What Is Possible? *

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Abstract

This paper argues that there are true synthetic modal claims and that modal questions in philosophy are to be interpreted not in terms of logical necessity but in terms of synthetic necessity. I begin by sketching the debate about modality between logical empiricism and phenomenology. Logical empiricism taught us to equate analyticity and necessity. The now common view is that analytic statements are necessary in the narrow sense but that there is also necessity in a wider sense. I argue against this that we should distinguish analyticity and necessity more strictly.

Hermann Lotze (1817-1881), perhaps the most influential philosopher of his time, wrote about his view that there are synthetic necessities ('synthetische Urtheile a priori'), a version of which I shall defend in this article, 'that we defend here a crucial element of German

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philosophy, for which we are attacked by all nations'[1]. A few decades later a philosophical battle about synthetic necessity broke out within German philosophy. One party won, the other party was dispersed, and after a few decades it was forgotten that there was such a battle and that there was an opposing party. The parties in the battle were the two great movements in philosophy in the 20th century: logical empiricism and phenomenology. The logical empiricists won. Since then there have been a few quarrels, instigated by Quine, Putnam, and Kripke about the empiricist doctrine of modality, but these were empiricist family quarrels. The core of that doctrine is still generally accepted.

I believe that the wrong party won and that this led to much confusion about modality and about many modal questions in philosophy. In this article I shall propose an alternative to the empiricist understanding of modality. I shall criticise the empiricist view that 'logical' modality is the strongest kind of modality and that it is the kind of modality that is relevant for modal questions in philosophy. I shall even question whether it deserves to be called 'modality' at all. I do not subscribe to the whole doctrine of phenomenology, but the conception of modality I shall propose shares with the phenomenologists' view the claim that the strongest and philosophically relevant notion of modality is not logical but synthetic modality. Let me begin by sketching how we inherited 'logical' modality from logical empiricism.

Phenomenology and logical empiricism

The phenomenologists, like Edmund Husserl, Max Scheler, and Adolf Reinach, put forward modal claims about the world, which they called *material* or *synthetic a priori* (cf. Smith 1992). Examples

[1] '[...] daß wir [hier] einen wesentlichen Punkt deutscher Philosophie vertheidigen, über den wir von allen Nationen angegriffen werden') (Lotze 1874, 581)

are 'Nothing can be green and red all over', 'There cannot be a tone without a pitch', or 'The value of being morally good is, necessarily, higher than the value of being pleasurable' (Scheler 1916, 122-6; criticised by Schlick 1930, 24). The phenomenologists were enthusiastic about the realm of the material apriori. Their philosophical project was to discover synthetic a priori truths about all sorts of things, such as values, rights, things and properties, speech acts such as promising, holiness, love, etc.[2]

The logical empiricists found all this very mysterious, for reasons of epistemology. 'A priori', according to Kant, means independent of experience. So is the phenomenologists' material a priori knowledge knowledge about the world (i.e. about things independent of us) that does not come through some kind of experience? That would be mysterious because how can we have knowledge without being related to the objects of this knowledge through experience? If one has no experience of something then one has no knowledge about it. The phenomenologist, however, did not mean that the material a priori knowledge is independent of *all* experience. They just meant that it does not come directly through sense experience, but that it comes through a special kind of experience, which Scheler called 'phenomenological experience' (Scheler 1916, 68-72). Phenomenological experience is experience in introspection, in 'Anschauung' (or 'Wesensschau'). 'What is given a priori is as much founded on "experience" as that which is given through experience in the sense of observation and induction. All that is given is based on experience.'[3] So according to Scheler, we can know some things because we become aware of them when we think about them. We can know them sitting in our arm chair. For example, we can know that there cannot be a

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[2] (Reinach 1913) cf. (Smith 1992); (Ingarden 1964-1974); (Otto 1917); (Hildebrand 1971).

[3] 'Aus dem Gesagten ist klar, daß, was immer a priori gegeben ist, ebensowohl auf „Erfahrung" überhaupt beruht wie all jenes, das uns durch „Erfahrung" im Sinne der Beobachtung und der Induktion gegeben ist. Insofern beruht alles und jedes Gegebene auf „Erfahrung".' (Scheler 1916, 71)

tone without a pitch by considering the nature of a tone. Of course, the logical empiricists did not like this idea better than the idea of knowledge without experience because it conflicts with their principle that all knowledge comes through sense experience.

Therefore the logical empiricists rejected the phenomenologists' material apriori. They claimed that there are no modal truths about the world. So are statements like 'There cannot be a tone without a pitch' false? Or meaningless? That is not what the logical empiricists said, they avoided the implausible claim that there are no modal truths. But they had to employ a trick, bringing in another topic. They said, look there are statements like 'Bachelors are unmarried'. They are called analytic statements, or tautologies. A tautology is a statement that is true just in virtue of its form. It is a statement whose negation is self-contradictory. There is nothing mysterious about tautologies.

