Inference, Belief, and Understanding

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Lewis Carroll's Achilles[1] has written in his notebook:

A: Things that are equal to the same are equal to each other.
B: The two sides of this Triangle are things that are equal to the same.
Z: The two sides of this Triangle are equal to each other.

Someone might accept the hypothetical proposition that if A and B are true then Z is true without accepting either A or B (although Achilles is surely right that such a person would be wise to abandon Euclid and take to football). Both the tortoise and Achilles also agree that someone could accept A and B without accepting the conditional 'If A and B are true then Z is true'. The tortoise challenges Achilles to consider him as such a person and to 'force him, logically, to accept Z as true' (ibid.). The story suggests that he can never succeed.

The tortoise claims at the outset not to accept the conditional (call it C) that if A and B are true then Z is true,[2] but he gladly accepts it as soon as Achilles asks him to. Since he insists that every proposition he accepts should be written down, C is duly added to A, B, and Z in Achilles's notebook. When the tortoise points out, as before, that it is possible to accept A, B, and C without accepting the conditional that if A and B and C are true then Z is true, Achilles asks him to accept one more conditional. He aggrees, and that conditional in turn is added to the notebook and called D. Before the same kind of interchange can be repeated the narrator, having pressing business at the bank, is obliged to leave. We are left to draw our own moral.

It seems to me that there is no sound moral to be drawn from the story about the nature of validity or logical consequence as such. Lewis Carroll does not succeed in showing that Z does not

1 Lewis Carroll, 'What the Tortoise Said to Achilles', *Mind* 1895, p. 278.
2 Here I deviate slightly from Lewis Carroll's story in which the statement called C is 'If A and B are true Z must be true' (p. 279). The change does not affect any point to be made about the story. See p. 181, n. 1 below.

quite follow from A and B alone and that something else is therefore needed to complete the implication. The conjunction of A and B does imply Z, whatever the tortoise happens to think about it. If we agree with J. F. Thomson that 'the intention of the story is, plainly enough, to raise a difficulty about the idea of valid arguments',[1] it is difficult to see what can be learned from it. He concludes that no point legitimately raised by Lewis Carroll amounts to a difficulty about the idea of valid arguments and that a number of sound points that can be made about valid arguments are not actually made by the story. But I think there remains a significant lesson to be learned from Achilles and the tortoise. The story shows something interesting and important about inference and belief, and the lesson can be fully appreciated only if those puzzling notions are clearly distinguished from the better-understood notions of logical consequence and truth.

Thomson argues that the alleged infinite regress of the story 'is just an infinitely long red herring' (p. 105) since Achilles is wrong to suppose that if the tortoise does not accept Z although he has accepted A and B then something must be added to those premisses to force him to accept that conclusion. The tortoise thinks anyone who accepts A and B but does not accept the conditional C is not 'as yet under any logical necessity to accept Z as true' (Carroll, p. 239); Thomson says he is wrong since Z follows logically from A and B and so anyone who accepts A and B is already 'under a logical necessity' to accept Z (p. 96). There is no reason to start on the regress at all.

Achilles resorts to what he regards as a strengthening of the original argument in order to force the tortoise to the conclusion. He adds to the premisses A and B the conditional C which has those premisses as antecedent and the conclusion Z as consequent. Thomson argues that no such manoeuvre can help establish the conclusion; 'strengthening' an argument in that way is always either redundant or futile.

> An argument may fail to establish its conclusion on either or both of two counts; it may have one or more false premises, and, independently, the relation required to hold between the premises and the conclusion may not hold. It is clear that a strengthened argument will always be valid and so will never

1 J. F. Thomson, 'What Achilles Should Have Said to the Tortoise', *Ratio* 1960, p. 95. The paper is full of much good sense and many helpful points that I do not discuss.

> fail on the second count, and that if an argument fails on any count its strengthening must fail on the first of them. In particular, if an argument fails by not having enough premises its strengthening will escape that weakness but must, just because it is the strengthened form of that argument, fail by having an unacceptable premise. It follows that from the point of view of getting arguments which establish their conclusions the operation of strengthening is either redundant or futile (pp. 97–98).

