2

Propositions

1. INTRODUCTION

In chapter 1 we undertook three main tasks: to introduce the concept of possible worlds; to introduce the concept of propositions and their truth or falsity; and to show how various logically important properties and relations of propositions can be explicated in terms of the ways in which the truth-values of propositions are distributed across the set of all possible worlds.

In this chapter we invoke the concept of possible worlds in order to give an analysis of what propositions *are;* to give an explanation as to why they need to be distinguished from the sentences which may be used to express them; and to provide a method for identifying and referring to particular propositions.

2. THE BEARERS OF TRUTH-VALUES

When we first introduced propositions as the items which are the bearers of truth-values, we said that propositions must be distinguished from the sentences which may be used to express them in much the same way as numbers must be distinguished from the numerals which may be used to express them (chapter 1, p. 10, footnote 8). But *why* must they be so distinguished? And what *are* propositions if they are not to be identified with sentences? These are the questions which we wish to answer in this section.

First, however, let us explore briefly the analogy we have drawn between propositions and numbers. Why should we want to distinguish between numbers and numerals? The following reasons have seemed to most mathematicians and philosophers to be compelling:[1] (i) — Numerals have physical existence as marks on paper, on blackboards, etc., as patterns of sound, distributions of molecules on magnetic tape, or the like. Numbers do not. It makes sense, for instance, to speak of a numeral being written in blue ink or white chalk, being large or small, decipherable or indecipherable. None of these

1. Exceptions are those who espouse the *nominalist* thesis that there are no abstract entities. See, for instance, W.V.O. Quine and Nelson Goodman, "Steps Toward a Constructive Nominalism", *Journal of Symbolic Logic,* vol. 12 (1947), pp. 105–122. Not surprisingly, Quine and Goodman are foremost among the proponents of the equally nominalist thesis that sentences, not propositions, are the fundamental entities required by logic. For a spirited criticism of nominalism in mathematics, logic, and physics see Hilary Putnam's short and eminently readable *Philosophy of Logic,* New York, Harper Torchbooks, 1971.

properties, by way of contrast, can sensibly be attributed to numbers. For numbers are abstract items,[2] expressible by those physical items which we call numerals, but not identical with them. We can erase a numeral — render it nonexistent as a physical entity — but in so doing we do nothing to render the number which that numeral expresses nonexistent. (ii) — Numerals do not stand in a one-to-one correspondence to numbers. On the one hand, for any given unique number — for example, the number two — there are different numerals which may be used to express it. Corresponding to the number two is not only the Arabic numeral "2" but also the Roman numeral "II". The numerals "2" and "II" are items in different languages. But the number two is not. If it were an item in a language then we should have to say, absurdly, that it belonged to one particular language, say Arabic, to the exclusion of any other. (iii) — Numbers have arithmetical properties and stand in arithmetical relations. Numerals do not. Mathematical operations of addition, subtraction, multiplication and division can be carried out on numbers, but not on numerals. To be sure, there are some idioms which suggest the contrary. We can and do speak of halving both numbers and concrete physical things. But it is clear that "halving" is here ambiguous between a mathematical operation and a physical one. Half the number two is the number one. Half the numeral "2" is, e.g., "ɂ" or "ɀ". The *mathematical* operation called "halving" can be applied to numbers but not to numerals, whereas the *physical* operation called "halving" can be applied to numerals but not to numbers.

Each of these three arguments has its analogue for the distinction between propositions and sentences. (i) — Sentences have physical existence as marks on paper, on blackboards, etc., as patterns of sound, distributions of molecules on magnetic tape, or the like.[3] Propositions do not. It makes sense, for instance, to speak of a sentence being written in blue ink or white chalk, being large or small, decipherable or indecipherable. None of these properties, by way of contrast, can sensibly be attributed to propositions. For propositions, we shall argue, are abstract items, expressible by those physical items which we call sentences, but not identical with them. We can erase a sentence — render it nonexistent as a physical entity — but in so doing we do not deprive the proposition which it expresses of existence. (ii) — Sentences do not stand in a one-to-one correspondence to propositions. On the one hand, for any given unique proposition, such as two plus two equals four, many sentences may be used to express it. Corresponding to the proposition that two plus two equals four is not only the English sentence "Two plus two equals four" but also the French sentence "Deux et deux font quatre", the German sentence "Zwei und zwei gleich vier", and so on. The sentences "Two plus two equals four" and "Deux et deux font quatre" are items in different languages. But the proposition that two plus two equals four is not. If it were an item in a language then we should have to say, absurdly, that it belonged to one particular language, say English, to the exclusion of any other. (iii) — Propositions have logically significant attributes: they have truth-values, have modal properties, and stand in modal relations. Sentences do not. Logical operations, such as those of conjunction, disjunction, negation, and the like, can be carried out on propositions but not on sentences. To be sure, some idioms suggest the contrary. We can and do speak of conjoining propositions and of conjoining sentences. But it is clear that "conjoining" is here ambiguous between a logical operation and a grammatical one. The logical conjunction of the proposition that two plus two equals four with the proposition that two plus two

2. This claim is compatible both with *conceptualism* — the view that such abstract entities exist insofar as they are created by the activity of human thinking — and with *Platonic realism* — the view that such abstract entities exist in their own right, independently of human thinking. The philosopher Kant and the mathematician L.E.J. Brouwer are foremost among the representatives of conceptualism regarding numbers. Plato, Frege, and Russell are notable exponents of this sort of realism. As will become obvious in this section, the present authors believe that such realism is the only ultimately defensible theory regarding the fundamental items both of arithmetic, viz., numbers, and of logic, viz., propositions.

3. In arguments (i) and (ii) we use the word "sentence" to refer to what we shall later call a "token" (as distinct from a "type"). We did this also in the parallel arguments (i) and (ii) regarding numerals. For more on the type/token distinction see p. 71ff.

equals four is logically equivalent to the proposition that two plus two equals four. The grammatical conjunction of the sentence "Two plus two equals four" with the sentence "Two plus two equals four" is the *non*equivalent (because double-length) sentence "Two plus two equals four and two plus two equals four." The logical operation can be applied to propositions but not sentences, whereas the grammatical operation can be applied to sentences but not to propositions.

In terms of the analogy between numbers and propositions and of the attendant arguments for distinguishing these items from numerals and sentences, respectively, we foreshadow some of the main conclusions of the present section. But not all of them. In order to do justice to some of the other arguments for identifying propositions as the bearers of truth-values — and, incidentally, in order to do at least partial justice to some of the arguments *against* such an identification — we propose to set these conclusions aside, provisionally at least, and pursue the question "What sorts of items have truth-values?" with open minds.

Our approach in what follows is the time-honored one of dialectical enquiry. We advance a tentative thesis, subject it to critical examination, repair its shortcomings by offering a new thesis, subject it in turn to critical examination; and so on until we produce a thesis which, hopefully, is found viable.

EXERCISES

Fill in the blanks with either "numeral" or "number" so as to allow the sentence to express a true proposition.

1. *Twice four is the* _____ *eight.*
2. *I just repainted the* _____*s on my mailbox.*
3. *The* _____ *"25" is constructed by placing the* _____ *"5" to the right of the* _____ *"2".*
4. *Twelve* _____*s appear on the face of a clock.*
5. *"Two" and "2" are two different symbols which may be used to refer to the* _____ *which is twice one.*

Fill in the blanks with "sentence" or "proposition" so as to make the following claims true.

6. *"Two plus two equals four" is a* _____ *of English.*
7. *"Two plus two equals four" expresses a necessarily true* _____.
8. *The* _____ *"Today is Monday" means the same as "Today is the day before Tuesday."*
9. *The* _____ *that today is Monday is equivalent to the* _____ *that today is the day after Sunday.*
10. *It is possible to erase a* _____*; it is not possible to erase a* _____.

* * * * *

Thesis 1: Such things as beliefs, statements, assertions, remarks, hypotheses, and theories are the bearers of truth and falsity.

Objection to Thesis 1: Each of the terms, "belief", "statement", etc., is ambiguous.

Now it is absolutely clear that we do, on occasion, attribute truth and falsity to beliefs, statements, assertions, remarks, hypotheses, and theories. And it may plausibly be argued that each of these kinds of things is a genuine bearer of truth-values. What is not quite so clear, however, is just what is meant by "belief", "statement", "assertion", "remark", "hypothesis", and "theory" when truth and falsity are at issue.

Each of these expressions is ambiguous. Each is ambiguous, in the first place, between:

(a) the state, act, or disposition of believing, stating, asserting, remarking, hypothesizing, or theorizing;

and

(b) that which is believed, stated, asserted, remarked, hypothesized, or theorized.

Let us illustrate this distinction by considering a case of belief.

Suppose John Doe believes himself to be ill. Then there are two quite different sorts of questions — corresponding to (a) and (b) above — that we might want to ask about this belief. On the one hand, we might want to ask a question like "What brought about this belief of his?" or "When did he start believing that?" In such a case we would be asking about John Doe's state of belief (or, as some would say, his "*act* of believing"). His belief, in this sense of the word (that of (a) above), is something which may arise at a specific moment of time and persist through time; it may be brought about or caused by some other event or state of affairs, e.g., by his having eaten too much; and it may in turn bring about or cause another event or state of affairs, e.g., his calling for the doctor.

On the other hand we may distinguish the *content* of his belief, that which he believes. It is this latter feature which may occur in other persons' beliefs as well. Although no other persons can have John Doe's belief in the sense that their *acts* of believing cannot be the same act as John Doe's, *what* they believe, viz., that John Doe is ill, may be shared both by them and John Doe. In this second sense of "belief", the sense in which we talk of *what* is believed (the sense (b) above), a belief may be shared by many persons.

Thesis 2: Acts of believing (stating, asserting, etc.) are the bearers of truth-values.

Objections to Thesis 2: First, the class of truths and falsehoods vastly outnumbers the class of belief-acts. Secondly, under this proposal some truths and falsehoods would be without contradictories.

Acts of belief (assertion, etc.) are temporal entities. They begin at some point in time and end at some later time. For example, when we were young many of us thought that the moon traveled along with our moving car at night, but as adults we no longer believe this. Over the course of our lifetimes, we will each entertain thousands, maybe even millions or billions of beliefs. For present purposes, however, the exact number is of no importance. What is of importance is whether or not the total number of belief-acts for all mankind is sufficiently large for them to be identified as the bearers of truth and falsity.

Earlier, in chapter 1, we proved that the number of truths is infinite and that the number of falsehoods is infinite: to each number within the infinite set of natural numbers there corresponds the truth that that number has a successor, and to each natural number there corresponds the falsehood

that that number has no successor. It now needs to be observed that the number of truths and falsehoods exceeds the number of natural numbers, i.e., is *nondenumerably* infinite. For the class of *real* numbers is larger than the class of natural numbers and to each of the real numbers there corresponds at least one unique truth and at least one unique falsehood about that real number. The full import of this fact is not always appreciated. It is all too easy to conceive of an infinite class as being just a very large finite class. But to say that the number of truths and falsehoods is infinite (let alone nondenumerably infinite) is not just to make a claim of the sort that the number is a trillion or a centillion[4] or the like. It isn't even to say that a centillion is just a minute fraction of the number of truths and falsehoods. So vast is the class of noncontingent truths and falsehoods that a centillion truths or falsehoods — or any other finite number — does not constitute *any* fraction whatever of the whole class.

And not only is the class of noncontingent propositions nondenumerably infinite. So, too, is the class of contingent propositions. The number of points of physical space is nondenumerably infinite, and to each of these points may be paired off, as the case may be, the contingent truth or falsehood which ascribes the presence of physical matter to that place.

With this background, we now come to the critical question: Is the class of belief-acts large enough for them to be identified with the nondenumerably infinite number of members of the class of truths and falsehoods? As a matter of fact, there does *not* seem to be even an infinite number of belief-acts (let alone a nondenumerably infinite number). This is not to say that there could not be, that in some possible world there isn't an infinite number of belief-acts; but it is to say that in this, the actual world, there seem to be far too few belief-acts for them to be reasonably identified as those things which are true and false. Just reflect on how many possible beliefs about the actual world are never entertained by us. Who, for example, has had or ever will have beliefs about the exact position of each atom of the sun's interior at exactly 6:01 A.M. on June 18, 1893, etc. etc.? Is it reasonable to argue that although no one has yet had any such beliefs, someday someone will? We think not.

If we are right in thinking that the number of belief-acts is smaller than the number of truths and falsehoods, have we not found a fatal objection to the theory that belief-acts are those things which are true and false? Obviously we have. For it is logically impossible that truths and falsehoods should be belief-acts if there are more truths and falsehoods than there are belief-acts.

However, the matter does not quite end here. For it is open to the proposer of the thesis that belief-acts are those things which are true and false to take objection to the idea that we have some independent way of ascertaining the number of truths and falsehoods. We can imagine him arguing in this way:

> You seem to know that there are an infinite number of truths and an infinite number of falsehoods. But this is question-begging; your belief is a result of your theory that truths and falsehoods are propositions. If you put that theory out of your mind, and assume nothing about the number of truths and falsehoods, the proposal that belief-acts are those things which are true and false, works.

But does it? Let us see.

Presumably the person who argues that belief-acts are those things which are true and false will allow the possibility, indeed the actuality, of mankind's having neglected collectively to believe everything there is to believe. But this concession has odd implications. Imagine a person walking along in a forest one day. He glances at a tree and believes (correctly) that it is a birch. Suppose, however, that he is the only person ever to have seen that tree and that a forest fire destroys it that

4. One (British) centillion = 10^{600}.

night without anyone else ever taking any notice of it. Suppose, further, that no one ever entertains the belief that it is false that that tree is a birch. It will then follow that if the class of bearers of truth-values were to be identified with acts of belief, a certain act would be true but would have no contradictory, since no person ever believes that it is false that that tree is a birch. In short, if we were to identify the class of truths and falsehoods with the class of belief-acts we would have to give up the claim that to every truth there corresponds a non-empty class of falsehoods each of which is a contradictory of that truth. Under this proposal, some truths and some falsehoods would be without contradictories. Not only would this make a shambles of logic; it is thoroughly counterintuitive as well. We have a strong disposition to insist that even if no one were to believe of the birch tree that it is not a birch, then were anyone to believe it, what he would believe is false.

Note carefully how we just expressed ourselves. In effect we said that it is possible that even though no one believes some particular thing, that thing which could be believed *is* false. We did not say that that thing which could be believed *would be* false if it *were to be* believed. That is, our common, hard-won conception of truth and falsehood has it that truth and falsehood may exist independent of human belief, that truth and falsehood do not as it were 'come into existence' with correct or mistaken human belief.

In short, it is not our holding to the theory that propositions are the bearers of truth and falsity which prompts our belief in an infinite number of truths and of falsehoods; it is quite the other way around. It is the widespread and strong belief that there are unexpressed and unbelieved truths and falsehoods which prompts us to look for a truth-value vehicle of prodigious number.[5]

It follows that insofar as a belief can properly be said to be true or false, we must understand that we are using the term "belief" in sense (b), not in sense (a). And by similar reasoning we may conclude that it is only in sense (b), not sense (a), that statements, assertions, remarks, hypotheses, and theories can be the bearers of truth-values. We may put it like this: beliefs, statements, etc., are true or false just when that which is believed, stated, etc., is true or false.

EXERCISES

For each of the following, explain in which sense of "belief" (act of belief or object of belief) the claim could be true.

1. *His belief that it was raining was fleeting; he glanced again out the window and saw that it was sleeting.*
2. *The belief that it is raining is inconsistent with the belief that it is not.*
3. *That a person believes that it is raining is consistent with his also believing that it is not.*
4. *Her belief that she was prime minister was induced by a mushroom omelet.*
5. *Her belief that she was prime minister was false.*
6. *No one's beliefs antecede his birth (or at least the moment of his conception).*

* * * * *

5. When we come to Thesis 5 we will discover that Quine, who eschews propositions, does not abandon the thesis that the number of truth-value bearers must be infinite. In arguing that the number of truth-value bearers is infinite, Quine is in argreement with us.

Thesis 3: That which is believed, stated, etc., is what is true or false.

Objection to Thesis 3: Talk about 'that which is believed' is unclear. What sorts of things can be believed? In particular, are these things sentences or propositions?

The distinction we have just made between acts, statements, or dispositions of believing, asserting, etc., and that which is believed or asserted is important and valuable. But the matter can hardly end there. **The trouble is that our talk — in the manner of (b) — of that which is believed, stated, asserted, remarked, hypothesized, and theorized is itself ambiguous. Consider the so-called theory that the earth is flat, and call it E. Plainly we may not only speak of the theory that E, but also of the belief that E,** the statement that E, the assertion that E, the remark that E, and the hypothesis that E. But what exactly is the status of E itself? Here philosophical opinion divides between those who say that "E" is the name of a *sentence,* viz., "The earth is flat", and those who say that "E" is the name of what they call a *proposition,* viz., the proposition that the earth is flat — a proposition which is typically *expressed* in English by the sentence "The earth is flat" but which is not to be identified with that or any other sentence. Accordingly, our talk of those things which are believed, stated, etc., and which can be bearers of truth-values, is equivocal between: (b′) talk of sentences; and (b″) talk of propositions. Let us examine the case for each.

Thesis 4: Sentences are the bearers of truth-values.

Objections to Thesis 4: Only certain kinds of sentences are plausible candidates for the bearers of truth-values. In addition there is an ambiguity in the notion of "sentence". It is necessary to distinguish between sentence-tokens and sentence-types.

Much of the impetus for saying — in the manner of (b′) — that it is sentences which have truth-values (whether or not these sentences are believed, stated, etc., by anyone), comes from an aversion to talk about propositions. It is not that talk of sentences' being true or false is any more natural than the rival piece of philosophers' jargon; for it may well be argued that when, on occasion, persons speak of a sentence as true or false they are merely speaking elliptically of the truth or falsity of that which is expressed by the sentence (of that which, on the rival theory, is to be called a proposition). Rather it is claimed that propositions, unlike sentences, cannot easily, if at all, be individuated (distinguished from one another and from other things in such a way that we can identify one and the same individual); or again it is claimed that there is simply no need to populate the universe with such obscure entities when all our practical and philosophical purposes are as well, if not better, served by talk of sentences.

Let us see, then, how well the thesis that sentences can be thought to be the bearers of truth and falsity fares under a careful examination.

All is not plain sailing for those who prefer sentences. For a start, a number of refinements are needed. We might begin, for instance, by pointing out that not all sentences, but only those which we call declarative — as opposed to, say, interrogative and imperative sentences — can on any ordinary interpretation, be said to be true or false. But even this restriction of the class of truth-valued sentences will not suffice. In *extra*ordinary circumstances a declarative sentence may be used in such a way that neither truth nor falsity is attributable to it (as, for example, if members of a secret society were to use "John Doe is ill now" as a password); and in quite ordinary circumstances something true or false may be conveyed by a nondeclarative sentence or even by something other than a sentence (as, for example, when John Doe utters the word "Yes" in answer to the interrogative "Are you ill?" or when he merely nods his head). Moreover, it is clear that John Doe can have a true or false belief, e.g., that he is ill, without his either uttering or inscribing any sentence at all. The answer that would be given,

however, is that although John Doe may not engage in any verbal performance of utterance at all, he must, insofar as he has the belief that he is ill, be either disposed to engage in the utterance of the sentence "I am ill now" or at least disposed to accept the sentence "I am ill now" as true of himself. Such refinements of the sentence-theory can be, and have been made. But we will not pursue them, since as we shall soon see, other more serious difficulties have yet to be faced.

Before turning to these more serious difficulties in the sentence-theory, however, let us pause to recognize an ambiguity in the very term "sentence".

The ambiguity can be brought to light by asking how many sentences occur in the box below:

John Doe is ill on Christmas Day 1973.

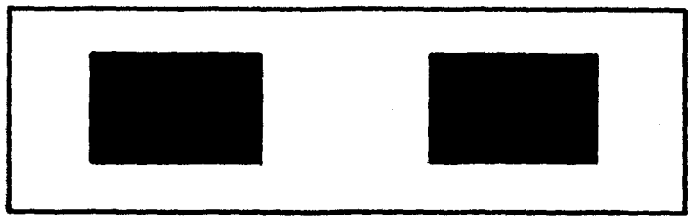
John Doe is ill on Christmas Day 1973.

Two answers could be given, with equal plausibility.

(i) We might say that there is only *one sentence* in the box, and that it has there been inscribed twice; or

(ii) We might say that there are *two sentences* — albeit of the same type — inscribed in the box.

If we choose to answer in the manner of (i), we are thinking in terms of what philosophers call "sentence-types"; while if we choose to answer in the manner of (ii), we are thinking in terms of what philosophers call "sentence-tokens". This distinction between *sentence-types* and *sentence-tokens* may be illuminated by asking, somewhat analogously, how many colors occur in the box below:



Again, two answers could be given with equal plausibility. (i′) We might say that there is *one color* in the box, viz., the color black. (ii′) Alternatively, we might say that there are *two color patches* in the box, both black. If we choose to answer in the manner of (i′), we are thinking in terms of what philosophers call *universals;* while if we choose to answer in the manner of (ii′), we are thinking in terms of what philosophers call *instances.* Plainly, sentence-tokens stand to sentence-types in much the same way as color-patches stand to colors: they are instances of universals.

Which is it, then, that are to count as vehicles of truth-values: sentence-tokens or sentence-types?

