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This paper is concerned with the wholly metaphysical question of whether necessity and possibility rest on nonmodal foundations—whether the truth conditions for modal statements are, in the final analysis, nonmodal. It is argued that Lewis’s modal realism is either arbitrary and stipulative or else it is circular. Even if there were Lewisian possible worlds, they could not provide the grounds for modality. D. M. Armstrong’s combinatorial approach to possibility suffers from similar defects. Since more traditional reductions to cognitive or linguistic facts suffer similar fates, the conclusion that the alethic modality is primitive and incapable of reduction is offered.

The Ontological Ground of the Alethic Modality*

Scott A. Shalkowski

Two fundamental questions bear on modal metaphysics. The first concerns the foundations or ontological ground of modality: What are the truth-conditions of necessary truths? The second concerns how we can come to have justified beliefs about modally qualified propositions: What is our epistemic access to necessity? An adequate theory of modality must answer both of these questions. Neither the foundations of nor our knowledge of modality should be an utter mystery. If no modal propositions are true, they can be of no use in constructing true theories about the world. If we have no knowledge of modality, constructing philosophical theories on modal foundations is little use in extending our knowledge about the world, since no justified theory can be based upon unjustified conjectures.

The contemporary revival of interest in modality has generated a substantial philosophical literature about the nature of modality and how a modal framework can be utilized to solve various philosophical problems.¹ Modal systems have been generated with abandon² and though philosophers have discussed the metaphysical commitments of modal theories in great detail,³ they have not addressed certain crucial issues concerning the foundations of modality. In particular, they have said very little about the nature of modal facts, whether they are reducible to nonmodal facts or are irreducibly modal, taking up this issue only indirectly in discussions of the ontological status of possible worlds. In the absence of a related metaphysics, the study of modal logics can serve only to expand our understanding of formal systems; it cannot expand our understanding of the world and can be no great boon in answering philosophical problems and puzzles. Though both the ontological and

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¹Much of the literature is well-known. Lewis, Carnap, Marcus, and Kripke were instrumental in providing much of the formal apparatus for modal logic. Michael Slote, in *Identity and Essence* (New York: New York University Press, 1975); Anil Gupta, in *The Logic of Common Nouns* (New Haven: Yale University Press, 1980); and Graeme Forbes, in *The Metaphysics of Modality* (Oxford: Clarendon Press, 1985), provide modal theories of various types of objects (e.g., events, processes, and sets) and use modality to solve certain philosophical chestnuts (e.g., problems regarding change for physical objects).

²For an account of the current state of formal systems see D. Gabbay and F. Guenther, eds. *The Handbook of Philosophical Logic Volume II: Extensions of Classical Logic* (Dordrecht: D. Reidel, 1983). The proliferation of formal modal systems makes it difficult to decide which system provides us with the proper logic for some particular type of modality. For evidence that it is not obvious which system captures metaphysical necessity, see Alvin Plantinga, *The Nature of Necessity* (Oxford: Clarendon Press, 1974); and Philip Quinn, "Metaphysical Necessity and Modal Logic," *The Monist* 65 (1982): 444-455.

³For an extended discussion and development of one particular account of these commitments, see Graeme Forbes, *The Metaphysics of Modality*. For classic papers from various viewpoints, see Michael J. Loux, ed. *The Possible and the Actual* (Ithaca: Cornell University Press, 1979).

the epistemological questions are fundamental, I am concerned here only with the nature of the ontological ground of modality. In particular, my concern is with the question of whether modality rests on nonmodal foundations, whether the truth conditions for modal statements are, in the final analysis, nonmodal. By focusing on possible-worlds reductions of modality, I shall argue that modal facts are irreducibly modal and show that such reductions are either arbitrary or circular.

In section 1 I briefly sketch what I mean by ‘ontological ground’. In section 2 I examine David Lewis’s claim that possible worlds, realistically construed, are the ontological grounds for modality, i.e., that facts about ontologically robust possible worlds are more basic than facts involving modality. I argue that Lewis’s modal realism is defective precisely because even if there were Lewisian possible worlds, they could not serve as the requisite nonmodal grounds for modality. In Section 3 I examine D. M. Armstrong’s recent combinatorial account of necessity and suggest that his neo-Tractarian approach to necessity suffers from the same defects as Lewis’s. After briefly showing how more traditional reductions suffer similar fates in section 4, I conclude that the alethic modality is primitive and incapable of reduction.

1. What is an Ontological Ground?

The question of what, if anything, is the ontological ground of modality is the question of what in the world provides for modality, or what is the nature of modal reality. I assume that there are truths involving modal qualification and (not uncontroversially) that truths, in general, are connected with reality. There is something in virtue of which they are true, i.e., they have truth conditions. My concern, then, is with the nature of the truth conditions of modally qualified statements.

If modality is grounded in reality, it is either a primitive or a nonprimitive feature of that reality. If it is primitive, then there is nothing nonmodal in virtue of which reality possesses modal characteristics—there are no nonmodal facts which wholly constitute modal facts. If it is not primitive, then there *is* something nonmodal in virtue of which modality is present in reality—there *are* nonmodal facts which wholly constitute modal facts.

