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Necessity and Criteria

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Considering the tremendous amount of subject matter in his specialized field that the teacher must acquire and the simple elements of teaching that the beginner must be introduced to, such an extra requirement in philosophy might very well prove to be overwhelming. These considerations lead me to conclude that there should be special courses for teachers designed to help them with respect to the tasks I have discussed.

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NECESSITY AND CRITERIA *

I

In *An Analysis of Knowledge and Valuation*,¹ C. I. Lewis makes a connection between criteria of application and our knowledge of necessary truths. He introduces first his notion of sense meaning. To know the sense meaning of an expression is to know what features in a situation would be necessary and sufficient for the expression to apply correctly to it.

. . . attribution of meaning in this sense requires only two things; (1) that determination of applicability or non-applicability of a term, or truth or falsity of a statement, be possible by way of sense-presentable characters, and (2) that *what* such characters will, if presented, evidence applicability or truth should be fixed in advance of the particular experience, in the determination of the meaning in question (135).

How we use this knowledge to determine necessary truths is brought out in the following passage:

We know that "All squares are rectangles" because in envisaging the test which a thing must satisfy if 'square' is to apply to it, we observe that the test it must satisfy if 'rectangle' is to apply is already included. This experiment in the imagination—which we must be able to make if we know what we mean and can recognize squares and rectangles when we find them—is sufficient to assure that the intentional meaning of 'square' has to that of 'rectangle' the relation prescribed by 'all-are' (152).

Seeing that the features a thing must have to be a square include those which are sufficient for calling it a "rectangle," we know that all squares are rectangles. The features here are found as the result of applying tests. Thus, a figure is a square only if we

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¹ La Salle, Indiana: The Open Court Publishing Co., 1946.

would find four sides upon counting, ninety-degree angles upon measurement, and equality of the sides upon measuring. But the first two features are sufficient for calling any figure a "rectangle."

In this paper I do not propose to discuss the specific details of Lewis's view. Instead, I wish to take up some more general questions that his position seems to me to raise about the relationship between necessity and what might be called "criteria of application."

It is important to stress that Lewis is interested in the epistemological question: How do we know necessary truths? And this question, as he intends it, presupposes, I believe, that apprehension of necessity is apprehension of a pre-existing state of affairs. A proposition *is* necessarily true, and we may then become aware of this fact.

On his view there must be for every descriptive term a set of criteria in virtue of which it is correctly applied to things, situations, etc. Necessity arises when there is a relationship holding among the criteria for two or more terms and, in the simplest case, as we have seen, the relationship is that of inclusion. Seeing the necessity of a proposition consists in apprehending this relationship. For Lewis this is possible because, if we are to know what we mean by a term, we must be able to envisage in advance our criteria for applying it. About his views on the process of envisagement, which are illustrated in the passage quoted above, I shall not have anything to say.

My question is rather about the idea that there is between terms a pre-existing relationship among their criteria which can be said to determine the necessity of certain propositions into which they enter and which, by whatever means, might allow us a basis for the awareness of necessity.

The concept of *criteria* itself is none too clear. Lewis seems to me often to use it in such a way that it is not clearly distinguishable from logically necessary and sufficient conditions. If that is how it is intended it seems hardly to supply the *ultimate* or "original" determination of necessity. In what follows I shall use it more broadly, to mean (still vaguely) that in virtue of which we apply a term to a situation. I think that what I want to say can be said without clarifying the notion further.

Using the intuitive notion of "inclusion of criteria" I want to examine two cases in which it seems to me dubious whether we can speak of this relationship holding prior to our acceptance of a statement as necessarily true. In one the inclusion seems to arise as the result of learning the necessary truth; in a second, knowledge of the necessary truth seems to be a prerequisite for under-

standing the terms involved, and thus there seems no room for a pre-existing connection.

II

The first example is often used in the literature. We find, upon consulting a dictionary, that whales are mammals. Zoologists classify whales as mammals, and the more sophisticated layman knows this. For the zoologist and the sophisticated layman, that whales are mammals may seem to have the status of a necessary truth. One may wonder whether this is genuinely a necessary truth. I share this apprehension, and more will be said about it. Here I shall assume that it is.

The things I shall say about this truth will go also for such statements as: Under standard conditions of pressure, water boils at 100°C; Hearts pump blood; Clouds are composed of vapor. I do not go into the interesting question of whether, as these examples suggest, truths of this type are all connected with a rather advanced body of scientific knowledge.

