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Modalities: Basic Concepts and Distinctions

Alvin Plantinga

1 Preliminary Distinctions and Remarks

A. Necessity circumscribed

The distinction between necessary and contingent truth is as easy to recognize as it is difficult to explain to the sceptic's satisfaction. Among true propositions¹ we find some, like

(1) The average annual rainfall in Los Angeles is about 12 inches

that are contingent, while others, like

(2)
$$7+5=12$$

or

(3) If all men are mortal and Socrates is a man, then Socrates is mortal

that are necessary.

But what exactly do these words - 'necessary' and 'contingent' - mean? What distinction do they mark? Just what is supposed to be the difference between necessary and contingent truths? We can hardly explain that p is necessary if and only if its denial is impossible; this is true but insufficiently enlightening. It would be a peculiar philosopher who had the relevant concept of impossibility well in hand but lacked that of necessity. Instead, we must give examples and hope for the best. In the first place, truths of logic – truths of propositional logic and first-order quantification theory, let us say – are necessary in the sense in question. Such truths are logically necessary in the narrow sense; (3) above would be an example. But the sense of necessity in question – call it 'broadly logical necessity' – is wider than this. Truths of set theory, arithmetic and mathematics generally are necessary in this sense, as are a host of homelier items such as

No one is taller than himself Red is a colour If a thing is red, then it is coloured No numbers are human beings

and

No prime minister is a prime number.

And of course there are many propositions debate about whose status has played an important role in philosophical discussion – for example,

Every person is conscious at some time or other

Every human person has a body

No one has a private language

There never was a time when there was space but no material objects

and

So the sense of necessity in question is wider than that captured in first-order logic. On the other

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There exists a being than which it is not possible that there be a greater.

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hand, it is narrower than that of *causal* or *natural* necessity.

Voltaire once swam the Atlantic

for example is surely implausible. Indeed, there is a clear sense in which it is impossible. Eighteenthcentury intellectuals (as distinguished from dolphins) simply lacked the physical equipment for this kind of feat. Unlike Superman, furthermore, the rest of us are incapable of leaping tall buildings at a single bound, or (without auxiliary power of some kind) travelling faster than a speeding bullet. These things are impossible for us; but not in the broadly logical sense. Again, it may be necessary – causally necessary – that any two material objects attract each other with a force proportional to their mass and inversely proportional to the square of the distance between them; it is not necessary in the sense in question.

Another notion that must carefully be distinguished from necessity is what (for want of a better name) we might call 'unrevisability' or perhaps 'ungiveupability'. Some philosophers hold that *no* proposition – not even the austerest law of logic – is in principle immune from revision. The future development of science (though presumably not that of theology) could lead us rationally to abandon any belief we now hold, including the law of non-contradiction and *modus ponens* itself. So Quine:

... it becomes folly to seek a boundary between synthetic statements which hold contingently on experience, and analytic statements, which hold come what may. Any statement can be held come what may, if we make drastic enough adjustments elsewhere in the system. Even a statement very close to the periphery can be held true in the face of recalcitrant experience by pleading hallucination or by amending certain statements of the kind called logical laws. Conversely, by the same token, no statement is immune to revision. Revision even of the logical law of excluded middle has been proposed as a means of simplifying quantum mechanics; and what difference is there in principle between such a shift and the shift whereby Kepler superseded Ptolemy, or Einstein Newton, or Darwin Aristotle?²

Giving up a truth of logic -modus ponens, let us say - in order to simplify physical theory may strike us

as like giving up a truth of arithmetic in order to simplify the Doctrine of the Trinity. In any event, Quine's point is that no statement is immune from revision; for each there are circumstances under which (perhaps with a reluctant wave) we should give it up, and do so quite properly.

