of this notion in semantics to its anti-realist pretensions in metaphysics. There is, however, another way of viewing the matter which I find both intriguing and dark; because it is intriguing I present it here and because it is (to me) dark, I present it without further discussion and as an afterthought.

One might think that the real effect of the anti-realist's moves in regard to the conditional and other contexts, and in regard to content, was this; it made it impossible for the realist to coherently *state* his position in the first place. Recall that in the argument of 'Assertability and anti-realism', the realist position was put this way: truth is not coextensive with epistemic notions such as assertability. Perhaps one should see the anti-realist position as claiming that there is no way in which this can be understood without lapsing into incoherence. Of course, the realist (such as McDowell) can see his own position as, roughly, this: given the *intelligibility* of realism, anti-realism comes out as incoherent (or, at least, in conflict with a number of things we very much want to preserve – things like the truth-value link, or the entailment relations between 'x knows that p' and 'p'). If there is anything in this thought, then the real position is that realist and anti-realist have less to say to one another than is currently supposed. Perhaps this seems something for which, if it were taken to heart, we should be grateful.

8

How can we tell whether a commitment has a truth condition?

Simon Blackburn

BACKGROUND

This chapter explores a distinction within the class of commitments. The problem is how to discover which among our commitments are truth valuable. If an utterance expresses a commitment which is capable of truth value, then it itself has a truth condition; its truth condition is just whatever condition it is that needs to be satisfied for the truth value T to be assigned to it. Let us say that commitment to a proposition with a truth condition is *belief*, and call any other kind of commitment a *stance*. Then my interest is in the division between belief and stance. But to put the issue this way is not to prejudge it; it may turn out, for instance, that the division vanishes, or can be resurrected only as a division within the overall class of beliefs – between those for which one notion of a truth condition is correct, and those which deserve another.

However we end up expressing it, many philosophical issues hinge on whether there is *some* division here. Emotivists, instrumentalists, dispositional theorists of conditionals, instrumental theorists of the mental (and Kripke's Wittgenstein) all hold theories according to which many ordinary commitments are not properly truth valuable, or have no truth condition. They have a different function, that gives them something else – at best an assertability condition, perhaps. This also means that assent to them is not belief, but represents some other kind of state – the adoption or endorsement of a stance.

What is the motivation for the division? Often it will be metaphysical, and sometimes it will derive from the theory of understanding or from epistemology – how can we conceive of facts of *that* sort? and how could we know them? Although I thoroughly respect these motivations, I also think it important to stress others. For they can on their own give rise to the counter that they arise from an unduly restricted, prejudiced, view of facts, and knowledge. After all, from some perspectives it is easy to lose a sense that we understand the obtaining of any facts (those concerning space and time for instance), but we obviously hold corresponding beliefs. So perhaps we should not react too dramatically to the fugitive quality of any category of fact. Similarly, perhaps we should be epistemological liberals: we can understand and know wherever we can build theories, and we do that in all the disputed areas. Furthermore, the sceptic about the division may continue, we have all learned a fundamentally Kantian lesson about the way in which our own categories and concepts infuse our conception of the reality we inhabit – surely this lesson extends to cover necessities, values, mentality, meaning. Even if these are creatures of our categories, so is everything else, and it is arbitrary to confine reality to the facts trawled up by any one part of our conceptual net.

All this ignores an 'internal' explanatory reason for exploring the division, which is at least as powerful as those drawn from metaphysics and epistemology. This is that when we think about what a mind needs to do, we should antecedently *expect* there to be a need to express commitment in other dimensions than that of belief in fact. Our functioning is not the simple accumulation of data, but in part an active organization of them and reaction to them. So we must need to express ways we manage our data, or dispositions to draw inferences among them, or attitudes we hold towards them. Endorsing and ranking these dispositions, attitudes, etc. contrasts with simple possession of a piece of fact, or description of the actual way of the world. Consider, for example, assent to rules or conditionals, remembering the problem which Achilles faced with the tortoise. This fable is usually used to force

a distinction between premises and rules of inference.[1] To complete this diagnosis we must see the tortoise's problem as treating acceptance of a rule as acceptance of a new proposition. The tortoise construed every new offering of Achilles as expression of another belief, which it duly accepted, or at least appeared to accept. But its assent never translated itself into a disposition to form other beliefs, nor into an endorsement of any such disposition. Hence Achilles could get it no nearer to the desired conclusion. So one way of describing the tortoise is that it misconstrued the nature of genuine assent to a conditional: if it is important to us to endorse and reject various systems of belief, or to make public and discuss dispositions to change systems which come about as a consequence of the acquisition of new beliefs, we will need a way of expressing these dispositions, policies, mandates and prohibitions. Given a need for such things, it may not even require metaphysical or epistemological argument to see commitment to conditionals as playing just that role.