EXERCISES

1. *The rectangle below*

> *Some athletes are students.*
>
> *Some students are athletes.*

contains

   A. *two sentence-tokens of the same type;*
   B. *two sentence-types of the same token;*
   C. *two sentence-tokens of different types;*
   D. *two sentence-types of different tokens;*
   E. *none of the above.*

2. *The rectangle in question 1 above contains*

   A. *two logically consistent sentences;*
   B. *8 word-tokens instancing 4 word-types;*
   C. *8 word-tokens instancing 8 word-types;*
   D. *4 word-tokens instancing 8 word-types;*
   E. *4 word-tokens instancing 4 word-types;*
   F. *8 word-types instancing 4 word-tokens;*
   G. *4 word-types instancing 8 word-tokens.*

3. *As well as distinguishing sentence-tokens from sentence-types, as was done in the preceding discussion, and word-tokens from word-types, as was done implicitly in question 2, do we also have to distinguish numeral-tokens from numeral-types? Explain.*

* * * * *

Thesis 5: *Sentence-*tokens *are the bearers of truth-values.*

Objection to thesis 5: *The same difficulty arises as with Thesis 2, viz., there are more truths than there are sentence-tokens.*

Anyone who abjures the abstract and takes comfort in the concrete will be likely to opt for the thesis that it is sentence-*tokens* which are truth-valued. For the criteria for individuating sentence-tokens are reassuringly straightforward: whether they take the form of written inscriptions or speech episodes, they can be individuated in the standard ways appropriate to physical objects and physical events (sound-producing movements), respectively. So there are no problems on this score. But how about their credentials as truth-vehicles? Is it really the case that for every truth there actually exists a sentence-token?

Although the number of actual sentence-tokens is staggeringly large, it is nonetheless far, far smaller than the number of truths. It is reasonable to suppose that the class of truths extends well beyond the sentential expression of these truths. There are many truths of mathematics and logic, for instance, which neither have been, nor (we may suppose) ever will be, encapsulated in sentential form. As just one instance recall our earlier example (Objection to Thesis 2) of the infinitude of noncontingent truths which ascribe the property of having a successor to each of the natural numbers. Then, too, there are vast numbers of contingent truths about the physical universe which have not yet, and possibly never will be, discovered. As a practical matter, just consider how many contingent truths there are about the actual world, truths which no one has asserted, is now asserting, or ever will assert. Just reflect on the series of sentences which begins: "(1) There is more than one atom of oxygen in the Atlantic Ocean; (2) There are more than two atoms of oxygen in the Atlantic Ocean; (3) There are more than three atoms of oxygen in the Atlantic Ocean; etc., etc., etc." We have good reason to believe that even if every person in the entire history and future of the world were to spend his lifetime adding more sentences to this *one* set, the set would never be completed in the anticipated lifespan of the physical universe. And this is just one set; there are countless others sets of this sort besides.

One of the chief contemporary sponsors of the sentence-theory, Quine, argues explicitly that there are quite enough sentence-tokens for them to be identified as the bearers of truth and falsity.[6] His argument is that the class of sentence-tokens need not be thought of as restricted merely to a subset of the class of word strings which persons may happen to inscribe or utter. If, instead, we conceive of sentence-tokens as *mathematical sequences* of those word-tokens which are inscribed or uttered at some time or other, then we may conclude that there are as many sentence-tokens as there are truths and falsities.

Against this ingenious theory we offer two main objections. First, there is something highly implausible about the suggestion that actual sentence-tokens are merely *mathematical* sequences of word-tokens. Ought they not rather to be identified with *temporally and/or spatially* ordered sequences of word-tokens? Suppose — contrary to fact — that the only words ever to be uttered or inscribed occurred in the utterance or inscription of the sentences "The cat is on the mat" and "Henry stood in front of the door." Then it would seem to be just plain false to say that the world numbers among its items the sentence-token "The mat is in front of the door." Yet this is what Quine's theory commits us to. Secondly, Quine's theory makes the existence of any truths dependent upon an historical accident, viz., the invention of language. It leads directly to the uncomfortable conclusion that had words never been invented there never would have been any truths. We shall return to this objection later, when dealing with Thesis 9, in our dialectical argument.

It seems clear, then, that *actual* sentence-tokens simply do not exist in the profusion that the theory calls for, and that we must therefore — if intent on preserving the theory — allow that it is either actual or *possible* sentence-tokens which carry truth and falsity. But once we say this, the advantages of this version of the sentence-theory over the rival proposition-theory have been narrowed almost to the point of nonexistence. For sentence-tokens which exist only as *possibilia* lack that concreteness and ease of individuation which first recommended them to us. *Possibilia* are just as abstract as propositions and admit of no easier individuation.

Thesis 6: *Sentence*-types *are the bearers of truth-values.*

Objection to Thesis 6: *This thesis leads to ascribing contradictory assertions to persons who have not contradicted themselves.*

6. W.V.O. Quine, *Word and Object,* M.I.T., Technology Press, and New York, Wiley, 1960, pp. 194–195.

It will not do to say simply that a sentence-*type*, such as that which corresponds to "I am ill now", is that which is true or false. For suppose that a token of this type were to be uttered by John Doe, while a token of its grammatical denial, viz., "I am not ill now", were to be uttered by his sister, Jill Doe. Then, if it were the sentence-*type* which was true or false, we should, in accordance with the dictates of logic and commonsense alike, be obliged to say that John and Jill were contradicting each other and that only one of them could be saying what is true. Or again, suppose the sentence-token "I am ill now" were uttered by John Doe immediately after overindulging his appetite at Christmas, and that the grammatical denial of the latter, the sentence "I am not ill now", were to be uttered by him after he has recovered from all illness. Then, if it were the sentence-type corresponding to "I am ill now" which is true (or false as the case may be), we should, once more in accordance with the dictates of logic and commonsense, have to conclude that he was contradicting himself and that only one of his utterances was true. After all, two people contradict each other if one says that something is true and the other says that the very same thing is false; and likewise a single person contradicts himself if he says both that something is true and that the very same thing is false.

Plainly something has gone wrong here. The simple fact of the matter is that what John Doe said, when he uttered the sentence "I am ill now", and what Jill Doe said, when she uttered the sentence "I am not ill now", were both true; and again that what John Doe said at Christmas and what he said some time later were both true. There must be something seriously amiss with a theory which commits us to imputing inconsistency where none exists. At the very least an amendment is called for.

Thesis 7: Context-free sentences are the bearers of truth-values.

Objection to thesis 7: It is necessary to distinguish context-free sentence-types from context-free sentence-tokens.

The amendment which sentence-theorists tend to favor is that of saying that the sentences, or utterances of sentences, of which truth and falsity are best predicated are what they call *context-free sentences*.[7] The basic idea of a context-free sentence is really very simple. If we consider a sentence like, "At one atmosphere of pressure, water freezes at 32°F.", we are not at all tempted to suppose — as we might in the case of "I am ill now" — that its truth-value varies with the special circumstances of its utterance or inscription: with who uttered it, or when he uttered it, or the like. No matter who utters it, or when he utters it, the sentence "At one atmosphere of pressure, water freezes at 32°F." has a constant truth-value, viz., truth. It is context-free in the way that the sentences of mathematics, physics, and the sciences generally are. Plainly enough context-free sentences cannot generate inconsistencies in the same way as do sentences like "I am ill now". If, then, some way could be found of transforming context-dependent sentences into context-free ones, the theory that sentences are the primary bearers of truth-values would have some chance of salvation. How might such a transformation be effected? The proposal is that pronouns like "I" are to be replaced by names, temporal references like "now" are replaced by dates, and tenses are cancelled altogether. Thus a context-dependent sentence such as "I am ill now", when uttered by John Doe on Christmas Day 1973, is transformed into the context-free sentence "John Doe is [in a tenseless sense] ill on Christmas Day 1973"; while the denial of this context-dependent sentence, when uttered by John Doe a week later, is rendered by the context-free sentence "John Doe is not ill on January 1, 1974." These context-free paraphrases of the two utterances of the context-dependent sentences "I am ill now" and "I am not ill now" not only express more precisely what it was that John Doe took himself to be asserting on each of the occasions when he uttered them, but also reveal — what we knew all along —

7. Quine and some others, somewhat less perspicuously, call context-free sentences "eternal sentences".

that he wasn't really contradicting himself at all when he first uttered the one and then, at a different time, uttered the other.

But with the concept of a context-free sentence now in hand, we must ask whether it is context-free sentence-*types* or context-free sentence-*tokens* which are supposed to be the bearers of truth and falsity.

EXERCISE

Read the following sentence aloud: "I started reading this page five minutes ago." Now paraphrase what you have just said so as to generate a context-free sentence.

* * * * *

*Thesis 8: Context-free sentence-*tokens *are those things to which truth and falsity may be attributed.*

Objection to Thesis 8: Again, there are more truths than there are sentence-tokens, context-free or otherwise.

Context-free sentence-tokens form a proper subclass of the class of sentence-tokens. And if there are too few sentence-tokens to satisfy the theory that sentence-tokens are to be identified as the bearers of truth and falsity, then a fortiori, there must be too few *context-free* sentence-tokens to do the job. In the whole history of mankind there have probably been only a few thousand, a few million at most, context-free sentence-tokens offered as reconstructions of context-dependent ones.

EXERCISE

One of the objections to Thesis 2 was that a consequence of holding that actual belief acts are the bearers of truth-values is that this makes the claim that every proposition has a contradictory both contingent and actually false. Show how this same criticism can be brought to bear both on Thesis 5 and on Thesis 8.

* * * * *

*Thesis 9: Context-free sentence-*types *are those things to which truth and falsity may be attributed.*

Objections to Thesis 9: First, the criteria for the individuation of context-free sentence-types are obscure. Secondly, because persons sometimes use words with different meanings, they will express different things even though the context-free sentence-types associated with their utterances are identical. Thirdly, this account cannot do justice to the fact that persons lacking a language can, nonetheless, hold true beliefs.

How about the supposition that it is context-free sentence-*types* which are truth-valued? Note that this proposal does not fall victim to the objection leveled against its immediate predecessor. Context-free sentence-types, unlike context-free sentence-tokens, *do* exist in the profusion required by the theory. For a sentence-type exists even when no token of that type exists. And one can plausibly argue that to every truth (and falsehood) there 'corresponds' a context-free sentence-type. But this is not to say that

these context-free sentence-types ought to be identified as the bearers of truth-values. There are difficulties in such a hypothesis.

In the first place, if we adopt this view we immediately abandon whatever advantages actual sentence-tokens have over propositions. For sentence-types — context-free or otherwise — are quite unlike sentence-tokens in that they are not physical objects or events locatable in space and time; and they cannot therefore be individuated in the way that inscriptions and utterances can. Strictly speaking, the answer to our earlier question as to how many sentences there were in the box cannot be — if we are thinking of sentence-types — that there is one. For sentence-types, as distinct from sentence-tokens, are not the sorts of things which can be *in* a box, or *on* a page, or *on* the tip of someone's tongue, or anywhere else. There could have been one or two, or more, sentence-tokens in the box; but there could not be any sentence-types *in* the box.

More precisely, we should say rather that one sentence-type was *instanced* by the two sentence-tokens in the box.

The box example, however, turns out to be a fairly simple one. For the two sentence-tokens which, we said, were instances of one and the same sentence-type were typographically identical. But suppose they had not been typographically identical. Suppose, for instance, that one were to be italicized (e.g., *"John Doe is ill on Christmas Day 1973"*) and the other not; or that one were to be written in capital letters (e.g., "JOHN DOE IS ILL ON CHRISTMAS DAY 1973") and the other in a mixture of capital and lowercase letters (e.g., "John Doe is ill on Christmas Day 1973"). Would we still want to say of these typographically different sentence-tokens that they were instances of the *same* sentence-type? Probably we would; for it seems reasonable to lay down as a sufficient condition of two sentence-tokens being of the same type that they be composed of the same words in the same order. But now suppose that one or more words in one or more of the sentence-tokens were to be misspelled. Would we still want to say that they were tokens of the same type? Our criteria for being of the same type now begin to look fuzzy. After all, the change of just one letter (or digit) might convert a sentence-token instancing one sentence-type into a sentence-token instancing another. Consider:

John Doe is ill on Christmas Day 1973.

John Doe is ill on Christmas Day 1975.

And finally consider this case:

John Doe is honored on Christmas Day 1973.

John Doe is honoured on Christmas Day 1973.

How many sentence-types are instanced by the two sentence-tokens in this last box?

From what has already been said it is apparent not only that sentence-types — context-free ones included — are abstract entities, but also that the criteria for their individuation are troublesome.

Yet so far we have considered only those context-free sentence-types of which context-free sentence-token instances actually exist. How about those which are instanced by the non-actual, merely possible, context-free sentence-tokens which we earlier felt obliged to postulate in order to accommodate unexpressed and undiscovered truths about logic, mathematics, and the universe at large? If the context-free sentence-types which are instanced by actual context-free sentence-tokens are abstract in the first degree, those which are instanced only by *possible* (and hence abstract) ones must be abstract in the second degree; and the criteria for their individuation must be correspondingly even more elusive.

Problems of abstractness and of the elusiveness of identity-conditions for context-free sentence-types are not the end of it: there are problems about their truth and falsity as well. These latter problems are not unique to the context-free sentence-type account. They arise for *any* version of the theory that it is sentences which are the primary bearers of truth-values, whether these sentences are context-free or context-dependent, types or tokens, or any combination of these. For this reason we shall state them in quite general terms.

In the first place, one and the same sentence (of whatever kind) is subject to different semantic construals by different people or at different times: the same sentence may — as we commonly say — "*mean* different things". Change of meaning, of words or lengthier expressions, is a familiar-enough fact of comparative linguistics. Thus, for example, one might observe that many North American speakers of English are disposed to use "disinterested" and its cognates to mean what English speakers throughout most of the rest of the world mean by "uninterested". Suppose, then, that speakers from each of these two classes of language-users are asked to consider the sentence "John Doe shows complete disinterest over the question of who was responsible for the oil spill" and to say whether it is true or false. Members of one class of speakers may say it is true, on the grounds that John Doe, though very interested in ecological issues, is able to treat questions about responsibility for ecological disturbance with the full impartiality that becomes one who is a judge; while members of the other class of speakers may say it is false simply on the grounds that John Doe, though of undoubted impartiality, is far from showing lack of interest in issues of ecology. Are they contradicting each other? If it were precisely the same thing which members of the one class asserted and members of the other class denied, we should have to say that they are, and hence that only members of one class could be saying what is true. Yet plainly, since the members of these two different classes mean different things by "disinterested", what some are asserting is quite different from what the others are denying. So there is no inconsistency after all. The case reminds one of the apparent conflict, discussed earlier, between John Doe and his sister Jill. However, in this case, unlike the earlier one, we cannot resolve the seeming conflict by resorting to the notion of a context-free sentence and saying that the context-free sentence asserted by one is different from the context-free sentence denied by the other. For this time the conflict has arisen over what is itself already a context-free sentence. So differences in meaning — for different people or even for the same people at different times — must be taken into account; and we can avoid inconsistency only by allowing that it is not, after all, context-free sentences *simpliciter* (whether tokens or types) which are the trouble-free bearers of truth and falsity; but rather that it is sentences *along with their meanings* which are the bearers of truth and falsity. But once we start talking thus about the *meanings* of sentences (context-free or context-dependent, types or tokens), we are well into the realm of abstractions which sentence-theorists tend to regard as forbidden territory.

In the second place, *any* version of the sentence-theory — type, token, context-free, context-dependent — must run into difficulties over prelinguistic times. For even if there is no clear sense in which our grunting forebears can be said to have made statements, assertions, or the like to each other, nonetheless we must surely allow that they had beliefs and that certain of their beliefs were true while others were false. But if, *ex hypothesi,* these were prelinguistic times, then these believers lacked a grammar and a semantics. But for a sentence to be intelligible, to be a content of a belief, the would-be believer must comprehend the grammar and semantics of that sentence, i.e. that sentence must belong to a language which the believer has mastered, or must be translatable into a language which the believer knows. But if the would-be believer lacks *all* language, then there is *no* sentence which he believes. Nor will it do to argue in this case, in the sort of way that we did earlier when we tried to accommodate the sentence-theory to John Doe's unexpressed belief that he was ill, that although our forebears did not actually either utter or inscribe sentences like "That animal is dangerous", they must, nevertheless, if they believed that a particular animal was dangerous, have been *disposed* to assent to such a sentence. For the logic of the case we are envisaging is that our forebears on occasion believed that a particular animal was dangerous when it was indeed dangerous; so that what they believed was true; and yet that there was no sentence expressing this belief which they could — given

their complete lack of familiarity with verbal expressions — have even been disposed to assent to, let alone to have uttered or inscribed. Of course, the problem we are posing presumes that it is at least possible to have a belief in the absence of any linguistic means for expressing that belief. But surely that presumption is warranted. Why else would our early ancestors have come to utter or inscribe sentences in some now-forgotten language (sentences which if preserved we would translate into English as "That animal is dangerous"), unless they believed that certain animals were dangerous? It seems wholly implausible to suppose that the use of sentences, or words, for that matter, antedated man's thought and belief. And it seems hardly, if at all, more plausible to suppose that by some cosmic coincidence or pre-established harmony, word and thought, sentence and belief, paragraph and reasoning, sprang into existence together. So the Gospel of John, chapter 1, verse 1, needs to be rewritten: we cannot say "In the beginning was the Word", but must say rather "In the beginning was the Thought" (where the word "thought" is taken as encompassing also belief, reasoning, and the like). To be sure, without words and sentences at our disposal our thinking, believing, and reasoning can reach no great heights. But if we say that language is a precondition of all thinking, believing, and reasoning, then we must not only countersay, for instance, Kohler's descriptions of the thinking capabilities of the apes, but also deny to our own forebears certain of those capacities and dispositions which, there is reason to suppose, aided them in the evolutionary struggle for survival: the capacity or disposition to believe, and believe truly, that certain animals were dangerous, that they had to forage or hunt if they were to eat, and so on. Yet if they could entertain such beliefs, and what they believed could be true or false, and there were at the time no sentences or other linguistic devices at their disposal, then we can only conclude that what they believed truly or falsely could neither have been a sentence nor have been analyzable in terms of sentences. Sentences, context-free or context-dependent, types or tokens, may help *us* to express the truths that they believed; but they did not help them. Once more the class of truths has failed to be exhausted by the class of sentences.

So what exactly is it that is true or false? Right at the outset, it will be remembered, we drew a distinction between: (a) the state or act of saying, believing, etc., that something is the case; and (b) that which is said, believed, etc., to be the case. And we found good reason to reject (a) altogether. Then we turned to (b) and saw the need to draw another distinction; this time between: (b′) the sense in which what is said, believed, etc., is a sentence; and (b″) the sense in which what is said, believed, etc., is what is called a proposition, something expressible by a sentence but by no means identifiable with a sentence. And after a fairly lengthy investigation we have found serious difficulties with (b′), in each of its various guises. It is time to see how (b″) can fare.

Thesis 10: Propositions are those things to which truth and falsity may be attributed.

Objection to Thesis 10: It is unclear what sorts of things propositions are.

The move away from sentences *simpliciter* to specially constructed context-free sentences as bearers of truth-values removes much of the initial motivation of the original sentence-theory. Context-free sentences — involving as they do substitutions for pronouns, temporal references, and tenses, made in the light of our *understanding* of what a person takes himself to be asserting when he utters a context-dependent sentence — begin to look rather like what the proposition-theorist calls "the proposition expressed by" such context-dependent sentences. Like propositions they are not themselves to be identified with context-dependent sentences, but may be said to be what these sentences express or convey. And like propositions, if true they are always true and if false they are always false; or rather, like propositions, they are omnitemporally true or omnitemporally false.[8]

8. For a discussion of the thesis that propositions bear their truth-values omnitemporally, see section 5, this chapter.

Given that the sentence-theory seems to be coming to resemble more and more the proposition-theory, and given the several difficulties which we have seen are attendant upon *any* version of the sentence-theory, it would now be appropriate to turn our attention to the proposition-theory.

Perhaps the first thing to note about propositions is that one reason philosophers have talked about them is that they have seen the need to speak compendiously about that which is true or false without identifying what is true or false with any of the candidates so far considered. They have observed that one and the same thing which is true, such as that the earth is round, can be believed, stated, asserted, supposed, doubted, hypothesized, theorized, etc.; that the truth that the earth is round can be expressed in many different ways within different natural languages or even within one and the same natural language; that there are truths, such as that lions can kill men, which at a certain stage in human prehistory could not be expressed in any language whatever; and that there are still other truths which it is reasonable to suppose that nobody will even discover let alone express. They have said, in effect: "Let us call items like this which are true — or for that matter, false — 'propositions'; then we can avoid more circumlocuitous expressions like 'That which was said (believed, etc.) to be true'." In short, one reason the term "proposition", in its technical philosophical sense, has been introduced is to effect a certain economy of language.

Does this mean that talk of propositions has been introduced solely as a manner of speaking — that propositions are mere fictions? Not at all. To be sure, the term "proposition" does facilitate our talk about whatever is true or false. But we must recognize that philosophers who opt for the proposition-theory regard such talk as referential talk; they maintain that there are nonphysical things which are true or false, and that the term "proposition" can be used when we want to refer to them.

But if propositions are neither physical entities nor fictional ones, what sort of entities are they?

Thesis 11: Propositions are to be identified with the meanings of sentences.

Objections to Thesis 11: First, the criteria for individuating propositions and for individuating the meanings of sentences are different. Secondly, sentence meanings can be identical even though the propositions expressed are different. Thirdly, meanings are not expressed by sentences; propositions are.

Having rejected all kinds of sentences, both sentence-types and sentence-tokens, as the bearers of truth-values, and having said that propositions are neither physical nor fictional entities, what else is there with which propositions might be identified? One answer that deserves attention is that propositions are the *meanings* of sentences.

