1

Brains in a vat

An ant is crawling on a patch of sand. As it crawls, it traces a line in the sand. By pure chance the line that it traces curves and recrosses itself in such a way that it ends up looking like a recognizable caricature of Winston Churchill. Has the ant traced a picture of Winston Churchill, a picture that *depicts* Churchill?

Most people would say, on a little reflection, that it has not. The ant, after all, has never seen Churchill, or even a picture of Churchill, and it had no intention of depicting Churchill. It simply traced a line (and even *that* was unintentional), a line that *we* can 'see as' a picture of Churchill.

We can express this by saying that the line is not 'in itself' a representation[1] of anything rather than anything else. Similarity (of a certain very complicated sort) to the features of Winston Churchill is not sufficient to make something represent or refer to Churchill. Nor is it necessary: in our community the printed shape 'Winston Churchill', the spoken words 'Winston Churchill', and many other things are used to represent Churchill (though not pictorially), while not having the sort of similarity

[1] In this book the terms 'representation' and 'reference' always refer to a relation between a word (or other sort of sign, symbol, or representation) and something that actually exists (i.e. not just an 'object of thought'). There is a sense of 'refer' in which I can 'refer' to what does not exist; this is not the sense in which 'refer' is used here. An older word for what I call 'representation' or 'reference' is *denotation*.

Secondly, I follow the custom of modern logicians and use 'exist' to mean 'exist in the past, present, or future'. Thus Winston Churchill 'exists', and we can 'refer to' or 'represent' Winston Churchill, even though he is no longer alive.

to Churchill that a picture – even a line drawing – has. If *similarity* is not necessary or sufficient to make something represent something else, how can *anything* be necessary or sufficient for this purpose? How on earth can one thing represent (or 'stand for', etc.) a different thing?

The answer may seem easy. Suppose the ant had seen Winston Churchill, and suppose that it had the intelligence and skill to draw a picture of him. Suppose it produced the caricature *intentionally*. Then the line would have represented Churchill.

On the other hand, suppose the line had the shape WINSTON CHURCHILL. And suppose this was just accident (ignoring the improbability involved). Then the 'printed shape' WINSTON CHURCHILL would *not* have represented Churchill, although that printed shape does represent Churchill when it occurs in almost any book today.

So it may seem that what is necessary for representation, or what is mainly necessary for representation, is *intention*.

But to have the intention that *anything*, even private language (even the words 'Winston Churchill' spoken in my mind and not out loud), should *represent* Churchill, I must have been able to *think about* Churchill in the first place. If lines in the sand, noises, etc., cannot 'in themselves' represent anything, then how is it that thought forms can 'in themselves' represent anything? Or can they? How can thought reach out and 'grasp' what is external?

Some philosophers have, in the past, leaped from this sort of consideration to what they take to be a proof that the mind is *essentially non-physical in nature*. The argument is simple; what we said about the ant's curve applies to any physical object. No physical object can, in itself, refer to one thing rather than to another; nevertheless, *thoughts in the mind* obviously do succeed in referring to one thing rather than another. So thoughts (and hence the mind) are of an essentially different nature than physical objects. Thoughts have the characteristic of *intentionality* – they can refer to something else; nothing physical has 'intentionality', save as that intentionality is derivative from some employment of that physical thing by a mind. Or so it is claimed. This is too quick; just postulating mysterious powers of mind solves nothing. But the problem is very real. How is intentionality, reference, possible?

Magical theories of reference

We saw that the ant's 'picture' has no necessary connection with Winston Churchill. The mere fact that the 'picture' bears a 'resemblance' to Churchill does not make it into a real picture, nor does it make it a representation of Churchill. Unless the ant is an intelligent ant (which it isn't) and knows about Churchill (which it doesn't), the curve it traced is not a picture or even a representation of anything. Some primitive people believe that some representations (in particular, *names*) have a necessary connection with their bearers; that to know the 'true name' of someone or something gives one power over it. This power comes from the *magical connection* between the name and the bearer of the name; once one realizes that a name *only* has a contextual, contingent, conventional connection with its bearer, it is hard to see why knowledge of the name should have any mystical significance.

What is important to realize is that what goes for physical pictures also goes for mental images, and for mental representations in general; mental representations no more have a necessary connection with what they represent than physical representations do. The contrary supposition is a survival of magical thinking.

Perhaps the point is easiest to grasp in the case of mental *images*. (Perhaps the first philosopher to grasp the enormous significance of this point, even if he was not the first to actually make it, was Wittgenstein.) Suppose there is a planet somewhere on which human beings have evolved (or been deposited by alien spacemen, or what have you). Suppose these humans, although otherwise like us, have never seen *trees*. Suppose they have never imagined trees (perhaps vegetable life exists on their planet only in the form of molds). Suppose one day a picture of a tree is accidentally dropped on their planet by a spaceship which passes on without having other contact with them. Imagine them puzzling over the picture. What in the world is this? All sorts of speculations occur to them: a building, a canopy, even an animal of some kind. But suppose they never come close to the truth.