I will call any theory that admits modal characteristics of the world only insofar as they are present in virtue of some set of nonmodal characteristics a reductive theory of modality. The reductive relation with which I am concerned is a metaphysical relation only. It presupposes nothing about the existence of bridge laws between theories or the semantic eliminability of reduced expressions in the reduced theory. Thus, according to my use, modality is reducible to the nonmodal iff modal facts are, ultimately, complexes of nonmodal facts. This reductive relation is weak enough so that modality is reducible iff modal facts supervene upon wholly nonmodal facts, which is also to say that modality is reducible iff the truth conditions of modally qualified propositions are nonmodal conditions. A successful reduction must not rely upon any tacitly modal characteristics of items in the reductive base, or modal relations between them, since this would leave some modality unreduced.⁴

The question of whether modal facts are ultimately (perhaps complex) nonmodal facts becomes, then, the same as the question of whether theories which utilize modality are ultimately reducible to theories that do not. When thinking about science, one might ask whether chemical

⁴This way of thinking about reduction is not wholly idiosyncratic. D. M. Armstrong, in *A Combinatorial Theory of Possibility* (New York: Cambridge University Press, 1989), 104, claims that supervenience theses are reductive theses—ontologically reductive, not semantically reductive. Supervenience doctrines are not so much alternatives to reductions, but reductions devoid of now-dubious ideas about linguistic analysis. Lorenz B. Puntzel makes a similar claim in “Reductionism,” in *Handbook of Metaphysics and Ontology* Vol 2, ed. Hans Burkhardt and Barry Smith (Philadelphia: Philosophia, 1991), 763-765, as he distinguishes different kinds of metaphysical and epistemological reductive relations.

phenomena are, at bottom, physical phenomena. This puts the matter in metaphysical terms. Alternatively, one might ask whether chemical theory is reducible to physical theory. This puts the issue in terms of the relation between two theories. If the theories are interpreted realistically, we can move uncontroversially between questions of ontological grounds and reducibility. To illustrate, if we ask whether modal facts are grounded in facts about possible worlds, we ask whether modality is reducible to possibilities and whether modal theories are reducible to theories which concern themselves only with possibilities. Concern over the proper metaphysics of modality is equivalent to concern over whether realistically-interpreted theories that invoke modality are reducible to theories that invoke only nonmodal characteristics of things. So, the question of what, if anything, is the ontological ground of the metaphysical modality is just the metaphysical way of putting the question of whether there is a reductive theory for modality.

It is important to separate whether the correct metaphysics is possibilist or actualist from the possibility of a reductive theory of modality. A possibilist recognizes the existence of objects that do not inhabit the actual world, whereas an actualist admits only actual existents. A possibilist may consistently hold either that the major theoretical function of possibilities is to ground modality or that possibilities, even though they exist, play no special role in grounding modality either because this role is filled by constituents of the actual world, or because modality is primitive. An actualist, of course, denies the existence of possibilities, but might think that possibilities *are* needed to ground modality and since there are no possibilities, modality is ungrounded and not a genuine part of reality. Alternatively, an actualist might think that even if (*per impossibile*) possibilities were to exist, they would play no role in grounding modality since it is the structure of the actual world that does so. An actualist who thinks that modality is grounded can opt for a reductive theory of modality that is framed in terms of actual properties, propositions, states of affairs, combinations of actual objects and their properties, conceivability, or linguistic phenomena and thereby treat at least some of these entities as more fundamental than modal phenomena. An actualist might nevertheless reject all reductions of modality and hold that modality is an irreducible feature of reality. Ultimately there is no entailment from any particular commitment on the possibilism/actualism divide to any correlative stance on the reductionism/primitivism issue. My concern over possibilism/actualism is secondary, with reductionism/primitivism the focus of the following discussion.

2. Possible Worlds as Grounds

The Kripke semantics for modal propositional logics is an ordered triple, $\langle \mathbf{G}, \mathbf{K}, \mathbf{R} \rangle$, with \mathbf{G} a special member of the set \mathbf{K} and \mathbf{R} a relation on \mathbf{K} .⁵ The semantics for quantified modal logics requires only an additional function assigning a set to each member of \mathbf{K} . This structure has permitted fruitful progress in philosophical and formal logic and possesses an elegance that far surpasses any natural language semantics. Even so, a modal skeptic's worries are not safely set aside simply because we now have a formal model structure in which a body of theorems comes out true. The modal skeptic may rightly object that, at best, Kripke's formal semantics shows that some consistent theory obeys the axioms of various formal systems called "modal logics." But, what has this to do with the logic of modality or ordinary modal reasoning? The mere construction of the model theory does not show that any interpretations of the formal operators answer to the common modal concepts that we employ in ordinary reasoning.⁶ It is the job of informal semantics, or what Plantinga calls "applied semantics," to exhibit the relation between formally defined notions and the concepts and categories of ordinary language and reasoning.⁷ For what follows we may safely assume that informal semantics can show

⁵Saul A. Kripke, "Semantical Considerations on Modal Logic," *Acta Philosophica Fennica* 16 (1963): 83-94; reprinted in *Reference and Modality*, ed. Leonard Linsky (Oxford: Oxford University Press, 1971), 63-72.