The view that propositions are the meanings of sentences derives some plausibility from one of the standard arguments for saying that it is propositions, not sentences, which are true or false: namely that truth-bearers cannot be identified with anything which is unique to one or another language — that the bearers of truth must be things which "transcend" any particular language and are the sort of things which can be shared by several languages. Suppose an English-speaker utters the sentence, "The earth is round", while a French-speaker utters the sentence, "La terre est ronde." Then, the argument goes, there is a sense in which both speakers assert the same thing and assert it truly. If you like, they both assert the same truth. Yet the truth which both of them assert cannot be identified with the words which either of them utters, for one utters an English sentence while the other utters a French one. Hence, although each of these sentences may be said to "express" the same truth, that which they both express is not a sentence in either English or French or, for that matter, in any other language. Rather it is, in the proposed terminology, a proposition. The argument seems a good one so far as it goes. But it leaves unanswered the question concerning the status of these proposed entities, propositions. And so it has come about that some philosophers, seeking to settle this question, and

reflecting on the fact that one thing which is common to both speakers is that the sentence that one utters *means the same as* the sentence the other utters, have concluded that the true proposition which both assert should be identified with the common meaning of these two sentences.

However, despite its initial attractiveness, this answer does not stand up to careful probing. To begin, the criteria for individuating propositions and for individuating the meanings of sentences are different. The sentence-meanings of two sentences can be identical even though the expressed propositions are different. And conversely, the propositions expressed by two sentences can be identical on occasions when the respective sentence-meanings are different.

In the first instance, we can point to sentences which have the same meaning but which express different propositions: as when John Doe utters the sentence "I am ill" and Jean d'Eau utters the sentence which means the same in French, viz., "Je suis malade." The sentences which they utter are correct translations of one another and so, on any ordinary reckoning, have the same meaning; yet one person expresses the proposition that John Doe (an Englishman) is ill while the other person expresses the different proposition that Jean d'Eau (a Frenchman) is ill. Plainly the proposition that one person expresses may be true while the proposition that the other person expresses may be false; yet their sentences have the same meaning.

And, in the second instance, looking at the converse, there are cases where we would want to say that the same proposition can be expressed by sentences having different meanings: as when John Doe says "I am ill" while his sister Jill says "My brother John is ill." If John is in fact ill, then each is expressing the same true proposition; yet the meanings of the sentences which they use to express this truth are different.

Further, this way of conceiving of propositions cannot do justice to their role as the bearers of truth and falsity.

In the first place, we do not as a matter of fact ordinarily attribute truth or falsity to sentence-meanings. It makes little if any sense to say "The meaning of your sentence is true." To be sure, we do sometimes say "What you meant to say was true" where a person has expressed himself clumsily or incorrectly. But since "what you meant to say" is here synonymous with "what you intended to say" this usage lends no support whatever to the thesis that truth is attributable to sentence-meanings.

Secondly, and more importantly, the suggested identification of propositions with sentence-meanings cannot accommodate those facts of natural history which we earlier took to be counter-instances to any version of the sentence-theory whatever: the fact that our nonspeaking forebears and some speechless creatures may reasonably be supposed to have entertained beliefs which were true or false in the absence of any sentences which might have expressed those true or false beliefs. The suggestion that it is sentence-meanings which are true or false is simply a version of the sentence-theory in general and suffers the fate of all such theories.

However, it might be said that there is another way of construing the sentence-meaning account which enables it to evade these difficulties: viz., that speaking of sentence-meanings is simply a way of speaking of meanings which are customarily — but not invariably — the meanings of sentences, and that it is these meanings, considered quite independently of the sentences with which they are usually associated, which should be identified with propositions, i.e., which should be identified as the bearers of truth and falsity. Those philosophers who like to think of meanings as abstract entities on a par with propositions might thus be tempted to effect an economy in their ontology by the simple expedient of identifying the two. But, for a start, the two cannot be identical. For the kind of association which meanings have with sentences is different from that which propositions have. Meanings, when they are associated with sentences, are meanings *of* those sentences; they are not expressed by them. Propositions, when they are associated with sentences, are *expressed by* those sentences; they are not propositions *of* those sentences. And in any case, meanings — as we have already seen — just are not the sorts of things which can play the role for which propositions have been cast: they just are not the

sorts of things which can be true or false. Propositions cannot be identified with meanings *simpliciter* any more than they can be identified with meanings of sentences.

EXERCISES

1. *Find an example of two sentences which differ in meaning and which it would be natural to use to express one and the same proposition. Are the sentences in your example context-free or context-dependent?*
2. *Find an example of two sentences which are alike in meaning but which it would be natural to use to express two different propositions. Are the sentences in your example context-free or context-dependent?*
3. *What arguments can be brought to bear against the thesis that it is the meanings of* context-free *sentences which are the bearers of truth-values?*

* * * * *

Thesis 12: Propositions are to be identified with sets of possible worlds.

Objections to Thesis 12: First, sets of possible worlds do not seem to be the right sort of things to be the objects of belief, doubt, etc. Secondly, this account would entail that there is only one necessarily true proposition and only one necessarily false proposition.

One proposal which has been promoted in recent years is that propositions are to be identified with sets of possible worlds; that is, it has been claimed that each proposition just *is* a set of possible worlds.

For every proposition there exists a set of possible worlds in which that proposition is true.[9] This being so, some philosophers have suggested that it may be profitable to identify each proposition with that set of possible worlds in which it is true. Of course, the point could not be put just this way; we should have to change our manner of describing the situation. Instead of saying that a proposition, P, is true in some set or other of possible worlds, W, we would say, "The proposition, P, *is* the set of possible worlds, W."

Several considerations favor this proposal.

For one, adopting it would markedly reduce our ontology; that is, would reduce the number of *kinds* of entities we require to make sense of our conceptual scheme. Instead of having to talk about both propositions and sets of possible worlds, we could make do just with sets of possible worlds. We would thereby avoid postulating the existence of an additional kind of abstract entity.

Secondly, in much work in formal semantics and in certain areas in formal logic, epistemology, and ethics, no distinction need be made between propositions and sets of possible worlds. For certain purposes it makes no difference whether propositions are *paired off* with sets of possible worlds or, in a stronger sense, are *identified* with sets of possible worlds.

Thirdly, there is the very attractive feature that sets have certain properties which lend themselves admirably to our purposes of explaining the logical attributes of propositions. For example, recall the modal relation of implication. Implication, we said, is that relation which one proposition bears to another when the latter is true in all possible worlds in which the former is true. If, however, propositions were to be identified with sets of possible worlds, the relation of implication could be

9. In the case of necessarily false propositions, the relevant set of possible worlds is empty, i.e., has no members. But no matter; a set having no members is every bit as much a genuine set as is a set having one or more members.

explicated more simply still: "P implies Q if and only if P is a subset of Q." Similarly all the other modal attributes of propositions could be explicated in set-theoretical terms: a necessarily true proposition would be simply the universal set (of possible worlds); a necessarily false proposition, the null (or empty) set; and a contingent proposition, a nonempty proper subset of the universal set.

Shall we, then, finally conclude that propositions are nothing other than sets of possible worlds?

The choice is not altogether easy or straightforward; for in spite of all the benefits to be gained by adopting such a proposal, there are some powerful objections. Although there are certain properties which sets possess which make sets attractive for identifying them with propositions, sets possess some properties and lack some others which would seem to make them unsuitable for identifying them with propositions.

In the first place we must remember that propositions are not only the bearers of truth-values; they are also, and importantly, the objects of belief, doubt, assertion, speculation, remembering, forgetting, etc. For not only is it proper to say, "P is true", where "P" names a proposition; it is equally appropriate to say such things as, "He believed P", or "He believed the proposition which she had expressed." Now while we seem to speak easily and naturally of one's believing a proposition (or a set of propositions), there is no corresponding idiom in which we would naturally talk of believing a possible world or a set of possible worlds. We do not normally think of possible worlds or sets of possible worlds as the proper *kinds* of thing either to be believed or to be disbelieved. At first impulse, our inclinations would probably be to say that sets of possible worlds are just not the right sort of thing to be an object of belief, doubt, assertion, etc. We probably would be inclined to say that while we can believe a proposition, we do not even understand what it would mean to say that we believe a certain set of possible worlds.

This first alleged difficulty with the proposal that propositions literally *are* sets of possible worlds may not be as damaging as it initially appears to be. For although we do not normally think of ourselves as believing sets of possible worlds, and indeed have not assigned any viable meaning to the expression, "He believes such-and-such a set of possible worlds", this is not to show that the notion is forever doomed to be regarded as a nonsensical one, or that we might not in time come to regard the latter way of talking as perfectly natural. At present the notion seems strange, but that is not the same as saying, even less showing, that the notion is intrinsically unsatisfactory. But what this first argument does is to alert us to the fact that the proposal, if adopted, will involve our making some significant adjustments or extensions to our naive, or prephilosophical, concept of a proposition.

If the foregoing were the only objection one had to identifying propositions with sets of possible worlds, quite probably we would judge the positive benefits to outweigh the oddity just mentioned, and we would adopt the proposal. But the choice is made less attractive by the presence of another problem.

If propositions were nothing other than sets of possible worlds, there could be no distinction between propositional-equivalence and propositional-identity, or in other words, we would be forced to conclude that any two propositions which were *equivalent* (i.e., true in just the same set of possible worlds) were also identical. As we have already seen in chapter 1, this result is counterintuitive. One hardly wishes to say, e.g., that the proposition that all sisters are female is the very same proposition as the proposition that two plus two is four. Yet the adoption of the thesis that propositions are nothing other than sets of possible worlds immediately forces us to this counterintuitive and objectionable conclusion. It is easy to see why. Sets are completely determined (i.e., individuated) by their members. There is no possibility of distinguishing two sets having identical members. If set S_1 has the same members as set S_2, then S_1 is the *very same set* as S_2. If, then, we were to identify propositions with sets of possible worlds, all necessarily true propositions would turn out to be identically the same set, viz., the universal set of possible worlds, and hence there would be but *one* necessarily true proposition. Similarly there would be but one necessarily false proposition, viz., the empty set. And all equivalent contingent propositions, e.g., (1) that Tom is ten years old and that all sisters are female and (2) that

Tom is ten years old and that two plus two is four, would turn out to be one and the same proposition, i.e., would turn out to be identical.

It is just because sets are completely determined by their membership that the second objection to the proposal that propositions literally are sets of possible worlds cannot easily be accommodated. The first objection we leveled was not altogether decisive, just because it was open to a supporter of the thesis to argue that one could simply 'stretch' the concept of what a proposition is so as to allow that a person could believe a set of possible worlds. But the second objection cannot be met in this way. One can adopt the proposal and avoid the sting of its consequences, viz., that there is exactly one necessarily true proposition, that there is exactly one necessarily false proposition, and that all equivalent contingent propositions are identical, only by changing the very concept of what a set is or by giving up the thesis that equivalent propositions need not be identical.

If, however, we wish as we do to retain both our current conception of sets and our intuition that not all equivalent propositions are identical, we are logically forced to abandon the proposal that propositions literally are sets of possible worlds. Taken together, the two objections to Thesis 12 show that the conceptual price which would have to be paid for adopting it is too great.

Thesis 13: *Propositions are abstract entities in their own right; that is, they are* sui generis, *they are not to be identified with any other kind of abstract entity.*

Objection to Thesis 13: *None, provided one can tolerate other such abstract entities as sets and numbers, etc.*

Having argued that propositions cannot be identified either with the meanings of sentences or with sets of possible worlds, we must now ask with what, if anything, they are to be identified.

Perhaps the time has come for us to look with suspicion on the suggestion that they should be identified with anything — if "being identified with anything" means being identified with anything *else*. Why should not propositions be *sui generis?* That is to say, why should they not be abstract entities in their own right?

There is, of course, an objection which is to be expected at this point, viz., "If propositions are abstract entities, then they are wholly inaccessible to human experience." This sort of objection is frequently voiced by those philosophers who, like Quine, demand that there be behavioral criteria for identifying objects of belief and who claim that these behavioral criteria are more easily satisfied if we identify the objects of belief with (concrete) sentences rather than with (abstract) propositions. In reply, we could, of course, rehearse once more the dialectic that we have already gone through in attempting to clarify this claim that sentences are the bearers of truth-values (are they sentence-types? sentence-tokens? context-free types? context-free tokens? etc.). Or we could point to the fact that in trying to get clear about precisely what proposition it is that a person believes, we can invite him to consider various counterfactual possibilities — various alternative possible worlds, as we have called them — and pose hypothetical questions of the form "If such and such were to happen, would you still want to assert your belief in P?" so as to elicit reactions, of a straightforwardly *behavioral* kind, to these other possible worlds.[10] Or, meeting the objection head-on, we might simply point out that if propositions are abstract entities then at least they seem to be in good company. After all, many mathematicians as well as philosophers have come to the conclusion that sets are abstract entities — not to be identified with collections of physical objects — and that numbers are abstract entities — not to be identified with numerals — and that sentence-types are abstract entities — not to be identified with any actual utterances or inscriptions. Why not allow propositions the same sort of ontological status as these?

10. See, further, section 7 ("Sentential Ambiguity and Possible-Worlds Testing") of the present chapter.

The strongest argument for the existence of propositions as abstract entities is that along with sets and numbers — and, for that matter, along with sentence-types, attributes, arguments, and the like — an appeal to them seems indispensable to any sophisticated attempt to understand the world of our experience. An appeal to something other than sentences and other than states or acts of believing, stating, asserting, remarking, hypothesizing, theorizing, and the like, is needed if we are to make ultimate sense of our ascriptions of truth and falsity. Propositions, conceived of as abstract entities in their own right, seem to do the trick. So conceived, they play the roles which have traditionally been assigned to them: they may be considered in abstraction from any sentences which are used to express them and for that matter, from any language whatsoever; they are suitable for being the objects of belief, doubt, etc.; and they are suitable for being the bearers of truth and falsity.

In saying that propositions are abstract, nontangible, timeless entities, our claim may be likened in several important respects to Bertrand Russell's claim put forward at the turn of the century that numbers are classes (or sets).[11] In reaching his conclusion Russell capitalized on the then little-known but important writings of Gottlob Frege.[12] A few years earlier Frege had undertaken to review all the most plausible theses available to him concerning the ontological status of numbers. One by one he showed that none of these theses, e.g., that numbers are numerals (inscriptions), that numbers are sensible things, that numbers are something subjective, etc., was adequate. In the end, his own solution, viz., that numbers are concepts, was to meet the same fate in the hands of Russell. Russell, acknowledging his indebtedness to Frege, rejected Frege's solution in favor of his own solution which has proved more satisfactory, viz., that numbers are classes. On at least one standard account of what classes are, it immediately follows that numbers are abstract, nontangible, timeless entities. Could *these* have been the things to which persons had (unknowingly) been referring for millennia when they did arithmetic, and to which English-speaking persons for the previous several centuries had (unsuspectingly) been referring when they used the words "one", "two", and "three"? The answer which Russell championed — an answer which has come to be widely accepted — is an unequivocal "Yes." Similarly we — along with many other philosophers — want to promote the thesis that the things referred to by such expressions as "What he denied" and "What she believed," are *propositions,* even though most persons who use these expressions have little if any idea what the actual referents of these expressions are. Insofar as persons could for centuries, and indeed some persons still continue to, use successfully the terms "one", "two", and "three", without knowing what the referents of these terms are, we argue that it is no objection to our solution to say that persons who use such expressions as "What he denied" and "What she believes" do not suspect that they are referring to abstract, timeless entities. As far as we can tell, no other account of the ontological status of the bearers of truth-values is adequate to fit the many things we *do* wish to say about such entities, and no other account is also free of attributing to such entities properties we wish *not* to ascribe to them. In sum, our answer to the question which began this section, viz., "What are the bearers of truth-values?" is: "propositions".

In the light of all this, what are we now to say about the thesis with which we began — the thesis according to which items other than propositions, e.g., beliefs, statements, assertions, remarks, hypotheses, theories, etc., may also be bearers of truth-values? Is this earlier thesis to be abandoned as superficial and/or just plain wrong-headed? Such a verdict would be altogether too harsh. The account we have eventually given is a *theoretical* one which serves to make coherent sense of the various attributions of truth and falsity which we make to these other items. To be sure, we do, in ordinary or casual contexts, attribute truth and falsity to beliefs, assertions, remarks, hypotheses,

11. Bertrand Russell, *Principles of Mathematics,* Cambridge, University Press, 1903.

12. Gottlob Frege, *Die Grundlagen der Arithmetik,* Breslau, 1884. Translated by J.L. Austin as *The Foundations of Arithmetic,* Oxford, Blackwell & Mott, Ltd., 1950. 2nd. revised edition, New York, Harper Torchbooks, 1959.

theories, and the like. But as we saw early on, when discussing that first thesis, our attributions of truth-values to these items is fraught with ambiguity. The upshot of our subsequent discussion of the succeeding theses is, in effect, that this ambiguity may be resolved in a theoretically sound way by regarding these attributions as expedient ellipses. That is, we can *reconstruct* these attributions in the following sort of way. We may allow that a belief is true or false just when the proposition believed is true or false; that a statement is true or false just when the proposition stated is true or false; that a remark is true or false just when the proposition remarked is true or false; and so on. From this hard-won, theoretical vantage point we can even reconstruct talk of a sentence's being true or false: true when the proposition which the sentence is understood to express is true, false when the proposition which the sentence is understood to express is false.

Categorial differences between sentences and propositions

It may be profitable at this point to pause briefly to catalog some of the differences between sentences and propositions.

There are certain descriptive categories which apply only to sentences and others which apply only to propositions.

For example, the categories of "meaningful" and "meaningless" apply only to sentences, not to propositions. Although a sentence may be meaningless, no proposition is. But this is not to say that every proposition is meaningful. Rather, propositions are neither meaningful nor meaningless. The categories "meaningful" and "meaningless" simply do not apply to propositions — any more than do the terms "red" and "blue". In denying that propositions are red, we do not want to be understood as implying that they are some other color. Rather the point is that the entire family of color predicates simply *does not apply* to propositions. The same holds for the family of predicates consisting of "meaningful" and "meaningless".

Similarly sentences, but not propositions, are grammatical or ungrammatical; sentences are in a language, propositions not; sentences may be translated or paraphrased, propositions not; sentence(-tokens) are physical states of affairs, propositions are not; sentences may be ambiguous or vague, propositions not.

On the other hand, we have taken some pains to argue that propositions, but not sentences, are strictly speaking the bearers of truth and falsity. Whenever truth or falsity is attributed to sentences, it is done so either mistakenly or through expediency. Similarly it is propositions, not sentences, which possess modal properties (e.g., necessary truth, necessary falsity, contingency, etc.) and which stand in the various modal relations (e.g., consistency, inconsistency, implication, equivalence, etc.) one to another.

One final note.

Our sponsorship of propositions as the bearers of truth-values and, for that matter, as the items between which logical relations hold, arises out of our concern to make sound *philosophical* sense of logic. We readily admit that much, if not all, of the purely formal business of logic — the calculations, the derivations, the proofs — can be conducted without even raising the issues which divide proposition-theorists from sentence-theorists. Stockbrokers can make their daily transactions without settling fundamental issues in economics. And mathematicians can agree about the theorems of arithmetic without having a commonly shared view about the nature or "ontology" of numbers. Likewise, logicians can agree about the *results* of logic without agreeing about logical theory and, in particular, without agreeing about the nature or ontology of the bearers of truth-values. Not all logicians wish to pursue the philosophy of logic. But those who do are invited to consider carefully our arguments for saying that talk of propositions is philosophically indispensable.

3. THE STRUCTURE OF PROPOSITIONS: A SPECULATIVE THEORY

As a result of a lengthy dialectical argument we have reached the conclusion that the bearers of truth and falsity are abstract entities which are not to be identified with any of the other abstract entities ready at hand in our ontology, e.g., they are neither sets, sentence-types, sentence-meanings, nor possible worlds.

Yet this is not to say that they are unstructured or that they do not number among their *components* one or more of these or some other abstract entities.

That propositions are structured entities, that they have components, is clear from a variety of considerations.

One thing which attests to the internal complexity of propositions is the fact that we use sentences, rather than mere words, to express them. Moreover, if it were not for the complexity of propositions it is very hard to see how we could possibly understand which proposition it is which is being expressed when we hear and understand a sentence we have never heard before. If, somehow or other, the structure of sentences didn't 'reflect' the structure of propositions, then the (rough) mapping which exists between the two would be a phenomenon of monumental coincidence.

Secondly is the fact that we can, and do, *analyze* propositions. We can reflect on the proposition that Mary and John came to the party together and 'see' that this proposition *implies* that Mary came to the party. Again, if propositions were without structure, but were instead atomic entities incapable of analysis, then it is incomprehensible how we might ascertain the presence of this implication, or indeed, of any other logical attribute.

Philosophers have struggled for a long time trying to adduce a viable theory of the structure of propositions. Doubtless the best-known attempt in this century is that of Ludwig Wittgenstein in his landmark *Tractatus Logico-Philosophicus*.[13] In the end, his attempt did not work, and he along with everyone else abandoned that particular theory. But the quest continues. Several persons today are engaged in trying to construct such a theory. Perhaps the most notable among them is Peter Strawson.[14]

In this section we will offer the first tentative suggestions for a theory of our own. It is hardly fully developed, but we have some reason to believe that it might, at least, be 'in the right direction'. But whether it is or not, it should be emphasized that very few of the *other* things we wish to say about propositions require that this theory be true. For example, in subsequent sections of this chapter we examine ways to *refer* to propositions, to *individuate* them, etc. These latter sorts of investigations do *not* require that we have a settled view as to the nature of the internal structure of propositions; indeed, quite the contrary is the case: the sorts of investigations just mentioned can proceed entirely in the absence of any theory as to the structure of propositions.

With these caveats expressed, then, let us turn to our speculations.

The theory we are to consider holds, briefly, that a proposition is identical with a set of concepts-in-truth-valued-combination. This calls for some elaboration.