Although for many of us, it seems, the criteria that something must satisfy if it is to be properly called a "mammal" must be present if we are properly to call an animal a "whale," we do not usually demand an investigation of their presence. Normally 'whale' is applied simply on the basis of the general look of a thing—its shape, size, and, perhaps, color. There seem to be two distinct sets of criteria in use: one, roughly speaking, the *gestalt* of the creature, which we usually find sufficient, and two, the presence of mammary glands. The second we assume to be satisfied, though we rarely make any investigation. We often have no doubts about our identification even though we have no opportunity to examine the animal with the care needed to find the characteristics that indicate a mammal.

Not only do we often neglect the second set of criteria, those for applying the word 'mammal', but many of us are ignorant of any necessity for them in the correct application of the word 'whale'. As children we learn the meaning of 'whale' through pictures, through being told they are large creatures living in the sea, etc.

In these first stages, we are often not told they are mammals. For some of us the connection never gets established. A sailor may have the ability to spot whales with great accuracy; he may know their habits and migrations; yet, for all of this, he can be ignorant of the fact that they are members of the same family as the cow. Moreover, this is perfectly possible though he knows what mammals are.

For the sailor no relationship of inclusion exists among the criteria for applying the terms 'whale' and 'mammal'. He could not come to see a necessary truth here in the way Lewis suggests we discover that all squares are rectangles. The sailor does not use the criteria attaching to the word 'mammal' in his application of the word 'whale'. And, for him, this is not a matter of taking anything for granted; being a mammal is not a requirement at all. So he cannot learn the necessary truth by discovering an inclusion among his criteria.

III

However, one may think this an unfair example—not a genuine counterinstance. He might reply by arguing that the zoologist and the sailor attach two distinct meanings to the word 'whale'. Only with the meaning the zoologist has in mind is it a necessary truth that whales are mammals. Hence, the reason Lewis's view will not work is that *as the sailor uses the word 'whale'* there is no necessary truth to discover. And in support of this contention, there is a very plausible argument. If two people attach the same meaning to an expression, one would think they must be prepared to apply it in the same way. If a new kind of marine animal were discovered, one looking like a whale in all respects except that it is not a mammal, the zoologist and other sophisticated people might refuse to call this a "whale" just on the grounds that it is not a mammal. Possibly they would speak of "pseudo-whales." But in our example, the sailor has no reason for hesitation. Since he picks out whales by their shape, size, and color, these new animals satisfy his criteria. So, one might argue, we can see that two distinct concepts are involved.

In a moment I should like to question this conclusion, for it does not seem so simple as all that. But suppose we accept it for now. 'Whales are mammals', we shall grant, simply does not express a necessary truth as the sailor uses the word 'whale'. Hence he cannot be expected to discover the necessary truth by an examination of his criteria of application. And there is no reason to suppose that there is a pre-existing connection among the criteria.

Still, if this is true, there *is* a sentence that expresses a necessary truth: the sentence 'Whales are mammals' *as used by a zoologist*. How then does the sailor come to know the necessary truth expressed by it? First, evidently, he must learn to use the word 'whale' as the zoologist does. Now the crucial question is this: Can the sailor first learn the zoologist's use of the word 'whale' and then, by discovering that the criteria for 'mammal'

are included, come to see the necessary truth? I should think the answer is "No." The way he learns the zoologist's use, if it is a different use, is through being taught the necessary truth. He may be told that whales *must* be mammals—in a tone of voice which shows that a defining condition is being indicated. Or he may discover a definition of the word in a dictionary. Or he may be told that zoologists classify the whale as a mammal—the word 'classify' possibly indicating that he is being told a defining condition.

Once the sailor has learned and accepted the fact that whales are classified as mammals it becomes plausible to say that he includes among his criteria for applying the word 'whale' the criteria for the word 'mammal'. But this state of affairs was brought about by teaching him the truth that whales are mammals. He now may regard this as "true by definition." And on the assumption that this is a necessary truth, were he to think that zoologists considered it a contingent truth, subject to refutation by observation of these animals, then he would not have grasped the point of the teaching; he would not yet understand how zoologists use the word 'whale'. So, it does not appear to be a matter of discovering something about one's own criteria. Nor can we speak of a pre-existing connection. Rather, if anything, the sailor discovers that other people include the criteria for applying one word among those for applying another—a discovery brought about by being taught to accept something as a necessary truth.

IV

A child may not know the facts of life and yet be said to understand the word 'father'. So too, I think, we would say that our sailor knew what the word 'whale' meant even though he was ignorant of the fact that whales are mammals. I do not believe that we ordinarily distinguish two concepts in such circumstances. Still, I am not sure what this comes to. One may say that we ought to even though we do not.