Now, in a philosophical *coup d'etat,* as if they wanted to prevent that anybody should ever think again that there are synthetic necessity statements, the logical empiricists substituted necessity by analyticity and called it 'logical necessity'. Let us call tautologies 'necessary' and allow no modal statements besides those claiming that something is, or is not, tautological. That is, interpret 'Necessarily p' as 'p is analytic' and 'Possibly p' as 'p is synthetic'. The phenomenologists they asked: 'Are those judgements [modal statements like 'There cannot be a tone without a pitch'] which you take to be synthetic and a priori really synthetic and a priori'? (Schlick 1930, 23) They argued that the phenomenologists' material a priori statements are in fact analytic. They are just about concepts. As 'Bachelors are unmarried' is true because of the definition of the word 'bachelor', so 'There cannot be a tone without pitch' is true because of the definition of the word 'tone'.

Thus the logical empiricists claimed that a statement is necessary if and only if it is analytic, and a statement is necessary if and only if it is a priori. Questions whether something is possible became questions about whether some statement is analytic. Since then philosophers approach modal questions in philosophy by looking for con-

tradictions. For example, they approach the question whether backward causation is possible by discussing whether 'A at t2 caused B at t1 (with t1 being earlier than t2)' is contradictory.

The common view today is still very close to the logical empiricist doctrine and goes like this. Being necessary is a way of being true. Some propositions are necessarily true, the others are contingently true. An example of a necessary proposition is 'All bachelors are unmarried'; an example of a contingent proposition is 'There are white moose'. This kind of necessity is *logical necessity*. Logical necessity is the strongest kind of necessity and is the kind of necessity that is relevant for philosophical modal questions (e.g. whether backward causation is possible, or whether there can be a zombie, i.e. a copy of my body that has no mental life). (I call this view *logicism.*) Following Kripke' (1972) and Putnam (1975) many widened their concept of necessity a bit so that it encompasses 'a posteriori necessary truths' such as 'Water is H2O'. This widened concept of necessity is sometimes called 'broadly logical necessity' or 'metaphysical necessity'. Yet wider is the concept of 'natural necessity', which means being in accordance with the laws of nature. Natural necessity is weaker than logical necessity because the logically necessary is a subclass of the naturally necessary.

The empiricist doctrine led us on the wrong track. We should go back and ask how modal questions arise and what modal claims are about. I shall argue that there are true synthetic, i.e. non-tautological, necessity statements (other than statements like 'Water is H2O') and that modal questions in philosophy are not to be understood in terms of 'logical necessity'. But first I have to define what an analytic statement is and introduce some terminology related to this.

Analytic statements

The clearest definition of a tautological or analytic statement is in terms of a statement being self-contradictory. Some other definitions

have been devised in order to have more statements turn out analytic. For example, such definitions define an analytic statement as one that is true in every possible world (Lewis 1946, 57) or as one that is true 'in virtue of its meaning' (Kripke 1972, 39), and they are designed to include in the analytic some of the phenomenologists' material a priori statements and the statements of mathematics. They are supposed to make these statements less mysterious because they make *a priori* knowledge turn out to be 'merely a product of human concepts, meanings, definitions, or linguistic conventions'[4]. But once we reconcile ourselves with the fact that 'There cannot be a tone without a pitch' is not of the same type as 'Bachelors are unmarried' and is not analytic we can give a neat, quite narrow definition in terms of a statement being self-contradictory.

By a self-contradictory statement I mean one which says something and denies it, or which speaks of something as being and not being in a certain way. For example, 'Miller is married and not married' or 'There is an unmarried man who is married'.

By a tautology I mean a statement whose negation is self-contradictory. By the negation of a statement I mean the statement that results from prefixing 'It is not the case that'. For example, 'No unmarried man is married' (which Quine (1951, 22) calls 'logically true') is a tautology because 'It is not the case that no unmarried man is married', by which one says the same as by 'There is an unmarried man who is married', is self-contradictory.

Now we have to give an account of the paradigm of an analytic statement, 'Bachelors are unmarried'. It is difficult to find a belief that one may express with this sentence; hence one may well say that it has no meaning. But with some charity we can make sense of it, in two ways: first, it may be taken as a statement about the meaning of 'bachelor'; secondly, it may be taken as a tautology.

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[4] For a critical discussion of such approaches to the analytic see (Bonjour 1998, ch. 2).

Here is how the bachelor-sentence can be used as a statement about the meaning of the word 'bachelor'. Imagine a conversation between John and Max where Max's mother tongue is not English. John and Max agree that George is married, but nevertheless Max calls George a 'bachelor'. This shows that Max does not know how the word 'bachelor' is used in English. John may now reply to Max 'Oh no, you are using the word 'bachelor' wrongly; *Bachelors are unmarried*'. John here clearly uses the bachelor-sentence to state that 'being unmarried' is part of the meaning of 'bachelor', i.e. that one uses the word 'bachelor' in order to say of something, amongst other things, that it is unmarried. The statement is what I call a disguised meaning-statement (DMS). A *disguised meaning statement* is one that is made true solely by the linkage of a certain word to its meaning and does not explicitly have the form 'A means B'.