It is clear how a strengthened argument will always be valid; in fact, it will be truth-functionally valid. But it is obviously not true that if an argument fails on either of Thomson's counts then its strengthening must fail by having a false premiss. An argument that is invalid although its premisses and conclusion are true will be 'strengthened' into a valid argument all of whose then-augmented premisses will still be true, as will the conclusion. The hypothetical added in the operation of 'strengthening' such an argument will not be a logical or necessary truth[1] (if it were, the original argument would have been valid), but it will have a true antecedent and a true consequent, and so it will be true. If we are restricted to the notions of truth and validity we can say that an argument 'establishes' its conclusion if and only if it is valid and has all true premisses. But then to produce an argument that 'establishes' its conclusion in this restricted sense it will be enough simply to 'strengthen' an argument that is invalid but has all true premisses and a true conclusion. Therefore in this purely logical sense of 'establish' the operation of 'strengthening' is not always either redundant or futile in producing arguments that 'establish' their conclusion. If we took Thomson to be making a point only about the idea of valid arguments then what he says would be incorrect.

But Thomson is right to say that if an argument is invalid then it is futile simply to go in for the operation of 'strengthening' if you

1 Thomson defines 'strengthening' as follows:

> Given an argument with premises $P_1, P_2, \ldots, P_k$ and conclusion Q let us call $(P_1 \& P_2 \& \ldots \& P_k) \rightarrow Q$ the hypothetical *associated with* that argument, and let us call the argument with the same conclusion and premises $P_1, P_2, \ldots, P_k, (P_1 \& P_2 \& \ldots \& P_k) \rightarrow Q$ the *strengthened* form of the original argument and a strengthened argument (p. 97).

It is clear that '$P_1 \& P_2 \& \ldots \& P_k \rightarrow Q$' is to be understood as a material conditional. Thomson also removes the 'must' from Lewis Carroll's conditional C. I simply follow him in doing so.

want to establish its conclusion. That, as he says, will always leave you with an 'unacceptable' premiss. But its 'unacceptability' is not equivalent to falsity, and the failure of the 'strengthened' argument to establish the conclusion is not equivalent to invalidity, so what is right in what Thomson says is not a point about valid arguments and the truth-values of their premisses, and so not a point about 'establishing' conclusions in the purely logical sense at all. 'Strengthening' alone is futile in establishing conclusions because it leaves you with a premiss that is in some way *epistemically* unacceptable even if it is true and its addition to the original premisses would yield a valid argument that 'establishes' its conclusion in the purely logical sense. So the admitted futility of 'strengthening' an argument is an epistemic matter that must be seen to be true independently of purely logical considerations.

The tortoise challenges Achilles to 'force' him to *accept* something, and if there really is a difficulty about that we should not expect it to be expressible in purely logical terms concerned only with the relations among propositions. Achilles says to the tortoise that if he refused to accept Z after accepting A and B and C and D then 'Logic would take you by the throat and *force* you to do it!' (Carroll, p. 280). But how could logic do that? Logic simply states what is the case, or that something implies something else; it does not state that people must accept certain things, or even that they must accept certain things if they already accept certain other things. As the tortoise remarks, 'Whatever *Logic* is good enough to tell me is worth *writing down*' (Carroll, p. 280), but all that gets written in the notebook is another conditional.

It is perhaps natural to say that the tortoise *must* accept Z since it follows from A and B, which he accepts. But even when the logical relations between A and B and Z are perfectly clear this 'must' is still unexplained. Certainly it is not the same as the 'must' in 'If A and B are true then Z must be true'. It is impossible for A and B to be true and Z false, but it is not impossible for 'The tortoise believes A' and 'The tortoise believes B' to be true even though 'The tortoise believes Z' is false. Or if for some reason that is in fact impossible,[1] its impossibility does not follow from the admitted impossibility of Z's being false while A and B are true, so it still needs to be explained. Someone might accept two propositions without knowing or even suspecting that they together imply some specified third proposition. He might never have

1 I discuss later some reasons for thinking it might be impossible.

heard of that third proposition at all, or if he had, he might have no opinion about it one way or the other. He might even believe it to be false, and so if he thinks of it at all he will think it does not follow from the first two. Since the tortoise accepts A and B, and Z follows from them, he might be said to be 'logically committed' to Z. But if that means only that Z follows from A and B, which he already believes, then it tells us only what we knew at the outset about the logical relations between A and B and Z. That does not help us understand how or why the tortoise in accepting A and B is 'forced' to accept Z.

Thomson tries to explain the 'must' by saying:

> . . . anyone who accepts the premises and denies the conclusion has committed himself to at least one falsehood. This is the threat behind the 'must'. 'If you assert the premises and deny the conclusion, you will have said at least one false thing, however the facts may turn out to be' (p. 100).

