THE LOGICAL STATUS OF MODAL REDUCTIONISM

Paul K. MOSER and Arnold vander NAT

Modal reductionism is a form of modal non-realism that aims to take the mystery out of modal discourse. Generally speaking, such reductionism asserts that we are able to reduce all modal entities, including possible worlds, possible states of affairs, and possible truths, to actually existing *non*modal entities. The desired reduction aims to do away with reference to modal entities of any kind. Contrast such reductionism with modal realism, according to which modal entities such as possible states of affairs either are actually existing entities or are constructions out of actual entities that have irreducible modal features: for example, the modal feature of instantiability. (¹) Modal reductionism is incompatible with the assumption of modal realism that there are entities irreducibly modal in nature.

Proponents of modal reductionism are legion. A partial list includes Carnap, Quine, Cresswell, Rescher, and Kripke. Carnap identifies possible worlds with certain maximally consistent sets of atomic sentences, so-called "state descriptions". (²) Quine and Cresswell identify possible worlds with alternative combinations of nonmodal physical entities in the actual world, such as spacetime points. (³) And Rescher and Kripke

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(¹) The familiar view called *modal actualism* is a species of modal realism, since it asserts that possibilities are constructions out of actually existent entities that have irreducible modal features. For the details of this view, see Robert M. ADAMS, "Theories of Actuality," and Alvin PLANTINGA, "Actualism and Possible Worlds," in *The Possible and the Actual*, ed. M.J. Loux (Ithaca: Cornell University Press, 1979), pp. 190-209, 253-73. The familiar view called *modal possibilism* or *modal non-actualism*, as represented by David LEWIS, is also a species of modal realism. See LEWIS, *Counterfactuals* (Cambridge: Harvard University Press, 1973), chapter 4.

(²) See Rudolf CARNAP, *Meaning and Necessity, 2d ed.* (Chicago: University of Chicago Press, 1956), pp. 9f. See also Jaakko HINTIKKA, *Models for Modalities* (Dordrecht: D. Reidel, 1969).

(³) See W.V. QUINE, "Propositional Objects," in *Ontological Relativity and Other Essays* (New York: Columbia University Press, 1969), pp. 144-56; and M.J. CRESSWELL, *Logics and Languages* (London: Methuen & Co., 1973), pp. 37-39, and "The World is Everything That is The Case," *Australasian Journal of Philosophy* 50 (1972), 1-13.

reduce possible worlds to the functioning of actual conceptual activity, or to use Rescher's terminology, "mere *entia rationis*". (⁴) For convenience let us call Carnap's approach *modal sententialism*, Quine's and Cresswell's approach *modal combinatorialism*, and Rescher's and Kripke's approach *modal conceptualism*.

This article will present an argument showing that none of those three variants of modal reductionism can provide a *logical* analysis of modal concepts and terms. Specifically, the argument will show that those variants state *contingent* hypotheses concerning modal concepts and terms. In doing so, the argument will refute a basic assumption common to many proponents of modal reductionism.

<div align="center">I</div>

We begin the argument by considering modal conceptualism ("MC" for short), the view that modalities such as possibilities are reducible to the functioning of actual conceptual activity: in particular, the activity of imagining, entertaining, hypothesizing, or stipulating various matters. Naturally, what MC holds for all possibilities, it holds for the possible truth of propositions. Let us use "C" to designate the condition of its being a function of actual conceptual activity to imagine, entertain, hypothesize, or stipulate a given matter; and let us use "R" to represent the proposition that there are conceivers, i.e., things engaged in conceptual activity. Here, then, is the argument concerning modal conceptualism:

1. MC entails that for any proposition, *P*, possibly *P* only if *P* satisfies C.   (From Def. of MC)
2. The satisfaction of C entails R.   (From Def. of C)

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3. For any proposition, P, P entails possibly P.   (Modal theorem) ([5])