⁶For a further discussion of these and related issues see Susan Haack's *Philosophy of Logics* (Cambridge: Cambridge University Press, 1978), chap. 10.

⁷Plantinga, chap. 7.

that the standard modal operators bear a striking resemblance to ordinary modal concepts and that the ordinary language interpretations of formal theorems are generally accepted as true.⁸

These semantic connections between formal modal operators and the modalities of ordinary language do not, in themselves, provide easy answers to the question of what grounds modal assertions unless the informal semantics tells us that the model-theoretic structure refers to some existing objects that are related in ways specified by the formal semantics. Kripke helpfully tells us that we can think of **K** as the set of all possible worlds, **G** as the actual world, and **R** as an accessibility relation between worlds. Informally, this allows us to interpret the model-theoretic semantics as defining necessary truth, from the vantage point of any particular world, as truth in every accessible possible world and possible truth as truth in at least one accessible possible world. The modal realist, I think, is sensitive to the requirement that truths must be grounded in the structure of reality and gladly takes Kripke's heuristic to have metaphysical significance. It is not just that we *can* think of the members of **K** as worlds, but we should. We should because there are such things and they provide the ontological ground for true modal assertions. Typically, what is modally true in one world is a function of what is nonmodally true in other worlds. Modal truths are grounded nonlocally, i.e., the truth of some modal propositions in a given world is secured in virtue of what is nonmodally true in some other world(s). In general, a single world is insufficient to ground claims involving necessity and impossibility because what goes on in other worlds is relevant. The actual world can tell us what is true, what is false, and some of what is possible, but it is not rich enough to ground what is necessarily true, necessarily false, and all of what is possible. Or, so goes the standard story.

Most resistance to the modal realist's account of the ontological ground for modality stems from disapproval of what is perceived as its ontological profligacy. Modal realism is ontology run wild. This perception is typically based on our apparent lack of epistemic access to these worlds. As a result, some actualists attempt to reduce possible worlds to propositions, properties, or states of affairs.⁹ The deeper metaphysical problem, however, is that for all its ontological extravagance and elegance modal realism is nevertheless incapable of providing the ontological ground for the alethic modality.¹⁰ According to modal realism, the existence of a group of objects, the possible worlds, is supposed to be the foundation for modal truths. The existence and natures of these worlds is the primitive feature of modal reality while the necessities and possibilities are parasitic on the nature of the set of worlds. For this account to work, there can be no modal restrictions on these worlds. Possible worlds must constrain facts of modality; facts of modality must not restrict the number and nature of possible worlds. Were God creating the entire Lewisian plurality of worlds, there would be no modal restrictions on God's act of creation. Without the worlds, there are no modal truths. The states that distinguish the modal truths from the modal falsehoods would not exist. To say that God had no choice as to which or how many worlds to create is to say that there *are* modal constraints on the number and nature of possible worlds and this is tacitly to give up the reductive features of the modal realist's

⁸In making this assumption I am ignoring disputes regarding which formal system best captures our sense(s) of 'necessarily'. None of the following discussion depends upon any particular resolutions of these disputes save for the assumptions mentioned earlier: that ordinary language and reasoning admit of modal qualification so that there is some modal concept to be formalized (presumably in a consistent manner) and that some modally qualified propositions are true.

⁹Robert M. Adams proposed a reduction in terms of propositions in "Theories of Actuality," *Noûs* 8 (1974): 211-231; Robert C. Stalnaker attempted a reduction in terms of properties in "Possible Worlds," *Noûs* 10 (1976): 65-75; Alvin Plantinga advocated a reduction in terms of states of affairs in "Actualism and Possible Worlds," *Theoria* 42 (1976): 139-160. William Lycan's "The Trouble with Possible Worlds" contains a discussion of Lewis's possibilism as well as actualist reductions of possible worlds. These articles are reprinted in *The Possible and the Actual*. For a more recent development of the combinatorial theory of possible worlds, see D. M. Armstrong, "The Nature of Possibility," *The Canadian Journal of Philosophy* 16 (1986): 575-594; and *A Combinatorial Theory of Possibility* (New York: Cambridge University Press, 1989).