I do not think this adds anything to a description of the logical relations among the propositions in question; it does not help explain any sense in which the tortoise must accept Z. Certainly anyone who accepts the premisses and denies the conclusion of a valid argument will have accepted at least one falsehood, but that is not the position the tortoise is in. He accepts the premisses but he does not accept the conclusion; he neither accepts it nor rejects it. If he asserts everything he accepts he will not assert any falsehoods. Because there is no inconsistency among all the things he accepts, the threat of the 'must' or the sense in which he is 'forced' to accept Z is not explained by saying that we know he has accepted one false thing however the facts turn out to be. Of course we know that if he accepts A and B and has any belief one way or the other about Z then either he will accept Z or he will believe at least one falsehood. But that says no more than that Z follows from A and B, and we knew that at the outset.

It is sometimes necessary or helpful in a discussion to say to someone 'If you accept this then you *must* accept that'. It can be a way of pointing out to him that what he has already accepted gives him excellent reason for accepting something else. The remark can be made when there is a valid argument from the things he already accepts to the proposition in question or when his reasons are in some other way conclusive. Thomson rightly

emphasizes that to point out that someone has good or conclusive reasons for believing something is not to state another reason he has to believe it.[1] The remark is a comment on the original premisses; it says something about them, but it does not give another part of the original argument. So when Achilles is led to remark at each point that if everything the tortoise has accepted so far is true then Z must be true he should not be seen as offering the tortoise yet another reason to believe Z. If he were doing that, he would never find enough reasons.

Thomson thinks the point is obvious and that we do not need Lewis Carroll's regress to establish it. He thinks it rests on nothing more than the truism that a conditional proposition cannot be part of its own antecedent (pp. 101–2). If someone who accepts premisses A and B is told that he must accept Z because if A and B are true then Z is true, he has not thereby been given another premiss to accept. The original argument was from A and B to Z, and the hypothetical associated with that argument has those premisses as antecedent and that conclusion as consequent. What he is told could not therefore be a premiss of the original argument since that would imply that that hypothetical (which has all the premisses of the argument in its antecedent) contains itself as part of its own antecedent. Since that is clearly absurd on the face of it Thomson concludes that we do not need Lewis Carroll's story to convince us that asserting that if A and B are true then Z is true is not giving a further reason beyond the truth of A and B for the tortoise to believe Z.

Certainly we do not need Lewis Carroll's regress to show us that a conditional cannot contain itself as part of its own antecedent. But I think there is more than that behind the insistence that a statement linking accepted premisses with a prospective conclusion—or in general a statement linking one's reasons with that for which they are reasons—cannot always be taken as a further reason one has for believing the conclusion. It is a point about inference and belief, and not simply about consequence and truth, or the logical relations among propositions. Whether or not Lewis Carroll had it in mind there is an important moral to be drawn from his story.

What is involved in someone's believing something on the basis

1 There is a very good discussion of this point on pages 100–2 of Thomson's paper.

of something else he knows or believes? This is not simply a question about the relation between the propositions the person believes. In Lewis Carroll's story the reasons are deductively sufficient for the conclusion, but once we abandon the idea that the story is concerned with valid arguments as such we can see that it raises a quite general problem about one belief's being inferred from or based on another, whether the one belief implies the other or not. If a person knows or believes that P is true and on that basis believes that Q is true then an Epistemologist's Notebook in which the person's state is fully described would list both P and Q among his beliefs, but the relation between P and Q, and therefore the kind of reason P is will vary from one case to another.[1] It might be that P implies Q, or that if P were to be true then Q would be true, or simply that if P is true then Q is true, or even that P is reason to believe Q.[2] But in each case, when we had written P in our notebook we would have identified a reason he has for believing Q. The correct answer for him to give when asked for his reason for believing Q is 'P'.[3]

But if we who wish to represent his belief in Q as based on P are to write in our notebook everything his having that belief on that basis consists in then when we have written only P and Q we will not have written enough. Someone can believe P and believe Q and still not believe Q on the basis of P whatever the relations between the propositions P and Q happen to be. He might believe Q for some reason completely unconnected with P, or perhaps for no reason at all (if that is possible). He might never have noticed any connection between P and Q and so might never have seen that P implies Q or that if P were to be true then Q would be true or that if P is true then Q is true or even that P is reason to believe Q. His belief in Q could therefore fail to be based on P

1 For the idea that there is no special activity or phenomenon properly called 'deductive reasoning' see Gilbert Harman, 'Induction' in M. Swain (ed.), *Induction, Acceptance and Rational Belief*, Dordrecht, 1970. The claim does not imply that people never believe something on the basis of other things that logically imply it.

2 For a clear demonstration that 'P is reason to believe Q' can be true even though 'If P then Q' is false, and that someone who reasons from P to Q *need* not therefore be supposed to be taking anything as strong as the conditional for granted, see Judith Jarvis Thomson, 'Reasons and Reasoning', in M. Black (ed.), *Philosophy in America*, London, 1965, pp. 294–6.