4. MC is true.   (Assumption for strict conditional proof) ([6])

5. For any proposition, P, possibly P only if P satisfies C.   (From 1, 4)

6. For any proposition, P, possibly P only if R.   (From 2, 5)

7. Hence, for any proposition, P, P only if R.   (From 3, 6)

8. There is a proposition, P, such that P is true.

(From existential generalization on 4 or on any tautology)

9. Hence, R.   (From 7, 8)

10. Therefore, MC entails R.   (From strict conditional proof 4-9)

11. For any propositions, P and Q, if P entails Q, then if Q is not necessarily true, then P is not necessarily true.   (Modal theorem)

12. Therefore, if R is not necessarily true, then MC is not necessarily true.   (From 10, 11)

Given the premises of this argument, the proponents of MC have two options: either to affirm that R is not necessarily true and therefore that MC also is not necessarily true, or to affirm that MC is necessarily true and therefore that R also is necessarily true. But it is patently false that R is necessarily true, since of course there was a time in our history when there were not yet conceivers. We conclude, therefore, that given the premises of argument 1-12 the proponents of MC are logically committed to the contingency of R and thus of MC as well.

But this conclusion apparently conflicts with what proponents of MC have claimed regarding MC. For instance, Rescher has proposed that MC is "purely a matter of a priori conceptual analysis"; and Kripke has suggested that MC specifies what we *mean* when we make a modal statement. ([7]) Yet, given the above argument, we now see that MC cannot be taken as a *logical* (i.e., conceptual) analysis of modal discourse in any ordinary sense of *logical analysis*. That is, MC cannot be construed as a logical truth stating logically necessary conditions about modal discourse. For given the contingency of there being conceivers, MC is also contingent. Evidently proponents of MC have not fully appreciated this consequence

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([5]) We shall discuss this theorem below, specifically its relevance to MC.

([6]) Note that the material conditional variants of premises 1-3 may be used inside the following strict conditional proof, since those premises constitute entailments.

([7]) RESCHER, "The Ontology of the Possible," p. 170; KRIPKE, *Naming and Necessity*, p. 44.

of their position; at least they have not remarked on the special status of MC, as perhaps involving "contingent a priori truth". ([8])

Perhaps, then, the proponents of MC are inclined to reject one of the premises of argument 1-12, in order to avoid the conclusion in question. The modal theorem serving as premise 3, viz., "For any proposition, P, P entails possibly P", appears to be the only assumption that might plausibly be rejected. We should ask, then, about the relation of MC to the modal theorem serving as premise 3.

Specifically, let us ask whether MC is logically committed to the modal theorem that necessarily, if P, then possibly P. The proponent of MC may construe this theorem as implying that we are unable to conceive of a situation where it is true that P but where we are unable to conceive that P is true. One might try to support this implied thesis by arguing as follows that its denial generates an inconsistency: The view that we are able to conceive of a situation where it is true that P but where we are unable to conceive that P is true entails, first, that we are able to conceive that P is true (since our being able to conceive of a situation where it is true that P requires our being able to conceive that P is true), and, second, that we are unable to conceive that P is true. However, this argument is unconvincing, since the view in question evidently does not entail that we are unable to conceive that P is true; it entails rather that we are *able to conceive* of a situation where we are unable to conceive that P is true, even though P is true in that situation. Conceive, for instance, of the following situation: It is true that the space-time world has four dimensions, but we are unable to conceive that it has four dimensions. Conceiving of our being unable to conceive that the space-time world has four

