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De Re Modality in the Late 20th Century: The Prescient Quine

John Divers

Quine’s (in)famous skeptical critique of de re modality is expounded in the pair of 1953 classic papers ‘Reference and Modality’¹ and ‘Three Grades of Modal Involvement’.² Here, I position the salient, and non-skeptical, treatments of de re modality in the later part of the twentieth century—those due to Kripke, Lewis and Fine—in relation to that prior skeptical critique. I emphasize the insights on which Quine’s skepticism was based and commend these as sound and enduring.³

1. Quine’s skepticism

In *Three Grades of Modal Involvement* Quine (1953b, 158-9) locates our subject matter within a systematic and philosophically neutral scheme of logical syntax. De re modal predication is what makes for Grade 3 in that scheme, and to explain what that amounts to we proceed, with Quine, via Grades 1 and 2.⁴

¹ W. V. O. Quine, ‘Reference and Modality’, in *From a Logical Point of View* (Cambridge, MA: Harvard University Press, 1953. Page references are to the second edition of the text (New York: Harper and Row 1961, 139–59), and henceforth I refer to it with the abbreviation RM.

² Quine, ‘Three Grades of Modal Involvement’, *Proceedings of the XIth International Congress of Philosophy*, Volume 14 (Amsterdam: North-Holland Publishing Co. Page references are to the reprint in Quine, *The Ways of Paradox and Other Essays*, revised edition (Cambridge, MA: Harvard University Press, 1976), 158–76, and henceforth I refer to this essay with the abbreviation TGMI.

³ By inviting greater appreciation for Quine’s achievements in this regard, I join J. Burgess, ‘Quinus ab omni naevo vindicatus’ in *Mathematics, Models and Modality* (Cambridge: Cambridge University Press), 203–35.

⁴ It would seem that Quine’s method and starting point here is attributable to his Carnapian education: in particular, the approach to modal words as quasi-syntactic expressions that lead to metaphysical entanglements that we must attempt to avoid, wherever possible, be avoided by translation into explicit syntactical predicates. For a most informative discussion of Carnap’s influence on Quine’s modal skepticism in this respect, and in others, see Shieh (2013), esp. §36.4–5.

Grade 1 modality is intentionally and explicitly metalinguistic. Here, a modal predicate (of necessity) attaches to the name of a (closed) sentence and so says something of, or about, that sentence—thus:

(G1) *‘Everything is physical’ is necessary.*

Grade 2 modality by contrast, is located at the same syntactic level as its non-modal complement. Now, modality no longer stands above the object-language alongside the other means we have of talking about parts of that object-language, such as its sentences and words. Modality is now part of the object-language and it is part of our means of talking in that language about things other than languages. The modal expressions of Grade 2 are operators (*It is necessary that* ___) of the kind that operate on closed, statement-expressing sentences (*everything is physical*) to make more complex closed, statement-expressing sentences—thus:

(G2) *It is necessary that everything is physical.*

In sentential modal logic (also known as propositional modal logic) this kind of sentence is regimented as $\Box A$ and the iteration of modal operators, $\Box\Box A$ (*It is necessary that it is necessary that everything is physical*) is syntactically permitted. In that respect, the Grade 2 modal expressions function like other familiar operators such as the negation operator (*It is not the case that ..*). So syntactically, the difference between Grade 1 and Grade 2 modality replicates the difference between (F1) and (F2):

(F1) ‘Everything is physical’ is not so.

(F2) It is not the case that everything is physical.

In both the cases of modality and negation, it is a good question why we have both sorts of construction (and how they relate to each other) but is a question beyond our immediate concerns with logical syntax. Continuing with those syntactic concerns, we might choose to open up the structure of the non-modal sentences of sentential modal logic to display their quantificational structure—thus, for the representative of the structure of *everything is physical* we would naturally have $\forall xPx$. But it still counts only as Grade 2 of modal involvement if the modal operators only have immediately within their scope, closed (statement-expressing) sentences—thus:

that this quasi-syntactic strategy, and its successor when Carnap adopted semantics, can’t work for

(G2*) $\Box \forall x Px$

In (G2*), we are certainly using the characteristic symbols of quantified modal logic, in which modal operators combine with quantifiers, variables and predicates, to regiment (G2). But the move to Grade 3, and to quantified modal logic proper, comes only when we allow as well-formed formulas a further kind of combination of these symbols. That is where a modal operator \Box operates immediately on a predicate Px (x is *physical*) to make a more complex modal predicate $\Box Px$, (x is *necessarily physical*): and, just to simplify the statement of syntax rules, all such predicates are also called ‘open sentences’. Grade 3, then, allows as well-formed those formulas that we get when we close these open-sentences (predicates) to make closed sentences (statement-expressors) by placing some appropriate quantifier on the outside—thus:

(G3) Everything is necessarily physical

(G3*) $\forall x \Box Px$

So the definitive Grade 3 phenomenon is the occurrence of a modal operator (somewhere) between a quantifier-plus-variable and the variable that it binds: it is quantification *across*, past or beyond a modal operator.⁵ If we apply the notion of *de re modal predication* to the language of quantified modal logic it is (the appearance within sentences of) predication of exactly that kind. In such *de re* modal predication, a modal operator (of necessity, for example) contributes to the formation of a modal expression which is apt to predicate something modal of whatever the values of the variables are: of the things that the language is interpreted as being about. That much ought to be philosophically uncontroversial, and so ought the following statement: it is the purpose of quantified modal logic(s) to treat the inferential properties of modal expressions at Grade 3 (and encompassing those at Grade 2 as a special case).