Here Quine may or may not be right. But suppose we temporarily and irenically concede that every statement, modus ponens included, is subject to revision. Are we then obliged to follow those who conclude that there are no genuinely necessary propositions? No; for their conclusion displays confusion. To say of modus ponens that it (or its corresponding conditional) is a necessary truth is not, of course, to say that people will never give it up, as if necessity were a trait conferred by longterm popular favour. I may be unprepared to give up the belief that I am a fine fellow in the face of even the most recalcitrant experience; it does not follow either that this belief is necessarily true or that I take it to be so. Nor would the unlikely event of everyone's sharing my truculence on this point make any difference. Just as obviously, a proposition might be necessarily true even if most people thought it false or held no opinion whatever on the matter.

So necessity has little or nothing to do with what people would in fact give up under various happy or unhappy circumstances. But it must also be distinguished from what cannot be rationally rejected. For clearly a proposition might be both necessary and such that on a given occasion the rational thing to do is to give up or deny it. Suppose I am a mathematical neophyte and have heard and accepted rumours to the effect that the continuum hypothesis has been shown to be independent of Zermelo-Fraenkel set theory. I relate this rumour to a habitually authoritative mathematician, who smiles indulgently and produces a subtly fallacious argument for the opposite conclusion - an argument which I still find compelling after careful study. I need not be irrational in believing him and accepting his argument, despite the fact that in this instance his usual accuracy has deserted him and he has told me what is necessarily false. To take a more homely example: I have computed the sum 97 + 342 + 781 four times running, and each time got the answer 1120; so I believe, naturally enough that 97 + 342 + 781 = 1120. The fact, however, is that I made the same mistake each time - carried 'l' instead of a '2' in the third column. But m belief may none the less be rational. I do not know whether circumstances could arise in which the

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able thing to do would be to give up modus but if such circumstances could and did would not follow that modus ponens is not would not follow that modus ponens, is not the structure of the structure of the structure resary truth. Broadly logical necessity, theremust be distinguished from unrevisability as or must be distinguished from unrevisability as or must be distinguished not poly and logical necessity well as from causal necessity and logical necessity used

strictly so called. It must also be distinguished from the self-evidand the a priori. The latter two are epistemologcal categories, and fairly vaporous ones at that. But consider the first. What does self-evidence come to? The answer is by no means easy. In so far as we can make rough and intuitive sense of this notion, however, to say that a proposition p is selfevident is to answer the question 'how do you know that p? It is to claim that p is utterly obvious – obvious to anyone or nearly anyone who understands it. If p is self-evident, then on understanding it we simply see that it is true; our knowledge of modus ponens may be cited as of this sort. Now obviously many questions arise about this notion; but in so far as we do apprehend it, we see that many necessary propositions are not thus transparent. 97 + 342 + 781 = 1220 is indeed necessary. but certainly not self-evident - not to most of us, at any rate.

Still, perhaps we could say that this truth is selfevident in an extended sense: it is a consequence of self-evident truths by argument forms whose corresponding conditionals are themselves self-evident. Could we add that all necessary truths are selfevident in this extended sense? Not with any show of plausibility. The axiom of choice and the continuum hypothesis are either necessarily true or necessarily false; there is little reason to think that either of these, or either of their denials, are deducible from self-evident propositions by self-evident steps. You may think it inappropriate to speak of truth in connection with such an item as, say, the continuum hypothesis. If so, I disagree; I think this proposition just as true or just as false as the commonest truths and falsities of arithmetic. But no matter; there are simpler and more obvious examples. Each of Goldbach's conjecture and Fermat's last theorem, for example, is either necessarily true or necessarily false; but each may turn out to be such that neither it nor its denial is self-evident in the extended sense. That is to say, for all I know, and, so far as I know, for all anyone knows, this may be so. I do not mean to assert that this is *possibly* so, in the broadly logical sense; for (as could plausibly be argued) where S is the set of self-evident propositions and R that of self-evident argument

forms, a proposition p possibly follows from S by R only if p actually, and, indeed, necessarily thus follows. And since I do not know whether Goldbach's conjecture or Fermat's theorem do follow from S by R, I am not prepared to say that it is possible that they do so. My point is only that the question whether, for example, Goldbach's conjecture is self-evident in the extended sense is distinct from the question whether it is a necessary truth.