For *us* the picture is a representation of a tree. For these humans the picture only represents a strange object, nature and function unknown. Suppose one of them has a mental image

which is exactly like one of my mental images of a tree as a result of having seen the picture. His mental image is not a *representation of a tree*. It is only a representation of the strange object (whatever it is) that the mysterious picture represents.

Still, someone might argue that the mental image is *in fact* a representation of a tree, if only because the picture which caused this mental image was itself a representation of a tree to begin with. There is a causal chain from actual trees to the mental image even if it is a very strange one.

But even this causal chain can be imagined absent. Suppose the 'picture of the tree' that the spaceship dropped was not really a picture of a tree, but the accidental result of some spilled paints. Even if it looked exactly like a picture of a tree, it was, in truth, no more a picture of a tree than the ant's 'caricature' of Churchill was a picture of Churchill. We can even imagine that the spaceship which dropped the 'picture' came from a planet which knew nothing of trees. Then the humans would still have mental images qualitatively identical with my image of a tree, but they would not be images which represented a tree any more than anything else.

The same thing is true of *words*. A discourse on paper might seem to be a perfect description of trees, but if it was produced by monkeys randomly hitting keys on a typewriter for millions of years, then the words do not refer to anything. If there were a person who memorized those words and said them in his mind without understanding them, then they would not refer to anything when thought in the mind, either.

Imagine the person who is saying those words in his mind has been hypnotized. Suppose the words are in Japanese, and the person has been told that he understands Japanese. Suppose that as he thinks those words he has a 'feeling of understanding'. (Although if someone broke into his train of thought and asked him what the words he was thinking *meant*, he would discover he couldn't say.) Perhaps the illusion would be so perfect that the person could even fool a Japanese telepath! But if he couldn't use the words in the right contexts, answer questions about what he 'thought', etc., then he didn't understand them.

By combining these science fiction stories I have been telling, we can contrive a case in which someone thinks words which are in fact a description of trees in some language *and* simultane-

ously has appropriate mental images, but *neither* understands the words *nor* knows what a tree is. We can even imagine that the mental images were caused by paint-spills (although the person has been hypnotized to think that they are images of something appropriate to his thought – only, if he were asked, he wouldn't be able to say of what). And we can imagine that the language the person is thinking in is one neither the hypnotist nor the person hypnotized has ever heard of – perhaps it is just coincidence that these 'nonsense sentences', as the hypnotist supposes them to be, are a description of trees in Japanese. In short, everything passing before the person's mind might be qualitatively identical with what was passing through the mind of a Japanese speaker who was *really* thinking about trees – but none of it would refer to trees.

All of this is really impossible, of course, in the way that it is really impossible that monkeys should by chance type out a copy of *Hamlet*. That is to say that the probabilities against it are so high as to mean it will never really happen (we think). But is is not logically impossible, or even physically impossible. It *could* happen (compatibly with physical law and, perhaps, compatibly with actual conditions in the universe, if there are lots of intelligent beings on other planets). And if it did happen, it would be a striking demonstration of an important conceptual truth; that even a large and complex system of representations, both verbal and visual, still does not have an *intrinsic*, built-in, magical connection with what it represents – a connection independent of how it was caused and what the dispositions of the speaker or thinker are. And this is true whether the system of representations (words and images, in the case of the example) is physically realized – the words are written or spoken, and the pictures are physical pictures – or only realized in the mind. Thought words and mental pictures do not *intrinsically* represent what they are about.

The case of the brains in a vat

Here is a science fiction possibility discussed by philosophers: imagine that a human being (you can imagine this to be yourself) has been subjected to an operation by an evil scientist. The person's brain (your brain) has been removed from the body and

placed in a vat of nutrients which keeps the brain alive. The nerve endings have been connected to a super-scientific computer which causes the person whose brain it is to have the illusion that everything is perfectly normal. There seem to be people, objects, the sky, etc; but really all the person (you) is experiencing is the result of electronic impulses travelling from the computer to the nerve endings. The computer is so clever that if the person tries to raise his hand, the feedback from the computer will cause him to 'see' and 'feel' the hand being raised. Moreover, by varying the program, the evil scientist can cause the victim to 'experience' (or hallucinate) any situation or environment the evil scientist wishes. He can also obliterate the memory of the brain operation, so that the victim will seem to himself to have always been in this environment. It can even seem to the victim that he is sitting and reading these very words about the amusing but quite absurd supposition that there is an evil scientist who removes people's brains from their bodies and places them in a vat of nutrients which keep the brains alive. The nerve endings are supposed to be connected to a super-scientific computer which causes the person whose brain it is to have the illusion that . . .