3 In saying this I do not imply that a person can always state his reasons for his beliefs, or that what he states when asked is always in fact his reason, or that in attributing to him one belief based on another we imply that he is able to state his reasons if asked.

even though it is in fact accompanied in his mind by a belief in P. So a notebook that states only that a person believes P and believes Q would not represent that person as believing Q on the basis of P.

How are we to represent that fact in our notebook? Of course it depends on what the constraints on the proper form for notebook entries are to be. We could simply write 'He believes P, he believes Q, and the second belief is based on the first' and leave it at that. But what it is for one belief to based on another would remain unexplained.

It is tempting to try to explain it by saying that the person must see or recognize or somehow be aware of some relation between P and Q. That was what was missing from the simple statement that he believes P and believes Q. And it does seem to capture something essential to reasonable belief.[1] It is no good believing something that actually amounts to deductively sufficient or conclusive or good or even some reason to believe something else if you never recognize or make use of that fact. The reasonable believer is one who exploits such connections and thereby comes to believe one thing on the basis of another. So whatever 'seeing some connection between P and Q' or 'drawing an inference (or reasoning) from one to the other' ultimately amounts to, it will at least involve some attitude of acceptance, recognition, awareness, or acknowledgement on the believer's part of 'P implies Q', 'If P were true then Q would be true', 'If P is true then Q is true', 'P is reason to believe Q', or some such proposition that serves to link his reason with that for which it is a reason. In going from his premiss to his conclusion he would seem to recognize or accept some such connection, and without it his belief in Q would not have been shown to be based on P. If we yield to this so far innocent-seeming temptation our notebook will show that his believing Q on the basis of P amounts to at least two things—his belief in P and his belief or recognition of something else, call it R, that expresses a relation between P and Q. If we are to write in our notebook everything involved in his believing Q on the basis of P it would seem that his acceptance of some R must be represented there.

How is that acceptance or recognition itself to be represented?

1 For an argument that a person who reasons from P to Q must at least be assuming or taking it for granted that P is reason to believe Q, see Judith Jarvis Thomson, op. cit. pp. 296–8.

If we write R as just another thing the person believes or recognizes or takes to be true then we still will not have written everything we need to represent his belief in Q as based on P. Someone can believe P and believe 'P implies Q' or 'If P were true then Q would be true' or 'If P is true then Q is true' or even 'P is reason to believe Q' and still not believe Q on the basis of P. He might believe Q for some reason completely unconnected with P and any of those other statements, or perhaps for no reason at all (if that is possible). He might confidently believe P and confidently believe some statement R about the relation between P and Q without ever having put them together and thereby noticed a connection between two of the things he accepts and Q. His belief in Q could therefore fail to be based on P even though it is in fact accompanied in his mind by a belief in P and an acceptance of R. Since he must have 'put P and R together' and somehow have seen or acknowledged their connection with Q, then for reasons similar to those which first tempted us to write R in the notebook we would then be forced to attribute to the believer some attitude of acceptance or recognition of the relation between what is now in the notebook and Q. In going from what is now in the notebook to his conclusion he would seem to recognize or accept some connection between P and R and Q, and without it his belief in Q would not have been shown to be based on P. If we yielded to this further temptation our notebook would show that his believing Q on the basis of P amounts to at least three things—his belief in P, his acceptance of R, and his belief or recognition of something else, call it S, that expresses a relation between P and R and Q. And again, if we wrote S as just another thing the person believes or recognizes or takes to be true then we still would not have written everything we need to represent his belief in Q as based on P.

Before leaving to attend to pressing business at the bank we should pause to notice a moral to be drawn from the tale of Achilles and the tortoise.

The moral is that for every proposition or set of propositions the belief or acceptance of which is involved in someone's believing one proposition on the basis of another there must be something else, not simply a further proposition accepted, that is responsible for the one belief's being based on the other. It is perhaps unobjectionable for certain limited purposes to represent a cognitive subject in abstract terms as a set of propositions that are said to

constitute his 'belief set'. But from Lewis Carroll's story we can conclude that no such fiction could ever represent any of a person's beliefs as based on other beliefs of his. A list of everything a person believes, accepts, or acknowledges must leave it indeterminate whether any of those beliefs are based on others. Given such a list we could find by simple inspection that some specified propositions P and Q are on it. Even if we know that P implies Q or that some weaker relation holds between them we will not thereby have found that the belief in Q is based on P. We could then search the list for some statement R about the relation between P and Q. If no such statement is on the list we would not have found that the belief in Q is based on P; but even if it is on the list we still would not have found that the belief in Q is based on P. We could scan the list again for a more complicated statement S about the relation between P and R and Q, but however that search turned out we would have to scan the list once again. And so on and so on. Even if God Himself looked into our heads and inspected all the members of our 'belief set' He could not thereby determine whether any of our beliefs are based on others. That is not a question that can be settled by any facts, however complex, about what we know, believe, or accept.[1]