Against this background, Quine takes as methodologically equivalent commitment to the intelligibility of *de re* modal predication and commitment to the (semantic) adequacy of quantified modal logics. Quine’s skepticism about *de re* modality is precisely the view that these twin commitments ought to be refused. What remains to be understood, then, is the case that Quine makes for his skeptical refusal of the *de re* modal package. In headline, Quine’s case is (quite predictably) that we are to refuse the package because the associated benefits cannot be

⁵ The standard locution is ‘quantifying into’ a modal context. But, if left as that, this is a badly misleading description of the intended Grade 3 syntactic phenomenon. For, in my hearing at least, ‘quantifying in’ permits the understanding that a quantifier be put *inside* the modal operator. And that, being a Grade 2 construction, is exactly what is *not* intended.

purchased at acceptable costs. In the remainder of this paper, and reflecting the approach of Quine, I shall have nothing at all to say about what such benefits might be. Thus, I shall concentrate entirely on what Quine characterizes as the costs of accepting de re modality.

2. Quine's case for skepticism

In my understanding, the master-argument of 'Reference and Modality' is as follows. Grade 3 modal contexts are *prima facie* referentially opaque [RM §1, 139-44]. Since no-one can tolerate unexpurgated referential opacity in these contexts [RM §2, 144-50], the only questions are whether, and at what costs, Grade 3 modal contexts can effectively be purged of it. Then we have a dilemma. There are two broad strategies for purging referential opacity: the first of these (the language-dependence strategy) is demonstrably ineffective [RM §3, 150-54], while the second (the language-independence strategy) can be implemented only at unacceptable costs [RM §3, 154-56].

The demonstration of the *prima facie* referential opacity of de re modal predication, comes in the famous *number of planets* paradox:

- (N1) The number of planets is 9
- (N2) 9 is necessarily greater than 7
-
- (N3) The number of planets is necessarily greater than 7.

We have a paradox in that it *appears* that all of the following conditions obtain: (N1) is true, (N2) is true, (N3) is false and the step that takes us from the premises, (N1) and (N2), to the conclusion, (N3), is an application of an impeccable inferential principle (*viz.* the inter-substitutivity of identicals).⁶ Two points about the subsequent tightening-up of the case for referential opacity are to be noted.

Firstly, Quine feels bound to put his observation on a firmer footing by showing that an appropriate analogue of the number-of-planets paradox can be constructed at a more secure and significant level of syntax. So Quine attempts to free the issue from incidental considerations about the behaviour and introduction of singular terms, either in English or in quantificational

⁶ See RM §1 and TGMI §I. Perhaps the 'apparent truth' of (N1) requires trans-generation explanation. Pluto was then classified as a planet and that the planets in question are supposed to be those in our solar system.

logic. He does so by drilling down to the level of pure quantificational modal logic at which the only vocabulary is as follows: non-modal predicates; modal operators, sentence connectives, variables and the quantifiers that bind those variables. And what Quine finds here is the prospect of a failure of the inter-substitutivity of identicals that is utterly inescapable—inescapable because (contrast modal English) there is no deeper level at which it might be analysed away—thus:

(N1*) $\Box Fx$

(N2*) $\underline{x=y}$

(N3*) $\sim\Box Fy$

Quine’s negotiation of this syntactic transition, from our N-version of the paradox to our N*-version of the paradox, is something that has been much discussed.⁷ But here I settle simply for asserting that, for our purposes, these details can be bypassed.

Secondly, Quine is perfectly clear that, at this stage in the dialectic, the necessity (modality) involved is of a kind that Carnap and others in the broad camp of logical empiricism had been prepared to champion:⁸ that is, analytic necessity, or analytic-or-logical necessity or broadly logical necessity. Following usage established in the early twentieth century Quine tends to call this *strict* necessity [e.g. RM 143]. And he further refines his target by contrasting this strict necessity with the most prominent case of non-strict necessities: that is the physical or causal modalities that feature prominently in the informal exposition of the natural sciences [RM 158]. However, to capture Quine’s intentions clearly the term *analytic* necessity is preferable.

The crucial Lemma of Quine’s master-argument for de re modal skepticism, then, is this:

(Lemma) If the quantification and the modality are both taken as ordinarily understood, then there is no obvious sense to be given to de re modal predication. [RM 150]

What Quine means here by quantification ‘ordinarily understood’ is quantification over what he would call extensional entities: these include the objects of folk theory (people, tables, tigers, mountains, stars ...) and the objects, both concrete and abstract, of science (electrons, spacetime points, sets ...). What Quine means by modality ‘ordinarily understood’ is modality as ordinarily understood by those (Carnapian) philosophers he was addressing directly: thus, analytic modality. That there is no obvious sense to be given to de re modal predication so understood is a natural

⁷ On Quine’s treatment of the related issues see Fine, ‘Quine on Quantifying In’ in *Modality and Tense: Philosophical Papers* (Oxford: Oxford University Press, 2005), 115-30, and Burgess, ‘Quinusab omni naevo vindicatus’; the latter is sympathetic to Quine’s aims, the former is not.

⁸ See R. Carnap, *Meaning and Necessity: a Study in Semantics and Modal Logic* (Chicago: University of Chicago Press, 1947).

and compelling thought, for what it appears to demand is this.⁹ Taking x only as x , it makes perfectly good sense to say that it is analytically necessary of x that it is F . And if having to make good sense of that were bad enough, we must do so while ensuring that we avoid the disaster of committing to cases in which it is analytically necessary of x that it is F and it is not analytically necessary of y that it is F and $x=y$ (cf. (N*1)-(N*3) above).

3. Strategies of responses to Quine's case for skepticism

In face of Quine's Lemma, my preferred map of the (four) strategic responses available to a 'friend of modality' is as follows:

ACCEPT QUINE'S LEMMA?

/	\
NO (Strategy 1)	YES

|

PERSIST WITH THE DEFENCE OF GRADE 3?