¹⁰The elegance and power of modal realism is evident in David Lewis's *On the Plurality of Worlds* (Oxford: Basil Blackwell, 1986).

program. Admitting constraints on the number and nature of worlds is to contradict the reductive modal realist's hypothesis that the existence of worlds is the prior, or more basic, feature of reality while modality is the posterior, or less basic, feature. So, those who hold that possibilia provide modality with its hold on reality can give no modal argument as to how many possible worlds there are or what they are like. That is to confuse the very order of analysis they require.¹¹

There is a parallel between the semantic problem posed for the model-theoretic semantics for modal logics and this metaphysical issue. The semantic concern is "What has the semantic structure of $\langle G, K, R \rangle$ to do with modal concepts and reasoning?" The metaphysical concern is "What has the ontological structure of these possible worlds to do with modal truth?" To see this let us drop the tendentious label of 'possible worlds' and substitute 'objects' which has the duty of covering both ordinary individuals as well as worlds. Assume for the moment that modal realism is correct. Using the possibilist quantifier, there are objects that are not actual. Now, the fact that there are other objects besides actually existing objects is not incompatible with the fact that some or all of these others are impossible. Inspired by Meinong, Terence Parsons admits objects that do not actually exist, as does Lewis. Contrary to Lewis, though, he admits incomplete and otherwise impossible objects.¹² Thus, it is manifestly improper to reduce modality to Parsons' ontology. Clearly, any theory that defines necessity in terms of impossible objects is misguided. They are not the right objects for this task. Expanding the domain beyond actual existents does not insure a proper reductive base for modality. The enlarged ontology might be too big to serve as a reductive base by containing impossible objects.

This suggests that one constraint on any reductive theory of modality is that every object in the reductive base, those things whose existence and nonmodal attributes are to ground modality, must be objects that possibly exist. A set of objects that just happens to be "lying around" is inappropriate for grounding modality unless all the objects meet the *prior modal condition* that they are all possible. The objects must first be possible, otherwise, like Parsons' impossible objects, they are not suited to the task of grounding modality. Defining 'necessity' as what happens with impossible objects and, hence, in impossible worlds, is defining it wrongly and in a way that does not match our pretheoretical understanding of modal phenomena. The modal realist suggests that an actualist's ontology is too small to ground modality, but must also suggest that Parsons' ontology is too large precisely because it contains objects that do not meet certain *modal* requirements.

The modal realist might argue that there are no impossible objects but only possible objects, some of which are actual. Lewis argues via analogy with mathematics. We are sure that at least some mathematical propositions are true. These truths require objects related in certain ways. Therefore, there are mathematical objects like numbers and sets. Likewise, we are sure that at least some modally qualified propositions are true. These truths require objects related in certain ways. Therefore, there are modal objects like possible worlds and their constituents. Furthermore, there are no impossible objects because there are no truths about impossibility that require them. We can tell the story of impossibility completely by restricting our attention to the possible.

¹¹Lewis argues for a large number of worlds on the basis of the Humean contention that distinct existences can be recombined in many ways. If this principle is intended as a first principle of modal metaphysics, then his view is subject to this criticism. However, his theory permits him to say that this Humean metaphysical principle is simply one pretheoretical judgment we have about modality and that in appealing to this principle he is merely tapping into a relatively uncontroversial, pretheoretical opinion about modality. Since his general theory about modality is intended simply to systematize such opinion in the optimum manner, his theory of possible worlds is committed to a sizeable plurality of worlds since pretheoretical opinion is likewise committed. If pretheoretical opinion is merely our first stage of epistemic access to the plurality and nature of possible worlds, it need not also function as a metaphysical constraint on the existence of these worlds.

¹²Terence Parsons, *Nonexistent Objects* (New Haven: Yale University Press, 1980). The difference between Lewis on the one hand and Meinong and Parsons on the other is that the objects admitted by Lewis do not inhabit this world at all. The objects admitted by Meinong and Parsons inhabit the actual world. They do not exist in the actual world, though. They subsist in the actual world.

An impossibilist should reject the premise that there are no truths that require impossible objects and argue via analogy with mathematics in parallel fashion. In the same way that mathematical terms seem to refer, so do terms about impossibles. If the analogy with mathematics works for modal realism, it works for impossibilism as well. Lewis's own argument is ill-suited to restricting the expansion of the domain only to possibilia. Impossibilia are equally warranted in the absence of a modal restriction on the kinds of objects there are. The need for this restriction shows that the most basic facts of existence are not the nonmodal facts involving the existence of worlds but the modal facts that restrict the entities there are. If the objects do not meet this prior requirement, the reducing theory effectively stipulates the content of 'necessary' in the same way Meinong/Parsons would if they defined 'necessary' in terms of the whole of their ontology.

Even if impossibilia are ruled out by fiat, the modal realist faces another, almost opposite, problem. Why think that this group of objects, be they worlds or individuals, has the requisite resources to handle all of modality as we pretheoretically understand it? Why are these nonactual, ontologically "distant," things better for this task than some group of actual objects, like the pencils in my drawer or bottle caps in Hackensack? In short, why think that the enlarged ontology is not too small for the task?¹³ Instead of thinking that **K** is a set of worlds, think of it as the set of pencils in my drawer, with **G** as my favorite and **R** as a relation among these pencils. Clearly, anyone proposing truth about all these pencils as necessary truth and truth about at least one pencil as possible truth would be guilty of co-opting the terms 'necessary' and 'possible' and giving them stipulative definitions. Such stipulative definitions have no purchase on our theories about necessity and possibility as we understand them prior to such stipulation. The modal realist cannot show in a noncircular fashion that putting the model-theoretic semantic structure to metaphysical work is any less arbitrary and stipulative, i.e., the modal realist cannot show what the nonactuals have to do with whether Socrates could have been a carpenter.¹⁴