Although this interpretation of the bachelor statement is the more natural one, many philosophers will say that when taken as an example of an analytic statement the bachelor-statement is not to be interpreted in this way. The meaning of the words has to be taken as fixed, they might say. This suggests that they want to use the bachelor-sentence in the sense of 'Unmarried men are unmarried', that is, in the sense of a tautology. What is special about the bachelor sentence is that the concept of a bachelor is a composed concept, i.e. one which has a nominal definition (as I will explain below). The definition is: by calling something a bachelor one says that it is an unmarried man.

Now, how should we use the term 'analytic'? One could use it just in the sense of 'tautological', but for that we have already the term 'tautological'. It is more useful to use it to refer to statements like the bachelor statement which are *disguised*, as opposed to *overt*, *tautologies. So by an analytic statement I mean a tautology whose negation entails a contradiction between a composed concept and a concept that is a part thereof.* An analytic sentence is one that can be interpreted as an analytic statement.

Analytic statements involve composed concepts. Let us have a closer look at them.

Composed concepts

Some predicates, like 'x is a bachelor', are used to say several things about something; they stand for composed concepts. For example, by saying that something is a bachelor one says that it is a man and one says that it is unmarried. A composed concept is one which has a nominal definition, i.e. a definition of the form 'To say of something that it is 'C' is to say of it that it is P and Q ...'. It is a prerequisite for being a competent user of this word 'C' to know this definition and to have the concepts involved. 'C' has what Katz calls a 'compositional meaning' (Katz 1998).

A composed concept has other concepts as parts. For example, the concept of being unmarried is a part of the concept of a bachelor. That concept X is *a part of concept Y* means that 'Y' is used for saying of something, besides other things, that it is X, and there is a concept Z which is just like the concept of being Y except that it is neutral about being X.

For each part of a composed concept we have a concept that constitutes the rest of the concept. That is, if we have the composed concept C of which concept P is a part, then we have an idea of what a thing is like for which the only reason that it is not C is that it is not P. We have the concept 'C minus P': the concept that is like C except that it is neutral about being P. For example, as the concept of being unmarried is a part of the concept of a bachelor, we have a concept of something for which the only reason why it is not a bachelor is that it is not unmarried: namely the concept of a man. (Cf. Zelaniec 1996, 32f)

Quine's objection against analyticity as I have defined it is this:

How do we find that 'bachelor' is defined as 'unmarried man'? Who defined it thus, and when? Are we to appeal to the nearest dictionary, and accept the lexicographer's formulation as law? Clearly this would be to put the cart before the horse. The lexicographer is an empirical scientist, whose business is the recording of antecedent facts. (Quine 1951, 24)

Quine's objection is directed at those who are trying to reduce necessity and the apriori to analyticity and for whom therefore the truth of an analytic statement may not be due to something contingent. To them he says that they cannot assume that necessity is based on definitions which lexicographers describe because these definitions are contingent. But as we are not looking for an empiricist account of the apriori but for the correct account of analytic statements, we can happily say that analytic statements are based on nominal definitions which are contingent linguistic conventions or rules.

Synthetic necessity

Are analytic statements necessary? Contemporary textbooks take analytic statements to be paradigm examples of true necessary statements. They say there are two kind of true statements: necessary truths, like 'Bachelors are unmarried', and contingent truths. Of course, if you define 'necessary' in this way then analytic statements and tautologies are necessary. Let me try out something different and consider synthetic modal statements, i.e. statements of the form 'It is impossible that p' (or 'Necessarily p', 'It is impossible that p', 'It is possible that p', etc.) where p is not analytic and not tautological. (By saying of a statement that it is a synthetic necessity, that it is synthetic and necessary, or synthetically necessary, or that it is a synthetic modal statement I mean that it is either itself a synthetic modal statement or that it can be transformed into one by adding 'necessarily' or another modal phrase.)

Why should there be true synthetic modal statements? Human beings have the peculiar ability to have views on something, to conceive of things, to construe things in their mind. They have concepts under which things that are independent of human minds may fall. For any set of concepts an existence claim can be formed which claims that there is something which falls under all of them. The source of necessity (and possibility) lies in the fact that reality does not allow for the existence of all the sorts of things that human beings can construe in their mind. For every description of a thing the question arises whether the existence of such a thing is possible. We can combine predicates with each other arbitrarily and think and talk about a thing to which they all apply. The conventional rules of language do not allow us to say that there is a married bachelor or that there is something which has charge but has no charge, but they do allow us to say without contradiction that there is somebody who is guilty for something he did not do freely, or that something caused something which took place earlier. But it does not follow from the fact that conventional rules of language allow for a certain combination of predicates that the properties to which the predicates refer are in fact combinable. And even if all properties were combinable, there would be synthetic modal true statements too: those that say for each combination of predicates that the existence of a thing to which they apply is possible.