/	\
NO (Strategy 2)	YES

/ \

Strategy (3)

Strategy (4)

Maintain 'ordinary' modality &
invoke 'extraordinary' quantification
(Language-dependence)

Maintain 'ordinary' quantification &
invoke 'extraordinary' modality
(Language-independence)

⁹ Here, and in what follows, it is easier for the reader to think only of cases of atomic 'F'. Many qualifications and complications would have to be introduced in order to take into account at every stage the special case where 'F' can be instantiated by a complex predicate that is apt to express a logical truth (e.g. $Ax \vee \sim Ax$). I claim, but won't attempt to argue here, that the special considerations that apply to those cases do not put them beyond the thrust of Quine's critique. In any case, were de re modal predication to prove defensible in these and only these cases it would be de re predication of a modality that is rather dull and whose population is not obviously well-motivated.

Strategy (1) is to reject the Lemma. And earning the right to do that would involve undertaking to show either: (a) how Quine is wrong in his view of what doubly ordinary de re modality requires us to make sense of; or (b) how, despite appearances, we can make sense of such a de re combination of quantification ordinarily understood with analytic modality. All other strategies proceed from acceptance of Quine's Lemma.

Strategy (2) is to retreat and defend only 'de dicto' modal commitments: that is, to abandon de-re-modal-predication-cum-quantified-modal-logic and draw the line of defensible commitment under either Grade 1 or under Grade 2 of modal involvement. Pursuit of this strategy requires defence of the classification of some statements as analytic (and others as synthetic) and will still, thereby, involve confrontation with *a* Quinean modal skeptic.¹⁰ But modal skepticism of that kind, and the related confrontation, raises quite different issues from those in prospect here.

Strategies (3) and (4) branch off from the acceptance of Quine's Lemma and involve attempts to defend de re modal predication under that constraint. The attempts in question depart from the 'ordinary' understanding of one of the two elements involved in Quine's conception thus far of de re modal predication. Strategy (3) is to propose an 'extraordinary' understanding of the quantification that is involved in the de re modal predication. Acknowledging those who Quine takes to be its proponents, this might be called the Carnap-Church strategy [RM 150-54]: more informatively, it might be called the language-dependence strategy. Strategy (4) is to propose an 'extraordinary' understanding of the modality that is involved in the de re modal predication. Acknowledging he who Quine takes to be its proponent, this might be called the Smullyan strategy:¹¹ more informatively, it might be called the language-independence strategy.

The aim of the language-dependence strategy, (3), is to make sense of de re modal predication by: (i) reconceiving the domain over which we quantify, and with a view to (ii) making the domain combine safely with the (intended) linguistic—analytic—character of the modality. So the re-conception of the domain of quantification is as a set of entities of a special

¹⁰ The locus classicus for this is Quine, 'Two Dogmas of Empiricism', *Philosophical Review* 60 (1951): 20-43.

¹¹ See RM 154ff; TGMI 174 and A. Smullyan, 'Modality and Description', *Journal of Symbolic Logic* 13 (1948): 31-7. It has been pointed out to me (by an anonymous referee, to whom I am grateful) that what I am calling "the" Smullyan strategy is strictly only a Smullyan strategy. For Smullyan (1947, 140) seems to have also been tempted by the language-dependence strategy (3) on the grounds that co-referential proper names might always be reckoned synonymous.

kind with natures that stand in intimate relations to ways of specifying them. The (historically) salient candidates for being entities of such a special kind are the individual concepts, or senses, that are postulated (in the tradition of Frege, Church and Carnap) to explain the phenomenon of true but non-analytic identity statements—for example: *Cicero is Tully*, or, *the first Postmaster General is the inventor of bifocals* or *the discoverer of Uranium is Marie Skłodowska-Curie*. Thus, one such entity might be picked out as *the-individual-concept-expressed-by-'Cicero'* and another as *the-individual-concept-expressed-by-'Tully'*. However, puzzlement about the ontology that might be proposed to fit this strange, language-dependent bill, need not detain us. For Quine comes to think that he has a lethal objection to the strategy that depends only on the bill itself [RM 155].

To approach Quine's objection, recall the number-of-planets paradox. The natural diagnosis of the paradox is that it arises precisely because we ordinarily take the individual things that we quantify over, for example the numbers, to be susceptible to analytically inequivalent specification. Thus we have, 'nine', 'the number of planets' but the (presumed) non-analyticity of, 'Nine is the number of planets'. The most direct way of dispatching the paradox, then, is to legislate against such inequivalence: that is, to stipulate that your domain of quantification, in quantified modal logic, will contain only entities that can never be picked out (as variable values) by two conditions that are analytically inequivalent. Bypassing metaphysical worries about the source of such a guarantee, or the conditions of identity of the entities posited,¹² we can proceed immediately to the destination at which Quine eventually arrives in the two classic papers. For Quine's ultimate complaint is that no such legislation can be effective: for it is provable that there are no such special entities of the kind it requires. The suggested proof is as follows. Assume that there is in the language a true but analytically contingent sentence p . (And afford that assumption more security by noting that the predication of analytic necessity of some truths is pointless unless that achieves contrast with others.) Then, given any condition, C , that specifies any x , we can immediately construct a condition, C^* that also specifies x but is analytically inequivalent to C —that is: $C^*(x) =_{df} C(x) \wedge p$. So given modal distinctions of the very kind that the proponent of the strategy is trying to defend, there are no things that meet the requirement of being specifiable in a way that is analytically equivalent to no other. And, thus, Quine takes the Church-Carnap, strategy to be defeated by a proof. My purposes here require only that we register Quine's view that the failure that besets the language-dependence strategy is of exactly this level: it is demonstrably ineffective. I shall not comment further on Quine's proof, or on how a language-dependence strategy might otherwise be prosecuted.

¹² See Quine, 'Notes on Existence and Necessity', *Journal of Philosophy* 40 (1943): 113-27.

3. Quine on the language-independence strategy

The aim of the language-independence strategy, (4), is to make sense of de re modal predication by: (i) reconceiving the character of the modality involved, and with a view to (ii) making it combine safely with the (presumed) language-independent character of the entities in the domain over which we ordinarily quantify. So the reconception of the modality is as a language-independent, non-analytic but still strict (not-merely-causal) modality, that applies to ordinary things independently of any considerations about how they are specified. Intending to capture exactly that (re)conception, I will call such modality *metaphysical* modality.¹³ The final, and most important business of this section will be to register three points about Quine's exposition of this language-independence strategy.

