

Yes, but what is the mother of necessity?

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It's a truism of philosophy that Realists must not postulate more than we could reasonably hope to know, while Anti-Realists must not leave us with so little that *all* knowledge is impossible. But balance is not easily come by—and even less in philosophy than in life. So philosophy continues to struggle over the hard cases, with neither the Realist nor the Anti-Realist able to score an easy victory.

One of the most difficult cases, and the most contended, is that of alethic modality: the concepts of necessity and possibility. A quick sketch will serve to bring out the problem. Let us take for granted, for the moment, the standard Kripkean semantics. Then there are a set of possible worlds and an accessibility relation on those worlds that is reflexive, symmetric and transitive. This gives us our usual philosophical notions of possibility and necessity (**S5**). Suppose that we wish to be Realists about the ontology that this semantics appears to presuppose. Then we will think that an infinity of such possible worlds genuinely exists. But we should then also be Realists about the accessibility relation, taking it to be a model of our epistemic capacities with respect to such worlds. But that seems absurd: we do not have knowledge of what goes on in other possible worlds. So Realism seems doomed to failure. But what if we started by being modest about our epistemic capacities, limiting any accessibility relation to *this* world; what then would we get in the way of necessity? The answer is the disappointing one, that we get collapse into the propositional calculus. No modalities at all.

The moral is that if we start out with our desired modal logic and try to read from it our ontic and epistemic commitments then it rapidly exceeds what is possible—while if we start with reasonable assumptions about what we can know and try to build our modal logic on that basis then we end up, seemingly, with no modal logic at all. And yet we have good reason to believe that we need modal concepts to make sense of both logical and mathematical truths and

logical and mathematical inference. We are at an impasse. Clearly we need a new idea.

I

Christopher Peacocke's *Being Known* offers a new idea for the solution of this problem. He argues that we have implicit knowledge of certain Principles of Possibility. These Principles are represented as constraints on the referential assignments that can be made to the concepts that we employ, so that an *admissible* assignment (under the Principles) represents a genuinely possible state of affairs. Thus an *assignment* is simply a function (in the mathematical sense) from concepts to the referents that are appropriate to their semantic class: singular terms are mapped to objects; predicates are mapped to properties and relations; quantifiers are mapped to a domain of objects, etc. These are then built up into assignments to whole propositions and a *specification* is the set of all propositions that are true under an assignment. (Peacocke speaks of 'Fregean Thoughts' where I have used 'proposition' but we can be flexible with our terminology here.)

What, then, makes an assignment admissible? According to Peacocke an assignment is admissible if it respects the rules that we use when we assign extensions to *all* concepts in the actual world. Thus if all horses are mammals in the actual world then this subset relation has to be preserved when we have a different referential assignment to *horses* and *mammals*. The network of reference assignments that are the result of the application of our semantic rules is then meant to determine, in a broad, structural way, the limits of what is to count as an admissible interpretation. In brief: it fixes the things that must be so, leaving free the things that could have been otherwise.

Two worries surface almost immediately. Firstly, Peacocke does not mention the semantic rules that apply in our world to the very many terms that have a modal component—terms other than alethic possibility and necessity, such as *believable*, *dangerous*, *attractive*, *provable*, *admissible*, etc. All such terms must have their meaning fixed *not* by (what we could think of as) the *first-order* semantic rules, but only by the incomplete determination of the semantics at the first-order level. This is an odd, and not entirely natural, semantic division; it also creates concerns about a regress of determinations (*admissible?*) and, of course, circularity. It also means that Peacocke cannot be right when he imagines the assignment function as complete.

But let us leave that problem aside for a moment. There is a second problem. Even if we restrict our attention to concepts with no modal component

it is not obvious that we can make the distinction between concepts, or relations between concepts, that are fixed by our semantic rules and those that are not so determined and that therefore are allowed to vary. It is hard, for example, to see how mathematics is going to come out necessary in this way. Of course, we can always gerrymander the rules and the consequent admissible assignments, but that is hardly in the spirit of Peacocke's proposal. There are meant to be natural assignments, readily grasped, corresponding to our ready grasp of modal truths.

And yet there is something undeniably appealing about the idea of basing our understanding of modalities on permutations of the assignments found in the actual world. These advantages can be seen in a far simpler, and I think much clearer, example: the tautologies of propositional logic.

Properly viewed, a truth-table evaluates a formula consisting of propositional variables, with each row of the table representing equivalence classes of substituted statements, equivalent in truth value. Yet there is an easy slide to a different view in which the table is seen as evaluating some *actual* proposition, with the different lines of the table representing the truth values that the proposition might have in other possible worlds. And it is only in this second, not entirely legitimate picture, that tautologies can be seen as having any real connection with necessary truths.¹ Certainly there is no way to read off necessity from a table that is evaluating a formula with propositional variables: what does truth under all substitutions have to do with other possible worlds?