The dispositions and mandates will of course need careful evaluation. Some will be better grounded than others, and the world will afford patterns of fact which make some obligatory and others less so; these commitments will need expressions enabling us to reason around them, work out their consequences, seek to better them. It may not be surprising if we find all commitments borrowing a propositional appearance so that this discussion can go well, and this foreshadows the major complication in establishing a reliable litmus test for the division.

It can be seen, from the way I have drawn it up, that this problem can equally well be approached by theorizing directly about propositions and truth, and by tackling it as a problem of propositional attitude ascription: how to separate things which are beliefs from those which are stances of other sorts. This is as it should be: well-developed areas where the nature of our commitments is problematic illustrate both strategies. For instance, moral realism is debated both directly, where the legitimacy of giving truth conditions to moral utterances comes under scrutiny, and indirectly, where it is some feature of commitment to moral views

1 Lewis Carroll, 'What the tortoise said to Achilles', *Mind* (1895).

which supposedly shows that they represent stances which are like or unlike other beliefs. But seeing the division as one within the nature of commitment does not make it any easier to locate it. It is not as though an individual can inspect the nature of his own commitments and pronounce with any authority on whether they represent stances or beliefs. You can announce to yourself or the world that you really *believe* in duties, gods, numbers, possibilities, conditionals, or equally that this is not belief but acceptance of an heuristic, or whatever, but you do not thereby establish the division. A theoretical distinction of the kind we are looking for needs a proper methodology, and untutored introspection does not provide it.

Commitments will typically get ordinary indicative expression. They can be called true. Some philosophers appear to think that this already settles it – that truth is so thin that it can be applied, by redundancy considerations, to any such commitment. This cannot be much of a point, since a thin theory of truth may have to consort with a thick theory of commitment, if we need more functional states than belief in the theory of cognition. And the example of rules and conditionals suggests that this could easily be the case. But in any case, is truth so thin that it can simply be purchased right across the board?

Do not think that the purchase is easy, effected simply by redundancy or 'transparency of truth' considerations. For, given that the division is well motivated, it could well have consequences – stances might show symptoms. Proposals fall under three heads. One might query whether a particular range of *cognitive attitudes* is explicable or legitimate, given the anti-realist starting point. Could we talk of knowledge, or discovery, or chances, for instance, in connection with stances (can morals be a matter of knowledge; can we doubt our stances?) Second, one might query whether a certain *syntactic form* is explicable or legitimate, given the starting point. Why do we treat expressions of stances as propositional? How do they function in indirect contexts? Finally, we might query whether a certain *logic* is explicable or legitimate for them. Why should we be committed to classical logical operations, laws such as bivalence (or even non-contradiction) given the anti-realist sympathy? Can stances have probabilities? A

close investigation of the consequences of the division needs to speak to all these issues.

In principle, the investigation could result in any of four kinds of theory. We might find that in some area we practise non-propositionally: that, in some respects, we do not treat utterances as expressive of belief. To some extent I believe that this is so in the case of conditionals, although that is for later. Or, we may find that the surface phenomena are exactly as would be expected if we treat the commitments as belief. That can give rise to two obvious reactions: trust the phenomena and avoid the anti-realism, or trust the anti-realism and abandon or regret the phenomena. That is, regard them as embodying an error – the erroneous belief that the commitments in question possess genuine truth conditions. But the third reaction is the interesting one. This approach I call quasi-realism; and it aims to show that there is no error, and no reason to interpret the surface phenomena as favouring realism. It seeks to reconcile the propositional appearance with a stance-based theory. According to the quasi-realist, we can start with a stance-based view of what commitment in some area is – what it is to assent to a moral or modal or conditional or whatever commitment, and out of that *distil* a legitimate object of the attitude – a proposition to be believed, given a probability, said to be true or false. This is a kind of constructivism about propositions and truth. The constructivism has us say that if it is legitimate for us so to talk, this means that there *are* such propositions. Another way of putting it is that we invent a proposition to stand at a particular point, as an object of needed attitudes in a well-functioning cognitive economy, and the proposition put there is a kind of reflection of a stance. But then when we think of our ontology, we see no need for an aspect of reality to which these relate. Perhaps rather than invent an 'ism' to stand here, I should simply signal an invitation open to all: find out how many of the surface phenomena can be explained and made legitimate by a stance-based theory.