When this sort of possibility is mentioned in a lecture on the Theory of Knowledge, the purpose, of course, is to raise the classical problem of scepticism with respect to the external world in a modern way. (*How do you know you aren't in this predicament?*) But this predicament is also a useful device for raising issues about the mind/world relationship.

Instead of having just one brain in a vat, we could imagine that all human beings (perhaps all sentient beings) are brains in a vat (or nervous systems in a vat in case some beings with just a minimal nervous system already count as 'sentient'). Of course, the evil scientist would have to be outside – or would he? Perhaps there is no evil scientist, perhaps (though this is absurd) the universe just happens to consist of automatic machinery tending a vat full of brains and nervous systems.

This time let us suppose that the automatic machinery is programmed to give us all a *collective* hallucination, rather than a number of separate unrelated hallucinations. Thus, when I seem to myself to be talking to you, you seem to yourself to be hearing my words. Of course, it is not the case that my words actually

reach your ears – for you don't have (real) ears, nor do I have a real mouth and tongue. Rather, when I produce my words, what happens is that the efferent impulses travel from my brain to the computer, which both causes me to 'hear' my own voice uttering those words and 'feel' my tongue moving, etc., and causes you to 'hear' my words, 'see' me speaking, etc. In this case, we are, in a sense, actually in communication. I am not mistaken about your real existence (only about the existence of your body and the 'external world', apart from brains). From a certain point of view, it doesn't even matter that 'the whole world' is a collective hallucination; for you do, after all, really hear my words when I speak to you, even if the mechanism isn't what we suppose it to be. (Of course, if we were two lovers making love, rather than just two people carrying on a conversation, then the suggestion that it was just two brains in a vat might be disturbing.)

I want now to ask a question which will seem very silly and obvious (at least to some people, including some very sophisticated philosophers), but which will take us to real philosophical depths rather quickly. Suppose this whole story were actually true. Could we, if we were brains in a vat in this way, *say* or *think* that we were?

I am going to argue that the answer is 'No, we couldn't.' In fact, I am going to argue that the supposition that we are actually brains in a vat, although it violates no physical law, and is perfectly consistent with everything we have experienced, cannot possibly be true. *It cannot possibly be true,* because it is, in a certain way, self-refuting.

The argument I am going to present is an unusual one, and it took me several years to convince myself that it is really right. But it is a correct argument. What makes it seem so strange is that it is connected with some of the very deepest issues in philosophy. (It first occurred to me when I was thinking about a theorem in modern logic, the 'Skolem–Löwenheim Theorem', and I suddenly saw a connection between this theorem and some arguments in Wittgenstein's *Philosophical Investigations*.)

A 'self-refuting supposition' is one whose truth implies its own falsity. For example, consider the thesis that *all general statements are false*. This is a general statement. So if it is true, then it must be false. Hence, it is false. Sometimes a thesis is called 'self-refuting' if it is *the supposition that the thesis is entertained*

or enunciated that implies its falsity. For example, 'I do not exist' is self-refuting if thought by *me* (for any '*me*'). So one can be certain that one oneself exists, if one thinks about it (as Descartes argued).

What I shall show is that the supposition that we are brains in a vat has just this property. If we can consider whether it is true or false, then it is not true (I shall show). Hence it is not true.

Before I give the argument, let us consider why it seems so strange that such an argument can be given (at least to philosophers who subscribe to a 'copy' conception of truth). We conceded that it is compatible with physical law that there should be a world in which all sentient beings are brains in a vat. As philosophers say, there is a 'possible world' in which all sentient beings are brains in a vat. (This 'possible world' talk makes it sound as if there is a *place* where any absurd supposition is true, which is why it can be very misleading in philosophy.) The humans in that possible world have exactly the same experiences that *we* do. They think the same thoughts we do (at least, the same words, images, thought-forms, etc., go through their minds). Yet, I am claiming that there is an argument we can give that shows we are not brains in a vat. How can there be? And why couldn't the people in the possible world who really *are* brains in a vat give it too?

The answer is going to be (basically) this: although the people in that possible world can think and 'say' any words we can think and say, they cannot (I claim) *refer* to what we can refer to. In particular, they cannot think or say that they are brains in a vat (*even by thinking 'we are brains in a vat'*).

Turing's test

Suppose someone succeeds in inventing a computer which can actually carry on an intelligent conversation with one (on as many subjects as an intelligent person might). How can one decide if the computer is 'conscious'?