Take a statement of the form 'Nothing can be A and B' where the predicates 'A' and 'B' are semantically independent from each other, i.e. neither is a composed concept of which the other is a part (and 'A' and 'B' are not synonyms). Neither is 'A' used in order to say of something that it is B, nor vice versa. The empiricist will say that 'There is nothing that is A and B' is, if true, contingently true. It is false that nothing can be A and B because it is 'logically possible' that something is A and B. Of course, you may say, it may be naturally impossible that there is something that is A and B, but in the strict and philosophical sense it is possible that there is something that is A and B. You will say this if you take tautologies to be the paradigms of

necessity. However, consider again what one could mean by asking 'Could there be something that is A and B?'.

If it is true that 'That stone over there is A' then 'A' refers to a property of the stone. The property is the object of 'A'. If it is also true that 'That shoe over there is A', then the shoe and the stone share a property. They resemble each other in a certain respect. Likewise can 'B' refer to a property of a thing.

Things like stones and shoes have many properties. Assume that the stone is not only A but also B. In that case it is not only true that there is something that is A and B, but it is also true that it is possible that there is something that is A and B. This is what I mean by saying that the properties A and B, i.e. the objects of 'A' and 'B', are combinable. For any set of predicates, A, B, ..., which are semantically independent from each other, not only the question arises whether there is something that is A and B ..., but also the question whether the existence of something that is A and B ... is possible.

We know that some properties are combinable. Perhaps all properties are combinable, but we have little reason to assume that.[5] It seems rather implausible that there could be something that has a mass of 1 kg and spin ½, or that there could be something that has spin ½ and is jealous, or, more controversially, that there could be something that has a charge but no mass.

So for any two semantically independent predicates, A and B, the question arises whether it is possible that there is something that is A and B. There is a true synthetic modal statement: either there is the synthetic modal truth that the existence of something that is A and B is possible, or there is the synthetic modal truth that the existence of something that is A and B is impossible. More generally, based on

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[5] According to Armstrong's (1989) 'combinatorial theory of possibility' all properties are combinable. However, by this he means not that there are no truths of the form 'Nothing can be A and B' but that all universals are combinable. 'Nothing can be A and B' is true, for example, if 'A' and 'B', although semantically independent, refer to universals that overlap.

the existential statement 'There is something that is A and B' there are modal statements of the following forms:

1. Necessarily, there is something that is A and B.

2. Necessarily, there is nothing that is A and B. (This means the same as 'It is impossible that there is something which is A and B' and 'Nothing can be A and B'.)

3. Contingently, there is something that is A and B.

4. Contingently, there is nothing that is A and B.

5. Possibly, there is something that is A and B.

6. Possibly, there is nothing that is A and B.

(I), 'There is something that is A and B', entails (5); (II), 'There is nothing that is A and B', entails (6). (1) entails (5), (2) entails (6). (3) entails (5), (4) entails (6).

(2) entails and, if taken in the modal sense which is relevant here, is entailed by

7. If something is A, then it is not B; and

8. All As are not B.

One may want to hold that there are also necessary predications which are meaningful, i.e. statements of the form '*a* is necessarily F' or 'That thing over there is necessarily F'. Whether this is so depends on whether one can make sense of 'It would be impossible for this very thing to be F'; that is, whether one can form an idea of what the world would have to look like if this statement were true and what it would have to look like if this statement were false. Note that by '*a* is necessarily F', in the sense in question, it is not meant that there is a contradiction between 'This is *a*' and 'This is not F' (for example because the name '*a*' is linked to a sortal, as 'Nixon' is linked to being a man). In any case, if some statements of the form '*a* is necessarily F' are meaningful, then they are equivalent to modal existential state-

ments, namely statements of the form 'It is impossible that there is something which is this very thing and not F'. We can therefore hold that all synthetic modal statements are, or are equivalent to, modal existential statements.

It is beyond the scope of this article to describe how we acquire modal knowledge and when we have justified modal beliefs. I assume that we know about some possibilities because we know that they are realized. If I know of something that is A and B, then I know that it is possible that there is something that is A and B. Further I assume that our modal intuitions make modal beliefs rational. But for the present purposes I do not need to take views on these matters.

A construed example of synthetic necessity

One may object that it is mysterious how it should be impossible that two predicates apply to the same thing although the two predicates are semantically independent. I shall now construe an example of a synthetic necessity claim which can be seen to be not mysterious.

Assume there is a causal feature, a property, of a thing which affects our senses in two ways, q and r, or which affects two different instruments. By a thing with a certain causal feature affecting our senses in a certain way I mean that if our senses are exposed to the thing then the thing causes an impression in us on the basis of which we can form a predicate, say P, and then rightly claim that the thing is P. A red thing, for example, causes an impression of a certain kind in us. In English it is said of things that cause such impressions that they are red. Now consider the case where one property affects our senses in two ways. We have two different senses that are affected by this property. To illustrate, the property may be the thing's having a certain surface such that the property lets the thing cause a visual impression by reflecting light of a certain kind, and it lets the thing affect our sense of touch. The very same feature of the thing affects us in two ways.