So not all necessary propositions are self-evident. What about the converse? Are some contingent propositions self-evident? The question is vexed, and the answer not obvious. Is the proposition I express by saying 2 + 2 = 4 is self-evident for me now' self-evident for me now? Perhaps so, perhaps not. Perhaps the idea of self-evidence is not sharp enough to permit an answer. What is once more important is that a negative answer is not immediate and obvious; self-evidence must be distinguished, initially, at least, from necessity.

Not strictly to the point but worth mentioning is the fact that some propositions seem or appear to be self-evident although they are not necessarily true or, for that matter, true at all. Some of the best examples are furnished by the Russellian paradoxes. It seems self-evident that for every condition or property P there is the set of just those things displaying P; it seems equally self-evident that there is such a condition or property as that of being non-self-membered. But of course these (together with some other apparently self-evident propositions) self-evidently yield the conclusion that there is a set that is and is not a member of itself; and this is self-evidently false. Some may see in this the bankruptcy of self-evidence. It is not my purpose, in these introductory pages, to defend self-evidence or answer the question how we know the truth of such propositions as modus ponens. Still, the conclusion is hasty. Our embarrassment in the face of such paradoxes shows that a proposition may seem to be self-evident when in fact it is false. How does it follow that modus ponens, for example, is not self-evident, or that there is some other or better answer to the question of how we know that it is true? The senses sometimes deceive us; square towers sometimes appear round. It does not follow either that we do not know the truth of such propositions as The Empire State Building is rectangular or that we have some nonempirical method of determining its truth.

Finally, the distinction between the necessary and the contingent must not be confused with the alleged cleavage between the a priori and the

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a posteriori. The latter distinction, indeed, is shrouded in obscurity. But given the rough and intuitive understanding we have of the terms involved, it is clear that the distinction they mark, like that between what is self-evident and what is not (and unlike that between the necessary and contingent), is epistemological. Furthermore, the relation between what is known a priori and what is necessarily true is by no means simple and straightforward. It is immediately obvious that not all necessary truths are known a priori; for there are necessary truths - Fermat's last theorem or its denial, for example - that are not known at all, and a fortiori are not known a priori. Is it rather that every necessary truth that is known, is known a priori? This question divides itself: (a) is every necessary truth that is known, known a priori to everyone who knows it? and (b) is every necessary truth that is known to someone or other, known a priori to some one or other? The answer to (a) is clear. Having taken the trouble to understand the proof, you may know a priori that the Schroeder-Bernstein theorem is a consequence of some standard formulation of set theory. If I know that you are properly reliable in these matters and take your word for it, then I may know that truth a posteriori - as I may if I've forgotten the proof but remember having verified that indeed there is one. To learn the value of the sine of 54 degrees, I consult a handy table of trigonometric functions: my knowledge of this item is then a posteriori. In the same way, even such simple truths of arithmetic as that 75 + 36 = 111 can be known a posteriori. So the answer to (a) is obvious. The answer to question (b) is perhaps not quite so clear; but elsewhere give some examples of truths that are necessary but probably not known a priori to any of us.³

So necessity cannot be identified with what is known a priori. Should we say instead that a proposition is necessary if and only if it is knowable a priori? But by whom? We differ widely in our ability to apprehend necessary truths; and no doubt some are beyond the grasp of even the best of us. Is the idea, then, that a proposition is necessarily true, if and only if it is possible, in the broadly logical sense, that some person, human or divine, knows it a priori? Perhaps this is true. Indeed, perhaps every truth whatever is possibly known a priori to some person - to God if not to man. But suppose we avoid the turbid waters of speculative theology and restrict our question to human knowledge: must a contingent proposition, if known, be known a posteriori? The question is as vexed as the notion of a priori knowledge is obscure. What is known a priori is known independently, somehow or other, of experience. My knowledge of *modus ponens* or that 7 + 5 = 12 would be cited by way of example. But how about my knowledge that I do know that 7 + 5 = 12? Is that independent of experience in the requisite fashion? Suppose

(4) I know that 7 + 5 = 12;

cannot I know a priori that (4) is true? And this despite the contingency of (4)? Perhaps you will say that I know (4) only if I know