The British logician Alan Turing proposed the following test:[2] let someone carry on a conversation with the computer and a conversation with a person whom he does not know. If he can-

[2] A. M. Turing, 'Computing Machinery and Intelligence', *Mind* (1950), reprinted in A. R. Anderson (ed.), *Minds and Machines*.

not tell which is the computer and which is the human being, then (assume the test to be repeated a sufficient number of times with different interlocutors) the computer is conscious. In short, a computing machine is conscious if it can pass the 'Turing Test'. (The conversations are not to be carried on face to face, of course, since the interlocutor is not to know the visual appearance of either of his two conversational partners. Nor is voice to be used, since the mechanical voice might simply sound different from a human voice. Imagine, rather, that the conversations are all carried on via electric typewriter. The interlocutor types in his statements, questions, etc., and the two partners – the machine and the person – respond via the electric keyboard. Also, the machine may *lie* – asked 'Are you a machine', it might reply, 'No, I'm an assistant in the lab here.')

The idea that this test is really a definitive test of consciousness has been criticized by a number of authors (who are by no means hostile in principle to the idea that a machine might be conscious). But this is not our topic at this time. I wish to use the general idea of the Turing test, the general idea of a *dialogic test of competence*, for a different purpose, the purpose of exploring the notion of *reference*.

Imagine a situation in which the problem is not to determine if the partner is really a person or a machine, but is rather to determine if the partner uses the words to refer as we do. The obvious test is, again, to carry on a conversation, and, if no problems arise, if the partner 'passes' in the sense of being indistinguishable from someone who is certified in advance to be speaking the same language, referring to the usual sorts of objects, etc., to conclude that the partner does refer to objects as we do. When the purpose of the Turing test is as just described, that is, to determine the existence of (shared) reference, I shall refer to the test as the *Turing Test for Reference*. And, just as philosophers have discussed the question whether the original Turing test is a *definitive* test for consciousness, i.e. the question of whether a machine which 'passes' the test not just once but regularly is *necessarily* conscious, so, in the same way, I wish to discuss the question of whether the Turing Test for Reference just suggested is a definitive test for shared reference.

The answer will turn out to be 'No'. The Turing Test for Reference is not definitive. It is certainly an excellent test in practice;

but it is not logically impossible (though it is certainly highly improbable) that someone could pass the Turing Test for Reference and not be referring to anything. It follows from this, as we shall see, that we can extend our observation that words (and whole texts and discourses) do not have a necessary connection to their referents. Even if we consider not words by themselves but rules deciding what words may appropriately be produced in certain contexts – even if we consider, in computer jargon, *programs for using words* – unless those programs themselves *refer to something extra-linguistic* there is still no determinate reference that those words possess. This will be a crucial step in the process of reaching the conclusion that the Brain-in-a-Vat Worlders cannot refer to anything external at all (and hence cannot say *that* they are Brain-in-a-Vat Worlders).

Suppose, for example, that I am in the Turing situation (playing the 'Imitation Game', in Turing's terminology) and my partner is actually a machine. Suppose this machine is able to win the game ('passes' the test). Imagine the machine to be programmed to produce beautiful responses in English to statements, questions, remarks, etc. in English, but that it has no sense organs (other than the hookup to my electric typewriter), and no motor organs (other than the electric typewriter). (As far as I can make out, Turing does not assume that the possession of either sense organs or motor organs is necessary for consciousness or intelligence.) Assume that not only does the machine lack electronic eyes and ears, etc., but that there are no provisions in the machine's program, the program for playing the Imitation Game, for incorporating inputs from such sense organs, or for controlling a body. What should we say about such a machine?

To me, it seems evident that we cannot and should not attribute reference to such a device. It is true that the machine can discourse beautifully about, say, the scenery in New England. But it could not recognize an apple tree or an apple, a mountain or a cow, a field or a steeple, if it were in front of one.

What we have is a device for producing sentences in response to sentences. But none of these sentences is at all connected to the real world. *If one coupled two of these machines and let them play the Imitation Game with each other, then they would*

go on 'fooling' each other forever, even if the rest of the world disappeared! There is no more reason to regard the machine's talk of apples as referring to real world apples than there is to regard the ant's 'drawing' as referring to Winston Churchill.

What produces the illusion of reference, meaning, intelligence, etc., here is the fact that there is a convention of representation which *we* have under which the machine's discourse refers to apples, steeples, New England, etc. Similarly, there is the *illusion* that the ant has caricatured Churchill, for the same reason. But we are able to perceive, handle, deal with apples and fields. Our talk of apples and fields is intimately connected with our *non-verbal* transactions with apples and fields. There are 'language entry rules' which take us from experiences of apples to such utterances as 'I see an apple', and 'language exit rules' which take us from decisions expressed in linguistic form ('I am going to buy some apples') to actions other than speaking. Lacking either language entry rules or language exit rules, there is no reason to regard the conversation of the machine (or of the two machines, in the case we envisaged of two machines playing the Imitation Game with each other) as more than syntactic play. Syntactic play that *resembles* intelligent discourse, to be sure; but only as (and no more than) the ant's curve resembles a biting caricature.