This obviously does not imply that whenever someone believes Q on the basis of P he cannot, on pain of infinite regress, be said also to have a belief that P implies Q, or that if P were to be true then Q would be true, or that if P is true then Q is true, or that P is reason to believe that Q is true. Someone might well hold just such a belief, and it might even have occurred to him explicitly in thinking about P and Q. It often requires explicit rehearsing of such statements, or deliberately working through an argument, to bring about a belief that a certain proposition is true. The point is only that even if the person is said to believe or accept some statement R linking things he already believes with his conclusion we still must attribute to him something else in addition if we are to represent his belief in that conclusion as based on those other beliefs. That additional factor cannot be identified as simply some further proposition he accepts or acknowledges. There must

1 This shows the limitations of any 'rational reconstruction' of the grounds of our beliefs which simply enumerates propositions believed and the relations holding, or believed to hold, between them. It also casts doubt on the notion of a person's 'complete' reason for a belief, and therefore indirectly on the idea that some knowledge is completely (epistemically) independent of experience in the sense that nowhere in one's complete reason for believing is there any appeal to experience.

always exist some 'non-propositional' factor if any of his beliefs are based on others.

It might well be felt that in showing or suggesting only this Lewis Carroll has not shown very much—that it is quite obvious without his help that the propositions alone, or the relations between them, are not enough. What is important is not only which propositions are 'written' in the mind, but also that the propositions 'written' there are *believed*. Since believing something differs from wondering whether it is true, or fearing or hoping that it is, if the same proposition or sentence is involved in each case then its being believed or accepted must be represented as its being in the mind or written on the mental tablet in a certain way. That 'manner of conception'[1] is what must be understood if we are to understand what it is for one belief to be based on another. Therefore only an adequate account of the nature of belief, and not a mere list of the propositions believed, would provide an explanation of what it is for one belief to be based on another.

For example, a picture of the mind as containing a list of propositions believed, even if the list carries the title 'Things Believed', will appear ridiculous in giving no account of a person's understanding of what he believes. Believing something involves understanding it, and that in turn appears to involve seeing some of its connections with other things one understands, or at least having the capacity to see and accept those connections in appropriate circumstances. If someone could not even believe P unless he understood it, and if he could not understand P without seeing that if it is true then Q is true, then his acceptance of the conditional that if P is true then Q is true would be part of what we attribute to him in attributing to him at the outset a belief in P. Of course, one can understand and accept a proposition without thereby seeing or accepting *all* of its consequences, since many of them are remote and difficult to discern. But it seems that a person will believe at least *some* of the consequences of what he already believes if he can truly be said to have those very beliefs in the first place. The fact that belief requires understanding and understanding requires seeing connections and drawing conclusions in appropriate circumstances might therefore be thought to provide

1 The phrase is deliberately reminiscent of Hume, who thought he was the first philosopher to see just this problem (see Hume's *A Treatise of Human Nature*, ed. Selby-Bigge, Oxford, 1958, p. 628). Although he lacked the full resources for a solution he made some suggestions in that direction in the Appendix to his *Treatise* (pp. 625–9).

a way around Lewis Carroll's regress[1] and to explain the source of the 'must' in 'He believes this so he must believe that'.[2]

This line of thinking finds support in a closer look at Lewis Carroll's story since it must be admitted that it is difficult to see how the tortoise could understand and accept A and B without accepting Z, especially if, as seems natural to assume, he understands Z. How could anyone understand and accept 'Things that are equal to the same are equal to each other' and realize that the sides of a particular triangle are things that are equal to the same without seeing that *if* those two things are true then the sides of that triangle are equal to each other? Failure to accept that conditional is one of the best grounds we could have for concluding that the tortoise does not understand what he has 'accepted' when he has 'granted' A and B. His not accepting the conditional C tends to show that he has not seen that A is a universal generalization and that B provides an instantiation of its antecedent, but if he has not grasped even such elementary structural features of the propositions he says he believes how can he be said to understand them at all? Or perhaps he does grasp the structure of A and B but does not realize that if a universal generalization is true and its antecedent is instantiated then that instance also fulfils the consequent. But could someone who does not know even that much about what a universal generalization is be said to know that A in particular is a universal generalization? If not, it is difficult to see that he fulfils the minimum conditions for understanding, and therefore for believing, A and B.