Firstly, Quine's attitude to the Smullyan strategy is quite different from his attitude to the Church-Carnap strategy. For Quine does *not* claim that the prosecution of the Smullyan strategy for expurgating referential opacity is subject to decisive objection. Quine, of course, takes the prosecution of the Smullyan/language-independence strategy to be ill-advised and, perhaps, even misguided. However, this attitude stands in marked contrast with his attitude towards the Church-Carnap/language-dependence strategy, which he takes to be a non-starter for being both demonstrably ineffective and, moreover, ineffective for reasons that even its proponents ought to recognize and admit.

Secondly, Quine predicts that prosecution of the Smullyanite, language-independence strategy will bring three very specific commitments: indeed he clearly and explicitly does so in

¹³ A caveat is in order concerning concerns the 'ordinariness' of the quantification that I have built into this (the Smullyan) strategy. The initially intended ordinariness involves, naturally, the objects of quantification being *actual* things as opposed to their being *merely possible* things. Yet, it might be required by a full prosecution of the Smullyan strategy across all the formulas of quantified modal logic (as per the semantics of Kripke (1963)) that the required domain of quantification turns out to not be very 'ordinary', in this respect, at all. In the case where a modal operator, especially a possibility operator, has wide scope with respect to a quantifier, as in *it might have been that there were more trees than there actually are*, the values of the variables might be taken either as non-actual-but-merely-possible trees, or as actual things that are not trees but might have been trees. Any such postulates will involve the friend of modality in a further confrontation with a Quinean modal skeptic of a kind: in this case, the skeptic about *possibilia* (the locus classicus for this is Quine, 'On What There Is', *Review of Metaphysics*, 2 (1948): 21-38). But as remarked in the case of retreating to the defence of only de dicto modality, this move takes us into quite different philosophical territory. The issues I am presently exploring arise even if de re modal predications are restricted by stipulation to those involving quantification over only un-controversially existing actual, and otherwise ordinary, things.

both *Reference and Modality* (154-6) and in *Three Grades* (175-6). The commitments in question are to:

- (Q1) the metaphysical doctrine of Aristotelian essentialism (as Quine represents that);
- (Q2) a logic of variables and singular terms that is more complicated, and weaker, than the orthodox approach that is embedded in orthodox classical first-order logic (as Quine understands that)
- (Q3) the status as a thesis of quantified modal logic, the principle of the necessity of identity as expressed by the formula, $(\Box=)$:

$$(\Box=) \forall x \forall y (x=y \rightarrow \Box x=y).^{14}$$

Thirdly, Quine's dialectic has—of course—particular dialectical opponents in view. Those dialectical opponents were thinkers who shared with Quine allegiance either to a certain conception of logic, or to some form of logical empiricism, but felt able to do so while remaining friends of modality: thus, C.I. Lewis, Church and Carnap [RM 155-56]. It is this consideration that explains why Quine presumes that the three commitments that he lists will automatically be counted as costs, and as cumulatively unacceptable costs, of implementing the language-independence strategy.

In light of the foregoing account, certain lazy 'takes' on Quine's skepticism about de re modality are exposed as canards—notably: that Quine argues that de re modal predication is absolutely unintelligible; that he is wrong-footed (or even refuted) by the Smullyan response to the number-of-planets paradox, or that he makes an unwarranted presumption that various commitments should be counted as costs. I contend that Quine deserves exoneration from such crass and unjust misrepresentations and that his achievements in this regard deserve greater recognition. Accordingly, I will attempt to show that there are few surprises, and certainly nothing that is apt to move Quine, in the salient philosophical defences of de re modal predication that followed his skeptical critique. My theses are: (a) that the principals—Kripke, Lewis and Fine—all undertake non-skeptical defences of de re modal predication that conform to the, Smullyan, language-independence strategy, and (b) none does so in a way that falsifies Quine's prediction of the commitments involved.

¹⁴ I use the term 'thesis' to gloss over (otherwise important) distinctions that are not immediately relevant: for example, that between axiom and theorem and between theorem and valid formula.

4. Kripke

The positioning of Kripke's defence of de re modal predication in relation to Quine's predictions is a relatively straightforward matter. For Kripke, as far as I am aware, does not dispute Quine's claim about which commitments a defence of de re modal predication will bring. Furthermore, Kripke (1980) consciously embraces and defends all three of the theses to which Quine claims the proponent of the language-independence strategy will be committed.¹⁵

First, Quine's version of Aristotelian essentialism in *Reference and Modality* is a clearly and explicitly modal version of the doctrine:

An object, of itself and by whatever name or none, must be seen as having some of its traits necessarily and others contingently, despite the fact that the latter traits follow just as analytically from some ways of specifying the object as the former traits do from other ways of specifying it. [RM 155]

It is Kripke who is primarily responsible for developing and defending the notion of a strict but language-independent conception of modality—the metaphysical modality—that this version of Aristotelian essentialism requires.¹⁶ In that cause, Kripke naturally, and famously, advocates the truth of various cases of de re predication of such a metaphysical modality—for example: that some things, such as Socrates, are necessarily human and some things, such as The Metre Rod, are contingently of the length that they actually are.

Second, it is a characteristic feature of Kripkean semantic theories of (alethic and normal) quantified modal logics, as summarized and discussed in Kripke's 1963 'Semantical Considerations in Modal Logic', that they pronounce as valid (over an appropriate range of model structures) the formula, $(\Box=)$. In *Naming and Necessity* Kripke also offers various considerations in support of this principle of necessity of identity so construed.