For the set of nonactual objects to be sufficient for grounding modality it must, therefore, meet a second modal condition. The set must be exhaustive and it is exhaustive only if it cannot have any more members. It is insufficient that the set simply contains all of the nonactuals. If there might have been more, then the set of objects is too impoverished to ground modality. The modal realist's claim that there *are* no more worlds is irrelevant apart from the claim that there *cannot* be any more. If there could be more but just aren't, the set is inappropriately small. If the most that is true about the worlds is that these are all there are, defining 'necessary' and 'possible' in terms of what is true in and of them is no less arbitrary than defining them in terms of the character of the pencils or the bottle caps. One could easily claim that plausible modally qualified propositions that remain ungrounded by these entities simply highlight that some genuine possibilities are not captured by any of these things that happen to be lying around.

Lewis responds that the significant difference between reducing modality to facts about possible worlds and reducing modality to facts about bottle caps in Hackensack is that there aren't enough suitably arranged bottle caps with the right constituents to serve as truth conditions for

¹³Given my informal characterization of what it is for an ontology to be too big and too small, an ontology can be both too big and too small at once. It could contain some impossibles and omit some possibles.

¹⁴One could imagine Lewis presenting a transcendental argument along the following lines. "We correctly judge that things might have been other than they are. For this to be true, there must be some ground for this truth. The actual world is insufficient to ground this since it is sufficient only to separate the true from the false. Therefore, for each truth there must be some nonactual ground. Since some of these truths regard the totality of states of affairs, there must be possible worlds and enough of them to ground all of these truths." This takes us to the existence of nonactual objects, including worlds, of sufficient number to avoid the present attack, without specifying how many possible worlds there are. Yet, the claim that the actual world is insufficient for grounding modality begs the question against both reductive and non-reductive actualism. What is obvious (assuming that modal skepticism is false) is that either modal truths are grounded in nonmodal features of what there is or they are grounded in primitive modal features of what there is, but this does not take Lewis to modal realism.

‘Socrates could have been a carpenter.’¹⁵ There are no Socrates-counterparts in Hackensack bottle caps. Any “modality” we could reduce to facts of Hackensack bottle caps bears no interesting relation to our common modal notions. In contrast, we know there are enough worlds and that they have the right constituents because of the analogy with mathematics and mathematical objects. We know there are such worlds and constituents because they are a precondition for something we know—modally qualified truths.

Whatever the merits of this argument for possibilities, Lewis’s response leaves the major issue untouched. Let us grant the existence of worlds and Socrates-counterparts. Absolutely nothing in my foregoing discussion undermines Lewis’s existence claims. What I have argued is that even if there are possibilities, they can serve as the ontological ground for modality only insofar as: (1) each individual meets the modal condition of being possible and (2) the set of them meets the modal condition of being exhaustive. The first condition insures that the reductive base is not too big by containing impossibles and the second insures that it is not too small by omitting some genuine possibles. These conditions determine which objects may be admitted to the reductive base and as admission conditions they are not subject to the prior existence and nature of possibilities. If the modal realist’s ontology fails to meet these two conditions, the resulting reduction of modality is just as arbitrary as the reduction in terms of impossibilities or bottle caps in Hackensack. If the modal realist’s ontology meets these conditions, a reduction of modality in terms of possible worlds and their constituents is circular. Lewis’s response is, in effect, a rejection of the arbitrariness charge which leaves him with no way around the circularity charge. Hence, modal realism, insofar as it is not arbitrary, is circular as a reduction of modality.

Since there are two prior conditions on any set of things that might ground modality and these conditions are themselves modal, there can be no successful reductive theory of modality. Some modality is primitive. Modality is not truth in all worlds that there just happen to be. At best it is truth in all worlds *that there could be*. In the following section I will argue that Lewis is not alone in this plight.

3. Combinatorialism

D. M. Armstrong provides a combinatorial account of modality, inspired by Brian Skyrms who was in turn inspired by Wittgenstein.¹⁶ He tries to reduce modality to facts about possible worlds, but neither the possible worlds nor their constituents have any ontological status independent of the actual world. Possibilities are merely constructs of actual objects and their properties.

Armstrong’s basic ontological unit is the state of affairs. Atomic states of affairs, like *a’s being F*, may be combined with one another to form complex molecular states of affairs. A state of affairs that includes all of existence is a maximal state of affairs or a possible world. We abstract from, or selectively pay attention to, salient “parts” of states of affairs. These are the individuals, properties, and relations. We can think of possible states of affairs as those in which individuals, properties, and relations are combined. Those combinations that obtain are constituents of the actual world. Those that do not are the merely possible states of affairs.

Simple individuals are those that have no other individuals as proper parts; otherwise, they are complex. Parallel conditions hold for properties and relations. Individuals, properties and relations are distinct when they are composed of distinct groups of properties. They are *wholly* distinct when they have no common constituent. In accord with the Humean principle that there is no necessary connection between distinct existences, Armstrong holds that wholly distinct individuals, properties, and relations may be promiscuously combined to yield all the combinations, which are the possible

¹⁵In conversation.