But there is one set of circumstances in which I think it would be wrong and misleading to say that the sailor had a *different* concept of a whale. Most of us who understand what mammals are know that animals are classified as being mammals or not and that this classification enters into the dictionary definitions of words designating kinds of animals. Given that in these cases 'X's are mammals' will express a necessary truth, one is often in the position of knowing that a sentence of this form expresses either a necessary truth or a necessary falsehood without knowing

which. For example, I know that it is either necessarily true or necessarily false that the duckbill platypus is a mammal, but I may not know which. I know that every sentence of the form 'Dodecahedrons have n edges' expresses either a necessary truth or a necessary falsehood, but I may be ignorant of what number to substitute for ' n ' to obtain the necessary truth.

Now it seems to me misleading to say in such cases that I have a *different* concept just because I do not include among my criteria for, e.g., the word 'platypus' the criteria for the word 'mammal'. For I am prepared to do so *if* an acceptable dictionary tells me that the platypus is a mammal. Hence my use is intimately connected with what zoologists say.

Our sailor uses as his only criteria for applying the word 'whale' such things as a certain size, color, and shape of marine animals. If we think that these criteria exhaust the meaning of the word for him, then we shall conclude that for him the sentence 'Whales are mammals' expresses a contingent statement. But in the sort of circumstances I have been describing this would be a mistake. He may know that this sentence expresses a necessary statement, either true or false, without knowing which. He knows that a dictionary is quite relevant if he wants to find out which. He does not utilize the criteria attaching to the word 'mammal', but he is quite prepared to if this is the way zoologists classify these animals. There is an indisputably contingent truth lurking in the background, but it is contingent for the zoologist as well as for the sailor. It is merely contingent that large marine animals with a certain characteristic size and shape (which we might specify through a picture) also have mammary glands and suckle their young. But while both the sailor and the zoologist would regard this as contingent, neither may regard it as contingent that whales are mammals.

In these circumstances, then, our sailor cannot discover that whales are mammals by inspecting his own criteria, but neither can we explain this away by saying 'Whales are mammals' means something different for the sailor, that it is merely a contingent statement.

V

In our first example, new criteria seemed to be included as the result of learning a necessary truth. In some cases, however, knowledge that two expressions are logically connected seems to be a pre-requisite for understanding both. This appears true of one of Lewis's favorite examples. The truth that all cats are animals is unlike the truth that all whales are mammals. One may

know what whales are and what mammals are without being aware of the connection. But if one knows what cats are and what animals are, I believe he must see that cats are animals.

If a child seriously asks us whether cats are animals, I think he automatically raises doubt about his understanding of the two words 'cat' and 'animal.' If he has a pet cat and if he correctly identifies other cats, then probably we suspect his grasp of the concept of animality. Even if he seems to know that cows and various other beasts are animals—at least *says* they are—his doubt about cats does not sit easy with us.

Another truth in the same category is: Blue is a color. Can a child know what the word 'color' means, realize that yellow and red are colors, but maintain a doubt about blue? I think not. The one case is sufficient to cast a shadow over our confidence.

These considerations might lead us to say that the criteria for applying the word 'animal' (whatever they may be) are *always* included among the criteria for applying the word 'cat'. This is merely a way of expressing the difference between our second case and the first. A man may know what whales are without knowing they are mammals, even while understanding the word 'mammal'.

The reasons that lead one to say this, however, show that the doctrine of pre-existing connections is again inadequate. For no one can come to see that cats are animals or that blue is a color by discovering something about his criteria for applying the words involved. He cannot because he does not yet understand those words if doubts about these truths remain.

We decide that something is a cat by seeing what it looks like, how it behaves, etc. Having decided in this way that we are looking at a cat, and if we do not know that cats are mammals, we might investigate to see if this is a *mammal*. But we cannot, it seems, in the same way investigate to see if it is an *animal*. For what has the *gestalt* of a cat has thereby the *gestalt* of an animal. Some have a more sophisticated understanding of the word 'whale'; they have added to their criteria the requirement of being a mammal. But there is not a more sophisticated understanding of the word 'cat' in which animality is made a requirement.

VI

The notion of inclusion of criteria seems to work best if we think of a term as having attached to it distinct sets of criteria in an additive fashion. The criteria we utilize in determining whether something is a whale are a certain shape, color, etc., *plus* the char-

acteristics of a mammal. It seems very plausible to think of the attachment of criteria in this way for a term such as 'whale'. For we can easily imagine detaching from the concept any requirements having to do with mammalian characteristics, and this in fact seems to be the case concerning the less sophisticated use of the word. The same sort of idea is much less tempting in regard to the relationship between the words 'cat' and 'animal'. What would be left over if we subtract the requirement of animality?