Two predicates, Q and R, can be formed, based on q and r. Q and R are conceptually independent from each other: neither is a part of the other. It is not a contradiction to say that there is something which is Q and not R. In this case it is true that *nothing can be Q without being R*. It is impossible that something is Q and not R because Q and R are based on the same property (where I use the term 'property' here such that difference of predicates does not entail difference of properties). But 'Something is Q and not R' is not contradictory. Only a statement like 'Something is Q and not Q' or 'Something is Q and N' where it is part of N's nominal definition that something which is N is not Q, is or entails a contradiction. No rule of language takes one from 'x is Q' to 'x is R'. It is a synthetic necessity that something which is Q is also R. If 'Q' were defined such that being Q entails being R, then one even could not use the predicate 'Q' to express the discovered fact that something which is Q is, always and necessarily, also R. So in the scenario described it would be true to say that nothing can be Q without being R, whilst it is not contradictory to say that there is something which is Q and not R. That nothing can be Q without being R is not somehow due to concepts or rules of language. It is a real, synthetic impossibility. There is nothing mysterious about such an impossibility.[6]

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[6] For the example to work, at least one of the predicates, 'Q' or 'R', must have a meaning like Putnam's (1975) 'natural kind terms'. There could be a different property which makes a thing appear q. This property might be such that a thing can have it without having a property in virtue of which it causes r. There could be a thing which causes q but not r. If causing q were sufficient for something being Q, then this thing would be Q but not R. It would be false that *nothing can be Q without being R*. So if my construed example is to work, then the predicate Q must be such that a competent user of 'Q' would not want to call something 'Q' if, although it causes q and therefore appears to be Q, it causes q in a way quite different from the way usually things cause q. Causing q is not sufficient for something to be Q. A thing is Q only if it is in the relevant respect objectively similar to the things that we usually rightly call Q, as something is water only if it resembles the stuff in our lakes in its chemical structure. If we were to discover in some region of the universe stuff which looks and tastes like water but turns out to be not H_2O, then we would say that it is not water. Likewise, if we were to discover that something causes q in virtue

Note that how *obvious* it is that nothing can be Q without being R depends on how familiar people are with the property to which 'Q' and 'R' refer. It might be so obvious that Q and R always come together that it is in fact believed by everybody that nothing can be Q without being R. It might take just little thought to see that. It may be so obvious that one cannot imagine something being Q and not R. But it could also take quite an effort to see that, or it might even be unknown. There can be unknown necessities. It could be that it is conceivable that something is Q and not R.[7]

However, I see no strong reason for assuming that *all* necessities rest, as in my example, on a fact that different predicates refer to the very same causal feature of a thing. There may be other grounds for necessities and impossibilities. In any case, often we have trustworthy modal intuitions where we do not know the ground of the necessity or possibility in question. In order to be justified in holding a modal belief we do not need to know the ground of the truth of the belief.

The impossibility of backward causation as an example of synthetic necessity

Now let us consider a real example of synthetic necessity. Is it possible that a rain dance, performed on Thursday with the intention of causing rain on the Monday before (at a place about which one does not know whether or not it was raining on Monday), causes the raining on the Monday before (besides the fact that dancing perhaps is

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of having some other property than the one 'Q' usually refers to, then we would say that the thing is not Q.

[7] The view that conceivability can ground modal knowledge has also been defended recently by (Gregory 2004). However, Gregory's discussion is based on the usual concept of broadly logical necessity. (Chalmers 2002) develops distinctions between different possible views about conceivability as a ground for modal knowledge.

unlikely to cause rain anyway)? Or, could I 'go back in time and plant a tree in a remote spot in Greenland' (Noordhof 1998, 871)?

Many inquire whether backward causation is possible by inquiring whether backward causation is 'logically possible', i.e. by inquiring whether there is a contradiction in every description of a case of backward causation. They equate the claim that backward causation is impossible with the claim that 'A cause is earlier than its effect' is analytic.

It is not analytic that a cause is earlier than its effect, because 'cause' is not a composed concept a part of which is that a cause is earlier than its effect. If it were, then we would have a concept that is just like the concept of a cause except that it is neutral about the temporal order of events, as we have a concept that is like the concept of a bachelor except that it is neutral about being married (namely the concept of a man). But we do not. The concept of a cause itself is neutral about the temporal order of cause and effect. That is why somebody who dances on Thursday in order to cause rain on the Monday before correctly says why he dances by saying 'I dance in order to cause rain three days ago'. The trouble with this is not that he contradicts himself but that, as most of us believe, it is impossible that something causes something which takes place earlier.

Whether backward causation is possible depends on whether it is possible that there is an ordered pair of events which resembles the paradigm cases in the relevant respect and where the first event is later than the second. The disagreement between us and the rain dancer is not one about the concept of a cause. It is a disagreement about a modal fact, and that is not a disagreement about concepts. It is wrongheaded to try to answer a modal question by inquiring whether there is a contradiction in the description of the situation whose possibility is under consideration. The question whether something is possible arises only if its description is consistent. The logical empiricists put us on the wrong track.