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([8]) KRIPKE, as is well-known, has introduced the notion of contingent a priori truth in *Naming and Necessity*, pp. 54-57. But there is no reason to suppose that he intends the notion to apply to an analysis such as that provided by MC; his use of the notion stems from consideration of truths such as that concerning the length of the standard meter stick. Nor is there any reason to think that Rescher regards MC as a contingent a priori truth. More importantly, it is altogether unclear how one might know a priori a proposition, such as MC, that entails the existence of contingent beings; for it is quite unclear how one might be *justified* a priori in believing such a proposition. What might the latter justification consist in, if not at least partly in experience? This question is arguably less troublesome for *non*-contingent true propositions, since there is available an appeal to the inconceivability of their being false. For a critical discussion of Kripke's arguments for the contingent a priori, see Albert CASULLO, "Kripke on the A Priori and the Necessary," *Analysis* 37 (1977), 152-59.

dimensions evidently does not entail that we are unable to conceive that it has four dimensions; for conceiving, unlike knowing, is not truth-entailing. Thus, we need to look elsewhere for support for premise 3.

The needed support can be found in the semantics for any actualist version of MC. A basic assumption of an actualist version of MC is that every possibility, P, is reducible to (in the sence of being determined by and only by) our ability actually to conceive that P. More generally, all talk of modality is to be understood solely in terms of the notion of *what we have the capacity actually to conceive*. (⁹) Thus, according to the basic semantical principle for an actualist version of MC:

AMC. For any proposition, P, and any situation, S, the value of "possibly P" in S is true if and only if there is a situation, S', which we are able actually to conceive, and the value of "P" in S' is true.

For present purposes, our talk of a *situation* is intended to be broad, allowing both for situations that we are able actually to conceive and for situations that we are able not actually to conceive, but only to conceive that we are able to conceive. We shall return to this latter distinction below.

The argument for the modal theorem constituting premise 3 can now be given:

1. The value of "Possibly (P and impossibly P)" in the actual world is true.   (Assumption for indirect proof)
2. Situation $S1$ is a situation we are able actually to conceive, and the value of "P and impossibly P" in $S1$ is true.   (From 1, AMC)
3. The value of "P" in $S1$ is true, and the value of "Impossibly P" in $S1$ is true.   (From 2)
4. The value of "Possibly P" in $S1$ is false.   (From 3)
5. For any situation, S, if we are able actually to conceive S, then the value of "P" in S is false.   (From 4, AMC)
6. The value of "P" in $S1$ is false.   (From 2, 5)
7. Hence, the value of "P" in $S1$ is false, and the value of "P" in $S1$ is true.   (From 6, 3)

(⁹) The proponent of MC needs, of course, to provide an explication of the notion of capacity (or ability) to conceive that does not rely on the very modal notions explicated by MC. We assume that such an explication is available in terms of the notion of the actual functioning of human conceiving in general, but we shall not digress on the details here. For relevant discussion, see RESCHER, "The Ontology of the Possible," in *The Possible and the Actual*, pp. 173-75.

Consequently, given AMC, the proponent of MC is logically committed to the modal theorem of premise 3 that necessarily, if P, then possibly P.

However, not every version of MC is logically committed to premise 3. An exception is provided by a non-actualist version of MC according to which any possibility, P, is reducible either to our ability actually to conceive that P or to our ability to conceive that we are able to conceive that P. The basic semantical principle of a non-actualist version of MC is:

> **NMC.** For any proposition, P, and any situation, S, the value of "Possibly P" in S is true if and only if there is a situation, S', such that S' is conceivable in S and we are able to conceive S at least indirectly, and the value of "P" in S' is true.

The talk of *indirect* conceivability in NMC is to be understood as referring to cases where a situation is not actually conceivable for us, but only conceivably conceivable. Further, the notion of conceivable conceivability is to be understood as allowing for various degrees of iteration of conceivability.

Given the present non-actualist version of MC, possibility may be determined by our ability simply to conceive that we are able to conceive a situation, even when we are unable actually to conceive the situation in question. Consider, for example, a case where we are able to conceive that we have superhuman intelligence, and where our having such intelligence would entail, and be entailed by, the fact that there is a special situation that we are able to conceive. In this case we are able to conceive that we have a certain feature that enables us to conceive a special situation, a situation that we are unable actually to conceive. Non-actualist MC affirms that possibilities are determined by any such case where we are able to conceive that we are able to conceive a situation, but where we are unable actually to conceive the situation. Thus, non-actualist MC implies that not all possibilities are reducible to what we have the capacity actually to conceive.