But for a reason I have not so far mentioned it is with just such terms as 'whale', where the additive scheme seems most plausible, that the notion of inclusion of criteria appears to be weak as a basis for necessity. Just because the mammalian requirements are so easily detachable, it becomes dubious whether we can say with confidence that they are, even for the sophisticated, necessary to the correct application of the term, and hence, whether they are or are not included in the relevant sense.

Consider once more the discoveries that might convince us that some of those creatures we otherwise would have unhesitatingly called "whales" do not have mammalian characteristics. These creatures look like whales, and any mariner who had not learned that whales were mammals would call them whales. What is the zoologist or sophisticated layman to say?

It is not really clear that he would say unhesitatingly, "Those creatures are not whales because they are not mammals." Nor, on the other hand, is it clear that he would say that some whales are not mammals. So, apparently, it is simply not now possible to say either that mammalian characteristics are essential to whales or not. Or, in another terminology, that mammalian characteristics are or are not included among the criteria we use.

What is disturbing about this is that the sentence 'Whales are mammals' does not seem definitely to express either a necessary truth or a contingent truth. For if it did, then the question about what is correct to say about the hypothetical possibility of discovering that many of the creatures we have called "whales" lack mammalian characteristics ought to have a definite answer one way or the other.

Such cases are often handled by making a distinction between circumstances that call for a change in belief and circumstances that call for a change in meaning. Thus, if one wishes to hold on to the position that 'All whales are mammals' does express a necessary truth, he might say that the discovery of nonmammalian creatures looking just like whales may lead us to change the meaning of 'whale'. So if we then said that some whales are not

mammals we would not contradict our present assertion that whales are all mammals. For 'whale' would mean two different things in the two cases. At present mammalian characteristics are a necessary condition, but in the changed situation, they might be dropped and a whale would be a large marine creature of certain characteristic shape, etc., which may or may not be a mammal.

An analogy with games may seem to help us in drawing the distinction. We can distinguish in a game moves that are either dictated or prohibited by rules from those which are made or not made because of tactical or strategical considerations. Thus in the opening position of chess, because it is not good tactics, P-R4 is not a move we make. But P-K5 is not made because it violates the rules. Now we can imagine that P-R4 comes to be made by good players: despite appearances it is discovered that it is not a bad move after all. We can also imagine that P-K5 comes to be made. But here the considerations that might prompt this change in the regularities of the game are going to be different. It is not, as things stand, an acceptable reason for making the initial move P-K5 that it puts us in a favorable position to win the game, as it would be if it could be shown to hold for P-R4. Rather the sorts of reasons we would give, reasons, we would say, for changing the rules, will have to lie in part outside the body of theory about tactics and strategy. For example, if, for the normal openings of white, a strategy has been developed for black that almost always leads to a dull but drawn game and if allowing P-K5 seems to eliminate this while still allowing black a fair chance to draw or win, then we might have a reason for changing the rules.

In the case of a game we seem to be able to draw a distinction between the sorts of reasons that might be given for the fact that a move which has heretofore not been played is now being adopted. In the one case the reasons will have to do solely with considerations of tactics and strategy, in the other they will have to do, roughly speaking, with the point of the game. Our question, then, is whether such a distinction can be drawn in the cases of the debatable counterexample to the necessity of 'All whales are mammals'.

Speaking in terms of the analogy, the reasons that are alleged to be reasons for adopting a new terminology rather than a new belief seem, unfortunately, to be strategy and tactics considerations rather than considerations about the point of the game. Supposedly there are two possible meanings for the word 'whale', in regard to one of which the connection between being a whale and being a mammal is necessary, while in regard to the other it is contingent. If we designate the first as 'whale₁' and the second as

'whale₂', then the view is that what we now hold to be true is that all whales₁ are mammals, and this is supposedly a necessary truth. Against the objection that if we were to discover that many of those creatures we have been calling "whales" do not have mammalian characteristics our response might well be to say that some whales are not mammals, it is alleged that this discovery might be a reason for shifting the meaning of 'whale' to that of 'whale₂'. But the supposed reason for shifting the meaning of 'whale' is not different in kind from reasons for shifting a belief. For it, the discovery about what we have been calling "whales" is on the hypothesis just the sort of reason which ought to lead to the belief that some whales₂ are not mammals. Hence it is the sort of reason which would lead us to change our belief, if we have it, in the truth of 'All whales₂ are mammals'. Without begging the question, we cannot support the position that we now mean one thing 'whale' but something different by it in the hypothetical situation through an attempt at distinguishing reasons for changing meaning from reasons for changing belief.