'Water is H2O'

The logical empiricists' assumption that necessary statements are a priori was challenged by Kripke's and Putnam's claim that 'Water is H2O' is necessary (Kripke 1972; Putnam 1975). The reason for this claim is that 'water' is what I call *a paradigm-based concept:* whether such a concept applies to something depends on whether the thing resembles objectively the paradigm cases in a certain respect that one need not know in order to have the concept. 'Water' is a paradigm-based concept because something that looks like water but has a chemical structure other than H_2O and therefore does not resemble the paradigm cases in the relevant respect is not water, according to Putnam.[8] Is 'Necessarily, water is H2O' therefore an example of a true synthetic modal claim? I think in one sense it is one, though not a very interesting one, but in three other senses it is not.

Here are three senses of the water-statement with which there is no true synthetic modal claim here. First, 'Water is H2O' can be used to express the belief that the stuff in our rivers and lakes is H2O. It is certainly not necessary that the stuff in our rivers and lakes is H_2O, because the earth could be totally similar to how it is now, except that the stuff in our rivers and lakes is XYZ. The claim that water is necessarily H_2O, in this sense, is not true.

Secondly, 'Water is H2O' can be used for saying that nowadays one rightly calls something 'water' only if it is H_2O. The sentence is then used for *reporting* how certain words are used. But then 'Water is H2O' is not necessary, because, of course, 'water' could be used quite differently.

Thirdly, 'Water is H2O' can be used for introducing the term 'water', i.e. for giving a definition. One can state that one is going to use the term 'water' to refer to H_2O and in the same sense as 'H_2O', without

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[8] For a thorough discussion of 'Water is H2O' see (Chalmers 1996, 56-65) or (Jackson 2000, 39 and 46-52). Both authors argue that 'water' has two different intensions.

being committed to any view about what the stuff in our rivers and lakes is like and how other people use 'water'. But then 'Water is H2O' is not used to make a statement at all. It is used to make a nominal definition, and nominal definitions in itself are neither true nor false. Also here we have no sense of 'Necessarily, water is H_2O' in which that modal claim is true.

I used to hold that there is no other usage of 'Water is H2O' and that there is no true modal statement here. But I now think that I have to admit that, as long as 'water' is not used in the sense of 'H2O', it is a true modal synthetic statement that 'Nothing can be water without being H2O'. But it is not an interesting one because nowadays water is defined as H2O and therefore there is no question whether something can be water without being H2O, and before it was known that water is H2O this was not a question either; the question then was just: what is water? That is, what is the chemical structure of the stuff in our rivers and lakes, and that is not a modal question.

Entailment

Many assume that to say that A entails B is to say that it is logically impossible that A and not B (e.g. Chalmers 1996, 70). By this they mean that A entails B if 'A and not B' is self-contradictory, and some authors may also want to hold that there are cases where it is logically impossible that A and not B although 'A and not B' is not self-contradictory; for example, they may want to hold that it is logically impossible that something is water and not H2O.[9] I suggest that we

[9] Swinburne forms a notion of entailment that is wider than analytic entailment by saying: 'a sentence r1 minimally entails a sentence r2 if the rules of public language are recognized by most speakers of the language to be such (when it is suggested to them) that a speaker of r1 in the given context is 'committed' to r2 in the context—in this sense that the speaker of r1 is thereby also taken to have affirmed r2' (Swinburne 1994, 107). My point is that this covers very different pairs of sentences, where in some cases 'r1&~r2' is self-contradictory and in some cases 'r1&~r2' is consistent but it is obvious that if r1 is true, then r2 is true too.

better restrict entailment to cases where the negation of what is entailed contradicts that which entails it, i.e. to what Katz (1998, 556) calls 'analytic entailment'. To say that A entails B is to say that 'A and not B' is self-contradictory. Entailment is not a matter of modal relations between propositions but a matter of contradictions. Of course, by stipulation we could also define: A entails B if, and only if, 'A and not B' is self-contradictory or it is (synthetically) impossible that A and not B. But this would be a very wide, inhomogeneous notion of entailment. We better distinguish between ''A and not B' is self-contradictory' and 'It is impossible that A and not B'.

Possible worlds

You may wonder why I have not mentioned 'possible worlds' thus far. It has become common to say 'a proposition is necessary if it holds at all possible worlds' (Chellas 1980, 3). For us, however, talk of possible worlds is of no use because it does not clarify what is meant by necessity and what the relationship between being necessary and being self-contradictory is. It does not clarify whether by a proposition being necessary it is meant that the negation of the proposition is self-contradictory. Usually it is assumed that propositions whose negation is self-contradictory and perhaps propositions of the type 'Water is H2O' are the ones that are true at no possible world. You can settle this matter by talk of possible worlds only if you indicate which possible worlds there are by specifying what you mean by 'possible'. But if you have done that adding talk of 'worlds' does not help you any further to clarify the relationship between modality and being self-contradictory.