The alternative picture of truth-tables gives us a combinatorial break-down of possible states of affairs and their covariance. Their rows represent worlds in which snow is not white, grass is not green, the good prosper and evil-doers are punished. It is this combinatorial representation of other states of affairs that gives us a grip on modal truths. It also shows us why the argument that I gave at the beginning of this paper was too swift: it showed that we cannot build modalities *on top of* a PC base without encountering epistemic difficulties, but that does not mean that we cannot find modal truths *within* PC. We can, and we can use this to justify the traditional view of logical truths as a species of necessary truth. But having done so we can now turn the original problem on its head by asking what modal logic the tautologies of PC satisfy. This question was asked

¹ The reason the view is not entirely legitimate is that there may be relations between the component statements of a composite proposition that make some lines of the table strictly impossible—however this does not affect our understanding of tautologies as necessary truths. It merely means that some propositions that are necessary, though non-tautologous, will be wrongly counted contingent. See my *Shadows of Necessity: Deductivism, Modality, and the Limiting of Reason* (forthcoming) for more on this, and an example.

and answered by E.J. Lemmon as long ago as the late fifties: the truth table tautologies satisfy a system that he called **S0.5**.²

This example of PC tautologies provides, I think, a simple model of the kind of strategy that Peacocke wants to follow. Hold fixed the meanings of certain terms (concepts, in Peacocke's way of speaking) which correspond to our logical vocabulary; allow the reference of other terms (those which occupy the variable position in the corresponding formula) to take other referents under the assignment function; the necessary truths are those that are true under every admissible assignment. Of course, Peacocke does a lot of the additional work necessary to make this strategy work—for, left to itself, it will fall far short of delivering everything that we want to count as a necessary truth. In particular he expends a good deal of effort to show that Kripkean *a posteriori* necessities of constitution and identity are secured by his analysis. But having one clear case where the strategy looks to be successful provides some reason to think that it can be extended and refined to cover the difficult cases as well.³

II

But though there are reasons to be optimistic there is also cause for disquiet. Peacocke speaks confidently of Principles of Possibility without it ever becoming clear what—ontologically—these things might be. It is clear enough that they are not meant to be simply subjective rules that we choose to adopt: Peacocke rejects, rightly, I think, all, so-called, non-cognitivist views. The Principles of Possibility are meant to objectively exist; they stand to us as objects of our knowledge. Yet what are they? Are they to be seen as a species of law of nature—like the Fermi Exclusion Principle? Or are they more abstract than that, and more akin to an algebra, or mathematical induction, or the Reflection Principle in set theory. But however we classify them it seems natural to ask the question: *must* these Principles be as they are, or could they have been otherwise? In other words, are they contingent or necessary? And to that question no answer seems possible; for if they are contingent then other principles are

² E.J. Lemmon 'Is there only one correct system of modal logic?' *Aristotelian Society Supp. Vol. XXXIII*, 23–40. Despite its low numbering this is still a T-based system.

³ There is a connection—which I will leave unexplored here—between John Etchemendy's discussion of Tarski's analysis of logical consequence, and in particular Vann McGee's response to it in terms of set-theoretic surrogates for possible worlds, and Peacocke's admissible assignments. Suffice it to say that the need for abstract objects to ensure the extensional adequacy of the standard (Tarskian) model-theoretic analysis of logical truth does not bode well for any attempt to make the non-abstract elements of the actual world stretch to *all* possibilities. It is overwhelmingly likely that Peacocke will have to take a very revisionary attitude to modal truth.

possible and we have lost the ground for any genuine necessity; or the Principles *could not have been otherwise* and are therefore themselves necessary, and we must look for the ground of necessity in whatever it is that has determined that they be so. The only response that I can imagine to this Euthyphro-style argument is just to insist that the Principles themselves are neither contingent nor necessary—and that only serves to heighten the mystery that surrounds them (are we now saying that it is *impossible* that they be either contingent or necessary? And what might *that* mean?)⁴

But there is some reason to think that Peacocke would try to finesse this argument by seeking to apply these Principles to themselves. It is by this means that he hopes to get the iterated modalities that are needed for **S4** or **S5**, so perhaps the same trick can be used to give a modal status to the principles.