The ease with which the tortoise 'accepts' the conditional C simply on request also makes it difficult to see that full-blooded belief is in question. He does not ask to have the meaning or implications of that conditional explained to him more fully, or to have its connections with A and B made more explicit; he insists only that it be written in the notebook. No doubt it will always be possible for the tortoise to insist that more and more complex conditional sentences be written in the notebook, but that in

1 This is perhaps the most natural and most widely-adopted suggestion for avoiding the regress. For a recent example see Max Black, 'The Justification of Logical Axioms', in his *Margins of Precision*, Ithaca, 1970. He holds that 'the form of words "Understanding and accepting premises of the form *p* and *If p then q*, but not accepting the corresponding proposition of the form *q*" describes nothing at all' (p. 21).

2 This is putting it optimistically, since the suggestion simply pushes the 'must' back one step. We would still need an explanation of why it is *impossible* for a person to understand and believe P without accepting certain other statements logically connected with it.

itself does not give us a way of understanding how it is possible for him to believe A and B without believing C, or to believe A, B, and C without believing D. Believing something is more than having something written in a notebook.

There is no doubt that a person's understanding of what he believes is an essential ingredient in belief, and that his not responding in appropriate ways—for example, his not accepting obvious consequences or obviously reasonable conclusions from things he purports to believe or his not changing his alleged beliefs when other things he believes are obviously good reason to do so—is good evidence that he does not understand them and therefore cannot properly be said to have the relevant beliefs at all. But the attempt to locate the source of the 'must' in 'He believes this so he must believe that' in the conditions of belief-attribution seems to me to promise less than complete success with the tortoise.

It is admittedly difficult to understand exactly how the tortoise could accept A and B and not accept C if he understands what they mean, but can it be said that, given his understanding, from the fact that he accepts A and B it *follows* that he accepts C? On that view his non-acceptance of the single statement C would be conclusive falsification of our attribution to him of understanding of A and B, but that seems unduly restrictive. Understanding something is a complex matter. Certainly if someone saw *none* of the relations between a particular proposition P and others, and was not disposed to accept it even though he already believed what were obviously good reasons for it or to reject it when he believed what were obviously good reasons against it, we would at some point justifiably conclude that he did not understand it. But that shows at most that understanding something requires seeing *some* (perhaps even a great many) of its obvious connections with other things.[1] It does not immediately provide a way of showing, of some particular proposition Q, that the person must see a connection between P and Q if he understands P. As long as he saw enough connections between P and other propositions he could be said to understand P even if he persisted in his non-

1 The point is well illustrated in the context of a general theory of action by Donald Davidson in 'Mental Events', in Foster and Swanson (ed.), *Experience and Theory*, Amherst, Mass., 1970, and 'Psychology as Philosophy', in S. C. Brown (ed.), *Philosophy of Psychology*, London, 1974. For another interesting argument to the same effect see Daniel Dennett, 'Mechanism and Responsibility', in T. Honderich (ed.), *Essays on Freedom of Action*, London, 1973.

acceptance of Q.[1] No doubt we would find this puzzling and perhaps could never satisfactorily explain what blocks his understanding at just that point, but we could not simply disregard everything that speaks in favour of his understanding P and declare that he does not understand it.

But even if the appeal to understanding is not clearly enough in itself to show that the tortoise must accept C, and therefore Z, it could still show that Lewis Carroll has not succeeded in raising a completely general problem about believing something on the basis of something else. If believing something involves understanding it,[2] and that in turn requires that one see some of its connections with other things and draw reasonable conclusions in appropriate circumstances, then even if the tortoise's situation in particular cannot be demonstrated to be impossible it does not follow that it could represent a quite general possibility with respect to *every* connection between A and B and other things. The appeal to understanding would show that a person could not be said to understand, and therefore could not believe, a proposition P if he did not see what any of its consequences were, or any of the things for which it is a good reason, or did not know what implied it or what would be good reason to believe it. If he never saw any such connections he could not be said to understand.

It is not my aim here to provide a theory of understanding along those lines and thereby to show that Lewis Carroll has not illustrated a quite general possibility. Even if the indispensability of understanding is granted and it is conceded for that reason that there is no completely general problem about believing something on the basis of something else we can still draw from the story a significant moral about how that all-important understanding is to be represented.