What is typical for a statement like 'Unmarried men are unmarried' is that its negation is self-contradictory. To say that it is true at all possible worlds is at best no further elucidation and at worst, if there are no possible worlds or if it is left unclear what they are, wrong or mystifying.

Could one hold that true synthetic modal statements are true because of what is the case in other 'possible worlds'? If this is to be not just a paraphrase for saying that something is possible, then it has to be understood as the claim that there really are these other worlds and that what is possible is a matter of what is the case there. That is implausible because whether something is possible does not depend on whether it is the case, whether here or elsewhere. Further, the construed example of a synthetic necessity which I gave above is an example of a synthetic modal statement that is true not because of what is the case in other worlds but because there are two predicates referring to the same property.

What is the strongest kind of necessity?

The common view has it that logical necessity is the strongest kind of necessity and that it is the kind of necessity that is relevant for philosophical modal questions. I call this view *logicism*. Let me argue that logical necessity is *not* stronger than synthetic necessity. The argument for the view that logical necessity is the strongest kind of necessity is that all other classes of possibilities are subsets of the class of logical possibilities. Chalmers (1996, 37) argues, for example, that everything that is 'naturally possible' is also 'logically possible', but not everything that is logically possible is also naturally possible: 'The class of natural possibilities is therefore a subset of the class of logical possibilities'.

I reply that logical necessity, in the sense of being tautological, is *not* stronger than synthetic necessity because nothing that is logically necessary is synthetically necessary, and vice versa. Logicists assume that there is a range of kinds of necessity the strongest of which is logical necessity. Perhaps it is right to say that the necessity in 'One cannot be guilty for something one did not do freely' is stronger than the necessity in 'There cannot be two masses which do not attract each other'. But if there is such a scale of strengths of necessity, logical necessity is not on this scale because logically necessary state-

ments are not at all about whether the world could be as it is described in a certain consistent statement. Logical necessity and synthetic necessity cannot be compared in strength because no logically necessary statement is synthetically necessary, and no synthetically necessary statement is logically necessary.

Whether you will say that logical necessity is the strongest kind of necessity depends on whether you form and use a concept of possibility, called for example 'natural possibility' or 'metaphysical possibility', that encompasses logical possibilities as well as synthetic possibilities, and, correspondingly, a concept of necessity that encompasses logical necessities as well as synthetic necessities. If you base your claim about what is the strongest kind of necessity on such a concept, then you will say that logical necessity is the strongest kind of necessity, because then the class of logical necessities is a subset of the class of natural necessities, and the class of logical possibilities is a subset of the class of natural possibilities.

My objection against this is that such a concept of natural necessity is a very mixed bag. To ask about a statement whether its negation is self-contradictory is very different from asking about a statement whether, although its negation is consistent, it describes something possible. The reason wherefore it is true that bachelors are unmarried is that one uses the word 'bachelor' in order to say of something (among other things) that it is unmarried, whereas, as I have argued above, the reason wherefore it is true (if it is true) that a cause is always earlier than its effect is not that one uses 'x is a cause of y' in order to say (among other things) that x is earlier than y. I therefore suggest that logical necessities and synthetic necessities do not have in common what would make it adequate to subsume them under one concept of natural necessity on the basis of which one could say that logical necessity is the strongest kind of necessity. Properly speaking 'logical necessity' is not a kind of necessity, and 'logical possibility' is not a kind of possibility. We better reserve the term 'necessity' for synthetic necessity, and the term 'possibility' for synthetic possibility. Instead of 'logically necessary' we can say 'tautological'; instead of 'logically possible' we can say 'consistent'. Consistency is

not a kind of possibility but a precondition of the truth of modal statements as it is a precondition of the truth of any statement.

David Chalmers argues against a concept of modality that is not reducible to a statement's being contradictory that a believer in such modality 'must embrace a *modal dualism,* with distinct primitive modalities of logical and metaphysical possibility, neither of which is reducible to the other' (Chalmers 2002, 194). My claim, defended above, that a concept that includes logical as well as synthetic modality would be a mixed bag is in line with this claim of Chalmers, that having both kinds of modality would be a modal dualism. I too want to avoid modal dualism. But I have suggested that to avoid it we should not, as Chalmers does, assimilate possibility to 'logical possibility' but rather exclude 'logical possibility' from the concept of possibility.

How to carve up the cake

Compare the common way of defining and drawing the lines between analyticity, logical necessity, necessity, etc. with what I have recommended. The common (empiricist, logicist) view, stereotyped, is as follows.