It should be clear that non-actualist MC, unlike actualist MC, is not logically committed to the modal theorem that necessarily, if P, then possibly P. The basic semantical principle for actualist MC, viz. AMC, entails in effect that all conceivable situations are fully accessible to the actual world in the sense of being conceivable in the actual world; thus AMC does not require modal restrictions because of the structure of accessibility. In contrast, the basis semantical principle for non-actualist MC,

viz. NMC, does not entail that all conceivable situations are fully accessible to the actual world. Given NMC, there may be conceivable situations that are not conceivable, but are merely conceivably conceivable, with respect to the actual world. Because of the present difference between AMC and NMC, we cannot rely on an indirect proof such as 1-7 above to show that NMC entails that necessarily, if P, then possibly P. Thus, we have not shown that non-actualist MC is logically committed to the conclusion of our argument 1-12.

Now we do not intend to rule out non-actualist MC as a conceptually viable option. But it should be noted that any such version of MC is an odd form of modal reductionism. The oddness is due to the fact that modality is being reduced not to an actual capacity to conceive, but rather to a capacity to conceive that we are able to conceive. The possibilities themselves may be inconceivable to us, according to non-actualist MC, but they are possibilities nonetheless, insofar as we are able to conceive that we are able to conceive them. So, we do not have in non-actualist MC a genuine reduction of modality to what is conceivable given the functioning of actual conceiving, since we do not have the implication that possibly P only if we have the capacity to conceive P. The reduction provided by actualist MC is clearly more in the spirit of conceptualist modal reductionism.

II

The argument 1-12 can easily be altered to show the logical contingency of modal sententialism and modal combinatorialism also. Clearly, sententialism, as ordinarily understood, is logically committed to the modal theorem of premise 3 that necessarily, if P, then possibly P, since its basic semantical principle is that for any proposition, P, and any situation, S, the value of "Possibly P" in S is true if and only if there is a situation, S', which is such that S' is a variation on the maximally consistent set of actually true sentences, and the value of "P" in S' is true. And combinatorialism, as typically understood, is also committed to that modal theorem, since its basic semantical principle is that for any proposition, P, and any situation, S, the value of "Possibly P" in S is true if and only if there is a situation, S', which is such that S' is a rearrangement of the actual physical arrangement, and the value of "P" in S' is

true. Thus, the basic semantical principles for sententialism and combinatorialism are directly analogous to the basic semantical principle for actualist MC, viz. AMC.

Clearly, the argument 1-12 can be altered to apply to sententialism. We need only redefine C as "X is related (in some specified way) to the members of a maximally consistent set of atomic sentences", and redefine R as "there is a set of sentences". Given the contingency of there being a set of sentences, modal sententialism is contingent also. A similar implication follows from combinatorialism. To see this, we need only redefine C as "X is related (in some specified way) to the alternative combinations of nonmodal physical entities in the actual world", and redefine R as "there are physical entities". Given the contingency of there being physical entities, modal combinatorialism is contingent also. This latter implication raises a question about the exact sense of Cresswell's aim to use combinatorialism as an "analysis" of modal discourse. ([10])

More generally, the foregoing variations on argument 1-12 raise a question about the exact logical status of modal reductionism as represented by sententialism, combinatorialism, and conceptualism. Clearly, its logical status is one of contingency. But what kind of contingent explication of modal discourse does such reductionism provide? Surely, as Rescher and other proponents have noted, it is not simply an inductive empirical generalization. Thus, given that modal reductionism provides neither a logical analysis nor simply an inductive generalization, its proponents must provide an account of the status of their position. Lacking such an account, modal reductionism will foster a kind of conceptual mystery similar to that which it aims to remove from modal discourse. We shall begin to remove some of this mystery by distinguishing two options for actualist modal conceptualism, the version of modal reductionism we find most plausible.