Quine's remaining prediction is that the prosecution of the Smullyan/language-independence strategy for justifying de re modal predication will result in a logic of variables and

¹⁵ To be thorough, one might consider the subtle prospect that Kripke (merely) chooses to embrace all three theses while, in some sense, he is not strictly (de jure) committed to them. In this paper I will put aside that subtlety in Kripke's case and in the cases of Lewis and Fine also: except to note one piece of important work that has been done under this heading in Kripke's case. Thus, given certain 'essential sentences' that represent Quine's modal version of Aristotelian essentialism, and a semantic theory of quantified modal logics as per Kripke, 'Semantical Considerations in Modal Logic' (*Acta Philosophica Fennica* 16 (1963): 83-94), Parsons ('Essentialism and Quantified Modal Logic', *Philosophical Review* 78 (1969): 35-52) shows what commitments concerning logical status of such sentences do and do not follow from (commitment to) the Kripkean semantic theory alone. However while Parsons' results are non-trivial, they by no means exhaust the sources and kinds of commitment to essentialism that are important in the bigger philosophical picture.

¹⁶ S. Kripke, *Naming and Necessity* (Oxford: Blackwell, 1980).

singular terms that is more complicated, and weaker than, the Russellian approach that is embedded in orthodox classical first-order logic (as Quine understands it). A full examination of this matter, in the case of any of the philosophers to be discussed, calls for the separation of a number of strands in Quine's prediction: for example, restrictions on the introduction and elimination rules of quantifiers in the logic is one thing, the 'construction' of singular terms from term-free resources is another. A full examination also calls for proper consideration of such thorny questions as how the singular terms in the logic might be supposed, by different parties, to relate to the idioms of natural language. However, in this paper I propose to take what I hope are informative shortcuts rather than offer a full tour. In that spirit, then—and thirdly—the following specific theses are all identified by Quine as integral elements of the Smullyan strategy and Kripke endorses all three. (T1) There are fundamental semantic differences between names and definite descriptions;¹⁷ (T2) changes in the scope of descriptions with respect to modal operators do make for differences in truth-value even when the description (actually) refers;¹⁸ (T3) Intersubstitutivity of variables takes place under restrictive semantic conventions governing the interpretation of variables. That is, the inter-substitutable variables are treated rigidly, in always being assigned to the same object in every world: absent that convention, and other things being equal, ($\Box=$) would not be validated.¹⁹

Thus, I conclude, Kripke's is a perfect example of a Smullyanite defence of de re modal predication as Quine foresees it. With both of the other philosophers to be considered, the evaluation is more complicated. And the common source of complication is their shared conviction that the metaphysical modality involved is non-primitive.²⁰

5. Lewis

On seeing Quine's predictions, it is tempting to leap to the conclusion that Lewis confounds all three. For does not Lewis reject Aristotelian essentialist metaphysics and reject the principle of

¹⁷ RM 154 and Kripke, *Naming and Necessity*, pp.24-6.

¹⁸ RM 154 n.9 and Kripke, *Naming and Necessity*, pp.10-14. So returning to the number-of-planets paradox and reporting the Smullyanite solution, it is held true that *the number of planets* (that very number, 9) is necessarily greater than 7 but false that it is necessary that *the number of planets* is greater than 7 (because there might only have been five planets).

¹⁹ TGMI 175 and Kripke, 'Semantical Considerations in Modal Logic'.

²⁰ The exact point of contrast is that Lewis and Fine deny that the metaphysical modality is primitive while Kripke does not deny that. More precisely, Kripke does not take issue with Quine's presumption that a defence of de re modal predication would be a defense of it as 'primitive', in the sense of its being part of logic proper and so of canonical notation. None of this, of course, is to attribute to Kripke the assertion that metaphysical modality is 'primitive' in any respect.

the necessity of identity and uphold a neo-Russellian descriptivism about singular terms? In each case, there is an important sense in which that is indeed so. Yet, Lewis is not directly at odds with Quine in these matters: and that is because Lewis is not party to a crucial presupposition on which Quine's predictions rely.

Quine, crucially, presupposes throughout his critique of de re modal predication that modal content is represented directly by a modal logical operator, in a non-extensional modal logic: and for Quine, to appeal to such a modal logic is to put modal vocabulary as an element of canonical or primitive notation. For those friends of modality that Quine had in mind when posing his skeptical challenge were all primarily defenders of quantified modal logic. And Lewis's treatment of de re modal predication is free of the commitments that Quine predicts precisely because Lewis's treatment is free of the constraints that come with the commitment to interpret de re modal predication in a special modal logic. That a non-logical, non-canonical, defence of de re modal predication might be mounted is not in conflict with any claim that was earlier made here by me—either for my own part or on behalf of Quine. What was claimed earlier, and claimed to be a matter of impeccable philosophical neutrality, was that the treatment of the inferential properties of Grade 3 constructions is the purpose of quantified modal logic(s). Quite so. *If* we indulge in quantified modal logic then that is why we do it: that is what it is for. But that is not to say that the treatment of the inferential properties of Grade 3 constructions must be handled in that way, and to understand and orientate the Lewisian position on this matter correctly, a sequence of three points must be registered.

The very first thing that Lewis does in approaching the interpretation of de re modal predication,²¹ is to distinguish between two ways of doing so: the way of quantified modal logic and the way of translation into a theory with a first-order, non-modal, logic. Next, Lewis asserts that the former, modal-logical, approach is not inevitable and then he proceeds to demonstrate that by presenting a (counterpart-theoretic) version of the other, first-order non-modal, approach.²² Thus, the counterpart-theoretic interpretation of discourse involving de re modal predication is one that involves logic only in a perfectly Quinean form: it is fully extensional classical first-order logic. The modal content of de re modal discourse is explicated in a non-logical first-order theory, to which non-modal logic is applied: the domain of the theory in question is a domain of non-actually-restricted individuals (possibilia) and the postulates of the

²¹ David Lewis, 'Counterpart Theory and Quantified Modal Logic', *Journal of Philosophy* 65 (1968): 113-26; page references are to the reprint of the essay in Lewis, *Philosophical Papers* vol. I (Oxford: Oxford University Press, 1983), 26-38, p. 26.