To understand a sentence is to know certain things about its structure and about the reference and meaning of its constituent terms, and thereby to know something about its relations to other sentences one understands. One aim of what is now called 'the theory of meaning' is to give a detailed and systematic description

1 For an argument that a certain minimal consistency and inferential ability is required for the possession of any beliefs, but that that does not warrant the specification of particular beliefs or inferences that *must* be accepted see Christopher Cherniak, *Beliefs and Logical Abilities*, Ph.D. Thesis, University of California, Berkeley, 1977.

2 The point that believing requires understanding need not be restricted to linguistic beings for whom there is a sentence they understand that states what they believe. In what follows I concentrate on the linguistic case.

of precisely what a person knows when he knows or understands a language. Whatever the final form of such a theory might turn out to be it is natural to think of it as a specification of what a person can be said to know or believe or accept in virtue of understanding his language as he does. Therefore in attributing understanding to someone we attribute to him attitudes of the form 'He knows (or believes) that . . .' with the blanks filled by propositions about semantical and other features of his language the knowledge or acceptance of which is thought to constitute his understanding of the language. But from Lewis Carroll's story we can see that this in itself can never be a full account of what his understanding his language, and his therefore being in a position to believe one thing on the basis of another, consists in.

Even if we add to the list of a person's beliefs in our Epistemologist's Notebook a further list (call it U) of all those propositions he accepts in virtue of understanding the language in which those beliefs are expressed we still will not have written enough to show that U does in fact represent the way he understands those beliefs. If, however many propositions of whatever complexity are written in our notebook that truly describe a believer's state of mind it remains so far indeterminate whether any of his beliefs are based on others, then in particular when we have attributed to him acceptance of the members of U we will not thereby have shown that they are connected in any way with his other beliefs. For example, the truths he knows about his language are presumably general in form, and the sentences he is said to accept in accord with that understanding are particular, so it must be shown that he knows or recognizes that those particular sentences are instances of the general linguistic truths he accepts. That cannot be shown by simply adding some new, more complicated sentences to the list of things he accepts. Something else is needed to represent the fact that he understands his beliefs in the way described by U. To say that the members of U themselves must also be understood, and not just dead inscriptions on a mental tablet, does not alter the case. That is either to encourage the writing of even more propositions in our Epistemologist's Notebook or to raise once again the problem of how that understanding, and therefore his belief, is to be represented there.[1] There must be some further

1 This holds whether those things the acceptance of which constitutes his understanding are regarded as indicative statements or as instructions, directives, imperatives (either hypothetical or categorical), rules, or other forms of 'practical' discourse.

answer to the question of what a person's believing, and therefore, understanding, those propositions amounts to; it cannot be answered by appealing to propositions already on the list or by adding more propositions to it.[1]

This is perhaps uncontroversial and serves only to emphasize the obvious point that a person's understanding and believing things must ultimately be seen as a certain complicated disposition or competence or practical capacity. But how is that capacity to be represented in our notebook? Even if there is no objection to representing it, at least for theoretical purposes, as a matter of the person's knowing a certain set of propositions to be true,[2] a list of those propositions, even if there is added to it the further, but unexplained, statement that they are all known, will never suffice as a description of the person's state. What is needed is some explanation of what his having that alleged knowledge amounts to, as opposed to what it is knowledge of.[3] That raises ill-understood epistemological issues that must be left aside here, but the moral of Lewis Carroll's story does seem to impose at least some constraints on any such account of practical capacities.

If knowing or believing something to be true—whether it be some elaborate fact about the structure of one's language or some simple fact about the familiar world—involves a disposition or capacity to 'act' in certain ways then obviously that disposition or capacity itself cannot be represented as nothing more than passive assent (even assent with understanding) to some proposition. That is what gives rise to the regress. How then is an 'active' assent or acceptance to be understood? Even if 'act' is somewhat artificially

1 I find Daniel Dennett has made a similar point, with explicit reference to Lewis Carroll, in discussing what he calls 'the brain-writing theory of belief'. He concludes that 'writing—for instance, brain writing—is a dependent form of information-storage. The brain must store at least some of its information in a manner not capturable by a brain-writing model' ('Brain Writing and Mind Reading', in K. Gunderson (ed.), *Minnesota Studies in the Philosophy of Science*, vol. VII, Minneapolis, 1975, pp. 410–11).

2 See N. Chomsky on 'competence' in, e.g., *Aspects of the Theory of Syntax*, Cambridge, Mass., 1965, pp. 3–9, or *Reflections on Language*, London, 1976, pp. 163–6. See also M. Dummett, *Frege: Philosophy of Language*, London, 1973, pp. 461–2, and 'What Is A Theory of Meaning?', in S. Guttenplan (ed.), *Mind and Language*, Oxford, 1975, p. 121.