III

There are two noteworthy variants of modal conceptualism construed as a contingent thesis. They are:

([10]) See CRESSWELL, *Logics and Languages*, p. 38.

I. MC is logically contingent, but it is not possible that there are modal conceivers and MC is false.

II. MC is logically contingent, and it is possible that there are modal conceivers and MC is false.

The talk of *modal conceivers* in I and II refers to conceivers who use modal concepts such as the concept of possibility. We shall argue that option II is preferable, from the standpoint of modal conceptualism, to option I.

Notice that II may be construed by the modal conceptualist as claiming that we are able to conceive of a situation where there are modal conceivers but MC is false. By way of objection, it might be asked why we should think that modal features are reducible to conceiving in the actual world, but are not thus reducible in at least one alternative world including modal conceivers similar to us? If unexplained, so the objection goes, such asymmetry will raise serious doubt about the explanatory value of II; for II will then leave unexplained the fact that modal features are reducible to modal conceiving in certain situations, but not in others. By way of reply, however, it seems that the needed explanation is straightforward: we are able to conceive of a situation where modal conceivers similar to us exist, but where modal features have a conceiver-independent basis of some sort, such as a basis in the arrangements of the basic physical components "inhabiting" (more accurately: conceived as inhabiting) that situation. Thus, we should not rule out such a possible situation, if only because modal combinatorialism is not impossible relative to possible situations "inhabited" by modal conceivers. Consequently, option I should be rejected on the ground that it rules out the possibility of a situation we clearly are able to conceive. And this leaves option II as the preferred explication of the thesis that MC is contingent.

Construed in accordance with II, MC is actually quite latitudinarian regarding possibilities. Clearly, it allows for the possible truth of at least the following prominent positions, due to our being able to conceive of their being true: modal combinatorialism, modal sentialism, and modal realism (where the latter position is construed either as modal actualism or as modal non-actualism). More generally, then, if we are able to conceive of a position as being true, MC allows for its possible truth. And this, of course, is a plausible feature of MC.

Another plausible feature of MC is that it provides an ontologically economical explanatory basis for modal discourse. By reducing modal

entities to our capacity actually to conceive, MC frees us from commit-
ment to ontologically unfamiliar modal entities. Thus, MC is to be prefer-
red to modal realism on grounds of ontological parsimony. The advantages
of MC over sententialism and combinatorialism are less easy to identify.
It can plausibly be argued that MC is to be preferred to sententialism on
the ground that sententialism commits us to sets while MC does not. Thus,
if we need not countenance sets elsewhere in our ontology, sententialism
loses to MC by considerations of ontological parsimony. The issue of
whether Quine is right in suggesting that combinatorialism requires sets
also cannot be taken up here. But it is worth stressing that if Quine is
right, MC is to be preferred to combinatorialism for the same reason that
sententialism loses to MC.

In any case, our present point is a general one: even if MC is logically
contingent, it can be justified by its explanatory value. And the present
point is especially compelling once we grant that ontological economy
is a constraint on explanatory value. Thus, let us not fall prey to the im-
plausible assumption that the *logical* contingency of MC raises special
problems for the *epistemic* basis for MC. A good explanation is none the
worse for its being contingent.

                                    IV

In summary, then, we have shown that three prominent variants of ac-
tualist modal reductionism are logically contingent. Also, we have drawn
a hitherto unappreciated distinction between actualist and non-actualist
versions of modal conceptualism, and have argued that modal concep-
tualism is neither conceptually inflexible nor epistemically bankrupt
because of its logical contingency. We leave it as unfinished business to
develop the exact implications of these results for conceptualist modal
semantics.

Loyola University of Chicago   Paul K. MOSER & Arnold vander NAT
Chicago, Illinois 60626 USA