(4) I believe that 7 + 5 = 12;

and perhaps you will add that knowledge of this last item must be a posteriori. But is this really true? On a strict construction of 'independent of experience' it may seem so; for surely I must have had some experience to know that I thus believe - if only that needed to acquire the relevant concepts. But on such a strict construction it may seem equally apparent that I know no truths at all a priori; even to know that 7 + 5 = 12, I must have had some experience. There is no specific sort of experience I need, to know that 7 + 5 = 12; and this (subject, of course, to all the difficulty of saying what counts as a sort here) is perhaps what distinguishes my knowledge of this truth as a priori. But the same thing holds for my knowledge of (4'). Belief is not (pace Hume) a special brilliance or vividness of idea or image; there is no specific sort of experience l must have to know that I believe that 7 + 5 = 12. So perhaps I know a priori that I believe that 7 + 5 = 12. If so, then I have a priori knowledge of a contingent truth. Similarly, perhaps my knowledge that I exist is a priori. For perhaps know a priori that I believe that I exist; I also know a priori that if I believe that I exist, then indeed I do exist. But then nothing but exceptional obtuseness could prevent my knowing a priori that I exist, despite the contingency of that proposition.

It is fair to say, therefore, that I probably know some contingent truths a priori. At any rate it seems clearly *possible* that I do so. So necessity cannot be identified with what is knowable a priori.⁴ Unrevisability, self-evidence, and a priori knowledge are difficult notions; but conceding that we do have a grasp – one that is perhaps halting and infirm – of these notions, we must also concede that the notion of necessary truth coincides with none of them.

Modalities: Basic Concepts and Distinctions

B. Modality de dicto and modality de re

Thave spoken of necessity as a property or trait of propositions and tried to distinguish it from others sometimes confused with it. This is the idea of modality *de dicto*. An assertion of modality *de dicto*, for example

(5) necessarily nine is composite

predicates a modal property – in this instance necessary truth – of another dictum or proposition:

(6) nine is composite.

Much traditional philosophy, however, bids us distinguish this notion from another. We may attribute necessary truth to a proposition; but we may also ascribe to some object – the number 9, let us say – the necessary or essential possession of such a property as that of being composite. The distinction between modality de dicto and modality de re is apparently embraced by Aristotle, who observes (Prior Analytics, i. 9) that 'It happens sometimes that the conclusion is necessary when only one premiss is necessary; not, however, either premiss taken at random, but the major premiss'.⁵ Here Aristotle means to sanction such inferences as

- (7) Every human being is necessarily rational
- (8) Every animal in this room is a human being
- SO
- (9) Every animal in this room is necessarily rational;

he means to reject such inferences as

- (10) Every rational creature is in Australia
- (11) Every human being is necessarily a rational creature

(12) Every human being is necessarily in Australia.

Now presumably Aristotle would accept as sound the inference of (9) from (7) and (8) (granted the truth of (8)). If he is right, therefore, then (9) is not to be read as (9') It is necessarily true that every animal in this room is rational;

for (9') is clearly false. Instead, (9) must be construed (if Aristotle is correct) as the claim that each animal in this room has a certain property – the property of being rational – necessarily or essentially. That is to say, (9) must be taken as an expression of modality de re rather than modality de dicto. And what this means is that (9) is not the assertion that a certain dictum or proposition – every animal in this room is rational – is necessarily true, but is instead the assertion that each res of a certain kind has a certain property essentially or necessarily – or, what comes to the same, the assertion that each such thing has the modal property of being essentially rational.

In Summa contra Gentiles, St Thomas considers the question whether God's foreknowledge of human action – a foreknowledge that consists, according to St Thomas, in God's simply seeing the relevant action's taking place – is consistent with human freedom. In this connection he inquires into the truth of

(13) What is seen to be sitting is necessarily sitting.

For suppose at t_1 God sees that Theaetetus is sitting at t_2 . If (13) is true, then presumably Theaetetus is *necessarily* sitting at t_2 , in which case he was not free, at that time, to do anything *but* sit.