To sharpen the point let us bundle all the modal principles together and call them P^* . Then we can say that *snow is white or snow is not white* is true under all admissible assignments (or by dint of the auxiliary modal principles). Thus we have P^* (*snow is white or snow is not white*). The question is, is it true that P^* (P^* (*snow is white or snow is not white*))? And, unfortunately, the answer is that, no, it isn't obviously true. It isn't obviously true under all admissible assignments—we don't even have a reason to believe that *admissible* is semantically fixed; nor does it seem to be a statement of essence or origin. At the heart of this problem is the stuff on which P^* has to work, which are concepts and the functions mapping concepts to their referents. If these are meant to be non-abstract elements of the actual world (and they are, for otherwise the knowledge gap will open up for these abstracta, defeating Peacocke's intentions) then there is no reason to think that *they* are necessary. We are perfectly free, as far as the Principles themselves are concerned, to map the concept of *concept* to something else. It is not one of the things that the admissible assignments hold constant.

The moral of this is that Peacocke *may* be able to capture **T**-based concepts of necessity and possibility, but he probably cannot answer questions about the modal status of his Principles of Modality, nor can he reach all the way to **S4** or

⁴ It is worth saying that non cognitivism—which, in the form that it has been given by Edward Craig and Simon Blackburn (and earlier, Quine), claims that our belief that a proposition is necessary is a matter of its 'epistemic entrenchment', our unwillingness to give it up—is open to a similar, Euthyphro-style, objection. *Why*, we might ask, can the proposition not be given up? It cannot be because of any characteristic of the proposition itself. Nor can it make a distinction between other propositions that we might be unwilling to give up for other reasons and the 'necessary' ones. Non-cognitivists invert the natural order of explanation and replace metaphysical mysteries with epistemological ones. But the former are always preferable, for the latter rob us of the rationality that we need to solve *any* problem.

S5. This is not a failing peculiar to his analysis, for it infects also the Positivist's attempt to reduce necessities to analyticities. To see this let us note that, even if we were to agree that it is analytic that *snow is white or snow is not white*, it certainly does not seem to be true that it is analytic that *it is analytic that snow is white or snow is not white*.⁵

But I would further suggest that the only reason that it seems to be analytic that *snow is white or snow is not white* is because the statement seems to be necessary, and this puts a constraint on meaning. So I would also say that the reason the Principles that Peacocke gives seem to fix what is necessary and possible is because they themselves are constrained to respect antecedent modal facts. And indeed if that were not so it would be completely unobvious why the things that the Principles hold fixed cannot (and that 'cannot' has a strong modal sense) vary.

I would, however, like to distinguish this problem from another kind of problem which sits near it in logical space: the problem of circularity. Peacocke has a great deal to say about this problem and my own view is that what he says is quite cogent. The charge might run as follows: *no explication of modal notions is entitled to use, or advert to, any modal notions whatsoever: not consistency, not conceivability, not truth under all possible substitutions. To use such notions is to give an account that is circular, and consequently illegitimate.* Charges of this kind are frequently made in philosophy, and on many occasions they are simply misdirected. In fact the accusation is usually made insensitive to the purposes of explanation. It is true that if one is trying to explain a modal concept to a sceptic who is convinced that there is no such thing, or to the neophyte who hasn't yet grasped any aspect of the concept, then using modal notions to explicate modal notions would indeed be illegitimate, or at least, unhelpful. But if it is one's belief that there are modal facts in the world—if that is not something that one is trying to establish—then there is no reason why one should not use modal concepts in the explication of modal facts. There is nothing illegitimate in that.⁶

⁵ It is useful to compare the failure of this way of getting iterated modalities in **S4** with the way they are achieved in the standard Kripkean semantics. In the latter we do not ask whether it is true in all possible worlds that it is true in all possible worlds that *snow is white or snow is not white*, we simply move from a reflexive accessibility relation to a reflexive and transitive relation. It is this ease that makes Kripkean semantics the astonishingly flexible tool that it is. It should not be abandoned lightly. It is also worth noting, here, against the non-cognitivist's attempted reduction of possibility to a (highly idealised) form of conceivability—an idealisation that I can't see that he is entitled to—that it also will reach only as far as **S4**. (See G.E. Hughes and M.J. Cresswell's *Introduction to Modal Logic*, (London: Methuen, 1968) p.78.

⁶ Suppose that one were trying to explain the direction of time. It would be absurd for someone to insist that no time-asymmetric processes could be used in the explanation, because 'to do so would

If Peacocke is occasionally sensitive to the charge of circularity it is, I suspect, because he has ambitions for something more far-reaching: he wants to refute the sceptic by showing that we have, incontrovertibly, modal *knowledge*, not just modal *beliefs*. But that is probably an impossible task. How can one show that there is a cognitive necessity for modal notions to one who is unwilling to grant the use of so much of our ordinary discourse? My own view is that we should be more ruthless with sceptics: if someone doubts that there is any legitimacy to modal notions then let him try to give a satisfactory account of the world without them. If he can then so much the better, if not then we can move on. In general: *best explanation wins*.