Concepts

The term "concept" is one of the oldest items in the vocabulary of philosophy and has been given especially wide currency in the writings of twentieth century philosophers. Yet although talk of concepts is common, accounts of what concepts *are,* or of what it is to have a concept, are rarely given.

13. Translated by D.F. Pears and B.F. McGuinness, London, Routledge & Kegan Paul, 1961 (original edition published in German, 1921, under the title *Logisch-philosophische Abhandlung*).

14. *Subject and Predicate in Logic and Grammar,* London, Methuen & Co. Ltd., 1974.

Without pausing to consider rival accounts that have been, or might be, given of what concepts are,[15] let us say forthwith what *we* mean by "concept".

For a start, like Frege and many others we wish to distinguish concepts from *conceptions* or *ideas*.[16] The latter are psychological entities which come into being and pass away from time to time during the lifetimes of conceiving beings. Concepts, as we shall speak of them, do not. Thus we want to be able to speak of a concept, such as that of number, having application to the world independently of the existence of persons' psyches.

Secondly, like Moore and many others we want to distinguish concepts from *words* or other *linguistic items*.[17] Words, like sentences, belong to specific languages. Concepts, like propositions, do not. Plato's analysis of what knowledge is, for instance, was not an analysis of a word in Greek but — we want to say — an analysis of a concept which is independent of Greek or any other language.

Nevertheless, although concepts are not to be identified with verbal expressions they may, we suggest, be *expressed* by verbal expressions which are used to designate certain kinds of items: items of reference (names and descriptions); properties (one-place predicates); and relations (two-or-more-place predicates). Words, when used in certain ways, may *express* concepts just as sentences, when used in certain ways, may *express* propositions.

But *which* words, it will be asked, are the ones which express concepts? Our suggestion is that concepts are expressible by those words which feature in a kind of *open sentence*. An open sentence, in general, is a sentence which contains a gap such that, when the gap is filled with an appropriate expression, the resulting *closed sentence* expresses something true or false.[18] The particular kind of open sentence which can express a concept is that in which the gap is to be filled either (1) *by a referring expression* of some kind (whether it be an indeterminately referring expression like "something" or "everything" or a determinately referring expression such as a name or a description) or (2) *by a sentence expressing a proposition*. For instance, the open sentences

"... is a bachelor"

"... is older than ..."

"... is older than the Sphinx"

"... believes that ..."

"... and ..."

are all concept-expressing by these criteria, whereas the open sentences,

15. For a survey of some of these, see P.L. Heath, "Concept", in *The Encyclopedia of Philosophy*, ed. P. Edwards, New York, Macmillan, 1967.

16. See his "Concept and Object" in *Translations from the Philosophical Writings of Gottlob Frege*, ed. Peter Geach and Max Black, Oxford, Blackwell, 2nd. revised edition, 1959, pp. 42–55, and *The Foundations of Arithmetic*, trans. J.L. Austin, esp. pp. 33–37.

17. See "A Reply to My Critics" in *The Philosophy of G.E. Moore*, ed. P.A. Schilpp, La Salle, Open Court, 1968, vol. 2, p. 664.

18. Open sentences are sometimes called *propositional functions*. Russell defines a propositional function as "any expression containing an undetermined constituent, or several undetermined constituents, and becoming [we would say "expressing"] a proposition as soon as the undetermined constituents are determined." "The Philosophy of Logical Atomism" reprinted in *Logic and Knowledge*, ed. R.C. Marsh, London, George Allen & Unwin Ltd., 1956, p. 230.

"Henry . . . a bachelor"

"Henry is . . . James"

"Someone believes that all men . . . "

are *not* concept-expressing.[19] Thus the concept of being a bachelor (the concept of a particular *property*) is expressible in English by the words "is a bachelor", that of being older than (the concept of a particular *relation*) by the words "is older than", that of being older than the Sphinx (the concept of a particular *relational property*) by the words "is older than the Sphinx", the concept of belief (the concept of what is called a propositional attitude) by the words "believes that", and the concept of conjunction (the concept of a particular relation) by the word "and".

Note that, on this account of what a concept is, it makes perfectly good sense to talk of concepts of the items referred to by names or descriptions. For even though names and descriptions standardly fill the gaps in concept-expressing open sentences like those displayed above, this does not preclude names and descriptions from featuring *elsewhere* in concept-expressing open sentences. As Quine has pointed out,[20] closed sentences like

"Henry is a bachelor"

"Pegasus is a winged horse"

can give rise to open sentences like

"x is Henry and is a bachelor"

"x is Pegasus and is a winged horse"

respectively, by the simple although artificial device of forming the verb-expressions "is Henry" and "is Pegasus" from the corresponding nouns. In this way we can allow ourselves to talk, legitimately, of the concepts of being Henry, of being Pegasus, and so on. We can have the concept of being such-and-such an item just as we can have concepts of properties and concepts of relations.[21]

Logicians often emphasize that open sentences — unlike closed ones — do not express anything true or false. Clearly, therefore, if concepts are identified with what open sentences (of the above specified kind) express, concepts — unlike propositions — are neither true nor false. Nevertheless, it seems natural to speak of concepts being "true of" or "false of " certain items; or again, to speak of concepts

19. Hereinafter we shall write concept-expressing open sentences with variables in place of the gaps. In place of expressions which are referring expressions, we will use the lowercase English letters "p" through "z". These variables are to be known as *individual variables*. In place of sentences which express propositions, we will use the uppercase English letters "P" through "Z". These variables are to be known as *sentential variables*.

20. W.V.O. Quine, *From a Logical Point of View,* Cambridge, Harvard University Press, 1961, p. 8.

21. Note that we speak here of concepts *of* properties and *of* relations. Many philosophers treat concepts as if they themselves *were* properties. See, for instance: Frege, "Concept and Object", p. 51; P.F. Strawson, *Subject and Predicate in Logic and Grammar,* pp. 13–20; and A. Pap, *Semantics and Necessary Truth,* New Haven, Yale University Press, 1958, p. 435. And some of these — Strawson, for instance— also treat concepts as if they were constituents of, or — as he puts it — "figure in", propositions. But insofar as concepts figure in propositions they cannot be identical with properties. The property of being a winged horse is no more a constituent of the proposition that Pegasus is a winged horse than is Pegasus. To be sure, we speak equally of the property of being a winged horse and the concept of being a winged horse. But identity of mode of expression does not confer identity on that which is expressed.

as "having application to" or "lacking application to" certain items; or, conversely (following Frege), to speak of items "falling under" concepts. Thus we shall say that a concept, C, is *true of* or *applies to* an item, *a*, (or, conversely, that item, *a*, *falls under* concept, C) if and only if *a* has the attribute of which C is the concept, e.g., the concept of *being green* is true of (applies to) your eyes if and only if your eyes are green.[22]

Attributes of concepts

This talk of concepts being true of or applying to items allows us to give an account of the fact — often acknowledged but seldom explained — that concepts can stand to one another in the same sorts of modal relations as can propositions. Once more we invoke possible worlds. Thus:

> concept C_1 is *inconsistent* with concept C_2 if and only if there is no possible world in which both concepts apply to the same item (e.g., the concepts of being a sister and being a male)[23];
>
> concept C_1 is *consistent* with concept C_2 if and only if there is at least one possible world in which both concepts apply to the same item (e.g., the concepts of being a sister and being wise);
>
> concept C_1 *implies* concept C_2 if and only if any possible world in which C_1 applies to an item C_2 also applies to that item (e.g., the concepts of being a sister and being female); and
>
> concept C_1 is *equivalent* to concept C_2 if and only if there is no possible world in which either concept has application to an item without the other concept having application to the very same item (e.g., the concepts of being a sister and being a female sibling).

And other modal relations, from the total range depicted by the fifteen worlds-diagrams of figure *(1.i)*, may likewise hold between concepts.

In similar fashion we can give an account of the fact that concepts can have different modal properties. Thus, we shall say that

> concept C is *necessarily applicable* if and only if in every possible world C has application to some item or other (e.g., the concept of being a prime number);
>
> concept C is *necessarily nonapplicable* (a self-contradictory concept, as we usually say) if and only if there is no possible world in which C has application to some item or other (e.g., the concept of being both round and not round); and
>
> concept C is *contingently applicable* if and only if there is at least one

22. Plainly this account, which gives the applicability conditions for concepts of properties, can easily be extended to yield applicability conditions for concepts of relations, etc.

23. Similarly the concept expressed by "either . . . or . . . " on the one hand and the concept expressed by "neither . . . nor . . . " on the other are inconsistent, indeed contradictories, since there is no possible world in which both concepts apply to the same pair of propositions and in every possible world one of them does.

> possible world in which C has application to some item or other and at least one possible world in which C does not have application to any item whatever (e.g., the concept of being red).[24]

It is evident that these three kinds of modal property for concepts are analogous to the three kinds of modal property for propositions, viz., necessary truth, necessary falsity, and contingency respectively.

One qualification is necessary, however. We have defined necessarily applicable concepts merely as concepts which in every possible world are true of *at least one item*. Are there, it is then natural to ask, any concepts which are necessarily applicable in the stronger sense of applying in every possible world to *every* (not just at least one) item? It seems there are. The apparently simple concepts of being a thing (item, object), of being self-identical (identical with itself), and of being an existent[25] (existence) are all cases in point. So, too, are such patently complex concepts as those of being red or not red, being intelligent or not intelligent — indeed any concepts comprising the disjunction of a given concept C and its complement not-C.[26] Such concepts, we shall say, are *universally* as well as necessarily applicable.

By way of contrast, some necessarily applicable concepts will not be universally applicable. We shall say that they are *non-universally* as well as necessarily applicable. Such concepts are applicable in all possible worlds to some item or other but in some possible worlds do not apply to everything. As examples we might cite the concepts of all those items which philosophers have traditionally described as "necessary existents" (meaning that they exist in all possible worlds), e.g., numbers, sets, and propositions. Thus it might plausibly be argued: (i) that the number eight, for instance, exists in all possible worlds since in all possible worlds there exists a number which is twice four; (ii) that the *concept* of the number eight is therefore necessarily applicable; but nevertheless, (iii) that the concept of the number eight, unlike the concept of self-identity, is not universally as well as necessarily applicable since that concept is not true of every item (i.e., since some items do not have the property of being eight).

EXERCISES

1. *For each of the following concepts say what its modal property is, and for each of the 15 possible pairs say whether the relation of consistency holds between the members of the pair:*

   (a) is a parent

24. Strawson is getting at much the same point when he writes: "every general concept occupies a position in *logical* space (or in *a* logical space), a position which it can wholly share with no other" (*Subject and Predicate in Logic and Grammar,* p. 17). The metaphor of logical space is, of course, one we have employed already when talking about the set of all possible worlds.

25. Note that by "the concept of existence" we do *not* mean "the concept of actual existence". The concept of existence has application in non-actual possible worlds to all these non-actual possible items which exist therein; but the concept of actual existence clearly does not. We need to distinguish existence from actual existence in much the same way as we earlier distinguished truth from actual truth.

26. In saying that not-C is the complement of the concept C we mean that not-C has application to all those items to which C does not have application. Note that, for example, the concept of being meaningful is *not* the complement of the concept of being meaningless, since there are some things, e.g., propositions, to which neither concept is applicable.

(b) is someone's offspring

(c) is a daughter

(d) is a prime number

(e) is red and colorless

2. *Which of the above concepts imply which of the others?*

* * * * *

Identity conditions for concepts

Some equivalent concepts seem, intuitively, to be identical as well. Most of us would say, for instance, that the concept of being a sister is not only equivalent to the concept of being a female sibling but is identical to it. They are equivalent, of course, because there is no possible world in which one has application to a thing without the other having application to the very same thing. And they are identical, we would want to say, because anything that can truly be ascribed to one can truly be ascribed to the other; because, in a word, they have no differentiating attributes.[27] To be sure, the verbal expressions "sister" and "female sibling" are different (as, again, are the French word "soeur" and the German word "schwester"). And this might dispose us to say that the concepts are different. But they are not. These expressions are simply different ways of expressing one and the same concept; there is no attribute which can truly be ascribed to the concept expressed by one of these terms which cannot truly be ascribed to the concept expressed by each of the others.

Other equivalent concepts seem, intuitively, not to be identical. To cite just one sort of case: the concept of being red or not red is equivalent to the concept of being intelligent or not intelligent. They satisfy our definition of equivalence, as do all concepts which are universally-cum-necessarily applicable. Yet they are not identical, we feel, insofar as certain attributes of one are different from attributes of the other, e.g., they have different constituents. What account, if any, is to be given of this stronger notion of concept-identity?

There are five sorts of case that we will need to consider:

(1) Among the set of concepts which are universally-cum-necessarily applicable are some which do not involve disjunctions of complementaries. These are the seemingly simple concepts of thinghood, of self-identity and of existence. Our first task must be to determine whether these concepts are identical as well as equivalent. Are there, then, any differentiating attributes which would render these concepts nonidentical? Provided we remember that by "the concept of existence" we mean the concept which applies in each possible world — not just the actual one — to all the items which exist therein, it seems that there are no attributes of the concept of existence which differentiate it from the concept of thinghood or, for that matter, from the concept of self-identity. It seems that to have the concept of a possible existent just *is* to have the concept of a possible thing and just *is*, again, to have the concept of a self-identical thing. In any case, many philosophers have treated these concepts, pairwise at least, as if they are identical. Thus Kant, for instance, claims "we do not make the least addition to the thing when we further declare that this thing *is*", which amounts to saying that the concepts of thinghood and existence

27. For the concept of a differentiating attribute see chapter 1, section 4, p. 39.

are identical.[28] And Salmon and Nakhnikian have shown that the concept of existence — standardly expressed in logic by "Ex" — can be defined as nothing more nor less than the concept of identity — standardly expressed by "x = x" — without disturbing any of the accepted results of logic.[29] There seem, more generally, to be no untoward philosophical, or logical, consequences of presuming the identity of these 'three' concepts.

(2) By way of contrast, there are many other universally-cum-necessarily applicable concepts of which we would want to say that, though equivalent, they are *not* identical. As already noted, the concept of being red or not red is equivalent but not identical to the concept of being intelligent or not intelligent. And we can elaborate on the reasons why. For among the simpler concepts which are the constituents of one there are some which are not even equivalent to those which are constituents of the other. The concept of being red has application in some possible worlds to items to which the concept of being intelligent does not. Hence these two concepts are not even equivalent; a fortiori they are not identical. But if they are not identical then neither, of course, are the complex disjunctions (of complementaries) of which they are constituents.

(3) Among the set of concepts which are necessarily nonapplicable we must include the complementaries of the universally-cum-necessarily applicable concepts in category (1) above, viz., the concepts of whatever is non-self-identical, of whatever is not a possible thing, and of whatever is not a possible existent. These concepts plainly satisfy our definition of equivalence. And, if our earlier arguments about their complementaries are sound, these will be identical as well.

(4) The matter stands otherwise for those necessarily nonapplicable concepts which consist of the *conjunctions* of complementary concepts: for instance, the concepts of being red *and* not red and of being intelligent *and* not intelligent. For these cases, concept-equivalence sometimes fails to carry with it concept-identity. And the reasoning given for cases in category (2) explains, mutatis mutandis, why. They will be nonidentical just when any of their constituent concepts are nonequivalent.

(5) Consider finally those cases which involve either (a) the disjunction of a contingently applicable concept with a concept belonging to categories (1) through (4), or (b) the conjunction of a contingently applicable concept with a (1) - (4) concept. As examples of (a) we have: the concept of being a sister or red or not red, and the concept of being a sister or intelligent or not intelligent. Clearly both these concepts will be equivalent to one another and equivalent, moreover, to the simple concept of being a sister (tout court). Yet, for the reasons already given, they will not be identical. As examples of (b) we have: the concept of being a sister and either red or not red, and the concept of being a sister and either intelligent or not intelligent. Here, too, for the reasons given, we can explain why such concepts are equivalent without being identical.

Indeed, if we review the three categories of cases in which equivalence may hold but identity fail to hold, viz., categories (2), (4) and (5), it should now be evident that the same explanation holds for each sort of case. Concepts are nonidentical just when at least one of the constituents of one is not equivalent to at least one of the constituents of the other.

28. *Critique of Pure Reason,* p. 628.

29. " 'Exists' as a Predicate", *Philosophical Review,* vol. 66 (1950), p. 539.

Turning this around, we obtain the following *identity-conditions for concepts:*

> Concepts are identical if and only if they are equivalent and there is no consituent of one which is not equivalent to one of the constituents of the other.

Since equivalence of concepts has already been explicated in terms of their applicability-conditions across the set of all possible worlds, it follows that the identity of concepts is likewise explicable.

Analysis of propositions

We started out to give a theory of the nature of propositions and found it necessary first to give a theory of the nature of concepts. It is time we connected the two.

A long-standing tradition in philosophy has it that one of the chief aims of philosophy is to *analyze* (and thus gain a clearer understanding of what is involved in) propositions and concepts. The tradition enjoyed (and in some ways is still enjoying) its heyday in the work of so-called "Analytic Philosophers" within the present century. But it had its roots in the work of Plato and Aristotle, and has been exemplified in the work of all great philosophers since then. There is another tradition according to which propositions have concepts as their constituents. It forms a keystone in the philosophical writings of Kant.[30] But it, too, is traceable back to the Greeks and still lives on in the work of many contemporary philosophers.[31] These two traditions come together in the view, perhaps most clearly articulated by G. E. Moore, that sooner or later, in the analysis of a proposition, one comes across a set of concepts which are its constituents and these, if complex, may be analyzed into still simpler concepts.[32] It is this view which we must now explore.

By "analysis", in general, we mean the examination of a complex of some kind with a view to determining what are its constituents and what are the relations between these constituents. Now it seems clear that on *any* view of what propositions are — whether they are identified with sentences, meanings, sets of possible worlds, or whatnot — it would be agreed that they are *complex, structured* items and hence subject to analysis. But what *are* the constituents of propositions? And in what relations do they stand to one another?

On the theory we are here offering the ultimate constituents of propositions are concepts.[33] For example: the constituents of the (false) property-ascribing proposition

(2.1) Muhammed Ali is an Olympic skier

30. For Kant *every* proposition is either such that the concept of the predicate is "contained" in the concept of the subject (i.e., is analytic) or such that the concept of the predicate lies "outside" the concept of the subject (i.e., is synthetic). See his *Critique of Pure Reason,* Introduction, B10.

31. Peter Strawson, for example, talks of "the concepts which figure in a proposition". See his editorial introduction to *Philosophical Logic,* London, Oxford University Press, 1967, p. 10.

32. See, especially, "A Reply to My Critics", in *The Philosophy of G.E. Moore*, ed. P.A. Schilpp, vol. 2, p. 664.

33. We say that the *ultimate* constituents of propositions are concepts since some propositions, viz., so-called compound propositions, have other (simpler) propositions as *their* constituents. The point is, however, that the *simplest* propositions in a compound propositions have concepts as *their* constituents. In order to avoid unnecessary complications we will proceed for the present by largely ignoring compound propositions. We show how they can be handled in chapter 4, section 2.

are the contingently applicable concepts of being Muhammed Ali and being an Olympic skier; the constituents of the (false) relational proposition

(2.2) Canada is south of Mexico

are the contingently applicable concepts of being Canada, being Mexico, and being south of.

Propositions, however, are not just *collections* (unordered sets) of their constituent concepts. A proposition is what it is by virtue of the fact that its constituents stand to one another in certain *ordered* ways. Wittgenstein made this sort of point when he wrote, in his *Tractatus Logico-Philosophicus:*

> A proposition is not a medley of words. — (Just as a theme in music is not a medley of notes.) A proposition is articulated. *(3.141)*

And G. E. Moore made the same point, more fully, when he wrote:

> The fact which we express by saying that Edward VII was father of George V, obviously does not simply consist in Edward, George, *and* the relation of fatherhood. In order that the fact may be, it is obviously not sufficient that there should merely be George and Edward and the relation of fatherhood; it is further necessary that the relation should *relate* Edward to George, and not only so, but also that it should relate them in the particular way which we express by saying that Edward was father of George.[34]

Whatever account we are to give of the proposition-yielding relation, it is clear that this relation must be sensitive to the order in which the conceptual constituents of a proposition occur within that proposition. This becomes clear when we consider the proposition

(2.2) Canada is south of Mexico

and its converse

(2.3) Mexico is south of Canada.

If *(2.2)* and *(2.3)* were constituted merely by the sets of their conceptual constituents, viz., {being Canada, being Mexico, being south of}, we should have to conclude that they were equivalent, and indeed identical.

It will not do to describe the ordering relation which holds between the conceptual constituents of a proposition as if it were itself another constituent of that proposition. For then we should need to specify still another ordering relation by means of which the set of constituents, when thus expanded, is ordered. In short, we would be embarked on an infinite regress.

Moreover, the ordering relation is not simply one which ascribes certain conceptual constituents to some others. Consider, for example, the proposition

(2.1) Muhammed Ali is an Olympic skier

whose conceptual components are the members of

{*being Muhammed Ali, being an Olympic skier*}

34. G.E. Moore, "External and Internal Relations", in *Philosophical Studies,* London, Routledge & Kegan Paul, 1965 (copyright 1922), pp. 277-278.

Clearly proposition *(2.1)* does not ascribe the *concept of being an Olympic skier* to the *concept of being Muhammed Ali*. Rather it ascribes (the *property* of) being an Olympic skier to (the *item*) Muhammed Ali himself.