But, on the other hand, we cannot with assurance go to the other side and hold that after all 'Whales are mammals', as we now mean it, expresses a contingent statement. For it is not clear that the *correct* response to the hypothetical situation, according to our present usage, is to say that some whales are not mammals.

VII

The difficulty brought up in the last section may look as if it were a challenge to the distinction between questions about meaning and questions about facts. But that would be, I think, the wrong conclusion. Rather, what is shown is that there is a difficulty in holding that, e.g., 'All whales are mammals' *now* expresses a necessary truth, since in the face of a certain kind of counterexample the reply, "That would be to change the meaning of 'whale'," cannot be clearly supported. It is the distinction, in particular cases, between "*change in meaning*" and "*change in belief*" that seems to be in question. But if we were faced with the circumstances envisaged in the counterexample, e.g., the discovery that many things now called whales do not possess the characteristics of mammals, the alternative before us: to refuse to call those creatures whales, and to say that some whales are not mammals, may still call for a decision about meaning. Schematically, the situation is this: The decision we are faced with in certain circumstances, to opt for alternative *A* or alternative *B*, is a decision about meaning, but there is a question whether we

can characterize either of these options as on the one hand preserving the meaning or on the other changing the meaning.

But it might be questioned whether we even have the right to mark the decision as one concerned with what we shall mean by, e.g., 'whale'. The argument I have in mind is the one which relies on the position that in the face of any experience we can hold on to any statement by appropriate denials and affirmations of others. Thus, if I hold that all cats drink milk and you produce a cat that turns up its nose at a bowl of milk, I might continue to affirm my statement by, for example, holding that the cat drinks milk surreptitiously while no one is looking. Here, on the basis of the same experiences, you are inclined to say one thing and I am inclined to say another. How are we to distinguish the choice in this example between your position and mine and the choice represented by the whale example? Is one a choice between opposing beliefs and the other a choice between ways of speaking?

The governing word, it seems to me, is 'choice'. We have a choice, in the whale example, between saying that whales are mammals and these creatures we have discovered are not whales and saying that some whales are not mammals. If, in these circumstances, I am inclined to say that these creatures simply are not whales while you want to represent the situation as the discovery that not all whales are mammals, we can easily come to see that our apparent disagreement is to be resolved by a decision to talk one way or the other. As soon as you see that I refuse to call these whales simply on the grounds that they are not mammals the apparent disagreement about the facts will vanish. You can state what has happened in my language and I in yours. (For example, "Some whales have been discovered not to be mammals" *versus* "Some creatures which in all other respects are just like whales have been discovered not to be mammals and hence not to be whales".)

But in the example about cats there is not, as yet at least, a place for this sort of accommodation. It may be true that I can hold on to the statement that all cats drink milk by explaining away every apparently falsifying experience. Eventually I may have to describe some as hallucinations or illusions. But the two of us are not faced with a *choice* as to whose way of describing the situation is to be used.

VIII

The only way we have of deciding what our present usage prescribes concerning hypothetical situations is now to pass a judgment on them. In doing this we are not, of course, predicting

what in fact we would say. Rather we now say something about the situation. But where we cannot at present pass a judgment one way or the other there is nothing else we can appeal to as showing what is correct. There is no reason, a priori, why our present usage should legislate for all hypothetical cases. Given present circumstances, the correct thing to say is that all whales are mammals. But whether this is, as we intend it, a necessary truth or contingent is indeterminate. It is indeterminate because the decision as to which it is would depend upon our being able to say now what we should say about certain hypothetical cases. And evidently we are not prepared to do that.

If this is so, Lewis's idea that what criteria are attached to a given term as part of its meaning must be "fixed" in advance of experience seems to be false. And the corollary, that it would always be clear upon investigation whether or not the criteria attaching to one term are or are not included in those attaching to another is likewise false.

This is not to say that the concept of necessity is useless here. It might be thought of as an ideal rigidity in our judgments about what to say concerning hypothetical cases. I have dealt here only with the first of the two examples used in the first part of the paper. Whether a similar indeterminacy can be found concerning, say, the statement that all cats are animals I have not dealt with. If it can, then a more sweeping reinterpretation of the notion of necessity might be called for.

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IT AIN'T NECESSARILY SO *

THE two statements that Donnellan considered in his paper † are both more or less analytic in character. By that I mean that they are the sort of statement that most people would consider to be true by definition, if they considered them to be necessary truths at all. One might quarrel about whether 'all whales are mammals' is a necessary truth at all. But if one considers it to be a necessary truth, then one would consider it to be true by definition. And, similarly, most people would say that 'all cats

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