III

But however we answer the question about the *modal* status of the Principles they must at least be *true*, and objectively true. Yet this raises again the question of how we *know* that they are true. Strangely, Peacocke has very little to say about this problem, being content to claim that we have a tacit understanding of the Principles when we make modal judgements. In effect this seems to say little more than that the Principles are *a priori* and innate—and if this *is* the answer then we might wonder if we have really made any progress beyond Leibniz, who argued for just such a view in the *New Essays on Human Understanding*.⁷ And perhaps this helps to place Peacocke's view: that it is, in essence, a revival of seventeenth century Rationalism. But if Rationalism foundered it was not because it suggested that there was innate knowledge but rather because it offered no reason to believe that what is innate is true. As far as I can see Peacocke faces the same problem.

In fact we can sharpen the problem into a dilemma. Suppose that a belief is a candidate for being considered innate. If there is nothing in experience that acts to make it probable that the belief is true then we cannot count the belief as knowledge—we must rest content with thinking it an innate *belief*. On the other hand if there *is* something in our experience that serves to justify the belief then

be circular'. Since it is obvious that time *is* asymmetric, all asymmetric processes (thermodynamic disequilibrium, K-meson decay, non-Unitary Quantum collapse, etc) are relevant in explaining that fact.

⁷ Peacocke acknowledges Leibniz as a precursor (p.171), but the only difference between them that he notes is that Leibniz believed that *all* necessary truths were *a priori*, whereas Peacocke believes, with Kripke, that some may be *a posteriori*. But Leibniz hints at an answer to the question that Peacocke resolutely ignores, for he suggests that innate ideas are placed in our souls by God and that we come to know them by some form of inner attention. And since they had their provenance in God, Leibniz may have thought that that was a sufficient reason to believe that they were true.

the belief may count as knowledge but there is no longer any reason to think it innate, for we could have acquired it through that same experience. Either way, there is no such thing as innate knowledge.⁸ The whisperings of a *modal* conscience, no less than a moral one, need not be trusted.

We might also wonder whether saying that a set of Principles is innate is any real advance on saying that knowledge of other possible worlds is innate. If the first is an unexplainable fact about us then we do not obviously need to revise our metaphysics to accommodate it. We can just stick with the innateness of the various modal axioms.

My own view—to turn positive for a moment—is that the problems Peacocke addresses are not solvable without making severe adjustments in our epistemology. Much of the pressure on Realism comes from the insistence that we be in direct causal contact with all of the items that we wish to believe in. So Realists about mathematical truth face the charge that we do not seem to have direct causal contact with numbers or sets or functions; Realists about modal truths do not have the requisite contact with other possible worlds, etc. Granted this lack of direct causal contact, how could we be said to have knowledge of such truths, even supposing that they *are* true? It is this knowledge gap that the Anti-Realist leverages to such effect.⁹ I suspect that it is this same exigent epistemology that is driving Peacocke's concerns.

But there is little reason, I suggest, to demand so much: direct causal contact may be sufficient for knowledge (*ceteris paribus*) but it is not necessary. The method of science is to postulate entities, develop the theory of same, and if the addition of such entities gives us the best overall explanation, then we are entitled to our tentative belief. Thus quarks were believed to exist long before there was direct evidence for them, likewise black holes. Experimental evidence certainly strengthens belief but it need not be negligible without it. We may say the same for the entities that enter into the truth-conditions for mathematics and logic. Since our scientific theories require us to employ both we are entitled to

⁸ There is a tiny escape route in this argument that is of little practical value in the present context but that must be mentioned. It is possible that a belief could be innate and such that subsequent experience indicates that, by a sheer stroke of good luck, the belief is true. In this case we *could* have acquired the belief through experience, it's just that we didn't.

⁹ I should confess here that if there is one piece of anti-realism that I cannot take at all seriously it is anti-realism about the past. For if there is one thing that we *are* obviously in direct causal contact with it is the past: it is simply the interior of the backward light cone—it is everything that may affect us. Moreover, the statement that *the past is what once existed* must be a candidate for Most Trivial Truth ever considered.

believe that they are true, and we are entitled therefore to believe in the ontology that makes them true. Again: *best explanation wins*.