St Thomas concludes that (13) is true taken de dicto but false taken de re; that is

- (13') It is necessarily true that whatever is seen to be sitting is sitting
- is true but
- (13") Whatever is seen to be sitting has the property of sitting necessarily or essentially

is false. The deterministic argument, however, requires the truth of (13''); and hence that argument fails. Like Aristotle, then, Aquinas appears to believe that modal statements are of two kinds. Some predicate a modality of another statement (modality *de dicto*); but others predicate of an object the necessary or essential possession of a property; and these latter express modality *de re*.

But what is it, according to Aristotle and Aquinas, to say that a certain object has a certain

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property essentially or necessarily? That, presumably, the object in question could not conceivably have lacked the property in question; that under no possible circumstances could that object have failed to possess that property. Here, as in the case of modality *de dicto*, no mere definition is likely to be of much use; what we need instead is example and articulation. I am thinking of the number 5; what I am thinking of then, is prime. *Being prime*, furthermore, is a property that it could not conceivably have lacked. Of course, the proposition

(14) What I am thinking of is prime

is not necessarily true. This has no bearing on the question whether what I am thinking of could have failed to be prime; and indeed it could not. No doubt the number 5 could have lacked many properties that in fact it has: the property of numbering the fingers on a human hand would be an example. But that it should have lacked the property of being prime is quite impossible. And a statement of modality *de re* asserts of some object that it has some property essentially in this sense.

Aquinas points out that a given statement of modality de dicto – (13') for example – may be true when the corresponding statement of modality de re – (13'') in this instance – is false. We might add that in other such pairs the de dicto statement is false but the de re statement true; if I am thinking of the number 17, then

(15) What I am thinking of is essentially prime

is true, but

(15') Necessarily, what I am thinking of is prime is false.

The distinction between modality *de re* and modality *de dicto* is not confined to ancient and medieval philosophy. G. E. Moore discusses the idealistic doctrine of internal relations;⁶ he concludes that it is false or confused or perhaps both. What is presently interesting is that he takes this doctrine to be the claim that all relational properties are *internal* – which claim, he thinks, is just the proposition that every object has each of its relational properties essentially in the above sense. The doctrine of internal relations, he says, 'implies, in fact, quite generally, that any term which does in fact have a particular relational property, could not have existed without having that property. And in saying this it obviously flies in the face of common sense. It seems quite obvious that in the case many relational properties which things have, the fact that they have them is a mere matter of face that the things in question might have existed with out having them.⁷⁷ Now Moore is prepared to concede that objects do have some of their relational properties essentially. Like Aristotle and Aquinas, therefore, Moore holds that some objects have some of their properties essentially and others non-essentially or accidentally.

One final example: Norman Malcolm believe that the Analogical Argument for other mind requires the assumption that one must learn what for example, *pain* is 'from his own case'. But, h says, 'if I were to learn what pain is from perceivin my own pain then I should, necessarily, hav learned that pain is something that exists on when I feel pain. For the pain that serves as m paradigm of pain (i.e. my own) has the property of existing only when I feel it. That property is essential, not accidental; it is nonsense to suppose the the pain I feel could exist when I did not feel it. This argument appears to require something lift the following premiss:

(16) If I acquire my concept of C by experienci objects and all the objects that serve as r paradigms have a property P essential then my concept of C is such that the pr position Whatever is an instance of C has F necessarily true.

Is (16) true? I shall not enter that question he But initially, at least, it looks as if Malcolm me to join Aristotle, Aquinas and Moore in suppor the thesis that objects typically have both essen and accidental properties; apparently he means embrace the conception of modality *de re*.

There is a prima facie distinction, then, betw modality *de dicto* and modality *de re*. This distition, furthermore, has a long and distinguis history. Many contemporary philosophers find the idea of modality *de dicto* tolerably *cl* however, look utterly askance at that of modalit *re*, suspecting it a source of boundless confus Indeed, there is abroad the subtle suggestion the idea of modality *de re* is not so much confu as vaguely immoral or frivolous – as if to accer employ it is to be guilty of neglecting serious in favour of sporting with Amaryllis in the sh In the next section, therefore, we shall exan objections to modality *de re*.