The proposition-yielding relation, then, must be one which assigns attributes of which certain constituents are the concepts to items of which other constituents are the concepts. In the case of proposition *(2.1)*, this relation may be expressed by saying:

> the item of which *being Muhammed Ali* is the concept has the attribute of which *being an Olympic skier* is the concept

or, in the locution of modern logic:

> there is an item, x, such that x falls under the concept of *being Muhammed Ali* and x falls under the concept of *being an Olympic skier.*

And, in the case of proposition *(2.2)*, the proposition-yielding relation may be expressed by saying:

> The item of which *being Canada* is the concept stands in the relation of which *being south of* is the concept to the item of which *being Mexico* is the concept

or, in the locution of modern logic:

> there is an item, x, such that x falls under the concept of *being Canada,* and there is an item, y, such that y falls under the concept of *being Mexico,* and x and y (in that order) fall under the concept of *being south of.*

In spite of the differences between these two cases a generalization can be made. Let us, borrowing from Strawson,[35] write

"*ass* { }"

to represent the *proposition-yielding relation.* Then we can say that the structure, *ass* {being Muhammed Ali, being an Olympic skier}, just *is* the proposition *(2.1);* that the structure, *ass* {being Canada, being south of, being Mexico}, just *is* the proposition *(2.2);* and so on. More generally, we can say that a proposition just *is* its constituent concepts standing in the proposition-yielding relation. Or, equivalently, we may say — with less appearance of circularity — that a proposition just *is* a truth-valued combination of concepts.[36]

Identity conditions for propositions

In chapter 1 (pp. 39–40) we argued that propositions are nonidentical if there are any attributes of one which are not attributes of the other. The fact that one proposition involves concepts different from those involved in another is sufficient to differentiate them. We now see that propositions may also

35. P.F. Strawson, *Subject and Predicate in Logic and Grammar.* Strawson gives a much more detailed and sophisticated account of the proposition-yielding relation. See especially pp. 20–35 and 84–92. ("*ass*" is his abbreviation of "assignment".)

36. For more on the relation between propositions and concepts, see chapter 4, section 2.

be differentiated from one another by having their conceptual components ordered differently within the proposition-yielding relation. This taken together with the account above of the identity-conditions for concepts provides a solution to the problem of giving identity-conditions for propositions:

> a proposition P is identical to a proposition Q if and only if P and Q have identical conceptual constituents, standing in the same order, in the proposition-yielding relation.

This account of what propositions *are* answers a question about their ontological status. It says nothing about how we might refer to them or individuate them in practice. To these matters we now turn.

4. ON REFERRING TO SENTENCES AND TO PROPOSITIONS

Techniques for referring to sentences

Sentence-tokens of some sentence-types can be asserted and thus come to express propositions. But there are things other than asserting that can be done with a sentence-token of a type the tokens of which are typically used to assert a proposition. We might, for example, count the words in it, translate it, paraphrase it (which is of course a case of translating within one language), parse it, or examine its phonetic structure, etc. In such cases the sentence-token is not a vehicle for communication but an object of study. And in such cases we want a device by which we can refer to the sentence without also asserting it. One device is to enclose the entire sentence-token in quotation marks.

Example

"John loves Mary" means the same as "Mary is loved by John."

Sometimes, for the sake of emphasis in exposition, we add the redundant terms "the sentence" before the quoted sentence and place commas to the left and right of the quotation marks.

Example

The sentence, "John loves Mary", means the same as the sentence, "Mary is loved by John."

A sentence along with surrounding quotation marks is the *conventional name* of the sentence within the quotation marks. Thus one way of referring to a sentence is by its conventional name.

A second way to refer to a sentence is by the use of an assigned name rather than the conventional name. The conventional names of long sentences are themselves even longer. Thus when referring to some sentences it becomes cumbersome to use their conventional names. We can assign a nonconventional name by stipulation. There is a variety of devices in common use to effect such an

assignment, and there is a variety of different kinds of symbols used for such names. The most common symbols are those that use capital letters of the English alphabet, numerals, or combinations of letters and numerals. In these pages we shall use all three kinds of symbols. The actual assignment may be effected as shown in the following examples:

Examples

Let "A"="John loves Mary."

(B2) "Mary is loved by John."

Using these shorter, assigned names, we can reiterate our former claim in a more compact form, viz., "A means the same as B2." A related device which we will use on occasion to assign a name to a sentence is to set that sentence off from the body of the text, indent it, place quotation marks around it, and finally to preface it with a set of parentheses containing two numerals separated by a point.

Example

(13.6) "Someone reported the accident."

The role of the *"13"* in the above example is to indicate the chapter in which the sentence was first labeled, and the role of the *"6"* is to indicate which numbered example in the chapter this sentence happened to be. Subsequently, if we wished to refer to this sentence we would do so by using the symbol *"(13.6)"* as the name of the sentence; for example, we might write: "*(13.6)* contains four words."

A third way of referring to sentences is by describing them. Thus, for example, we might say that the first sentence of this paragraph consists of eleven English words. The descriptive expression "the first sentence of this paragraph" refers to the sentence "A third way of referring to sentences is by describing them." This method of description gives us the ability to refer to certain sentences even when we do not know their conventional names. Thus, although I don't know what words you uttered when you uttered your first sentence after waking today and am consequently unable to refer to that sentence by its conventional name, I can refer to it, nonetheless, simply by describing it as: "the first sentence you uttered after waking today".

This device of describing sentences rather than naming them is extremely useful. Without it we could not, for example, ask a person to repeat the last sentence he just uttered but which we failed to catch. If we were required to name the sentence in order to ask him to repeat it, we would, of course, be unable to do so. It makes sense to say, "I did not hear what you just said", but it is very peculiar (to say the least) to say, "I did not hear you just say 'Hello, I am Alfred E. Neuman.' "

Basic techniques for referring to propositions

There are at least three different ways to refer to sentences. How shall we refer to propositions? Just as we might wish not to utter a sentence assertively but rather to say something about it, so too we might wish not to express a proposition but to say something about it. For example, we might wish to say that one proposition in particular logically follows from another specified one, but not wish to express either one. In such a case we will need a device by means of which we can refer to a proposition.

One such device uses the English word, "that". Prefacing a sentence with the word "that" generates the *name* of the proposition which that sentence would express if asserted.

Example

Incorrect: John was late logically follows from John and Mary were late.

Incorrect: "John was late" logically follows from "John and Mary were late."

Correct: That John was late logically follows from that John and Mary were late.

The last example above, although grammatically correct, grates on our ear. Thus sometimes for the sake of euphonics and sometimes for the sake of emphasis we add the redundant term "the proposition" before the "that".

Example

The proposition that John was late logically follows from the proposition that John and Mary were late.

A second way in which we can refer to propositions is to place a sentence in quotation marks and preface the resulting sentence-name with the words, "the proposition expressed by the sentence", or more often, its abbreviation, "the proposition expressed by".

Example

The proposition expressed by "John was late" logically follows from the proposition expressed by "John and Mary were late."

Just as in the case of sentences, so too in the case of propositions we can refer to propositions by assigning them numerical names by stipulation. We have already used this device in chapter 1. There we indented a sentence-token, which expressed the proposition under consideration, and assigned a numerical label. That we were naming a proposition, and not a sentence, is conveyed by the fact that the sentence-token appears without quotation marks. The accompanying numerical label (e.g., "*(1.3)*") constructed after the fashion for sentence-names as described above, serves as a nonconventional name for the proposition expressed by the indented sentence. In short, labels attached to indented sentences which appear *with* quotation marks are the names of *sentences* [see, e.g., *(2.4)*, p. 101]; labels attached to indented sentences which appear *without* quotation marks are the names of *propositions* [see, e.g., *(1.3)*, p. 16].

On occasion we shall also use English letters and combinations of letters and numerals (e.g., "P1")

as the names of propositions. We will assign such names in any of three ways. First we may depend on the context of the discussion to make it clear that a given symbol stands for a particular proposition (or for a sentence, as the case may be). Or we may state explicitly that we are assigning some symbol to be the name of a particular proposition. For example, we could if we pleased, state explicitly that the letter "Q" will name the proposition expressed by the sentence "John was late", and that the letter "R" will name the proposition expressed by the sentence "John and Mary were late." Thus using "Q" and "R" as the names of propositions, it would be perfectly proper to write "Q logically follows from R." Quotation marks would *not* be needed around the names of the propositions, nor would those names need to be prefaced with "that". Finally we shall sometimes use an explicit shorthand device, viz., that of using the equals-sign ("=") to make the assignment.

Example

Let "P2" = Today is Monday.

This is to be read as saying: "Let the symbol 'P2' be the name of the proposition expressed by the sentence 'Today is Monday'." Alternatively, this may be read as "P2 is the proposition that today is Monday." The fact that the sentence which occurs to the right of the equals-sign appears *without* quotation marks indicates that we are here constructing the name of a *proposition* and not of a sentence.

Fourthly, again as in the case of sentences, we can refer to propositions by describing them. The expression "the first proposition you expressed after waking today" certainly refers to a proposition, although admittedly, you might not recall which one it is.

There is yet a fifth way of referring to propositions. It is by constructing the gerund phrase corresponding to the indicative sentence which expresses the proposition. Thus the following two sentences mean the same thing:

"The proposition that John walked down the street logically follows from the proposition that John and his dog walked down the street."

"John's having walked down the street logically follows from John and his dog's having walked down the street."

Advanced technique for referring to propositions: context-free references

The technique of prefacing a sentence with the word "that" in order to refer to a proposition is by far the most common technique at our disposal. It is not, it should be pointed out, a technical device invented by logicians. Quite the contrary, it is a device which originates in workaday prose. Everyone, logician and nonlogician alike, uses it countless times every day. Just consider how many times a day we say and hear such things as "The prime minister said that the foreign minister will make a trip abroad in September", "Someone once said that to err is human", and "Let me remind you that I told you that you should call ahead if you are going to be late."

For most purposes, this simple technique of prefacing a sentence with the word "that" succeeds in securing reference to the proposition intended. But it doesn't always. There are some circumstances, both in ordinary affairs and in the more specialized concerns of logic, in which it becomes necessary to resort to somewhat more sophisticated techniques.

For example, imagine that on Dec. 25, 1973, Jane Smith were to have said, "John is not feeling

well", and sometime later, in different circumstances on Jan. 1, 1974, in reply to a routine inquiry about John's health, she were to have said, "John is feeling fine." If we were to try to report both things that Jane Smith said, restricting ourselves to the simple device of merely repeating the sentences she uttered prefacing them by "that", we would find ourselves saying something of this sort:

(2.4) "Jane Smith said that John is not feeling well and that John is feeling fine."

This way of putting it would make it appear that Jane Smith had contradicted herself. But clearly she had not done so.

Or consider the case in which three persons, Albert, Beatrice, and Constance, are talking together. Albert says, "I remember the first time I met Beatrice." Constance, who is momentarily distracted, doesn't catch this remark, and asks Beatrice what Albert said. Beatrice can hardly adopt the naive 'that'-construction. If she did, she would find herself saying, "He said that I remember the first time I met Beatrice"; that is, she would find herself claiming that Albert said she remembers the first time she met herself. Instead she should (and would) say something of this sort: "He said that he remembers the first time he met me."

Obviously, for some cases, we shall require a more sophisticated technique for referring to a proposition than the simple one of prefacing with "that" the sentence which happened on an occasion to express that proposition. Many techniques are used in commonplace prose. We will not, and probably cannot, catalog them all. Instead we shall outline a single strong technique which works in all cases, a technique which, admittedly, were it to be adopted widely in workaday prose, would lead to stilted talk. But the latter is no real objection; the technique is designed to satisfy the technical requirements of logic, and is not intended for adoption in ordinary speech and writing.

The sorts of difficulties which we have just reviewed, viz., the appearance of contradiction in the case of the report of what Jane Smith said, and the mistake in reference in what Beatrice might have said, can both be corrected by making context-free references to the propositions expressed.

For many sentences, the matter of which proposition that sentence happens to express will depend importantly on the *context* of the uttering or the writing of that sentence. Consider, for example, the sentence-type corresponding to

(2.5) "She purchased a new home yesterday."

What proposition would be expressed by the uttering of a sentence-token of this type? Obviously there is no single answer. Which proposition happens to be expressed on a given occasion of utterance or inscription of a token of this type will depend crucially on the particular circumstances of that utterance or inscription, i.e., on the context. It will depend on who is being referred to by "she" and will likewise depend on which day is being referred to by "yesterday", and this latter, of course, will be determined by the matter of when the sentence-token is written or uttered.

One technique for making a context-free reference to a proposition involves, first, applying that technique adopted by the sentence-theorists to construct context-free sentences, viz., paraphrasing the original utterance in the following way:

> All pronouns which refer to particular persons, places, times, things, events, etc., are to be replaced by nouns or descriptive phrases which denote just those items; and all tacit references in an assertion, whether to persons, places, times, things, events, etc., are to be made explicit.

Then, secondly, the context-free sentence resulting from the paraphrase is to be prefaced by "that".

Note, of course, that the first step, the paraphrasing, is not a mechanical procedure. It involves *understanding* what proposition is being expressed.[37]

Let's take two examples. Suppose that someone were to say, "I was here yesterday." What proposition are we to say that that person had expressed? To begin we would have to know *who* the speaker was (i.e., the referent of the pronoun "I"). Let us suppose it was Bertrand Russell. Secondly we would have to know *when* the sentence was uttered; this would be required in order that we should know what day was being referred to by "yesterday". Let us suppose that the sentence was uttered on Nov. 2, 1958. And thirdly, we would have to know *where* the sentence was uttered. Suppose that it was uttered on the steps of Royal Albert Hall in London. Knowing these three things, but only then, we are in a position to make a *context-free* reference to the proposition expressed. And it is, simply, the proposition that Bertrand Russell was on the steps of the Royal Albert Hall in London on Nov. 1, 1958.

For our second example, let us return to *(2.4)*, i.e., the problematic report of what Jane Smith said about John's health. By making context-free references to the propositions she expressed, all appearance of her having contradicted herself disappears:

(2.6) "Jane Smith said that John was not feeling well on Dec 25, 1973 and that John was feeling fine on Jan. 1, 1974."

Of course, not all sentences need to be repaired in this fashion before they are suitable for prefacing with "that". Many will be quite correct just as they stand. For example, no such repair or modification would be required for the sentence "Copper conducts electricity", nor for the sentence "Two plus two equals four", nor for the sentence "Canada's Centennial Year was 1967." But for any sentence in which there is either a tacit reference to a place or to a time or an occurrence of a pronoun whose referent is a particular person, place, thing, time, event, etc., that sentence must be paraphrased to make all such references explicit if that sentence is to be used in a context-free 'that'-construction.[38]

EXERCISES

Add quotation marks in the following in all, and only those, places where they are required so as to render the claim being made true. If a sentence is correct as it stands, mark it as correct.

37. Sometimes a sentence is ambiguous and hence more than one proposition may be understood as being expressed by it. For such cases, the above technique does not suffice. Techniques for handling ambiguous sentences will be discussed in section 7.

38. For present purposes this final summing up of the technique for generating context-free references to propositions will have to suffice. The inclusion of the qualification "particular" is intended to exclude such cases as: "If any oxygen remains in a light bulb after manufacture, then it will cause that bulb to burn out prematurely." Here the terms "it" and "that" do not refer to particulars thing — in the vocabulary of the Logic of Analysed Propositions we would want to say that these terms are bound by quantifiers — and they would not have to be "paraphrased-away". But this still leaves the following case: "If Bertrand Russell was one of the authors of *Principia Mathematica,* then he was a collaborator of Alfred North Whitehead's." According to our rule, we should have to replace "he" in this sentence (since "he" refers to a particular) with "Bertrand Russell". While no harm will result if we do, it is not, it is clear, strictly required in this case. But it is easier to make the rule slightly stronger than need be, than to make it more complicated just in order that it should be only as strong as absolutely necessary.

1. ***Today is Monday contains three word-tokens.***
2. *That today is Monday implies that tomorrow is Tuesday.*
3. *The name of the proposition that you are twenty-one years old is that you are twenty-one years old.*
4. *That two plus two equals four is true.*
5. *Two plus two equals four is neither true nor false.*
6. *Whatever is true is not also false.*
7. *Two plus two equals four contains the same number of word-tokens as four plus four equals eight.*
8. *The sentence-type instanced by the cat is on the mat is a context-dependent sentence-type.*
9. *The context-free sentence copper conducts electricity expresses a possibly true proposition.*
10. *That today is Monday is the name of a proposition which implies that tomorrow is Tuesday.*

* * * * *

Untensed verbs in context-free references

The great Scottish philosopher, David Hume, was born in 1711. Suppose that in 1719 his mother had said,

(2.7) "David will be ten years old in two years."

Suppose also that David Hume himself said in 1721,

(2.8) "I am ten years old this year."

And finally, suppose that three years later a friend of his had said to him,

(2.9) "You were ten years old three years ago."

Clearly, all three speakers would have expressed the *same* proposition; but one would have used a future tense verb, one a present tense, and one a past tense. Thus, obviously, a single proposition can be expressed by a variety of sentences using verbs of different tenses. How, then, shall we refer to the proposition expressed by *(2.7)*, *(2.8)* and *(2.9)*? Shall we use a future tense verb, a present tense one, or a past tense one? Of course we can do any of these; we need only take recourse to the device of saying: "the proposition expressed by the sentence, '. . . . . .', when spoken by so-and-so at such-and-such a time in this-or-that place". But suppose we wish to refer to the proposition expressed without taking recourse to quoting a specific utterance. Suppose, more particularly, that we wish to avail ourselves of a context-free 'that'-construction.

If we refer to a proposition by means of a context-free 'that'-construction, then any time which is

referred to by that proposition will be explicitly expressed. But if this is so, then the verb we use need not be tensed; the explicit reference to a specific time will carry the temporal information.

How shall we express an untensed verb? The convention adopted is to use symbols which are typographically or phonemically indistinguishable from present tense verbs but to use them to represent untensed verbs. Thus, for example, a context-free reference to the proposition expressed by *(2.7)*, *(2.8)*, and *(2.9)* using an untensed verb would be,

(2.10) "the proposition that David Hume is ten years old in 1721".

The "is" which occurs in *(2.10)* is not, appearances notwithstanding, a present tense verb; it is an untensed one. It is being used here in the same way in which the verb "conducts" is being used in the sentence,

(2.11) "Copper conducts electricity."

In this latter sentence, although the verb "conducts" is typographically indistinguishable from a present tense verb, it is not a present tense verb. Rather, it is an untensed verb, and what is being expressed by *(2.11)* is not the proposition that copper conducts electricity at present; it is the proposition that copper conducts electricity at all times — past, present, and future.

5. THE OMNITEMPORALITY OF TRUTH

We have said that noncontingent propositions have the same truth-values in all possible worlds, and have said that contingent propositions have different truth-values in different possible worlds. But these claims leave a particular question unanswered, viz., "Can propositions *change* their truth-values?" If a proposition is true (or false) at one time in a possible world, does it have that truth-value in that possible world at all times, or might it change in truth-value from time to time?[39]

Consider the proposition that John Doe is ill on Dec. 25, 1973. Let us call this proposition "J". Suppose now that John Doe was in fact suffering grievously from influenza on Dec. 25, 1973. Clearly the proposition J is *now* (several years later) true. But was J true *before* Dec. 25, 1973? Was it true, for example, a month earlier, on Nov. 25, 1973? Was it true a year earlier? Was it true ten thousand years earlier?

To all these latter questions we wish to reply: yes. We wish to argue that all propositions are omnitemporally true or false; that they do not "become" true or false; that those which are true always have been and ever will be true, and those which are false always have been and ever will be false.

How shall we justify this answer?

We begin by noting that the question "When did it become true?" cannot even intelligibly be raised for a vast number of propositions. Are we seriously to ask when it became true that four is twice two, or when it became false that all squares have eleven interior angles? Of course, there may well have been, and probably were, specific times when these noncontingent propositions first became *known*. But surely we would want to insist that in coming to have their truth-values known, these propositions did not thereby *become* true or false. They had been, as it were, true or false all along; that is, the proposition that four is twice two was true even before anyone knew it; more specifically

39. In this section we shall concern ourselves only with the question of the *temporal* changeability of truth-values. We leave the question of the *spatial* changeability of truth-values, that is, the question whether propositions can change in truth-value from place to place, to be explored in the exercises at the end of this section.

it always has been true, is now, and ever will be; it is, in a word, omnitemporally true; there never was a time when it was anything other than true; it never 'became' true.

Or consider the contingent proposition, the natural law that pure water freezes (at standard atmospheric pressure) at 32°F. Again it strikes us peculiar to ask, "When did this proposition become true?" Surely not when it was discovered to be true. Water had been freezing at 32°F. millions of years before anyone discovered that fact and will (presumably) continue to freeze at 32°F. long after human beings have disappeared from the universe. Can we, then, identify the moment of this proposition's becoming true with the moment when some water first froze at someplace or other in the dark recesses of prehistory? This answer doesn't sit any more comfortably. For we should surely want to say of a still earlier epoch that it was true of water then that it was the sort of stuff which would freeze at 32°F., even if none of it happened yet to have frozen. All in all, there just doesn't seem to be any time, any specific moment of history, of which it can reasonably be said that it was at that moment that the proposition that water freezes at 32°F. 'became' true.

For a truly prodigious number of propositions the question "When did it become true (or false)?" does not even intelligibly arise. But is this the case for *all* propositions? Could the question be significant for some special class of propositions? Are there some propositions which we would want to say did 'become' true (or false) at some particular time? Clearly the proposition-theory would be both tidier and simpler if *all* propositions were to turn out to be omnitemporally true or false. But can such a thesis be maintained? Are there any untoward consequences in our saying that every proposition bears its truth-value (in each possible world) omnitemporally?