A *tautology*, or analytic statement, is defined as a statement whose negation is self-contradictory. Many authors squeeze some examples which the phenomenologists took to be synthetic into the class of the analytic because they think these examples would be mysterious if they were synthetic. For example, according to the common view (as defended by Schlick 1930) statements like 'Nothing can be green and red all over' and 'Every tone has a pitch', and also mathematical statements are analytic (whereas I would take the phenomenologists' view that they are synthetic). Tautologies, according to the common view, are paradigm examples of *necessary* statements. They exhibit the strongest kind of necessity: *logical necessity*. The logical empiricists equated being necessary with being tautological. In the seventies

then many widened their concept of logical necessity by taking Putnam's and Kripke's 'Water is H2O' to be necessary: 'broadly logically' or 'metaphysically' necessary. The common view distinguishes logical necessity, necessity in the strongest sense, and also 'broadly logical or metaphysical necessity', from '*natural*' or 'causal' necessity (Plantinga 1974, 2; Chalmers 1996, 34-38). What is not logically necessary may still be naturally necessary. Natural necessity is weaker than logical necessity; what is logically necessary is also naturally necessary but not vice versa. What is naturally necessary depends on what the laws of nature are.[10]

Against this view, I have proposed the concept of synthetic necessity, which excludes tautologies from being necessary. I define analyticity as the logicists do, but in practice I take fewer cases to be analytic because I accept as disguised tautologies only statements with composed concepts (as I have defined it), and not statements like 'A cause is earlier than its effect' or 'What is coloured is red' which logicists take to be tautological because they want to accept them but want to avoid accepting synthetic modal statements. A tautological statement I define as one whose negation is a self-contradiction. As a tautology is something very different from a true (synthetic) necessity statement my concept of necessity is the concept of synthetic necessity, which excludes tautologies. In contrast to the logicist I do not distinguish between different kinds of necessity and possibility. Philosophical modal questions, such as whether backward causation is possible, are to be interpreted in terms of synthetic modality.

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[10] (Fine 2002) takes logical necessity to be a kind of necessity and argues that natural necessity and modal necessity are wholly distinct from metaphysical necessity. My mixed bag objection applies also to Fine's concept of metaphysical necessity. Against Fine I believe in modal monism, but I cannot defend this fully here. Once we kick out tautologies from the class of the necessary we have just one kind of modality. In my article ... I defend a non-Humean theory of causation with connexions but without necessity.

Examples of modal questions in philosophy

There are many areas where we could come to new results if we interpreted modal questions not in terms of logical but in terms of synthetic modality. Here are some examples.

Materialists in the philosophy of mind hold that the mental supervenes on the physical, i.e. that there could not be a copy of my body that does not give rise to a mental life as I have it. Chalmers (1996, 94-99 and 2002, 195-199) rejects materialism because it is *logically possible* that there is a zombie, i.e. a copy of my body without mental life: 'I can discern no contradiction in the description [of a zombie]' (96). If I am right the argument has to be reconsidered. The question is not whether a zombie is logically possible, but whether it is synthetically possible (as I argue in my...). The materialist has to defend not logical supervenience but synthetic supervenience.

Another argument for dualism depends on a modal claim. Richard Swinburne (1997, ch. 8) argues: it is *logically possible* that I shall continue to exist after my death; if that is to be possible I need to have a soul; therefore I have a soul. 'From the mere logical possibility of my continued existence there follows the actual fact that there is now more to me than my body.' (Swinburne 1997, 154) The controversial premise here is the one that it is possible that I shall continue to exist after my death. If I am right the question is not whether this is logically possible but whether it is synthetically possible. The materialist should hold that although it is consistently describable that I shall continue to exist after my death it is in fact impossible.[11]

J.N. Findlay, in his famous article 'Can God's Existence be Disproved' (1948), proposes a modal argument against the existence of God. If there is a God, then he exists necessarily, because if he merely

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[11] Swinburne's premise is that it is 'logically possible' that I shall continue to exist after my death, but in my view what he writes in support of this premise shows not only that this is consistently describable, but, through employing modal intuitions, it supports also the claim that it is really, i.e. synthetically, possible that I shall continue to exist.

happened to exist he would not be worthy of worship and he would not be the Lord of everything. But it is logically possible that there is no God. Therefore there is no God. This argument is a consequence of the logical empiricists' coup d'etat. The traditional thesis that God exists necessarily (if he exists at all) is rejected also by many theists today because they interpret it in terms of logical necessity, and it is quite obvious that 'God exists' is not logically necessary. They say that God's existence is not logically necessary, but it may be necessary in some weaker sense. If I am right the claim that God exists necessarily is to be interpreted not in terms of logical necessity but in terms of synthetic necessity, which is the only and the strongest kind of necessity.

Laws of nature are logically contingent; their negation is not self-contradictory. This is generally equated with the claim that the laws of nature could be different, or that they could change. The logicists cannot even meaningfully ask whether they are necessary in the weaker sense, i.e. naturally necessary, because that is defined in terms of 'according to the laws of nature'. If there is some truth in what I have argued in this article, then this is the wrong approach. Of course laws of nature are logically contingent. But this does not mean that they are contingent, i.e. that they could be different or that they could change and that the existence of a universe is possible which totally resembles our universe but in which, for example, the gravitational force between bodies is weaker. Whether the laws of nature could be different is a matter of synthetic modality.

So we need to liberate ourselves from the legacy of logical empiricism and reconsider all those modal questions which are now generally interpreted in terms of 'logical necessity'. Just call tautologies 'tautologies' and not 'necessary', and when you face a modal question think not about what is consistent but about what is possible.

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