¹⁶D. M. Armstrong, “The Nature of Possibility,” *The Canadian Journal of Philosophy* and *A Combinatorial Theory of Possibility*.

worlds. Such combinations allow “contracted” worlds, in which some actual individual or property does not exist, as well as “augmented” worlds, in which there are some individuals that do not exist in the actual world. He thereby admits the possibility of “alien” individuals, but not alien universals, since the former but not the latter may be constructed by combining the resources of the actual world. Since we begin with only actual individuals and universals, possible worlds are constrained by what is actual. To the extent that possible worlds serve to reduce modality, this combinatorialism is an actualist theory of possibility.

The Humean principle of recombination hints at some interesting distinction between admissible and inadmissible combinations of individuals, properties, and relations, as there must be. Otherwise, all combinations are admissible, which yields the result that it is possible to combine any two arbitrary properties, which is patently false. Thus, the entire weight of the combinatorial program rests on this distinction and it must be a distinction that does not rely upon any modal characteristics of individuals, universals, or relations. This, however, is the sticking point. That all wholly distinct properties may be combined in accord with the Humean principle certainly does not follow from the definitions of simple or wholly distinct properties.¹⁷ Hence, it cannot be analytic that simple and other wholly distinct properties may be indiscriminately combined. An acceptable account may rely upon only the nonmodal features of these properties and thereby show that for any pair of mutually incompatible properties the members of the pair are not wholly distinct. Armstrong suggests that it is an interesting, and hopefully successful, research program to show that all incompatible properties are structural in a way that explains their incompatibility. For instance, color properties appear to be simple properties that are incompatible with one another. Armstrong suggests, by way of an analogy borrowed from Wittgenstein, that in the same way the impossibility of an object moving exactly one inch and exactly two inches from a particular point in a unit of time is explained by the structural nature of the relevant distance properties, the incompatibility of color properties is explained by their structure.¹⁸ Perhaps it is plausible to think of color properties as complex quantitative properties, but the promise of a successful research program for other properties an adequate justification does not make. Further, even if it were shown that there is a correlation between compatible properties and wholly distinct properties, it does not follow that the nature of their distinctness explains their compatibility. Perchance it is some other, likewise correlated, feature.

Since we do not yet know whether this research program will prove fruitful for the combinatorialist, consider what nonmodal properties of properties might account for their (in)compatibility. Consider a pair of incompatible properties. Why are they incompatible? Failing to be wholly distinct is insufficient, since the conjunctive properties of *being red and round* and *being red and weighing 5 grams* are perfectly compatible, though not wholly distinct. Only some properties with common constituents are incompatible. Another nonmodal fact about incompatible properties is that no individual actually exemplifies both properties, but no one who recognizes the distinction between the possible and the actual can take the lack of co-exemplification as sufficient for the incompatibility of two properties. A host of compatible properties fail to be co-exemplified. Armstrong can say that it is a primitive fact about simple properties that they are all combinable and about some complex properties that they are not, only on pain of demarcating the set of all combinations via a modal fact. To explain why we should appeal to the wholly distinct character of properties and not to some other characteristic, we must appeal to the fact that wholly distinct properties are combinable, i.e., it is possible to combine them. The notion of a combination, then, relies upon this modal condition as a way of demonstrating that the reduction to combinations is not arbitrary.

To put the point another way, the fact that two properties are never combined in the actual world is either a contingent or a necessary feature of that pair of properties. If it is contingent, then it is possible that they be combined and, hence, appear together in some admissible combination. If it is necessary, then they are incompatible and cannot appear together in any admissible combination. While

¹⁷Jaegwon Kim raises a similar point in “Possible Worlds and Armstrong’s Combinatorialism,” *The Canadian Journal of Philosophy* 16, (1986): 608.

¹⁸Armstrong, “The Nature of Possibility,” 592; and *A Combinatorial Theory of Possibility*, chap. 6.

Armstrong requires that admissibility accounts for possibility and that the wholly distinct character of combinable properties and relations accounts for admissibility, nonmodal facts about distinctness are insufficient. They are insensitive to the distinction between necessary and contingent lack of combination. The only way to explain the distinction between admissible and inadmissible combinations of properties is in terms of the possible co-exemplification of the properties in admissible combinations.

The modal element of the combinatorial story goes even deeper. It is not enough that two combinable properties *are* wholly distinct. Armstrong explicitly recognizes that he must make some modal claims about properties so that the Humean Principle of Recombination can be promiscuously applied, not only in our world but also in worlds “constructible” from ours. For instance, the simplicity of a property is one of its essential features. Otherwise two simple properties that are actually wholly distinct might turn out to be complex properties in some other world that are not wholly distinct and, perhaps, not combinable. Likewise, complex properties have their constituents essentially. It is hard to see in what else their identity could consist. So, to specify the nature of properties to which combinatorialism is appropriate, the theory must rely upon certain *de re* claims about whether a property is simple or complex and, thus, whether any of these properties are suitable candidates for combinations. With this, the reduction of possible worlds ultimately rests upon a modal foundation.