Some philosophers have thought that there are. In particular they have argued that it must be allowed that at least some propositions are not omnitemporally true or false. And they have been led to this position because they have thought that to maintain otherwise is to commit oneself to a belief in fatalism, i.e., the doctrine that all our actions are beyond our control, that they are in some sense predestined. What might lead a person to such a belief? The reasoning is something of this sort:

> If it is true now that I will do A tomorrow, then tomorrow I will do A. But if it is true now that I will do A tomorrow, then tomorrow, when I do A, I am not choosing to do it; I am not responsible for doing it; I am doing it because it was destined that I should do it.

But this argument commits a serious logical blunder. It puts the cart before the horse, so to speak. It is not a proposition's being true which makes us do something tomorrow. It is rather that our doing something tomorrow accounts for a certain proposition's being true, namely the proposition which ascribes that particular action to us tomorrow. It may well be true today that you will sneeze four times tomorrow. But it is not the truth of this proposition which makes you sneeze. Rather it is that you do sneeze four times tomorrow which 'makes' or accounts for this particular proposition's truth. What makes you sneeze is an irritation in your nose, not the truth-value of a proposition. Truth-values of propositions are not causal agents. They don't cause anything, sneezes, murders, acts of generosity, or extreme contrition. They are just not the *sorts* of things which make us *do* anything at all. But if this is so, then there is no cause for concern in allowing a proposition about the future to be conceived of as being true even now. That a proposition about the future is even now true does not, it is clear, entail fatalism. And consequently there is no objection on this score to saying that what happens in the future, including those things which are within our capacity to bring about, accounts for certain propositions (viz., all those about the future) being true (or false) today, yesterday, and a million years ago.[40]

40. For a more detailed discussion of fatalism, see R.D. Bradley's "Must the future be what it is going to be?" *Mind*, vol. 68 (1959), reprinted in *The Philosophy of Time*, ed. R.M. Gale, Garden City, N.Y., Anchor Books, Doubleday & Co. Inc., 1967, pp. 232–251.

There is yet another, very different sort of argument which has sometimes been advanced in support of the position that some propositions 'become' true at a certain time. It is an argument which trades on the well-known fact that words often vary in meaning over a period of time.[41] For example, by the then-current definition of "obscene", public nudity was considered to be obscene in Victorian times; by today's (or tomorrow's) definition, public nudity is not considered to be in and of itself obscene. Reflecting on these facts, some persons have been tempted to put the matter this way:

> The proposition expressed by "Public nudity is obscene" was true in the late nineteenth century, but it is no longer true, i.e., it has changed its truth-value, it has become false, in the latter half of the twentieth century.

If one adopts the sentence/proposition distinction, then it is easy to see that this way of putting the matter rests on an elementary muddle. The point properly should be put this way:

> The sentence "Public nudity is obscene" in the late nineteenth century expressed a proposition which is true, and that same sentence (or more exactly, a sentence-token of that same type) when uttered in the late twentieth century expresses a (different) proposition which is false.

What we have here is not a case of one proposition which has a changing truth-value, but rather one sentence-type whose tokens over a period of time express different propositions. What changes over the course of the century mentioned is not the truth-value of a proposition, but which proposition a particular sentence-type happens to express. If "obscene" changes in meaning, then "Public nudity is obscene" might very well, and probably will, express a different proposition. The case may be likened to a change in the referent of the expression "the king" in the sentence "The king is bald." Suppose a country, let us say Upper Sylvania, has a succession of kings. Then, through the years when various persons in that country, speaking of their own king, utter the sentence "The king is bald" it will happen that some will speak truly and others falsely. But it is not that one proposition switches its truth-value from time to time. Quite the contrary, as various kings come and go, the sentence "The king is bald" expresses a number of different propositions. Spoken in 1834, the sentence "The king is bald" would have expressed a proposition about the then-current king, Modernus XIV; and the same sentence spoken in 1947 would have expressed a proposition about the then-current king (the great-great grandson of Modernus XIV), Reactus I.

By taking advantage of the technique of constructing context-free references to propositions, we can readily dispel the appearance that there is but a single proposition involved in this latter case. There is not one proposition involved, but several, e.g., the proposition that Upper Sylvania's king in 1834, Modernus XIV, is bald; the proposition that Upper Sylvania's king in 1947, Reactus I, is bald; etc.

Once again we see that an attempt to argue that some propositions 'become' true or false rests on a confusion and fails to make a good case for adopting such a thesis.

In at least two instances, then, those who would argue that some propositions ought to be thought of as not being omnitemporally true (or false) fail to make their case. This is not to say, of course, that there might not exist better arguments which would support their contention. But we do not

41. And, we might add, from place to place. Recall the discussion, earlier in this chapter, of the term "disinterested." (See p. 78.)

know of any, and, clearly, the onus is on those who would so maintain to support their position with better arguments. Until those arguments are forthcoming, the desire for simplicity and tidiness would demand that we assume that all propositions are omnitemporally true or omnitemporally false.

There is yet another reason for our wanting to say that propositions are omnitemporally true or false, and it is that to deny it would render logic itself vastly more complicated. For one thing we would require (at least) a third 'truth-value', which is to say we would have to abandon the Law of the Excluded Middle. For whatever considerations demand that we maintain that propositions about the future are not now true also demand that propositions about the future are not now false. Whatever argument leads to the conclusion that the proposition that you will sneeze four times tomorrow is not now true, must *mutatis mutandis* apply to the *falsehood* of that proposition's *contradictories,* e.g., that it is not the case that you will sneeze four times tomorrow. One cannot, with consistency, deny truth to the former and assert the falsehood of the latter. Thus the theory that propositions about the future cannot be true now, implies the stronger thesis that propositions about the future lack any truth-value whatever, i.e., are neither true nor false. But *this* consequence would effectively destroy the account we have given of the relations of contradiction, equivalence, etc. For all these accounts are premised on the supposition that in every possible world every proposition has either one or the other truth-value. Our accounts of these relations, then, would have to be made considerably more complicated.

In sum, our reasons for postulating that propositions — noncontingent and contingent alike — are omnitemporally true or false are twofold: (1) so assuming does not seem to have any undesirable consequences; and (2) failing to so assume, has profoundly complicating effects on logic.[42]

For our purposes, then, we shall assume throughout this book that propositions are omnitemporally (and for that matter, omnispatially) true or false. This assumption seems to us to be warranted and fruitful. We have no need of the notion, indeed we explicitly eschew the notion, of a proposition's 'becoming' true or false.

EXERCISES

1. *What argument can be brought to bear against the claim that the proposition that water freezes at 32°F. became true at that moment in deep antiquity when the first molecule of water was formed?*
2. *Can a proposition vary in modality? Could a proposition, for example, be contingent at one time and noncontingent at another? Explain your answer.*

42. Some logicians have set out to explore in detail the complicating effects, on logic, of denying the omnitemporality of truth and falsity. Their explorations have gone in two main directions. Some have developed what are called *tense logics:* they have worked out the consequences of allowing tensed verbs to remain in proposition-expressing sentences so that what they call "propositions" about the future may *change* their truth-values with the passage of time. Others have developed so-called *multi-valued logics:* in these logics, they have worked out, among other things, the consequences of saying that 'propositions' about the future are *neither true nor false,* although they may become so when, in the fullness of time, events make them so. Both sorts of logics find a place for close relatives of the modal notions of contingency, noncontingency, inconsistency, implication, and the like. But neither operates with precisely the same notions that we explicated in chapter 1. Moreover, from our vantage point it looks as if both are trying to do logic in terms of sentences rather than, as we are doing, in terms of propositions.

3. *What reasons can you give in support of the claim that propositions do not vary in truth-value from place to place?*

6. PROPOSITIONS, SENTENCES, AND POSSIBLE WORLDS

Consider the contents of the following three boxes:

Box 1	The cat is on the mat.
Box 2	"The cat is on the mat."
Box 3	The proposition that the cat is on the mat

Box 1 contains an undistinguished English sentence. Box 2 contains the name of that sentence constructed in accordance with the standard convention described in section 4. And Box 3 contains the name of the proposition expressed by the sentence in Box 1.

Both Boxes 2 and 3 contain names, of a sentence in the earlier case and of a proposition in the latter. The former of these names was constructed by our taking a sentence-token of the type instanced in Box 1 and surrounding it with quotation marks; the latter was also constructed by taking a sentence-token of the type instanced in Box 1, but then prefacing it with the words "the proposition that".

In spite of the fact that both the names occurring in Boxes 2 and 3 are constructed out of (physical) tokens of the same type, there are important differences between them.

One does not have to *understand* the sentence in Box 1 in order to know which sentence-type is being referred to by the name in Box 2. But one does have to understand the sentence in Box 1 in order to know which proposition is being referred to by the name in Box 3. For example, suppose someone did not know what the word "cat" means. As a consequence that person would not understand the sentence in Box 1; yet he might perfectly well know that the name in Box 2 is the name of that sentence-type, a token of which can be seen in Box 1. We can name sentence-types easily, even when we do not understand them. But suppose that same person were to consider the name in Box 3. Would he know which proposition was being referred to? Of course, somebody might tell him in words which he did understand, but barring that, he would not be able to tell, in reading through the contents of Box 3, which proposition was being referred to.

In short, the matter of determining the referent of a sentential name (e.g., the contents of Box 2) is *not* dependent on a knowledge of the meanings of the terms in the sentence which has been placed in quotation marks. On the other hand, the matter of determining the referent of a propositional name (e.g., the contents of Box 3) *is* dependent on a knowledge of the meanings of the terms in the sentence which has been prefaced with the expression "the proposition that" or simply "that".

If a person were to ask us, "What is the referent of the name in Box 2?", we could simply point to the contents of Box 1 and say, "It is a sentence-type of which this is a token." But what shall we say to the person who asks us, "What is the referent of the name in Box 3?" Our first inclination would be to reply, "It is the proposition that the cat is on the mat." But immediately we feel the unhelpfulness of this answer. It is as if someone were to ask us, "Who was it who was named

'Lester Pearson'?", and we were to reply, "It was Lester Pearson." While this answer is true, it is not very helpful. It would be more helpful to a person who wanted to know, "Who was it who was named 'Lester Pearson'?", to reply with something of this sort: "It was the prime minister of Canada from April 1963 to April 1968" or "It was the seventh president of the United Nations General Assembly." In short, what we would like to do in response to such a question is to give a *description* of the thing being asked about.

Is this really a problem? Could a propositional name, such as the one in Box 3, fail to pick out a single proposition? Could it, perchance, pick out more than one?

Clearly it could designate any number of completely different propositions. For example, it would designate one proposition if the word "cat" were being used to refer to cats; it would designate quite different propositions if the word "cat" were being used to refer to dogs or to wristwatches or to footprints. Similarly, it would designate one proposition if the word "on" were being used to mean one thing's being on another; it would refer to quite different propositions if the word "on" were being used to mean one thing's being beside another or one thing's being in debt to another, etc.

It is clear, then, that the matter of which proposition we refer to by using a propositional name will depend importantly on the meanings and references of the words in the sentence which we preface by a "that". This raises some problems when we come to invoke talk of propositions in the context of a discussion of possible worlds.

It is easy to refer to a sentence-token which occurs in another possible world. We can say of a fictitious world, for example, that someone in it wrote the sentence, "The cat is on the mat." And our ability to refer to his inscription is in no way dependent upon our knowing what proposition that person might have intended to express by writing what he did.

But now a serious problem presents itself. When it comes to referring to the proposition which our fictional utterer expressed, how precisely are we to refer to it? After all, those very same words may be used in *other* possible worlds by *other* fictional utterers to express still *other* propositions. There is no single proposition which the sentence "The cat is on the mat" expresses in all the possible worlds in which it is uttered. More generally, whatever sentence we utter, there is always someone, somewhere, either in the actual world or in some other possible world, who uses the very same sentence to express an altogether different proposition. If their using our words and sentences in a different sense affected what *we* say, then everything we say would be completely indeterminate as to meaning.

How can this intolerable range of indeterminacy be narrowed? Posed in these general theoretical terms the problem may seem insoluble. Yet the solution — or at least a partial one — is at hand; we need only attend to some of the conventions implicit in our actual linguistic practice.

The same sort of problem presents itself, on a reduced scale, when we consider the different meanings which words and sentences may have in the actual world. For instance, in the actual world, English speakers use the letter-sequence "p"-"a"-"i"-"n" to refer to a certain kind of sensation, while French speakers use that same letter-sequence to refer to bread. How, then, it might be asked, can we determine what is being referred to on a particular occasion of utterance of that letter-sequence? How is it that we, as English speakers, have no difficulty whatever in saying truly of French-speaking persons that they feel pain, not bread, when they injure themselves? How is it that French speakers have no difficulty whatever in saying truly of English-speaking persons that they eat bread, not pain, when they sit down to breakfast? The answer is obvious. In using the letter-sequence "p"-"a"-"i"-"n", each set of speakers takes for granted two interpretative provisos: (1) that the letter-sequences and the word-sequences which they utter (or inscribe) are to be understood in terms of the conventions of a *single* language (we shall call this the *uni-linguo proviso*); and (2) that that language is their *own* (we shall call this the *linguo-centric proviso*).

Now these two provisos amount to unstated but universal conventions not only for the interpretation of those letter-sequences which we call words, but also for the interpretation of those

word-sequences which we call sentences. They are implicit in our linguistic behavior. We shall try to make them explicit.

The uni-linguo proviso

Whenever we wish to say anything at all, it is necessary that we operate under the *uni-linguo proviso:* the proviso that the various sentences we utter or write are each items in *one* language. This is not to say that a bilingual speaker could not utter, for example, some sentences in French and others in English. The uni-linguo proviso certainly allows for this possibility. What it does not allow, however, is that a speaker could meaningfully use a sentence in the absence of any conventions whatever — implicit or explicit — for assigning it to some one language or other.

The uni-linguo proviso is so natural and so effortlessly satisfied that it might seem as if it is never violated. But it sometimes is violated inadvertently and occasionally is violated intentionally. We can see an example of the violation of the uni-linguo proviso in the perplexities in which some persons land themselves and their listeners when they try to compare the decimal system of arithmetical notation with the binary. Such persons have failed to realize that, in such a case, they are in fact operating with two *languages.* Consider, for example, the symbol "10". What *number* does this symbol represent? In the decimal system of notation, this symbol represents the number ten, while in the binary system of notation this symbol represents the number two. In the decimal system of notation the sum of the numbers represented by the symbols "10" and "10" is represented by the symbol "20", while in the binary system of notation the sum of the numbers represented by the symbols "10" and "10" is represented by the symbol "100". But many persons, especially when they are newly introduced to the binary system, are likely to become confused about these points and to try to express them in the following way:

> "In the decimal system, ten plus ten is twenty, while in the binary system, ten plus ten is one hundred."

This way of putting it makes it seem as if the sum of ten plus ten is variable, that changing the so-called 'base' of one's arithmetic changes the sum of pairs of numbers. But the sum of numbers is invariable. Ten added to ten has the *same* result whether one is adding in the decimal system or the binary. Ten plus ten is twenty in *any* arithmetic system. The confusion arises in thinking that the symbol "10" in both the decimal system and the binary system refers to the number ten. It does in the former but not in the latter. Consider the following sentence:

"10 + 10 = 100"

Does this sentence express something true or false? If it is construed as a sentence of the decimal system, it expresses a falsehood; if of the binary system, a truth. Taken by itself, with no stipulation or understanding as to which language it is a member of, it does not express any proposition. But once it is stipulated, for example, that it is a sentence in the decimal system of expression, then the fact that it might also be used to express a true proposition in the binary system does not alter or even affect the fact that what it expresses is false.

The lesson to be learned from this example can be generalized. It does not apply only to the case of languages of arithmetic. The point to be learned is that until a sentence is assigned to a specific language it is a meaningless string of noises or marks which expresses no proposition whatever. And unless a proposition-expressing sentence is assigned to a single language, the matter of which proposition it expresses will be indeterminate.

The linguo-centric proviso

For practical purposes it is not sufficient merely to operate under the uni-linguo proviso. Theoretically, a person uttering sentences which customarily would be thought to belong to one particular language, could, if he were both clever enough and so inclined, use those sentences with meanings determined by another language. Thus, for example, a person could theoretically use the sentence "Today is Sunday", to express what you and I would express by saying, "The light bulb in the lamp in the den has burned out." And similarly, every other sentence he uttered could also be assigned a non-ordinary meaning. In short, one could speak in a secret code and still observe the uni-linguo proviso. But it is clear what the cost would be: virtually no one who was not privy to his 'game' and its specific details (that is, the 'dictionary' for translating between two languages, the grammar of the other language, etc.), would have any idea which proposition he was trying to express. If we are to have a maximum of intelligibility and ease of understanding, it will not do to have the meanings of our utterances veiled in this way. Rather, practical necessity demands that we adopt a stronger proviso than the unadorned uni-linguo proviso. As a practical matter we insist that the propositions expressed by our utterances be determined not by what *someone* could express by making such an utterance, but rather by what propositions *we and others like us* typically express by making such an utterance. (We presuppose ourselves and others with whom we converse to belong to a community of speakers of a common language.) To operate under this stronger proviso is to adopt the *linguo-centric proviso.*

The linguo-centric proviso will, then, require that — when we use English words and sentences either to express a proposition, or in conjunction with a convention for naming, to refer to a proposition — we be understood as using those words and sentences with the meanings and references which *our* linguistic community gives them in this, the actual, world.

The linguo-centric proviso is not a piece of cultural conceit nor is it a piece of local parochialism, but quite the contrary. It is a practical necessity for any person's speaking intelligibly that he operate under his own community's version of the linguo-centric proviso. The linguo-centric proviso is not required solely by English speakers. It is as much a practical precondition of a Frenchman's, a German's, or a Maori's speaking intelligibly as it is of our speaking intelligibly. Likewise, it is a precondition for the successful communication between persons in a non-actual possible world. Unless a Frenchman (German, Maori, or for that matter a Martian, etc.) and his listeners can assume that their words have their *customary* meanings, the things they utter, if not of indeterminate meaning, will at the very least be unintelligible to the other members of the same linguistic community.

Securing reference to propositions

As we have seen, theoretically the sentence

(2.12) "The cat is on the mat"

could be used to *express* any proposition whatsoever. And as a consequence, the propositional name

(2.13) "that the cat is on the mat"

could *refer* to any proposition whatsoever. But by using the sentence *(2.12)* and the name *(2.13)* in contexts which presuppose our own version of the linguo-centric proviso, we can confidently use one to express a specific proposition, and the other to refer to it. That proposition is, simply, the one which is *standardly expressed* by the sentence *(2.12)* when that sentence is taken to be a sentence of the *English* language in the *actual* world, *here* and *now.*

The resolve to operate under this proviso answers a worry some persons have about the possibility of any proposition's being true (or false) in all possible worlds. The worry may be expressed in this way:

> It has been claimed that the proposition that all rectangles have four sides is true in all possible worlds. But there is no unique proposition which is referred to by the propositional name "that all rectangles have four sides". The propositional name "that all rectangles have four sides" will refer to different propositions in different possible worlds according as the words in the sentence, "All rectangles have four sides", have different meanings in those various possible worlds. There is no *one* proposition named by the expression "that all rectangles have four sides", and a fortiori no proposition which is true in all possible worlds. For every series of words whatsoever, there is some possible world in which those words are used to express a false proposition. Hence the class of necessary truths, the class of propositions which are true in all possible worlds, is empty. There are no necessary truths. And by similar reasoning we can show that there are no necessary falsehoods. In short, there are no noncontingent propositions.

To this worry we may now reply:

> It does not matter that the name *we* use to refer to a specific proposition may also be used in a different possible world to refer to another proposition. The proposition to which *we* are ascribing necessary truth is the one *we* are referring to, using the standard meaning-conventions for English in the actual world here and now. When we say that the proposition that all rectangles have four sides is true in all possible worlds, it is simply irrelevant to object that our words may be used by the inhabitants of a different possible world to refer to something else.

In short, it must be understood that when we ascribe necessary truth to the proposition expressed by the sentence "All rectangles have four sides", we are ascribing necessary truth to that proposition only which contemporary speakers of English ordinarily express in the actual world by means of that sentence. It matters not at all that speakers of another language, in this or any other possible world, might use that same *sentence* to express other propositions and that some of these other propositions will have modal properties different from the modal properties of the proposition we express. The possibility of such other uses of the physical item the *sentence* "All rectangles have four sides", in no way militates against the fact that the *proposition* which we express in our language in the actual world (through our use of that sentence), is not only true in the actual world, but is true in all possible worlds.[43]

43. It should be clear that the requirement of operating under the linguo-centric proviso is *not* a requirement which arises out of one's having adopted the theory that it is propositions, not sentences, which are the bearers of truth-values. Sentence-theorists, too, will want to insist on the need for this proviso. No sentence-theorist would want to attribute the property of truth (or falsity) to a specific sentence unless he was assured that the words in that sentence were being used in their customary sense and that the grammar of the sentence was standard or 'normal'. For example, when a sentence-theorist claims that the sentence-token "All rectangles have four sides" is true, he does so under the cloak of the linguo-centric proviso. He intends and

7. SENTENTIAL AMBIGUITY AND POSSIBLE-WORLDS TESTING

Sentential ambiguity

In section 6 we saw how the linguo-centric proviso can help us to secure reference to a particular proposition despite the fact that one and the same propositional name can be used, i.e., is used in other possible worlds, to refer to countless different propositions. Ipso facto we have seen how that same proviso can help us to determine what proposition a particular sentence *expresses* despite the fact that one and the same sentence can be used to express countless different propositions.

But the linguo-centric proviso does not enable us to secure reference to a particular proposition when, in a single linguistic community in the actual world, one and the same propositional name is used to refer to *more* than one proposition. Ipso facto that proviso does not help us to determine what proposition a particular sentence *expresses* when, in the actual world, it is used to express more than one proposition. In short, the linguo-centric proviso does little to solve the problems posed by sentential ambiguity. Let us explain.

Sentences can be ambiguous, in the actual world, in any or all of several different ways.