In the case of the ant, we could have argued that the ant would have drawn the same curve even if Winston Churchill had never existed. In the case of the machine, we cannot quite make the parallel argument; if apples, trees, steeples and fields had not existed, then, presumably, the programmers would not have produced that same program. Although the machine does not *perceive* apples, fields, or steeples, its creator–designers did. There is *some* causal connection between the machine and the real world apples, etc., via the perceptual experience and knowledge of the creator–designers. But such a weak connection can hardly suffice for reference. Not only is it logically possible, though fantastically improbable, that the same machine *could* have existed even if apples, fields, and steeples had not existed; more important, the machine is utterly insensitive to the *continued* existence of apples, fields, steeples, etc. Even if all these things *ceased* to exist, the machine would still discourse just as

happily in the same way. That is why the machine cannot be regarded as referring at all.

The point that is relevant for our discussion is that there is nothing in Turing's Test to rule out a machine which is programmed to do nothing *but* play the Imitation Game, and that a machine which can do nothing *but* play the Imitation Game is *clearly* not referring any more than a record player is.

Brains in a vat (again)

Let us compare the hypothetical 'brains in a vat' with the machines just described. There are obviously important differences. The brains in a vat do not have sense organs, but they do have *provision* for sense organs; that is, there are afferent nerve endings, there are inputs from these afferent nerve endings, and these inputs figure in the 'program' of the brains in the vat just as they do in the program of our brains. The brains in a vat are *brains;* moreover, they are *functioning* brains, and they function by the same rules as brains do in the actual world. For these reasons, it would seem absurd to deny consciousness or intelligence to them. But the fact that they are conscious and intelligent does not mean that their words refer to what our words refer. The question we are interested in is this: do their verbalizations containing, say, the word 'tree' actually refer to *trees?* More generally: can they refer to *external* objects at all? (As opposed to, for example, objects in the image produced by the automatic machinery.)

To fix our ideas, let us specify that the automatic machinery is supposed to have come into existence by some kind of cosmic chance or coincidence (or, perhaps, to have always existed). In this hypothetical world, the automatic machinery itself is supposed to have no intelligent creator–designers. In fact, as we said at the beginning of this chapter, we may imagine that all sentient beings (however minimal their sentience) are inside the vat.

This assumption does not help. For there is no connection between the *word* 'tree' as used by these brains and actual trees. They would still use the word 'tree' just as they do, think just the thoughts they do, have just the images they have, even if there were no actual trees. Their images, words, etc., are qualitatively identical with images, words, etc., which do represent trees in

our world; but we have already seen (the ant again!) that qualitative similarity to something which represents an object (Winston Churchill or a tree) does not make a thing a representation all by itself. In short, the brains in a vat are not thinking about real trees when they think 'there is a tree in front of me' because there is nothing by virtue of which their thought 'tree' represents actual trees.

If this seems hasty, reflect on the following: we have seen that the words do not necessarily refer to trees even if they are arranged in a sequence which is identical with a discourse which (were it to occur in one of our minds) would unquestionably *be about trees* in the actual world. Nor does the 'program', in the sense of the rules, practices, dispositions of the brains to verbal behavior, necessarily refer to trees or bring about reference to trees through the connections it establishes between words and words, or *linguistic* cues and *linguistic* responses. If these brains think about, refer to, represent trees (real trees, outside the vat), then it must be because of the way the 'program' connects the system of language to *non-verbal* input and outputs. There are indeed such non-verbal inputs and outputs in the Brain-in-a-Vat world (those efferent and afferent nerve endings again!), but we also saw that the 'sense-data' produced by the automatic machinery do not represent trees (or anything external) even when they resemble our tree-images exactly. Just as a splash of paint might resemble a tree picture without *being* a tree picture, so, we saw, a 'sense datum' might be qualitatively identical with an 'image of a tree' without being an image of a tree. How can the fact that, in the case of the brains in a vat, the language is connected by the program with sensory inputs which do not intrinsically or extrinsically represent trees (or anything external) possibly bring it about that the whole system of representations, the language-in-use, *does* refer to or represent trees or anything external?

The answer is that it cannot. The whole system of sense-data, motor signals to the efferent endings, and verbally or conceptually mediated thought connected by 'language entry rules' to the sense-data (or whatever) as inputs and by 'language exit rules' to the motor signals as outputs, has no more connection to *trees* than the ant's curve has to Winston Churchill. Once we see that the *qualitative similarity* (amounting, if you like, to quali-

tative identity) between the thoughts of the brains in a vat and the thoughts of someone in the actual world by no means implies sameness of reference, it is not hard to see that there is no basis at all for regarding the brain in a vat as referring to external things.

