'NECESSARY', 'A PRIORI' AND 'ANALYTIC'

By Aaron Sloman

IT is frequently taken for granted, both by people discussing logical distinctions[1] and by people using them[2], that the terms 'necessary', 'a priori', and 'analytic' are equivalent, that they mark not three distinctions, but one. Occasionally an attempt is made[3] to establish that two or more of these terms are equivalent. However, it seems to me far from obvious that they are or can be shown to be equivalent, that they cannot be given definitions which enable them to mark important and different distinctions. Whether these different distinctions happen to coincide or not is, as I shall show, a further question, requiring detailed investigation. In this paper, an attempt will be made to show in a brief and schematic[4] way that there is an open problem here and that it is extremely misleading to talk as if there were only one distinction.

In a large class of cases, which proposition is expressed by a sentence S will depend on three factors:

(a) Which particular things correspond to the referring expressions in S,

(b) which concepts correspond to the descriptive expressions, or which properties and relations correspond to them, and

(c) the way in which the logical words and constructions used in S are to be understood (e.g. whether 'and' is taken to be defined by the normal truth-table).

Whether the proposition so expressed is true or false will, in most of these cases, depend on the further factor

(d) How things happen to be in the world, or, which states of affairs actually exist.

A Priori/Empirical

There are different ways in which the truth-value of a proposition may be discovered. In many cases, one must observe, by means of the senses—aided perhaps by instruments, memory or the reports of other people—particular things in the world, to find out what properties they possess, in which relations they stand to one another, and how they

---

[1] E.g. P. F. Strawson, in Chapter 1 of *Introduction to Logical Theory*.
[2] E.g. A. Montefiore, in Chapter 3 of *A Modern Introduction to Moral Philosophy*.
[3] E.g. by A. M. Quinton in *Proceedings of the Aristotelian Society* 1963–4.
[4] I have given a more detailed discussion of one aspect of the problem in 'Colour Incompatibilities and Analyticity' in Analysis Supplement, January 1964.

behave. This way of coming to know things is *empirical*. If the truth-value of a proposition is discovered by some other means, *e.g.* by carrying out a mathematical proof in one's head, or by employing some logical technique, then it is known *non-empirically* or *a priori*. (These may be taken as equivalent terms.) We have here a distinction between ways of coming to know things; so, since guessing is not a way of coming to *know*, it does not fit into either half of the distinction. A proposition may be said to be *a priori* if its truth-value can be known *a priori*. If it can be known *only* empirically, then it is an *empirical* (or *a posteriori*) proposition. If it is possible to discover the truth-value of a proposition *either* empirically *or* non-empirically,[1] that is, if it can be known in both ways, then it is a priori. If there are any propositions whose truth-value cannot be known at all (see below) then they are neither empirical nor a priori, according to this definition.

Among the propositions which can be discovered a priori it is possible to pick out a number of subclasses, depending on exactly how the discovery can be made.

Logical Truths and Falsehoods

If it is possible to discover the truth-value of a proposition expressed by a sentence S simply by investigating the factor (c), *i.e.* the meanings of the logical constants employed, taking into account the structure of the sentence (*e.g.* facts like repetitions of the same descriptive word) and applying purely logical considerations, without taking any account of factors (a), (b), or (d), then the proposition is said to be *logically true (or false)* or *true (or false) in virtue of its logical form*. By 'logical consider-ations' are meant ones which are completely topic-neutral insofar as they take no account of specific features of the things or properties referred to by the non-logical words used in S, but only their logical type (*e.g.* whether they are referring expressions or descriptive expressions, or relational terms, etc.). It follows from the above definitions that all logically true propositions can be known non-empirically, and are therefore a priori.

Analytic/Synthetic

In some cases (*e.g.* 'All unmarried uncles are brothers'), although factor (c) alone does not fully determine the truth-value of the proposition expressed by S, the truth-value may nevertheless be discoverable in an a priori manner from this factor plus further information about the defining relations between the non-logical words in S. All that is needed

---

[1] *E.g.* one can discover a priori that all unmarried uncles are brothers. On the other hand, a person who had not thought out all the logical connections might investigate this empiric-ally by asking every man in turn whether he was an uncle, whether he was married, and whether he was a brother. One who did this would be doing something unnecessary, but not something irrelevant. Students of psychology and the social sciences may be able to think of examples of similar unnecessary investigations.

may be simply a specification of what the relations are between the words, without their actual meaning being specified. (*E.g.* it may be enough to know that 'uncle' is a descriptive expression which means the same as 'brother or brother-in-law of a parent', and that 'brother-in-law' means the same as 'one who is married to a sister', without knowing what any of these expressions mean—though in that case one will not, of course, know exactly which proposition is expressed by a sentence using these words.) If the truth-value of the proposition expressed by S can be discovered or demonstrated in this way, *i.e.* using purely logical considerations based on (c) and defining relations[1] between non-logical words in S, then the statement is said to be *analytic* (analytically true, or analytically false). Any proposition whose truth-value cannot be discovered in this way is said to be *synthetic*. For example, if knowledge of its truth-value has to be based on (d), or on non-logical considerations which are peculiar to the specific content or subject matter of the proposition (*e.g.* propositions about colours, or about geometrical shapes), then the proposition must be synthetic.

It follows from the above definitions that every analytic proposition is a priori (its truth-value can be known a priori), but the converse remains problematic. The definition of 'analytic' is intended to be taken in such a way that all propositions which are logically true or logically false are included in the class of analytic propositions. We have thus found a wider and a narrower class of a priori propositions, leaving it open whether there are still more.