²² David Lewis, 'Counterpart Theory and Quantified Modal Logic', p.26.

theory govern counterpart relations over those individuals.²³ ²⁴ The statement of these intentions in Lewis' 1968 paper sets out a broad agenda from which he, in his subsequent theorizing of de re modality never departs.²⁵ And to take proper account of this agenda we must handle matters with some care.

First, Lewis claims that what is represented here by ($\Box=$) is a modal principle (of necessity of identity) that should not be accepted.²⁶ It is crucial to take seriously Lewis's choice of terminology. What Lewis does not claim is that ($\Box=$) is invalid or that is a non-theorem. For 'invalid' and 'non-theorem' (and their cognates) are terms that are apt in discussing the model-theoretic and proof-theoretic status of formulas of your logic, and Lewis is not considering the formulas of QML as formulas of his logic. In light of this crucial distinction (between the canonical and the non-canonical) Quine's intended and frequent observation in the matter, might be put, thus. If you locate de re modal predication in your logic—and, a fortiori, in your canonical notation—and you also refuse ($\Box=$), then you make a nonsense of the logic of identity. For then you are denying that a primitive or canonical predication (such as $\Box F$) is equally predicable of primitively or canonically specified identicals (by hypothesis, x and y). Certainly, if you take an apparent failure of intersubstitutivity of identicals to be merely a quirk of representation at a non-canonical level—like English, or a logic into which non-variable singular

²³ One potential cause of confusion here is the fact that the notation of quantified modal logic (QML) does have a significant role in the development of counterpart theory (CT) in Lewis' 1968 paper. For the technical part of the paper offers a systematic translation of the formulas of QML into those of CT. But the point of that is to persuade those who are already convinced of the expressive virtues of QML that CT shares these. That is, if you think that de re modal discourse is represented systematically, and with a certain degree of expressive completeness, by the formulas of QML, you must accept that also for the formulas of CT. The non-technical part of the paper is to (begin to) argue that the CT representation of de re modal discourse is (at least) as adequate as the QML representation in broader semantic and philosophical respects. One can see how Lewis's approach might be adapted and re-organised so that it would become, through counterpart-theoretic models, a genuine interpretation of quantified modal logic. See G. Hughes & M. Cresswell, *A New Introduction to Modal Logic* (Routledge: London, 1996), pp.353ff. But that was not Lewis's project, and it is crucial in understanding the relationship of Lewis to Quine that this is understood.

²⁴ Another potential cause of confusion here is the fact that Lewis allows the way that we choose to specify things a role in picking out which counterparts enter into the truth-conditions of de re modal sentences in which those specifications feature. For is that not a clear renunciation of the Smullyan strategy that proceeds from language-independent modality? No. For we don't conceive the modal facts as language-dependent just because we rely on considerations about language to pick out which language-independent facts (facts of objective similarity, for Lewis) they reduce to. For extensive discussion of that point see Divers, 'Quinean Scepticism about De Re Modality after David Lewis', *European Journal of Philosophy* 15 (2007): 40-62. So Lewis's position as a Smullyanite defender of de re modal predication is secure.

²⁵ Especially not so in the further classic sources of Lewis on modality: *Counterfactuals* (Oxford: Blackwell, 1973) and *On the Plurality of Worlds* (Oxford: Blackwell, 1986).

²⁶ David Lewis, 'Counterpart Theory and Quantified Modal Logic', p.36. To be truly precise, Lewis's claim concerns the open analogue of ($\Box=$). But that is irrelevant for present purposes.

terms have been introduced—you always have the option of mitigating that by showing that it disappears at the canonical level. Indeed, Quine [TGMI 173-5] makes precisely this point on behalf of the friends of modality. So Quine’s claim about ($\Box=$) is about what must be involved in defending de re modal predication as a feature of canonical notation, beyond which there is nowhere to run and nowhere to hide. And the Lewisian rejection of the principle ($\Box=$) does not provide a counterexample to Quine, for Lewis does not reject ($\Box=$) while attempting to treat de re modal predication as a feature of a canonical notation.

Second, the treatment of singular terms and variables in Lewis, as in the other cases, must be somewhat rough and ready here. However, here are the salient points. Given Lewis’s thoroughly Quinean conception of logic as classical first-order logic with identity, and adding to that the primitive predicates of counterpart theory, there is no obvious pressure from the logic of identity to depart from the Russellian conventions for introducing and eliminating singular terms via the description operator. There is no obvious need, thus far, to weaken or complicate the logic of identity or introduce supporting lemmas.²⁷ However, if we ascend to a level at which modal expressions (the modal operators) are also in play—introduced, as it were, via their counterpart-theoretic ‘translations’—then Lewis is a self-identifying Smullyanite²⁸ and he embraces the relevant Quinean predictions. That is, in the first place, it is acknowledged that de re predications involving modal expressions are in general scope ambiguous: they are translatable into the ‘canonical’ notation of counterpart theory in scope-sensitive ways that are not logically equivalent. And the effect of this is precisely to force the need for ‘supporting lemmas’ in governing whether descriptively analysed terms are available as variable substituends for universal elimination or existential introduction. For such terms will be available only when the wide/de re translation is equivalent to the narrow/de dicto translation, and that is when certain further lemmas of counterpart theory hold.²⁹

Finally, Lewis is explicit in his endorsement of (his finding ‘congenial’) Quine’s version of Aristotelian essentialism.³⁰ So, inter alia, what Lewis finds congenial is that objects have in themselves, and independently of any consideration of language, some traits necessarily and

²⁷ To be fair, there are non-obvious objections to the effect that Lewis’s CT translations do require him to mess with the handling of variables in first-order logic. The objections are due to Hazen, ‘Counterpart-Theoretic Semantics for Modal Logic’, *Journal of Philosophy* 76 (1979): 319-38, and Kripke (*Naming and Necessity*, 45n13) and here I can address them only insofar as I am prepared to state my conviction that Lewis deals adequately with these in his ‘Postscript to Counterpart Theory and Quantified Modal Logic’, in *Philosophical Papers* vol. I, 39-46, p.45.