The most difficult point for combinatorialism, however, is the same as that for modal realism. What nonmodal facts make it legitimate to account for the possible in terms of what is true of at least one combination? Why is this any less arbitrary than defining it in terms of what is true of at least one pencil in my drawer or at least one bottle cap in Hackensack?¹⁹ Armstrong’s account of admissibility is tacitly an attempt to show that the set of combinations is neither too large nor too small. By circumscribing the set of combinations the hope is that the set of combinations will not be so generous as to contain impossibilities. Yet Armstrong’s forced denial of alien universals is one intuitive reason for thinking that the set of combinations is too impoverished to serve as a reductive base for modality. The fact that combinatorialism excludes them is a reason to think that the set of combinations is too small to account for all necessities. We can argue about whether taking the considered modal judgment that there could be alien universals is worth the theoretical cost of giving up on combinatorialism, but the crucial issue here rests not on a battle over modal intuitions. Rather, it is that unless a reductive theory provides an account of why the proposed reductive base is sufficient for reducing modality, we are left with nothing more than a battle of intuitions. The only way for Armstrong to justify his choice of reductive base is to invoke modal conditions it meets, thus nullifying the point of the reduction. All appeals to possible worlds, whether they are concrete possibilities or abstract constructions, are to no avail. To define ‘possible’ in terms of *possible* worlds is explicitly to rely upon the modal features of the set of worlds. To define ‘possible’ in terms of worlds (or anything else) is to be without the resources for justifying this definition as preferable to one in terms of pencils or bottle caps.

Other two-stage reductions fare no better. Those who try to reduce modality to possible worlds and further reduce possible worlds to complete sets of co-exemplifiable properties, maximal consistent sets of propositions, or maximal states of affairs, do not address the real failings of Lewis’s program which have nothing to do with its nonactual ontology. Two-stage reductions of modality are bound by the same modal pre-conditions. That the properties must be co-exemplifiable, that the propositions

¹⁹Kim points out that Armstrong is not even able to mimic the standard possible worlds semantic definitions for ‘possible’ and ‘necessary’ (611). For Armstrong, the only states of affairs that exist are those that obtain—the actual ones. So, there is only one existing combination. The combinations in terms of which he wants to explain possible worlds do not exist in this world. For any false but possibly true proposition, P, it is, strictly speaking, false to say that ‘Possibly P’ is true just in case there is a combination in which it is true. There exists only one combination and P is false in that combination. So, Armstrong must also find a new semantic structure with which to work. But, if one cannot take advantage of the semantic virtues of the possible worlds semantics, it is hard to justify the bother of giving a theory of possible worlds. Actualists typically feel compelled to do so because they wish to utilize the formal structure of the possible worlds semantics and at the same time use worlds, in their reduced form, as the ontological ground of modality. Armstrong is forced to have the worlds, without their semantic virtues.

must be *consistent*, that the states of affairs must be co-obtainable are just peculiar ways in which actualist reductions of possible worlds show that modality is really not reducible to worlds, whether full-blooded or ersatz.²⁰

4. Concluding Remarks

I have argued that attempts to reduce modality to possible worlds are successful only to the extent that the worlds and their constituents possess certain modal characteristics, making the reductions circular. The hidden modality is not as easily recognized in the possible worlds approaches as it is for some others, but the indispensability of the two modal conditions blocks any reduction. Consider more traditional ways of thinking about modality, which link it with facts of conceivability or linguistic usage.

The set of things conceivable must be neither too large nor too small, which is just to say that each object of conception must possibly exist and that the totality of things that may be conceived must omit nothing that could exist. That I conceive some state of affairs obtaining is manifestly irrelevant if it is allowed that I am able to conjure conceptions of impossible situations. Likewise, my failure to conjure the relevant mental state is an uninteresting fact of psychological biography in the absence of the fact that no possibilities escape my conceptual powers. Citing ideal conceivers does nothing to eliminate the need for these conditions, but simply places the conditions into the proper characterization of the conceiver's ideality. In addition, there is the obvious modal element that the relevant cognitive relation between the objects of conception and the conceiver is not a nonmodal relation like actually, occurrently conceiving the object or state of affairs in question; it is that the object or state is *conceivable*. It is possible to conceive it.