3 For an emphasis on the importance of the first half of this distinction for the theory of meaning see Dummett, 'What is a Theory of Meaning?', pp. 106–9, 121. He uses it as a weapon against theories that would explain meaning in terms of truth-conditions alone. Chomsky on the other hand concentrates on specifying what is 'known', and not on what it is to 'know' it. He simply describes the latter as having a 'finite representation' of a 'cognitive structure' (see, e.g., *Reflections on Language*, pp. 162 ff.).

extended to such things as inferring and drawing conclusions it will not do to say that believing P must be seen as a practical capacity or disposition to *act on* P in the sense that P *guides* or *directs* one's actions. Acting on a proposition in the sense of being guided by it involves understanding it, and on this picture of understanding that in turn involves accepting certain other propositions. Therefore either that further acceptance is merely passive and the regress remains, or else it in turn is a matter of being disposed to act on those other propositions as well, and so what was originally represented as a case of being disposed to act on P would involve being disposed to act on something else in addition. And that in turn would involve understanding it, and therefore being disposed to act on something else, and so on. So we cannot suppose that someone learns a first language, or originally comes to understand what he does, by applying a theory or model or set of instructions or rules that he understands. There must be some way to stop the regress that threatens any completely general search for a set of criteria or procedures for determining how something is to be understood.[1] It cannot be a condition of explaining how a person comes to understand a word or sentence in one way rather than another that there should always be something he goes by or relies on, in the sense of something he can be said to know or believe, to determine that the expression is to be applied this way rather than that. No satisfactory explanation of understanding is possible on such an overly demanding conception of a practical capacity.[2]

It might be thought, on the other hand, that a person's believing and understanding things in the way he does is nothing more than his having a disposition or capacity to 'act' in relevant ways in appropriate circumstances. It is not that he acts *on*, or *in the light of*, propositions in the sense that his grasp of a set of propositions guides his actions in each case, but only that his 'actions', including

1 Readers of Wittgenstein will recognize this as a central idea in the discussion of understanding in sections 143–242 of *Philosophical Investigations*, Oxford, 1953. See especially section 201.

2 It is not easy to see how Dummett's requirement (in 'What Is a Theory of Meaning?') that a theory of meaning should be 'rich' or 'full-blooded' avoids this difficulty. He requires that a 'theory of understanding' should 'explain' how a speaker 'derives' his understanding of a particular sentence from his knowledge of the language (p. 112), how he is 'guided' by it in grasping the content of sentences (pp. 133–4), and how he knows what 'governs the application' of a name to a thing (p. 131). For penetrating criticism of the reasons offered for Dummett's requirements see John McDowell, 'On the Sense and Reference of a Proper Name', *Mind* 1977.

his inferences, are in fact in accord with those propositions he is said to accept. Here there is no threat of a regress since there does not always have to be some further proposition the acceptance of which is needed to account for his 'acting' in the way he does. Even if the acceptance of more and more propositions can without paradox be attributed to him, they are not called for to explain why or how he understands and believes things in the way he does. But it is no accident that nothing more is called for, since on this more permissive model a person's understanding and believing what he does amounts to nothing more than his being disposed to 'act' in just the ways that are responsible for the attribution of those very beliefs to him in the first place. How he gets those dispositions and is led to activate them need not always be explained in terms of other things he knows or believes. It will at some point simply be accepted as an unexplained fact that he does, or can be brought to, respond in just those ways; or if that fact in turn can be explained it will not be in terms of further pieces of knowledge, belief, or awareness attributable to the person in question.

Therefore if it is a condition of there being such a thing as a satisfactory 'theory of understanding' that it should provide a genuine explanation in cognitive terms of how we are able to understand and believe things in the ways we do then both these extremes must somehow be avoided. An overly permissive account will be felt to leave unexplained the fact that people naturally 'see' or understand things one way rather than another, and so will be accepted, if ever, only as a last resort when the search for a more ambitious theory has been abandoned. But how could the search for an ambitious non-permissive theory that invokes cognitive attitudes to explain the sources of a person's understanding and beliefs be anything but a search for an overly demanding, and therefore necessarily unavailable, theory? It is one of the many merits of Lewis Carroll's engaging story that it can be seen as presenting us with just that problem. It might seem that the solution is obvious and that we must inevitably fall back on a more permissive and therefore less 'explanatory' conception at some point; but it will be time to proclaim the obviousness of that fact when philosophers no longer pursue theories of knowledge and understanding that could succeed only by denying it.

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