²⁸ Lewis, ‘Counterpart Theory and Quantified Modal Logic’, p.33, n.16.

²⁹ Lewis, ‘Counterpart Theory and Quantified Modal Logic’, p.33-4.

³⁰ Lewis, ‘Counterpart Theory and Quantified Modal Logic’, p.32.

other traits contingently. That is a modal commitment. But such a modal commitment need not be in itself much by way of a metaphysical commitment and not, a fortiori, a commitment to specifically Aristotelian metaphysics in any demanding sense. We appreciate the need to distinguish one kind, or level, of commitment from the other once, as we have established, the distinction between the canonical and the non-canonical (or primitive and non-primitive) is in play. For, as we have seen already in the discussion of ($\Box=$), what one is committed to is one thing, and what one is committed to there being *at the canonical or primitive level* is another. Quine might be charged with making a mistake in taking fairly minimal commitments about what is necessarily (or essentially) this way or that and then *characterizing these as* acceptance of a very non-minimal metaphysical doctrine—the metaphysical doctrine of Aristotelian essentialism (see, e.g., Quine 1953b, 176). In charity, though, we ought to recall Quine’s presumption that the discussion is about what is defensible by way of a (modal) logic and, so, at the canonical level. And we ought to remind ourselves that what is perhaps the most famous Quinean dictum in this matter is precisely and explicitly about the consequences of championing a logic—thus: ‘Aristotelian essentialism should be every bit as congenial to (the champion of quantified modal logic) as quantified modal logic itself.’³¹

In sum, then, Lewis’s position affords no counterexample to anything that Quine predicted in this regard. Lewis does not commit to a deeply metaphysical Aristotelian Essentialism: that ‘fundamental’ reality is such that things have such modal features. But nor does Lewis commit to treating de re modal predication as a feature of ‘fundamental’ notation. And Quine’s prediction, insofar as it might be put in these terms, was only that commitment to the latter would require commitment to the former.

6. Fine

There is no respect in which Fine needs to depart, or in which he actually does depart, from the commitments, (Q1)-(Q3), that Quine predicts. For, as I understand it, Fine’s, non-skeptical, Smulyanite, defence of de re (metaphysical) modal predication replicates the Kripkean position in acceptance of the modal doctrine of Aristotelian Essentialism, the necessity of identity in the form of ($\Box=$) and the non-Russellian treatment of singular terms and variables.³² This is the

³¹ Quine, ‘Reply to Professor Marcus’, *Synthese* 20 (1961): 177-84, p.184.

³² The (now) classic source that I have in mind and to which I shall refer most frequently is K. Fine, ‘Essence and Modality’, *Philosophical Perspectives* 8 (1994): 1-16. But see also, for example, Fine, ‘The Logic

point that is central to present purposes and it ought to be registered and acknowledged. But there is more here that needs to be explained and more to appreciate about Quine in the process.

What remains to be understood about the agreement between Kripke and Fine, and what makes Fine's work among the most significant on the topic, is this. After metaphysical modality is up-and-running, as it were, Fine may be viewed—in all immediately relevant respects, and applying a broad brush—as being as Kripkean as Kripke. And that is why, as noted, Fine, like Kripke, is in the position of fulfilling all of Quine's predictions about the language-independence defence of de re modal predication. Where Fine proceeds beyond Kripke is in taking us into a metaphysical 'jungle' of Aristotelian Essentialism that Quine would have found deeper and darker than any jungle that he himself had dared to envisage. Kripke embraces the predicted commitments, (Q1)-(Q3), without indicating any departure from the Quinean presupposition that the defence of de re modal predication is to be a defence of de re modal predication as primitive. However, Fine (1994) rejects the primitive status of de re modal predication and regards Kripkean modal ideology (including all of the Quine-predicted commitments) as metaphysically and logically supported by deeper essentialist commitments—this position presupposing, of course, that the essentialist commitments are not simply equivalent to de re (metaphysically) modal commitments. In this regard, it is informative to consider Quine's second version of the metaphysical doctrine of Aristotelian essentialism given in *Three Grades*—thus:

This is the doctrine that some of the attributes of a thing (quite independently of the language in which the thing is referred to, if at all) may be essential to the thing and others accidental. E.g. a man, or talking animal, or featherless biped (for they are all in fact the same things) is essentially rational and accidentally two-legged and talkative not merely qua man but qua itself. [TGMI 176]

The first version of the doctrine, given by earlier quotation from *Reference and Modality*, I characterized as modal, because it involves explicit predications of the paradigmatically modal modifiers, 'necessarily' and 'contingently'. This second version of the doctrine puts in the place previously occupied by those modal modifiers the explicitly essentialist modifiers, 'essentially' and 'accidentally'. Before Fine, most—and notably both Kripke and Lewis—acquiesced in the presumption, apparently shared by Quine, that nothing (much) was at stake in distinguishing the modal version of essentialism from the essentialist version of essentialism: hence the free and unconcerned movement back and forth between modal and essentialist predications.³³ But the

of Essence', *The Journal of Philosophical Logic* 24 (1995): 241-73, and his 'Introduction' to *Modality and Tense: Philosophical Papers* (Oxford: Oxford University Press, 2005), 1-18.