The premisses of the argument

I have now given the argument promised to show that the brains in a vat cannot think or say that they are brains in a vat. It remains only to make it explicit and to examine its structure.

By what was just said, when the brain in a vat (in the world where every sentient being is and always was a brain in a vat) thinks 'There is a tree in front of me', his thought does not refer to actual trees. On some theories that we shall discuss it might refer to trees in the image, or to the electronic impulses that cause tree experiences, or to the features of the program that are responsible for those electronic impulses. These theories are not ruled out by what was just said, for there is a close causal connection between the use of the word 'tree' in vat-English and the presence of trees in the image, the presence of electronic impulses of a certain kind, and the presence of certain features in the machine's program. On these theories the brain is *right*, not *wrong* in thinking 'There is a tree in front of me.' Given what 'tree' refers to in vat-English and what 'in front of' refers to, assuming one of these theories is correct, then the truth-conditions for 'There is a tree in front of me' when it occurs in vat-English are simply that a tree in the image be 'in front of' the 'me' in question – in the image – or, perhaps, that the kind of electronic impulse that normally produces this experience be coming from the automatic machinery, or, perhaps, that the feature of the machinery that is supposed to produce the 'tree in front of one' experience be operating. And these truth-conditions are certainly fulfilled.

By the same argument, 'vat' refers to vats in the image in vat-English, or something related (electronic impulses or program features), but certainly not to real vats, since the use of 'vat' in vat-English has no causal connection to real vats (apart from the connection that the brains in a vat wouldn't be able to use the word 'vat', if it were not for the presence of one particular vat –

the vat they are in; but this connection obtains between the use of *every* word in vat-English and that one particular vat; it is not a special connection between the use of the *particular* word 'vat' and vats). Similarly, 'nutrient fluid' refers to a liquid in the image in vat-English, or something related (electronic impulses or program features). It follows that if their 'possible world' is really the actual one, and we are really the brains in a vat, then what we now mean by 'we are brains in a vat' is that *we are brains in a vat in the image* or something of that kind (if we mean anything at all). But part of the hypothesis that we are brains in a vat is that we aren't brains in a vat in the image (i.e. what we are 'hallucinating' isn't that we are brains in a vat). So, if we are brains in a vat, then the sentence 'We are brains in a vat' says something false (if it says anything). In short, if we are brains in a vat, then 'We are brains in a vat' is false. So it is (necessarily) false.

The supposition that such a possibility makes sense arises from a combination of two errors: (1) taking *physical possibility* too seriously; and (2) unconsciously operating with a magical theory of reference, a theory on which certain mental representations necessarily refer to certain external things and kinds of things.

There is a 'physically possible world' in which we are brains in a vat – what does this mean except that there is a *description* of such a state of affairs which is compatible with the laws of physics? Just as there is a tendency in our culture (and has been since the seventeenth century) to take *physics* as our metaphysics, that is, to view the exact sciences as the long-sought description of the 'true and ultimate furniture of the universe', so there is, as an immediate consequence, a tendency to take 'physical possibility' as the very touchstone of what might really actually be the case. Truth is physical truth; possibility physical possibility; and necessity physical necessity, on such a view. But we have just seen, if only in the case of a very contrived example so far, that this view is wrong. The existence of a 'physically possible world' in which we are brains in a vat (and always were and will be) does not mean that we might really, actually, possibly *be* brains in a vat. What rules out this possibility is not physics but *philosophy*.

Some philosophers, eager both to assert and minimize the

claims of their profession at the same time (the typical state of mind of Anglo-American philosophy in the twentieth century), would say: 'Sure. You have shown that some things that seem to be physical possibilities are really *conceptual* impossibilities. What's so surprising about that?'

Well, to be sure, my argument can be described as a 'conceptual' one. But to describe philosophical activity as the search for 'conceptual' truths makes it all sound like *inquiry about the meaning of words*. And that is not at all what we have been engaging in.

What we have been doing is considering the *preconditions* for *thinking about*, *representing*, *referring to*, etc. We have investigated these preconditions *not* by investigating the meaning of these words and phrases (as a linguist might, for example) but by *reasoning a priori*. Not in the old 'absolute' sense (since we don't claim that magical theories of reference are *a priori* wrong), but in the sense of inquiring into what is *reasonably* possible *assuming* certain general premisses, or making certain very broad theoretical assumptions. Such a procedure is neither 'empirical' nor quite 'a priori', but has elements of both ways of investigating. In spite of the fallibility of my procedure, and its dependence upon assumptions which might be described as 'empirical' (e.g. the assumption that the mind has no access to external things or properties apart from that provided by the senses), my procedure has a close relation to what Kant called a 'transcendental' investigation; for it is an investigation, I repeat, of the *preconditions* of reference and hence of thought – preconditions built in to the nature of our minds themselves, though not (as Kant hoped) wholly independent of empirical assumptions.