Necessary/Contingent

How things happen to be in the world might have been different. That is to say, the actual states of affairs might not have existed, and others might have existed in their place. There is a green type-writer in front of me, but there might have been a black one, or none at all. If we take full account of all these possibilities we can say that there is a class of possible states of the world, of which only one actually exists. (Or we might talk about a class of possible worlds. This should not be taken to imply that the class would consist of clearly differentiable discrete entities.) If a proposition has a truth-value which depends on factor (d), this means that its truth-value would have been different if some other possible state of affairs had existed in the world, that is, if the things in the world or their properties and behaviour or mutual relations had been different from what they are. In this case we have a *contingent* proposition.

---

[1] Defining relations need not be synonymy relations, nor need they be relations between verbally definable words. For example, ostensively defined concepts (*e.g.* the concepts 'red' and 'orange' ?) may be indeterminate in a way that can be eliminated by the stipulation that they are to be incompatible. For more on this, see the article referred to in footnote 4, p. 12 *supra*.

On the other hand, if no state of affairs could possibly have existed in which it would have had a different truth-value, then the proposition is a *necessary* one (*i.e.* necessarily true, or necessarily false).

There is nothing in this definition to indicate the source of the necessity of such a proposition. It may have something to do with the structure of the sentence expressing the proposition being such as to determine the truth-value independently of anything else at all, let alone how things are in the world (*e.g.* logically true propositions), or it may be that some limits exist to the ways in which properties and relations of objects can co-exist in one state of affairs, and that in particular every combination which would make the sentence S express a false proposition lies beyond these limits. Admittedly, the notion of necessity defined above will not be completely clear until all the possible sources of necessity have been described and classified, just as the notion of analyticity remains unclear insofar as the various kinds have not been described. But the notions are clear enough for the lines of further enquiry to be indicated. In particular, the following problems arise.

(1) **Are all necessary propositions a priori**? *Problematic.*

Since it does not follow immediately from the definition of 'necessary' that a proposition which is necessarily true can be known at all, it does not follow, in particular, that it can be known without the use of the senses to examine particular things in the world. Hence it does not follow that all necessary truths can be known a priori. For example, if a proposition of mathematics which is still unproven is true, *e.g.* Goldbach's conjecture, then it is necessarily true, since no state of the world could make it false. But it may, in spite of being true, be unprovable, *i.e.* there may be no general way of establishing that it holds for all possible numbers, even if it does, and even if it can be established for each in turn. If no finite proof is discoverable to cover all cases, then the proposition is not knowable, and consequently not a priori.

(2) **Are all a priori propositions necessary**? *Yes.*

This is not problematic, for it is clear that if the truth-value of a proposition can be known a priori, *i.e.* without using the senses to discover how things happen to be in the world, then the way things happen to be in the world cannot make any difference to its truth-value, and therefore it cannot be contingent, *i.e.* it must be necessary.

(3) **Are all a priori propositions analytic**? *Problematic.*

This is problematic since it does not follow from the fact that the truth-value of a proposition can be known without the use of the senses to examine particular objects and find out how things happen to be in the world, that its truth-value can be known on the basis of purely logical investigations of factor (c) and the definitional relations between the

non-logical words used to express it. For example, there may be a non-empirical way of acquiring such knowledge by reflecting on the specific nature of certain physical properties (*e.g.* colours, or shapes). So this question, like question (1), can be answered only after further detailed investigations, if it can be answered at all.

(4) **Are all analytic propositions a priori?** *Yes.*

Since analytic propositions were picked out in terms of a way of discovering their truth-values which definitely did not involve empirical investigation of how things happen to be in the world, they must all have truth-values which can be discovered a priori. (Note that the fact that empirical investigation may be required to discover exactly what some person means by a sentence S, *i.e.* which proposition S expresses, is not a reason for saying that it is an empirical proposition, since this applies to *all* propositions. A proposition is empirical only if *after* one has learned which proposition is being talked about, *e.g.* by learning the meanings of the words used to express it, it is *still* necessary to use empirical means in order to discover its truth-value. It is important to distinguish discovering which proposition is expressed by a sentence S from discovering whether that proposition is true or false.)

(5) **Are all necessary propositions analytic?** *Problematic.*

From the fact that no state of affairs can possibly exist in which the truth-value of a proposition would have been different from what it is, it does not follow obviously that the truth-value of the proposition is fully determined by the factors mentioned in defining 'analytic'. Thus, one might argue that although 'No volume is completely enclosed by three plane surfaces' expresses a necessary truth, it is not obviously analytic, since the truth may depend not on the defining relations between the words used to express it, but on something else, *e.g.* the 'structure' of space. In any case, the answer to this question follows from the answers to questions (4) and (1).

(6) **Are all analytic propositions necessary?** *Yes.*
This follows from the fact that all analytic propositions are a priori and that all a priori propositions are necessary.

Since these questions are not all completely trivial, it cannot be assumed without further argument that 'necessary', 'a priori' and 'analytic' are synonyms, or even that they pick out the same set of propositions. For the same reason, it is confusing to talk about 'the analytic/empirical distinction', as some do, at least until further investigations have shown that the words 'analytic' and 'a priori' as defined above mark distinctions which coincide; though even then it may be misleading if the coincidence is not a trivial matter of definition.

University of Sussex