³³ This is not to say that everyone was happy to accept that all essentialist claims were adequately expressed through the notation of standard first-order quantified modal logic. See, for example, David Wiggins, 'The *De Re* 'Must': A Note on the Logical Form of Essentialist Claims', in *Truth and Meaning: Essays in Semantics*, edited by Evans, G. & McDowell, J., (Oxford: Oxford University Press, 1976), 285-

contention of Fine is precisely that modal predication—and especially de re metaphysically modal predication—is to be explained in terms of different and more fundamental considerations about essence. Thus, it is true of Socrates that he is (metaphysically) necessarily human: but the truth of this de re modal predication obtains in virtue of (the modal fact is ‘grounded in’) non-equivalent facts about the essence of Socrates. And the facts about essence are, in turn and ultimately, the identity-making facts (what makes it the case that Socrates is the very thing that he is) as contrasted with the attribute-fixing facts (what makes it the case that Socrates—identity fixed—is how he is). Fine’s 1994 asymmetry thesis is that x ’s being (metaphysically) necessarily F is necessary but not (even materially) sufficient for x ’s being essentially F . Some of Fine’s illustrations of insufficiency exploit exactly the same trick that Quine exploited in his anti-Church-Carnap proof above. The trick is to invoke that expansive conception of non-modal predicates that includes open sentences that have closed sentences as parts. Thus in Fine’s defence of insufficiency we have the likes of *necessarily x is a philosopher or $2+2=4$* being true of Socrates but *essentially x is a philosopher or $2+2=4$* being (we are told) not true of Socrates. Various other kinds of illustrations are also invoked to exploit the ‘intuition’ that only some of what is metaphysically necessary of Socrates is attributable to his being the very thing that he is. For example, it is metaphysically necessary of Socrates that he is a member of the set {Socrates} and it is metaphysically necessary of {Socrates} that it has Socrates as a member. But while having Socrates as a member is essential to (grounded in the identity of) {Socrates}, we are told that being a member of {Socrates} is not essential to—because not grounded in the identity of—Socrates.

Thus, Fine exceeds Quine’s prescience only by proceeding further in a direction along which Quine predicted only the minimum distance of travel that would be involved. From Quine’s standpoint, the natural reaction to Fine’s defence of de re modal predication is as follows. It was never ruled out, and now it is proved, that the pursuit of a coherent worldview in which to embed de re modal predication might lead to even deeper metaphysical commitments than were predicted as the minimum in that regard. It goes with the genuinely modal territory, beyond Grade 1, and all agree, that we must abandon a purely extensional conception of logic. In modal logic, we can no longer freely intersubstitute expressions with the same extensions—for example predicates that apply to the same things, or statements with the same truth-value. For it is true that $2+2=4$ and true that *Quine is a philosopher*. But when we substitute the latter for the former in the truth that *it is necessary that $2+2=4$* we get the falsehood *it is necessary that Quine is a*

philosopher. Quine [TGMI 168ff] thought also—for reasons I have not had time to go into—that the only coherent position for a friend of modality was one in which there was no stopping at the minimal modal logic of Grade 2. So acceptance of modality leads to acceptance of quantified modal logic, and with that evident intensionalist metaphysical commitments. For one would accept (in some cases) that it is a fundamental feature of the world, because it is so according to the canonical statement of best theory, that x is *necessarily* F . But if Fine is right, what is in prospect is a further push from Grade 3 on to a further (fourth) grade of non-extensional involvement that is not merely modal and not merely intensional. For in essential contexts, we can no longer freely intersubstitute expressions even when they are modally (that is, intensionally) equivalent—for example predicates that apply to exactly the same things in every possible circumstance or statements that necessarily have the same truth-value. For, on Fine's view that will lead us from truth to falsehood in some cases where we substitute even modally equivalent predicates into x is *essentially* F . For it is true that *Socrates is necessarily such that he is identical to Socrates* and true that *Socrates is necessarily such that either he or 2 is an even number*, but while it is also true that *Socrates is essentially such that he is identical to Socrates* it is (we are told) false that *Socrates is essentially such that either he or 2 is an even number*. Thus, in Fine's scheme of things, acceptance of modality leads ultimately to not only intensionalist metaphysical commitments but to hyperintensionalist metaphysical commitments. For one would accept (in some cases) that it is a fundamental feature of the world, because it is so according to the canonical statement of best theory, that x is *essentially* F . So for Quine, the prospect raised by Fine's prosecution of the Smullyan strategy is that of inflating the costs of defending de re modal predication to a greater level, by a whole order of magnitude, above those that he had dared CI Lewis, Church and Carnap to contemplate.

7. Conclusion

What Quine foresaw was this. (1) The project of defending quantified modal logic, and thereby de re modal predication as an element of canonical notation, is not doomed to be ineffective. But, (2) the only defensive strategy that has a chance of proving effective is the Smullyan strategy on which we reconceive strict modality as a language-independent modality. And, (3) once that step is taken, specific commitments to (at least) the following, are bound to ensue: the modal version of the doctrine of Aristotelian essentialism, some significant departures from the classical (Russellian, description-centred) treatment of variables and singular terms, and a quantified modal logic that has as a thesis the necessity of identity, ($\Box=$). What Kripke does subsequently is

to embrace entirely Quine's theses, (Q1)-(Q3) and try to make the package an attractive one. In doing so, Kripke accepts, with the first move, a presupposition that Quine shared: namely, that a defence of de re modal predication will locate it in the logic proper, and hence as a feature of canonical notation. What Lewis and Fine both do is to refuse that presupposition. Having done so, neither Lewis nor Fine takes issue with, nor confounds, Quine's predictions, (Q2) and (Q3) about the consequences of accepting that presupposition. I doubt that Quine was surprised by the emergence of the, obvious and natural, strategic thought that de re modal predication might be defended as a non-canonical (reducible) aspect of 'total theory'. Perhaps Quine's only surprise would have been at the metaphysical lengths to which these philosophers have been prepared to go to in mounting such a defence. For the metaphysical postulates in question are, with Lewis, an infinity of universes across which every metaphysical possibility is realized and, with Fine, a universe that is more radically non-extensional than Quine took even the ancient worldview of Aristotelian essentialism to suggest.³⁴

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³⁴ I thank Joseph Melia for his comments on an earlier draft of this paper.

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