Sometimes a sentence is ambiguous because it contains an ambiguous word or phrase; for example,

(2.14) "Now I can see what you were talking about"

which is ambiguous between

(2.15) "Now I understand what you were talking about"

and

(2.16) "Now I have caught sight of what you were talking about."

Sometimes a sentence is ambiguous because of its grammatical structure; for example,

(2.17) "Flying planes can be dangerous"

which is ambiguous between

(2.18) "Flying planes are sometimes dangerous"

and

(2.19) "It can be dangerous to fly a plane."[44]

And sometimes a sentence is ambiguous because of the different roles it can be given in communication; for example,

(2.20) "In the evolutionary struggle for existence just the fittest species survive"

---

expects that we will take his words in their customary sense. The proposition-theorist will say that it is the proposition which the sentence "All rectangles have four sides" expresses which is true, while the sentence-theorist will say that it is the sentence itself; but each will insist that his own claim is conditional upon the words "all" "rectangles" "have" "four" "sides" being used in their customary sense and is conditional upon the grammar of the sentence being normal.

44. Sentences like *(2.17)*, which are ambiguous because of their grammatical structure, are said to be amphibolous (pronounced am · phib · o · lous).

which is sometimes used in such a way that it is ambiguous between the truism

(2.21) "In the evolutionary struggle for existence just the surviving species survive"

and the dubious generalization which may be expressed as

(2.22) "In the evolutionary struggle for existence just the physically strongest species survive."

In the presence of any of these kinds of sentential ambiguity it would be inappropriate to speak — as we often have done of nonambiguous sentences in preceding sections — of *the* proposition which is "standardly" or "customarily" expressed by the sentence. For there is, in these latter cases, no such proposition; that is, there is no such *single* proposition. We cannot, in the presence of these sorts of ambiguity, confidently rely upon the linguo-centric proviso to make it clear what proposition a given sentence expresses or what proposition a given propositional name refers to. For in cases of these kinds, the conventions of the language we speak allow for a sentence to express *more than one* proposition.

How then, in cases of sentential ambiguity, can we determine which particular proposition is being expressed, or referred to, on a particular occasion of sentential utterance?

In some circumstances the answer is easily supplied: We can disambiguate the ambiguous sentence by attending to the *context* of its utterance — the immediate linguistic context, perhaps, or, more broadly, the sociogeographic context.[45] In each of the cases of ambiguity cited above it is not too hard to imagine contexts of utterance in which disambiguation can easily be effected. For instance, it may be that the sentence "Now I can see what you were talking about" is uttered in circumstances where it is obvious that the item which was being talked about is not (perhaps even could not be) something in anyone's visual field, so that "see" is patently to be interpreted in the sense of "understand"; or it may be that the sentence "Flying planes can be dangerous" is sandwiched in someone's discourse immediately after the sentence "Your father and I wish that you wouldn't take flying lessons" and immediately before the sentence "And it is especially dangerous for someone who, like yourself, is poorly coordinated", so that "flying" is patently to be interpreted as a verb, not an adjective; or again, it may be that the sentence "In the evolutionary struggle for existence just the fittest species survive" is uttered in the context of a discussion of the alleged virtues of body-building, of jogging, and of cardiovascular fitness, so that it is clear that the speaker's claim is most aptly expressed by *(2.22)*.

But although attention to context sometimes suffices for disambiguation, it does not always suffice. Ambiguous sentences are sometimes uttered in contexts which leave their interpretation open; and sometimes they are uttered in virtual isolation from any context whatever. How can disambiguation be effected then?

The method of possible-worlds testing

Fortunately, there is available to us a more general and more powerful method than that of appealing to context: what we shall call *the method of possible-worlds testing*. What the method amounts to is simply this: we confront the utterer of a given ambiguous sentence with the descriptions of various sets of possible worlds and ask the utterer to say in which sets, if any, the proposition he or she is asserting is true and in which sets, if any, it is false.

45. Recall, once again, our earlier discussion of the adjective "disinterested".

There is nothing particularly esoteric or difficult involved in applying the method of possible-worlds testing. It is implicit in our commonplace strategy for getting clear about what someone is asserting when we ask a question of the form: "Do you mean (are you asserting) . . . , or . . . , or . . . ?" followed (when necessary) by asking a further question or series of questions of the form: "If none of these, then do you mean (are you asserting) . . . , or . . . , or . . . ?", where the blanks are filled in by descriptions of possible states of affairs (sets of possible worlds) one or more of which, we begin by presuming, the speaker 'has in mind'.

The object of the method of possible-worlds testing is to match an unknown proposition to a specific set of possible worlds, and thereby to distinguish it from other propositions. In this respect it may aptly be likened to the party game called "Twenty Questions", whose object it is to figure out, by posing questions which can be answered either by "yes" or "no", exactly what thing the person being questioned has in mind. In practice, however, the method of possible-worlds testing usually is not as protracted as the game of Twenty Questions. This is because it is typically used as a *supplement* to the linguo-centric proviso: it is used to pick out one proposition from among a small number of stipulated alternatives; that is, it is called into use in the face of sentential ambiguity where the alternative interpretations are generally known and few.[46]

By a series of carefully chosen descriptions of various sets of possible worlds, we try to isolate just that set of possible worlds, if any, in which the intended proposition is true, and just that set of possible worlds, if any, in which it is false. To each description of a set of possible worlds which we ask the utterer of an ambiguous sentence to consider, we may envisage any of three sorts of responses: the person questioned may reply that the proposition he means to express is true in some, but not all, of the possible worlds we have described; that it is true in none of them; or that it is true in all.[47] If

46. Theoretically, but impractically, the method of possible-worlds testing *could* be used in circumstances in which we had no idea whatever what proposition a person intended to express by uttering a certain sentence. Perhaps such a person is speaking in code, or in a foreign or unknown language. In such a case, where the speaker and listener do not share the *same* linguo-centric proviso, the method of possible-worlds testing, through laborious application, just *might* reveal what proposition the speaker had in mind; or, more probably, if it worked at all, would reveal an equivalence-class of propositions, one of which the speaker intended to express.

Admittedly, however, this may be an overly sanguine point of view. Quine has argued [*Word and Object*, chapter 2] that there is always a residual, in principle ineliminable, indeterminacy in translation, i.e., that however much evidence one has that one has translated correctly, the evidence always underdetermines the hypothesis. If Quine is right in this, then the method of possible-worlds testing will be similarly limited in its efficacy: it may be used to narrow appreciably the range of possible propositions from which to choose the one intended by an utterer of some problematic sentence, but will be unable to narrow that range to a unique proposition or even to an equivalence-class of propositions.

47. We are presuming, of course, that the person being questioned is both willing and able to cooperate with us in our pursuit of clarity. However, not everyone is like this. Some are unwilling to cooperate: their sentences remain ambiguous and unclear and the propositions, if any, which they use their sentences to express, remain hidden from all but themselves. The method of possible-worlds testing is no answer to human intransigence. Others are unable to cooperate: their sentences remain ambiguous and unclear and it is uncertain whether they are using these sentences to express any propositions at all. People can and do mouth words without any idea of what they are trying to say. The method of possible-worlds testing is no cure for mindlessness.

Perhaps more importantly, we are also in our description of the method of possible-worlds testing disregarding the problem posed by sentential vagueness. For simplicity, we are pretending that the person we are interrogating answers all our questions unequivocally and with no ambivalence. But this is a somewhat idealized situation. More realistically we can well imagine that for descriptions of some sets of possible worlds,

we continue our questioning to the point where our descriptions have exhausted all possible worlds (and this is easy to do, since it is a trivial matter to construct 'complementary' sets of descriptions — one description need only be a contradictory of another description), there are three and only three possible outcomes to the application of this method. The person questioned may in the end: (1) opt for some set of possible worlds and reject all others; (2) opt for none; or (3) opt for all. Let us consider examples of each of these outcomes.

An Example of Case (1)

Suppose someone were to say "Human conduct is subject to moral rule", and that we were unclear as to precisely what proposition, if any, is being asserted. We describe a set of possible worlds, the worlds of Judeo-Christian belief, in which there is a personal deity who issues moral edicts. Are these the worlds in which what is being asserted is true? The answer we receive is "Not exactly; some of them are and some of them are not." But we wish to know exactly which ones are and which ones are not. So we try again. We describe a different set of possible worlds, the worlds of Greek mythology, in which several gods and goddesses subject us to their whims, some of them moral and some not so moral. Are these the worlds in which what is being asserted is true? Again the answer is "Not exactly; some of them are and some of them are not." So we try again. And again. Eventually by judicious trial and error we discover that what is being asserted is true in just those possible worlds in which acting morally brings its own reward, while acting immorally brings its own punishment. And now, whether or not we agree with what is being asserted, we at least know what it is; we know that what has been asserted is a contingent proposition, true in some possible worlds, false in all the others; and we have distinguished that proposition from other propositions which might plausibly have been, but were not in fact, asserted by the utterance of the ambiguous sentence.

Note that the method of possible-worlds testing involves asking whether the proposition we are trying to isolate is *true* in each member of a stipulated set of possible worlds, not the deceptively 'similar' question whether the proposition in question is *consistent* with the description of that set of possible worlds. After all, the proposition that acting morally brings its own reward while acting immorally brings its own punishment is consistent with our description of the possible worlds of Judeo-Christian theology (this was the point of the answer "Not exactly; some of them are [worlds in which the proposition is true] and some of them are not"); and that proposition is consistent, too, with our description of the possible worlds of Greek mythology. Yet both of these sets of worlds, we are supposing, are ones which the speaker says are not encompassed by the truth of what he is asserting. Of course, our story might have been different. Among the sets of possible worlds which the speaker accepts there might have been worlds in which the Judeo-Christian God issues edicts

---

our respondent will be ambivalent or confused as to what he wishes his answer to be; in addition to being ambiguous, his utterance is vague: he himself is not clear as to *precisely* which proposition he intends to express. The existence of vagueness in a sentential utterance is illustrated in the following situation. A person says, "John is tall." We wish to know precisely what proposition is being expressed. We ask the utterer, "Would what you have expressed be true in a possible world in which John is 7′ 4″ in height?" The utterer replies, "Yes." We then ask, "Would what you have expressed be true in a possible world in which John is 5′ 11″?" In the face of this latter question, the respondent may hesitate, and finally say, "I'm not sure." Given such a response, we would have to say that his initial utterance was somewhat vague. It was vague because the utterer himself was vague, i.e., uncertain, as to precisely which proposition he wanted to express. Vagueness, then, is a property which attaches to utterances, i.e., sentences, when their utterers are vague.

and worlds in which Zeus and his cohorts manipulate human conduct as well as worlds in which there is an apt coincidence between certain types of actions (viz., moral and immoral ones) and certain types of consequences (viz., rewards and punishments). If that had been the case, then we should have concluded that the proposition which our speaker asserted encompassed *all* of these possibilities — that he was asserting that either God issues edicts *or* the gods subject us to moral rules *or* there is a cosmic coincidence between act and consequence. If the speaker allows that *any* of these sets of possible worlds are ones in which what he asserted is true, he is asserting something less specific (something with less contingent content as we shall say later [chapter 6, section 11]) than if he allows only one of these sets of possibilities. But he is nonetheless asserting something quite *definite*. Being true in a greater number of worlds does not make a proposition less definite or more vague. It only makes it less specific.

An Example of Case (2)

Suppose someone is telling us a story about his walking trip in the mountains of Austria and of how he came across a charming village in which there lived what he describes as "an old man who is a particularly zealous barber". Without explaining or elaborating he goes on with his story and we are left wondering what he meant by "zealous" —what he was asserting when he said that the barber was zealous. Later we question him. We describe a set of possible worlds — those in which the barber is a dedicated churchgoer, defender of the faith, and so on — and ask him if these are the possible worlds in which what he was asserting is true. No, we are told; the barber is not a religious zealot; he is just zealous in his job. But what does that mean? It turns out that the barber is described as zealous because he insists on shaving *all* those in the village who do not shave themselves, and because, further, he insists on shaving *only* those in the village who do not shave themselves. At first this state of affairs may seem to us eminently reasonable: there are two classes of men in the village, those who shave themselves and are therefore (according to the barber's policy) not shaved by the barber, and those who do not shave themselves and are therefore (according to the barber's policy) shaved by the barber. Yet on rethinking the situation, something puzzles and eludes us. What does the story-teller mean by "all" the men in the village? Does this include the barber? Without waiting for an answer we press ahead with our questions. Is what the story-teller is asserting true in those possible worlds in which the barber shaves himself? The story-teller, after a little thought, says, "No, of course not, for the barber shaves only those men who do *not* shave themselves." Very well, then, we ask, "Is what the story-teller is asserting true in those possible worlds in which the barber does not shave himself?" Once more the story-teller pauses. Then, with considerable chagrin, he admits, "No, for according to the story the barber shaves all those men who don't shave themselves." At this point no more need be said. There *cannot* be a barber in Austria or, for that matter, in any possible world, who is 'zealous' in the story-teller's sense of the word. For all the possible worlds in which there is a barber are either worlds in which the barber shaves himself or worlds in which the barber does not shave himself. Yet the proposition which the story-teller was asserting is, on his own admission, *false* in both these sets of possible worlds. There are no possible worlds, then, in which a barber exists who satisfies what the story-teller means by 'zealous'. In short, the proposition which the story-teller was asserting when he said that he met a particularly zealous barber on his walking tour cannot possibly be true, i.e., is necessarily false.[48]

48. The story of the zealous barber is adapted from the so-called 'Barber's Paradox' of Bertrand Russell.

Note that in case (2), as in all others in which we come to suspect that a speaker is saying something necessarily false, our best strategy is to divide the set of *all* possible worlds into exhaustive subsets and see in which, if any, of these subsets the speaker wishes to maintain his claim. This is what we did in dealing with the story of the zealous barber. Implicitly we subdivided the set of all possible worlds into those in which a barber exists and those in which no barber exists. Tacitly, we dismissed the latter, since they are worlds in which the story-teller's assertion is patently false, and offered for consideration the two remaining sets of possible worlds: those in which there is a barber who shaves himself and those in which there is a barber who does not shave himself. These three sets of worlds exhaust all possibilities. And since the story-teller's assertion is false in all three, it plainly *cannot* be true.

An Example of Case (3)

Consider, once more, the sentence *(2.20)*, viz., "In the evolutionary struggle for existence just the fittest species survive." As already observed, this sentence may be used to express a contingent proposition about the survival-value of physical fitness and strength. But, equally, it may be used to express the proposition that only the surviving species survive, viz., the kind of necessary truth expressed by those sentences which we sometimes call *tautologies*. How does it come about that persons sometimes use *(2.20)* in this latter way? The following sort of occurrence is probably familiar to us all. Someone starts a discussion by telling us that in the evolutionary struggle for survival just the "fittest" species survive. And it immediately occurs to us that if by "fittest" we are supposed to understand "physically strongest", then the claim being made is highly contentious and probably false. Counterexamples crowd into our minds. How about dinosaurs? Surely, by any ordinary criterion of physical strength and fitness, they must count among the fittest species that have ever populated the earth. Yet, patently, they did not survive. And how about, on the other hand, the delicate butterfly? Its physical fitness is at a minimum — certainly in comparison with that of dinosaurs — yet it survived when they did not. Faced with such counterexamples as these, the proponent of the original claim may, of course, retract and admit that he was wrong. But, equally, he may try to save face by redefining "fittest" for us. By "fittest species", he tells us, he didn't really mean "physically strongest": rather he meant something like "best adjusted to the environment". Thus amended, his claim is perhaps less vulnerable to *prima facie* counterexamples. But not wholly. Were not dinosaurs extremely well adjusted to the environment of their times? Or if not, then we need to have the notion of being well adjusted to the environment explicated for us. What is to count as the test or criterion of this sort of fitness (i.e., adjustment to environment)? Pressed for an answer, the proponent of the original claim may reply that the criterion of adjustment to the environment is obvious: we look to see which species have in fact survived. But if this is his answer — if, that is, he cannot give an *independent* criterion of "fitness" or "adjustment", i.e., a criterion which is not parasitic upon the notion of survival itself — then his claim turns out to be absolutely *invulnerable to any possible counterexample*. It turns out, in other words, to be true in all possible worlds, i.e., to be necessarily true, since it is then nothing more than the truism that the surviving species survive.[49]

49. If a sentence is so used that the proposition it expresses is invulnerable to all *possible* counterexamples, it loses its credentials as a pronouncement of genuine science. As Michael Scriven puts it: "One could go a step further and define 'the fittest' as 'those which survive'; that is not stretching but breaking the concept, and this step would be fatal to all scientific claims of the theory." ["Explanation and Prediction in Evolutionary

Philosophers sometimes use a variation of the method of possible-worlds testing in order to establish not that what someone said is truistic, but the weaker conclusion that what someone said cannot mean what it ordinarily means. For instance, consider the sentence, often asserted by religious persons,

(2.23) "God loves us as if we were His own children."

What, exactly, is being expressed by such a sentence? First of all, apart from some theologians, most persons believe that God's existence is a contingent matter, i.e., that God exists in some possible worlds and not in others. This being so, most persons would use *(2.23)* to express a contingent proposition; the proposition expressed by *(2.23)* would be false in all those possible worlds in which God does not exist. But in which subset of all possible worlds is the proposition expressed by *(2.23)* true? It is here that substantial disagreement may exist between persons. Suppose we were to describe a possible world in which God allows truly calamitous misfortunes to befall mankind, and the religious-minded utterer of *(2.23)* insists that the proposition he is expressing is true in such a world. Suppose, even, that he would insist that the proposition expressed is true in every possible world in which both God and persons exist no matter how extreme the suffering of those human beings. Under such circumstances we would be forced to the conclusion that he must mean something different by his use of the word "love" from what we ordinarily mean in using that term. For clearly we would not describe a parent as one who "loved his children", who had it in his power to prevent, yet allowed, truly calamitous misfortunes to befall his children. Loving parents simply do not behave in this fashion. Of course this argument will work only if the believer also holds that God is omnipotent and that he has complete power over the course of events. But given that presupposition, it seems fair to conclude, at the very least, that the 'love' which is being ascribed to our Heavenly Father must be very different (qualitatively) from that of any earthly father.[50]

Note that we can conclude that the proposition which a person expresses is necessarily true only if there is no possible *set of circumstances* which would make it false i.e., no possible world in which it is false. It does not suffice merely for there to be no conceivable *experiences* which would falsify it. Thus it may well be that, as some philosophers have argued, no set of human experiences could ever falsify the proposition that sea serpents exist somewhere or other. But this would not show that sea serpents necessarily exist. Similarly, it may well be that, as some philosophers have argued, no set of human experiences could ever falsify the so-called "causal principle", viz., that every event has a cause. But this would not show that the causal principle is necessarily true. The set of possible human experiences is very different from the set of possible worlds.

Janus-faced sentences

The method of possible-worlds testing is not only an invaluable aid towards resolving ambiguity; it is also an effective weapon against a particular form of linguistic sophistry.

Thinkers often deceive themselves and others into supposing that they have discovered a profound truth about the universe when all they have done is utter what we shall call a "Janus-faced

---

Theory", *Science*, vol. 130 (Aug. 28, 1959), pp. 477–482, reprinted in *Man and Nature*, ed. R. Munson, New York, Dell, 1971.] A related point has been made by Morton Beckner: "No discredit is cast upon selection theory by showing that it is in fact compatible with all available evidence. On the contrary, discredit would accrue only if it were shown to be compatible with all possible evidence." [*The Biological Way of Thought*, Berkeley, University of California Press, 1968, p. 164.]

50. This is the sort of argument which is developed by Anthony Flew in "Theology and Falsification" in *New Essays in Philosophical Theology*, ed. A. Flew and A.C. MacIntyre, New York, Macmillan, 1964, pp. 96–130.

sentence". Janus, according to Roman mythology, was a god with two faces who was therefore able to 'face' in two directions at once. Thus, by a "Janus-faced sentence" we mean a sentence which, like "In the evolutionary struggle for existence just the fittest species survive", faces in two directions. It is ambiguous insofar as it may be used to express a noncontingent proposition, e.g., that in the struggle for existence just the surviving species survive, and may also be used to express a contingent proposition, e.g., the generalization that just the physically strongest species survive.

If a token of such a sentence-type is used to express a noncontingently true proposition then, of course, the truth of that proposition is indisputable; but since, in that case, it is true in *all* possible worlds, it does not tell us anything distinctive about the actual world. If, on the other hand, a token of such a sentence-type is used to express a contingent proposition, then of course that proposition does tell us something quite distinctive about the actual world; but in that case its truth is far from indisputable. The sophistry lies in supposing that the indisputable credentials of the one proposition can be transferred to the other just by virtue of the fact that one sentence-token might be used to express one of these propositions and a different sentence-token of one and the same sentence-type might be used to express the other of these propositions. For by virtue of the necessary truth of one of these propositions, the truth of the other — the contingent one — can be made to seem indisputable, can be made to seem, that is, as if it "stands to reason" that it should be true.

Among the more common examples of sentences which are often used in a Janus-faced manner is the sentence

(2.24) "Everyone acts selfishly all the time."

It may be used to express the proposition

(2.25) No one's acts are ever altruistic

in which case — on any ordinary understanding of what "altruistic" means — the claim being made is contingent but false. Or it may be used to express the proposition

(2.26) Every person's acts are always performed by those persons themselves

in which case the proposition is undoubtedly true — because necessarily true — but is no longer an interesting topic for debate. The trouble is, of course, that someone may utter *(2.24)* with the intent of making a significant psychological claim about the sources and motives of human action — as in the manner of *(2.25)* — but, when challenged, try to save face by taking refuge in a tautology — such as *(2.26)*. Not only is such a move on a par with crasser forms of prevarication; it may tempt us, if we do not keep our wits about us, to attribute to the contingent psychological claim the kind of indisputability which belongs only to necessary truths.