One of the premisses of the argument is obvious: that magical theories of reference are wrong, wrong for mental representations and not only for physical ones. The other premiss is that one cannot refer to certain kinds of things, e.g. *trees*, if one has no causal interaction at all with them,[3] or with things in terms

[3] If the Brains in a Vat will have causal connection with, say, trees *in the future*, then perhaps they can *now* refer to trees by the description 'the things I will refer to as "trees" at such-and-such a future time'. But we are to imagine a case in which the Brains in a Vat *never* get out of the vat, and hence *never* get into causal connection with trees, etc.

of which they can be described. But why should we accept these premisses? Since these constitute the broad framework within which I am arguing, it is time to examine them more closely.

The reasons for denying necessary connections between representations and their referents

I mentioned earlier that some philosophers (most famously, Brentano) have ascribed to the mind a power, 'intentionality', which precisely enables it to *refer*. Evidently, I have rejected this as no solution. But what gives me this right? Have I, perhaps, been too hasty?

These philosophers did not claim that we can think about external things or properties without using representations at all. And the argument I gave above comparing visual sense data to the ant's 'picture' (the argument via the science fiction story about the 'picture' of a tree that came from a paint-splash and that gave rise to sense data qualitatively similar to our 'visual images of trees', but unaccompanied by any *concept* of a tree) would be accepted as showing that *images* do not necessarily refer. If there are mental representations that necessarily refer (to external things) they must be of the nature of *concepts* and not of the nature of images. But what are *concepts*?

When we introspect we do not perceive 'concepts' flowing through our minds as such. Stop the stream of thought when or where we will, what we catch are words, images, sensations, feelings. When I speak my thoughts out loud I do not think them twice. I hear my words as you do. To be sure it feels different to me when I utter words that I believe and when I utter words I do not believe (but sometimes, when I am nervous, or in front of a hostile audience, it feels as if I am lying when I know I am telling the truth); and it feels different when I utter words I understand and when I utter words I do not understand. But I can imagine without difficulty someone thinking just these words (in the sense of saying them in his mind) and having just the feeling of understanding, asserting, etc., that I do, and realizing a minute later (or on being awakened by a hypnotist) that he did not understand what had just passed through his mind at all, that he did not even understand the language these words are in. I don't claim that this is very likely; I simply mean that there

is nothing at all unimaginable about this. And what this shows is not that concepts *are* words (or images, sensations, etc.), but that to attribute a 'concept' or a 'thought' to someone is quite different from attributing any mental 'presentation', any introspectible entity or event, to him. Concepts are not mental presentations that intrinsically refer to external objects for the very decisive reason that they are not mental presentations at all. Concepts are signs used in a certain way; the signs may be public or private, mental entities or physical entities, but even when the signs are 'mental' and 'private', the sign itself apart from its use is not the concept. And signs do not themselves intrinsically refer.

We can see this by performing a very simple thought experiment. Suppose you are like me and cannot tell an elm tree from a beech tree. We still say that the reference of 'elm' in my speech is the same as the reference of 'elm' in anyone else's, viz. elm trees, and that the set of all beech trees is the extension of 'beech' (i.e. the set of things the word 'beech' is truly predicated of) both in your speech and my speech. Is it really credible that the difference between what 'elm' refers to and what 'beech' refers to is brought about by a difference in our *concepts?* My concept of an elm tree is exactly the same as my concept of a beech tree (I blush to confess). (This shows that the determination of reference is social and not individual, by the way; you and I both defer to experts who *can* tell elms from beeches.) If someone heroically attempts to maintain that the difference between the reference of 'elm' and the reference of 'beech' in *my* speech is explained by a difference in my psychological state, then let him imagine a Twin Earth where the words are switched. Twin Earth is very much like Earth; in fact, apart from the fact that 'elm' and 'beech' are interchanged, the reader can suppose Twin Earth is exactly like Earth. Suppose I have a *Doppelganger* on Twin Earth who is molecule for molecule identical with me (in the sense in which two neckties can be 'identical'). If you are a dualist, then suppose my *Doppelganger* thinks the same verbalized thoughts I do, has the same sense data, the same dispositions, etc. It is absurd to think his psychological state is one bit different from mine: yet his word 'elm' represents *beeches*, and my word 'elm' represents elms. (Similarly, if the 'water' on Twin Earth is a different liquid – say, XYZ and not H_2O – then 'water'

represents a different liquid when used on Twin Earth and when used on Earth, etc.) Contrary to a doctrine that has been with us since the seventeenth century, *meanings just aren't in the head.*