Linguistic theories framed in terms of abstract propositions cannot avoid the need for the two modal conditions, since failure to recognize that these conditions hold for the set of propositions simply re-invites the question of why these particular entities are relevant or sufficient for grounding modality. Theories framed in terms of linguistic usage automatically satisfy the possibility condition in an inoffensive way, but they can meet the exhaustiveness constraint only by admitting that meaning is modal in nature, since there obviously could be more linguistic conventions than there are.²¹ That an

²⁰In "Worlds and Modality," *The Philosophical Review* 102 (1993): 335-361, Tony Roy asks how Lewis's concrete worlds bear on an adequate understanding of modality, but concludes, not that worlds are metaphysically insufficient, as I do, but that concrete worlds are unhelpful, even irrelevant, to understanding modality. He then attempts a rehabilitation of worlds which is an admixture of linguistic/deductive and combinatorial approaches to worlds. The relation between my discussion and Roy's account of worlds depends on a resolution of metaphysical commitments he leaves open. On the one hand, if he allows some modal properties to be primitive, then my discussion provides a general rationale for understanding complex modal properties in terms of more basic modal properties and leaving the story at that. His claim that his worlds are merely representations fits with this alternative, since the way *representations* can ground the possibility of Socrates being a carpenter is hard to fathom. Yet, he distances himself from primitive modality. On the other hand, if he thinks of worlds combinatorially, as he explicitly does, then my arguments against Armstrong's combinatorial theory apply equally to Roy's account. Yet, Roy is also ambivalent about whether he has provided a reductive theory of modality, even though he claims that it is "the actual structure of nonmodal properties" that constrain modality (338) which seems to be a reductive claim.

²¹The first condition is met on the minimal, and rarely contested, assumption that if something is actual, it is thereby possible. This is an assumption of ordinary modal reasoning, though it is not mandated by all formal systems.

expression means what it does involves not merely that the expression has been or is being used in certain ways but it also involves that it is permissible to use it in novel circumstances in some limited ways. That meaning is projectible, but restricted, is just the fact that it is possible to use the expression in certain ways and not in others and still accord with the conventions of a given language. Expressions with the same previous usage but different projections onto novel cases differ in meaning. Thus, the story of meaning is, in the final analysis, a modal story and not the proper basis for the foundations of modality.

I wish to conclude that modality is a basic, primitive, feature of the world. Once we entertain the prospect that actual objects may have modal properties—not in virtue of the ways worlds, combinations, or abstract objects are, but irreducibly—the temptation to think that an actualist ontology requires a reductive approach to modality vanishes. The justification of primitive modality has two components. The first I have set out above. Reductions are doomed to fail because they end either in subtle arbitrariness or circularity. The second component involves showing that there is some point in working with the hypothesis that modality is primitive. If there is no such point, then perhaps the irreducibility of modality is evidence of its dispensability. However, dispensing with modality is not a viable option since an adequate philosophical account of other phenomena requires a modal framework. In other work, for example, I have suggested that metaphysical necessity allows for a more adequate account of causal phenomena than neo-Humean empiricist theories.²² To the extent that we need some theory of the causal, there is reason to maintain that the metaphysical modality is primitive. Its irreducibility is insufficient evidence for its dispensability.

Even if modality is a primitive feature of the world, I have not answered here what form it takes, *de re* or *de dicto*. For the primitiveness of *de re* modality I offer the following. If propositions and other linguistic units are entities of any sort, whether abstract or concrete, then *de dicto* modality is just a special case of *de re* modality—modality as it pertains to a thing. Even if the necessity of a proposition is grounded in the meanings of the logical constants and the meaning of its constituents, the relations between these meanings, in order to be relevant here, must be essential features of these propositional constituents. Analytic propositions may be true in virtue of the relations between their constituents, but these relations could not differ. They are essential to these constituents. Granted, ‘ \supset ’ might have designated a different function, but how could the conditional relation have been different? So, *de re* modality undergirds the propositions we might plausibly think of as *de dicto* necessary.

The positive view which emerges is modal actualism. Modality is neither reduced nor eliminated and no appeal to possibles is made. It grounds necessity and possibility in the actual world, albeit as a primitive feature of the actual world. A theory that takes modality as primitive is, nonetheless, a theory of modality. It is simply not a reductive theory. The ultimate ontological ground for possibilities is to be had either in the nature of certain actual objects (they are the sorts of objects that can have certain (perhaps alien) properties) or in the nature of the actual world (it is the sort of thing that can exhibit certain properties). These are modal properties of ordinary individuals or the world, but that does not bar them from providing the ontological ground for modally qualified statements.²³ This appeal to primitive modality should not be written off lightly. Every respectable theory has its primitives. If the theory itself is reducible to another, then its primitives may be reducible to something in the reducing theory. But, this process of reduction must end, whether all theories are ultimately reducible to one foundational theory or not. Where it does end, we are left with a theory that treats certain features of the world as primitive. I trust that these general reflections on various reductive strategies serve to turn our attention away from modal reductionism and toward modal primitivism. As with all primitive features of the world, we cannot help the skeptical by providing an

²²“Supervenience and Causal Necessity,” *Synthese* 90 (1992): 55-87.

²³A view somewhat like this has been defended by Kit Fine in “Essence and Modality,” *Philosophical Perspectives* 8 (1994): 1–16. Though currently he takes facts of identity to provide an analysis of modality, I take claims of identity to be basic *de re* modal claims which underlie other *de re* and *de dicto* modal claims.

analysis. All we can do is point to clear cases and exhibit the consequences of theorizing without the primitive notion. While more of this needs to be done, the project here has been to justify this pointing and exhibiting. After all, if a successful reduction were available, it would be much more powerful at converting the modal skeptic. As it is, friends of modality must, in the end, point and exhibit.