As a second strand to this, we may note that our modal beliefs are not just a matter of making judgements about what is necessary and what is possible. We also make judgements about what is *contingent*. Thus were I to see a branch broken from an oak tree here, I would judge it to be a contingent matter of fact because I can see that that oak tree, there, does not have its branch broken. They have similar essences and so where they differ must be in what is *accidental*. It is this that provides us with a great deal of our modal beliefs—though it is often neglected in discussions these days.¹⁰ Thus we make judgements about what is contingent based on *a posteriori* necessities (making them *a posteriori* contingencies) and we mesh this as best we can with our evolving ideas about logical truth and logical inference. The result is a heterogeneous body of modal beliefs that we try to bring together in a single modal system, **S5**. In fact the concept of contingency does a great deal to constrain our choice of modal logic, for it turns out that only certain systems allow the definition of such a concept.¹¹

It is useful, I think, to make a distinction between the semantics of modality (which is best given by Kripke's possible worlds) and the sources of our knowledge of modality. The problem of modal realism has been exacerbated by the too ready assumption that, if what it means for a statement to be necessary is that it be true in all possible worlds, then to know that the statement is necessary must mean that we have *knowledge* of other possible worlds. Far from this assumption being obviously true, it seems to me nearly obviously false. Our knowledge of modalities arises from our theorising about the actual world—and is susceptible to change as our theories change. It is just part and parcel of our *fallible* knowledge of the world around us. But the fact that it arises out of our knowledge of the actual world does not mean that it cannot be a genuine knowledge of necessity and possibility.

Thus I suggest that in 1953 Quine slightly misidentified the 'two dogmas of empiricism' with devastating results for subsequent theorising. It is not the analytic/synthetic distinction that is in need of giving up but rather the *a priori/a posteriori* distinction. Our knowledge of the world is fallible and revisable in the light of new discoveries and explanation is indeed holistic, as Quine argued, but

¹⁰ So it is neglected also by Peacocke. *Being Known* contains no index entry for contingency.

¹¹ Essentially it constrains them to be T-based systems. See M.J. Cresswell's 'Necessity and Contingency' in *Studia Logica*, 47, 1988, 145–9.

this does not mean that there are no necessary truths.¹² It simply means that our knowledge even of modal truth is *a posteriori* in character. Thus it does not follow, as Quine believes it follows, that because even our ideas of logical truth are revisable that the truths of logic are not necessary truths. The real dogmas of empiricism are the belief that necessary truths must be known *a priori* and its dual, that *a posteriori* knowledge is only ever knowledge of contingencies. It is these dogmas that have made the problem of mathematical knowledge seem so intractable.

IV

But this brief sketch of a solution is in the opposite direction to Peacocke's position in *Being Known*. Seen from a distance his general view resembles a kind of Ontological Argument. Reflecting on the meanings of concepts in certain propositions we find that they imply that the propositions must be known, and thus must be true. But whereas it is uncontroversial that knowledge implies truth it is very controversial—indeed quite strange—to suggest that meaning implies knowledge. (It is this claim that Peacocke calls the *Linking Thesis*.)

The only way to understand this thesis, I suggest, is to consider it not as a relation between the meaning of concepts and knowledge but rather as a relation between two different items of knowledge, thus: *A* knows the meaning of statement '*p*' entails that *A* knows that *p* is true. The Linking Thesis (LT) is the claim that this statement is true for some *p*.

I suggest that LT is *never* true under the usual meaning of the antecedent, because all that is really required for *A* to know the meaning of '*p*' is for *A* to understand what *would* be the case *were p* true. But even in the case of the most plausible candidate for *a priori* status it is always possible that someone understand the proposition and yet it not be so. The only way that LT will have true instances is if a large number of externalist assumptions are imported into the meaning of '*A* knows the meaning of '*p*'' so that if '*p*' turned out to be false it would also turn out that *A* did not really know the meaning of '*p*' after all, appearances notwithstanding. And under these conditions we would never know whether *A*, or anyone else, really knows the meaning of '*p*'. Thus the price that we will pay for making LT true will be the loss of our grip on whether anyone

¹² In fact I think that only half of Quine's Holism is plausible. It is right to say that all (or perhaps, *almost* all) statements are revisable in the light of recalcitrant experience—this is simply to say that no statement is *a priori* certain; but I suggest that it is deeply implausible to assert that any statement may be able to be retained in the light of recalcitrant experience. In most instances rationality will require the revision of a particular statement. Since I adopt only half of Quine's Holism, my position may be called 'Halfism'.

understands the meaning of certain propositions. Rather than making the world epistemically accessible we will simply have infected our understanding of *understanding* with the inaccessibility of reality.

But one doesn't put out fires by setting oneself alight. At least, it isn't recommended.