We have seen that possessing a concept is not a matter of possessing images (say, of trees – or even images, 'visual' or 'acoustic', of sentences, or whole discourses, for that matter) since one could possess any system of images you please and not possess the *ability* to use the sentences in situationally appropriate ways (considering both linguistic factors – what has been said before – and non-linguistic factors as determining 'situational appropriateness'). A man may have all the images you please, and still be completely at a loss when one says to him 'point to a tree', even if a lot of trees are present. He may even have the image of what he is supposed to do, and still not know what he is supposed to do. For the image, if not accompanied by the ability to act in a certain way, is just a *picture*, and acting in accordance with a picture is itself an ability that one may or may not have. (The man might picture himself pointing to a tree, but just for the sake of contemplating something logically possible; himself pointing to a tree after someone has produced the – to him meaningless – sequence of sounds 'please point to a tree'.) He would still not know that he was supposed to point to a tree, and he would still not *understand* 'point to a tree'.

I have considered the ability to use certain sentences to be the criterion for possessing a full-blown concept, but this could easily be liberalized. We could allow symbolism consisting of elements which are not words in a natural language, for example, and we could allow such mental phenomena as images and other types of internal events. What is essential is that these should have the same complexity, ability to be combined with each other, etc., as sentences in a natural language. For, although a particular presentation – say, a blue flash – might serve a particular mathematician as the inner expression of the whole proof of the Prime Number Theorem, still there would be no temptation to say this (and it would be false to say this) if that mathematician could not unpack his 'blue flash' into separate steps and logical connections. But, no matter what sort of inner phenomena we allow as possible *expressions* of thought, arguments exactly similar to the foregoing will show that it is not the phenomena themselves that constitute understanding, but rather the

ability of the thinker to *employ* these phenomena, to produce the right phenomena in the right circumstances.

The foregoing is a very abbreviated version of Wittgenstein's argument in *Philosophical Investigations*. If it is correct, then the attempt to understand thought by what is called 'phenomenological' investigation is fundamentally misguided; for what the phenomenologists fail to see is that what they are describing is the inner *expression* of thought, but that the *understanding* of that expression – one's understanding of one's own thoughts – is not an *occurrence* but an *ability*. Our example of a man pretending to think in Japanese (and deceiving a Japanese telepath) already shows the futility of a phenomenological approach to the problem of *understanding*. For even if there is some introspectible quality which is present when and only when one *really* understands (this seems false on introspection, in fact), still that quality is only *correlated* with understanding, and it is still possible that the man fooling the Japanese telepath have that quality too and *still* not understand a word of Japanese.

On the other hand, consider the perfectly possible man who does not have any 'interior monologue' at all. He speaks perfectly good English, and if asked what his opinions are on a given subject, he will give them at length. But he never thinks (in words, images, etc.) when he is not speaking out loud; nor does anything 'go through his head', except that (of course) he hears his own voice speaking, and has the usual sense impressions from his surroundings, plus a general 'feeling of understanding'. (Perhaps he is in the habit of talking to himself.) When he types a letter or goes to the store, etc., he is not having an internal 'stream of thought'; but his actions are intelligent and purposeful, and if anyone walks up and asks him 'What are you doing?' he will give perfectly coherent replies.

This man seems perfectly imaginable. No one would hesitate to say that he was conscious, disliked rock and roll (if he frequently expressed a strong aversion to rock and roll), etc., just because he did not think conscious thoughts except when speaking out loud.

What follows from all this is that (a) no set of mental events – images or more 'abstract' mental happenings and qualities – *constitutes* understanding; and (b) no set of mental events is *necessary* for understanding. In particular, *concepts cannot be*

identical with mental objects of any kind. For, assuming that by a mental object we mean something introspectible, we have just seen that whatever it is, it may be absent in a man who does understand the appropriate word (and hence has the full blown concept), and present in a man who does not have the concept at all.

Coming back now to our criticism of magical theories of reference (a topic which also concerned Wittgenstein), we see that, on the one hand, those 'mental objects' we *can* introspectively detect – words, images, feelings, etc. – do not intrinsically refer any more than the ant's picture does (and for the same reasons), while the attempts to postulate special mental objects, 'concepts', which *do* have a necessary connection with their referents, and which only trained phenomenologists can detect, commit a *logical* blunder; for concepts are (at least in part) *abilities* and not occurrences. The doctrine that there are mental presentations which necessarily refer to external things is not only bad natural science; it is also bad phenomenology and conceptual confusion.