It should be evident how the method of possible-worlds testing can guard against sophistries of this kind. We need only ask the utterer of a token of a Janus-faced sentence-type whether there is any possible state of affairs in which the proposition being asserted is false. If the answer is "No", then the proposition being asserted will undoubtedly be true, even though it may not strike us as very informative. But if the answer is "Yes", then we shall want to enquire as to whether the set of circumstances in which it is false happens to include the actual world. All too often the contingent propositions which Janus-faced sentences may be used to express turn out not only to be *possibly* false but to be *actually* false as well.

Utterers of tokens of Janus-faced sentence-types may, of course, be quite unclear as to which kind of propositions they intend to express. Janus-faced sentences can beguile us all, speakers as well as hearers. But this much is clear: we cannot have it both ways; we cannot, that is, on one and the same

occasion of the utterance of a token of a Janus-faced sentence-type claim *both* that it expresses a proposition possessing the indisputable credentials of a necessary truth *and* that it expresses a proposition which is distinctively true of the world in which we live. For no proposition is both contingent and noncontingent even though one and the same sentence-type may be instanced sometimes by tokens used to express a contingent proposition and sometimes by tokens used to express a noncontingent one.

EXERCISES

For each of the following Janus-faced sentences explain how, on one interpretation, it may be used to express something indisputable (perhaps necessarily true), while, on another interpretation, it may be used to express something dubious (perhaps contingent and false).

1. *"One cannot be certain of the truth of any contingent proposition."*
2. *"Sounds exist only when they are heard."*
3. *"All persons are born equal."*
4. *"I can never have your thoughts."*
5. *"The future must be what it is going to be."*
6. *"Everyone is entitled to his/her own beliefs."*
7. *"Tomorrow never comes."*

8. POSSIBLE-WORLDS PARABLES

Sometimes a theory to the effect that a certain proposition, A, implies another proposition, B, (or, equivalently, that it is impossible for A to be true without B being true) becomes so deeply entrenched in our thinking that it takes on the status of a virtual dogma. The reasons for its entrenchment may be many and varied. It may be that some currently favored theory, T, taken together with A, does imply B. Or it may be that the supposed connection has been laid down by authority or merely been taken for granted and never adequately subjected to critical examination. The reasons themselves may be of interest to the intellectual historian, the sociologist, or even the psychologist. But they are not our present concern. What does concern us are the methods by which such a theory may be assailed. And one of the most effective of these is the telling of a possible-worlds parable.

By "a possible-worlds parable" we mean a story, directed against a theory of the above kind, which purports to describe a possible world in which A is true and B is false — a world, the possibility of which would show that, contrary to the theory, A does not imply B.

The method of telling possible-worlds parables, it should be noted, is different from the method of possible-worlds testing. It is different in intent and different in execution. The method of possible-worlds testing aims at disambiguating sentence-utterances; and it does this, when successful, by conducting a conceptual survey — in principle if not in practice — of the set of all possible worlds and determining in which, if any, the proposition expressed is true. The method of

possible-worlds parables, by way of contrast, aims at refuting a philosophical theory; and, when successful, it does so by conceptually constructing at least one possible world which is a counter-example to the theory and which shows the theory to be false. In fact, the method of possible-worlds parables is simply a special case of the more general method of testing a theory by looking for counter-examples. Consider *any* theory T — scientific or philosophical, highly speculative or utterly mundane — which asserts that all things of a certain kind, i.e., all things having one certain property, are also things of a second kind, i.e., are things having another property. Such a theory, T, might be about crows (e.g., saying that all things which are crows are also things which are black) or it might be about possible worlds (e.g., saying that all possible worlds in which the proposition A is true are also worlds in which the proposition B is true). One of the tests of T's acceptability is that it withstand a determined search for counter-examples — a determined search, that is, for an instance of a thing which is of the first kind mentioned and which is not also of the second kind. If the theory is a scientific one, asserting that in the actual world all things which have the property **F** are things which have the property **G**, we shall have to look for an *actual* counter-example, something that has the property **F** and which does not also have the property **G**. For example, if the theory is the simple one that all (actual) crows are black, we would look to see whether we could find anywhere in the actual world a crow which is not black. But if the theory is a purely philosophical one, asserting that A implies B, or equivalently, that every possible world in which A is true is also a possible world in which B is true, we need not restrict our search for counter-examples to just one possible world, the actual world. Since the theory makes a claim about *all* possible worlds, the scope of our inquiry may be extended to possible worlds other than the actual one. Such a theory will be refuted if we can find *any* possible world, actual or non-actual, in which A is true and B is false.

In order to see how the telling of a possible-worlds parable can refute a philosophical dogma, consider, once more, the theory that only creatures with a language can entertain beliefs. This is a theory which we examined earlier (this chapter, section 2, Thesis 9) when disputing the view that it is sentences, rather than propositions, which are the bearers of truth-values. Our counter to it, remember, was that there is good reason for saying that *in the actual world,* in prelinguistic times, our own ancestors entertained beliefs some of which were true and some of which were false. And in like manner, it has been argued by Norman Malcolm[51] that there is good reason for saying, again, that *in the actual world* languageless creatures such as dogs can think or believe that such and such is the case, e.g., that a cat has gone up a tree.

Now it is clear that if, as both we and Malcolm have argued, there are circumstances in the actual world in which a languageless creature thinks or believes a proposition to be true, then the theory, which has gone virtually unchallenged since the days of Descartes — that the ability to think or believe implies possession of a language in which that thinking or believing can be expressed — is thereby refuted. Nevertheless both we and Malcolm are, in a sense, indulging in overkill. We are both producing actual counter-examples when all that is called for is a possible one. Let us, then, consider how a similar theory might be refuted by means of a story of circumstances which, so far as we know, never were or will be actualized. And in order to extract a new philosophical lesson, let us consider a slightly weaker version of the No-Beliefs-Without-Language Theory.

Case Study 1: The thesis that persons (creatures) who lack a language cannot have reflective beliefs

The theory that we are to consider maintains that it is impossible for a creature to have reflective beliefs unless that creature possesses a language, or in other words, that lacking a language *implies*

51. "Thoughtless Brutes", a presidential address published in the *Proceedings and Addresses* of the American Philosophical Association, vol. 46 (1973), pp. 5–20.

the absence of reflective beliefs. By "reflective beliefs" we mean beliefs issuing from one's reflecting on one's beliefs, rather than issuing from, for example, external stimuli. Let us call the theory that it is impossible to have reflective beliefs in the absence of language the "No-Reflective-Beliefs-Without-Language Theory". It is not hard to see that a philosopher could consistently reject the No-Beliefs-Without-Language Theory while subscribing to the No-Reflective-Beliefs-Without-Language Theory. Indeed, this is Malcolm's own position. He argues that there is more than enough nonlinguistic behavior exhibited by languageless creatures to justify our ascribing to them beliefs founded upon their *direct* awareness of their environment, but he denies that any amount of nonlinguistic behavior exhibited by languageless creatures could ever justify us in ascribing to them beliefs founded upon *reflective* awareness.[52]

One way of assailing the theory that reflective awareness implies possession of a language would be to attack the argument that Malcolm presents for it. And perhaps the best way of doing that would be to point out that even if it were a fact that no amount of nonlinguistic evidence could ever *justify* the ascription of reflective awareness to languageless creatures, it still would not *follow* that languageless creatures do not have the ability to be reflectively aware of their beliefs. The non-existence of evidence for a state of affairs does not imply the non-existence of that state of affairs itself.

However, by the same token, refuting this or any other argument for the No-Reflection-Without-Language Theory is not the same as showing the theory itself to be false. In order to show that the theory itself is false — in order to show, that is, that reflective awareness does not imply possession of a language — a different strategy of frontal attack is required: we need to show that it *is* possible for a languageless creature to reflect upon its own beliefs. And one of the best ways of showing this is to construct a possible-worlds parable.

The following possible-worlds parable — adapted from Donald Weiss' article "Professor Malcolm on Animal Intelligence"[53] — sets out to do just this. Imagine that on some fictitious planet we come across an animal (hereinafter called "Arthur") that has emerged from an egg that was long before abandoned by its mother. Let us further suppose that although we (hidden behind the reflective glass portholes of our spaceship) can observe Arthur, Arthur cannot observe us. Arthur, we note, never comes across any other animate creature and, not surprisingly, never learns a language. Nevertheless, as the months go by (while we prepare our spaceship to conduct a long-planned astronomical experiment) we observe Arthur learning to cope with his environment in increasingly sophisticated ways. He invents and masters the use of tools, and by trial and error develops complex techniques for securing food, shelter, and even some of the comforts of life. Among other things, he learns to make tools out of metal. He does this, as did our forebears, by heating bits of metal in a forge and hammering them into shape while they are hot. It soon becomes apparent to all of us, including the behavioral scientists on our intergalactic expedition — that Arthur believes that metals become malleable when heated. Then one day Arthur chances upon a piece of metal, left by earlier visitors, which seems not to conform to the general rule: although heated to the same degree as other pieces of metal he has found, this piece is hardly more malleable than it was when cold. The experience presents a challenge to his beliefs. What will Arthur do? Fascinated, we watch as Arthur becomes agitated, paces this way and that, then sits down and stares fixedly into space. Fifteen minutes pass. Then he leaps to his feet, brings in more fuel, rigs up a second set of bellows and sees his strenuous efforts rewarded with success: the recalcitrant metal at last becomes malleable. We, the privileged

52. The distinction between direct awareness of a state of affairs and reflective awareness that one is aware of that state of affairs, is one which Malcolm marks — somewhat oddly — by distinguishing between "mere thinking", on the one hand, and "having thoughts", on the other hand.

53. Donald Weiss, "Professor Malcolm on Animal Intelligence", *Philosophical Review*, vol. 84 (1975), pp. 88–95.

observers of all this, are tempted to say that Arthur has reflected upon his belief in the malleability of all metals, hypothesized that a more intense heat may make even the most recalcitrant metals malleable, and put his hypothesis to the test of experience. And when, in subsequent months, we observe further instances of such behavior in response to other challenges to his beliefs, we all — including the behavioral scientists among us — conclude that without a doubt Arthur *was* indulging in reflective awareness and evaluation of his beliefs. It therefore comes as no surprise when, after an untimely accident brings about Arthur's death, we learn from a postmortem examination that Arthur's central nervous system was at least as highly developed as our own. If he could display such reflective intelligence without knowing any language, we speculate, what might he have achieved had he known one?

Is this parable a conclusive one? Does it establish unequivocally that it is possible for a languageless creature to have reflective beliefs? A residual doubt might trouble us: in our parable we have said that no one *taught* Arthur a language, and we certainly haven't ascribed one to him; but can we be assured that he doesn't in fact *have* a language? Couldn't Arthur *have* a language even if he never *exhibits* any linguistic behavior, e.g., never converses with anyone, never speaks, writes, reads, etc.? In short, can we be assured that we really have told a parable in which a person both lacks a language and, nevertheless, has reflective beliefs?

How can we meet this worry? In this way: by asking anyone who seriously thinks that Arthur might, under the conditions described, nonetheless have a language, to continue the parable in such a way as to describe the additional facts which would support that attribution. Given that Arthur has never been taught a language, has never conversed with anyone, has never spoken, has never written anything, nor has ever read anything, it is rather hard to see what else might be true of him which would make our attributing to him the having of a language a reasonable hypothesis. Our rebuttal may be put this way: What more might reasonably be required to show that a person does *not* have a language than our showing that he has never been taught one, has never spoken one, has never heard one, has never written one and has never read one?

But suppose that the proponent of the No-Reflective-Beliefs-Without-Language Theory is undeterred. Suppose he counters with one of our very own arguments. Suppose he reminds us that the absence of evidence for the existence of something does not imply that the thing does not exist. Couldn't it be argued that although we have said that there is no evidence whatsoever for Arthur's having a language, this is not to show that he in fact does not have one?

How serious is this objection? How shall we meet it?

We can meet it by asking the critic just what it is supposed to show. Is it supposed to show that in the absence of our finding any evidence for Arthur's having a language it is nonetheless *possible* that he has one? If this is what it is supposed to establish — and it does look as if this is the strongest contention the critic would be likely to maintain — we can reply in two ways. In the first place, we could point out that the absence of evidence for a thing's existence does not imply the possibility of that thing's existence. If, for example, we were to set out to look for a round square we would fail to find any evidence for the existence of one. Yet we should hardly want to conclude from this lack of evidence that it is nonetheless possible that round squares exist. They do not, of course; they are impossible objects. In short, the critic's claim that it is *possible* that Arthur has a language is problematic, and is not seen to be established by our parable. But all this may be put aside. There is a much more telling objection to be leveled. For in the second place we can point out that even if it were to be allowed that it is possible that Arthur has a language, this is too weak a claim to support the original thesis. The original thesis maintains that if Arthur has reflective beliefs, then it is *necessary* that he have a language. And this original, stronger thesis does seem to be undercut (i.e., rendered implausible) by our possible-worlds parable. What the parable does not challenge is the weaker thesis that it is *possible* that a creature having reflective beliefs possesses a language. But this is as it should be, since this weaker thesis is patently true.

Neither, of course, will it do to object to the moral of the parable by arguing that the world described in our parable does not actually exist, that it is purely a fanciful product of our imagination. That much may be conceded without affecting the point at issue. For all that is required in order to refute the theory that there cannot be reflective beliefs without language, it must be remembered, is that we find a *possible* counter-example, i.e., a counter-example in which there is no inconsistency. That the counter-example of our choice happens to be non-actual is wholly beside the point. The purported connection between reflective awareness and language may hold in the actual world, but since it does not hold in all possible worlds, the connection is only a contingent one, not the logical one of implication.

Case Study 2: The thesis that persons (creatures) who lack a language cannot believe necessary truths

For a second case study, let us consider still another theory which asserts the primacy of language within the structure of knowledge and belief. A philosopher might well allow that a languageless creature may believe certain contingent propositions on the basis of direct awareness of his environment, or even that a languageless creature may believe certain contingent propositions on the basis of reflecting upon his own beliefs, and yet deny that a languageless creature could ever come to believe (in the truth of) propositions which are necessarily true. That is to say, a philosopher might consistently reject both the No-Beliefs-Without-Language Theory and the No-Reflective-Beliefs-Without-Language Theory while at the same time subscribing to what we may call the No-Belief-In-Necessity-Without-Language Theory.

It is not hard to understand why someone might want to adopt this third position. In the first place, it might be argued that there is a radical difference between belief in contingent propositions, e.g., that the cat went up the tree, or that there is some temperature above which every metal melts, and belief in a necessary proposition, e.g., that if one thing is heavier than a second and that second is heavier than a third, then the first is heavier than a third. The difference, it would be said, is that although a languageless creature could come to believe in the truth of a contingent proposition on the basis of its direct awareness of its environment, i.e., states of affairs in its own world, no languageless creature could come to believe in the truth of a necessary proposition on the basis of such direct awareness. Since necessarily true propositions — the argument would continue — are true in all possible worlds and since no creature has *direct* awareness of any situation in any other possible world than its own, no creature could have direct awareness of the truth of a necessary proposition. And in the second place, it might be argued that *we* could never have behavioral evidence, of the kind appealed to in connection with our prelinguistic ancestors and languageless Arthur, which would warrant our ascribing belief in a necessary truth to a languageless creature, since belief in a necessary truth would be compatible with any behavior whatever that a languageless creature displayed. Hence, there could never be any *distinctive* behavior pattern the presence of which would establish belief in such a truth.

However, regardless of what arguments are advanced for the theory[54] there is a strong argument against it: one which takes the form of a possible-worlds parable.

Let us imagine that in some world the science of neurophysiology is developed to the point where invariable correlations are discovered between certain so-called 'mental states', e.g., of belief, of supposition, etc., and certain states of the central nervous system. And let us suppose, further, that

54. Note than an argument akin to the first one just cited — an argument to the effect that it is impossible through experience to gain knowledge of necessary truths — is dealt with in chapter 3 (pp. 168–169), while an argument akin to the second has already been dealt with by pointing out that the non-existence of evidence for a state of affairs does not imply the non-existence of that state of affairs.

neurophysiologists have discovered not only the specific locus within the brain of those neural states which are the correlates of certain *kinds* of belief but also what kinds of electrochemical reactions take place within these highly localized neurons when *particular* beliefs of these various kinds are being consciously entertained. In particular, let us suppose that whenever a language-possessing creature actively (or as philosophers would say, "occurrently") believes that if one thing is heavier than a second and the second heavier than a third, then the first is heavier than the third, then during this sort of belief-episode and during no others, particular neurons of type K are in excitation state α. Moreover, let us assume that this invariable correlation is found to hold for all language users, whether they happen to speak English, German, Russian, or whatever. This particular correlation is observed to be exceptionless in the case of all language-possessing creatures; indeed, it is constantly verified by readings from the neuron-scanners which are implanted in the brains of all language-speakers in our imagined world.

Now it so happens that the philosophers in this world are all firm adherents of the theory that belief in a necessary proposition implies possession of a language. The neurophysiologists, however, are somewhat sceptical and resolve to put this theory to the test. They contrive an ingenious, although somewhat inhuman, experiment. A newly-born child to whom they give the name "Henry" is put into a specially equipped laboratory where he is nurtured, raised and — in a manner of speaking — 'educated' in complete ignorance of the existence of other animate creatures. Henry is exposed to all sorts of shapes, colors, textures, sounds, weights, and the like, but never to a language. He plays games with a set of six balls of different weights and is rewarded when he learns to arrange them from left to right in order of increasing weights. He does this, the experimenters observe, by picking them up in pairs, judging their comparative weights, and then arranging or rearranging them in the correct order. Just from watching Henry's behavior, the experimenters are tempted to conclude that Henry believes the necessary truth that if one thing is heavier than a second and the second heavier than a third, then the first is heavier than the third. Excitedly, they turn to the readings from the neuron-scanner implanted in Henry's brain. And there, as they had anticipated, they see that Henry's K-type neurons are indeed in excitation-state α. They are tempted to rush to the Academy of Philosophy with their findings. But caution prevails. It is only after they have repeated the experiment a number of times with the same result, then duplicated it for other necessary truths which they suppose Henry to believe, and have tested their findings with other unfortunate languageless subjects, that they announce the demise of the No-Belief-in-Necessity-Without-Language Theory.

Case Study 3: The thesis that a justified belief in a true proposition constitutes knowledge

Possible-worlds parables need not always draw as much on fantasy as does the one just considered. It sometimes suffices, in order to refute a philosophical theory, to draw attention to possibilities much closer at hand, as it were, i.e., to possible worlds not much different from the actual one.

One philosophical thesis in epistemology, or the theory of knowledge, which may be traced back to Greek Antiquity,[55] is the theory that a justified belief in a proposition which is true constitutes knowledge. Yet only recently, in 1963 to be exact, was the first refutation of this thesis published. In a short but remarkably incisive article, Edmund Gettier produced two telling counter-examples.[56] In our idiom, we would say that he told some possible-worlds parables. With the insight his paper has given us, we can offer a possible-worlds parable which is somewhat simpler even than the ones he told.

55. Plato, *Theaetetus* 201 and *Meno* 98.

56. "Is Justified True Belief Knowledge?", *Analysis*, vol. 23 (1963), pp. 121–3.

The thesis which we are challenging may be stated, equivalently, in this fashion: A person's justifiably believing a true proposition P implies that person's knowing P. This thesis, of course, is readily paraphrased into a possible-world's idiom, viz., "Any possible world in which both P is true and a person, *a*, justifiably believes that P is also a world in which *a knows* that P." Given this latter paraphrase, the strategy of attack becomes clear: we must try to describe a possible world in which (1) a person justifiably believes a true proposition, and (2) that person does not know that that proposition is true. Can we tell such a parable? Although examples eluded philosophers for centuries, it is now a trivial matter for tyros in philosophy to construct them with ease. Here is but one case.

We imagine a possible world in which a secretary has relied for years on the electric clock hanging on his office wall. For all the forty years he has worked in that office, the clock has never once been wrong. One morning a client walks in the door below the clock. Since her back is to the clock she doesn't see it, and wishing to know what time it is, she asks the secretary. He glances at the clock for the first time that day, reads it correctly, and reports "It is ten minutes past nine." Now as it happens, unknown to him, the hitherto trusty clock expired exactly twelve hours earlier. He happened to glance at it at just the one moment during the morning when its unmoving hands were pointing at the right time. Three conditions are satisfied: (1) the proposition that the time is ten minutes past nine, is true; (2) he believes that proposition to be true; and (3) he is justified in believing that proposition to be true — after all, the clock has been unerringly reliable for forty years. But does he *know* that it is ten minutes past nine? We would hardly want to say so. Rather we would say that his was a merely fortuitous belief, and this for the reason that one cannot know what time it is by reading a stopped clock.

In sum, then, we have our counter-example. There is a possible world in which a person justifiably believes a proposition which is true and yet does not know it. From a proposition's being true and being justifiably believed, *it does not follow* that that proposition is known to be true. Knowledge, in short, requires something more than mere justified true belief. And what this something *more* might be is a question which has occupied many philosophers in recent years.

EXERCISES

Part A

Try to refute each of the following claims by telling a brief possible-worlds parable.

1. *It is impossible to share another person's pain.*
2. *Body-swapping is logically impossible. No one person could possibly have successively two different bodies; if the bodies are different, then the persons are different.*
3. *That God is good is incompatible with there being evil in the world.*
4. *It is a necessary condition of something's being a physical object that it be visible.*
5. *It is impossible to determine whether two persons with normal vision, viz., who pass all the standard tests for colorblindness, really do in fact perceive colors in the same way.*

Part B

Now try to assess how successful each of your attempted refutations was.