That, at any rate, is a programme. Where successful, it 'saves the phenomena' for anti-realism. It would reconcile a stance theory with a truth-conditional appearance, in cognitive attitudes, in syntax, or in logic. Quasi-realism thus does most service to anti-realists, who can be reassured that they do not need to regret the surface features of our thought which appear to need realistic explanation. But of course it would not compel anti-realism, since showing that *P* is consistent with *Q* is not showing that *P*, even when *Q* amounted to the principal reason against *P*. What will genuinely define a realist are thick, unearnable practices, which mean primarily at least practices of explanation.[2]

There is undoubtedly a tension between two ways of reacting to successes of quasi-realism. If stances behave so like propositions it follows that there is no mistake in talking of truth or falsity in connection with them. But is this just talking 'as if' there were moral, modal, causal, conditional truths, when in fact there is none? It can feel like it, but this is a bad way of expressing the end product. For it is not as if we had a notion of what it would be to come across 'genuine' causal, moral facts, but unfortunately have to content ourselves with talking as if we had performed this feat, when we have not done so. A quasi-realist may hold that *he* gives all the content there can be to sentences maintaining particular moral, causal, conditional truths. He can mean all that it is possible to mean by saying that a particular proposition, which reflects a stance, is really true or false. *The contrast with simple realism comes not in the things you end up saying, but in the theory which gives you the right to say them.*

It may help at this point to contrast two quite similar approaches to different categories of necessity – Quine on logical necessity, and Hume on natural. Each sees the modal vocabulary in terms of an 'essentially dramatic idiom': the expression of an attitude we take up, in the one case to propositions which achieve a certain protected status in our thinking, in the other case to regularities which we have come to take as fixed in our minds. But Hume is not properly represented as supposing that there are no causes, although we talk as if there were. He ends up saying that there are indeed causes, in the only sense which we can give that commitment. Similarly, there are values and virtues, laws and beauty: it is

2 This is urged in my 'Truth, realism and the regulation of theory', in *Midwest Studies in Philosophy, vol. V*, eds P. French, T. Uehling and H. Wettstein (Minnesota, 1980).

the explanation of our right to say so which is anti-realist.[3] On the other hand, Quine takes the projective theory of modality to be a relegation: it unfits the notion for serious science. Whose reaction is the right one? Notice that there are two very different aspects to Quine's position.[4] One is that he is centrally concerned to confine the real world to the world of physics; from this ontological perspective, he is right to say that there is no modality. This is the denial of real realism. Similarly Hume can say that in nature there is no (intelligible) causal nexus between events. But the second component in Quine's position brings the fundamental difference from Hume. Hume defends and enters into the way of thinking ('causalizing' – parallel to moralizing), which, in any case, nature demands of us. Quine, on the other hand, regrets the attitudes to propositions involved in giving them the status of necessary truths: modalizing is conservative (sometimes Aristotelian) and in any case potentially obstructive of scientific change. In this respect Quine stands to Hume on modality rather as Nietzsche does to Hume on ethics: it is the attitudes which he attacks. But Hume's reaction is possible and consistent: showing the origin and nature of the commitment need in no way undermine it.

If this is the end point, then we end up saying the things which were originally forbidden to the anti-realist – that there are causal, modal, conditional, moral truths, facts, or that we believe in them, with probability, knowledge, certainty. This sounds like queasy realism, especially if we are suspicious of 'real' realism – the belief that there is a coherent explanatory status for the disputed 'facts'. If nothing but images, ghosts and rhetoric exists on *that* side, it might be best to avoid the impression that there is a defined realist

3 It is difficult to overestimate the damage caused by missing this. A recent offender is David Armstrong, *What is a Law of Nature* (Cambridge, 1984) where a 'regularity theory' of causation is assumed to entail that we should say different, and unattractive things. Whereas in Hume, and its best development, what it does is to give a different account of the way in which we come to say the things we do.

4 Of course, there are many further aspects to the second part of Quine's position – the hostility to 'modalizing'. They include suspicion of use/mention confusion, suspicion that non-holistic theories of meaning are involved, as well as suspicion of Aristotelian essentialism.

theory to be *anti*. And in that case, everyone seems to be joining hands, and the distinctive contribution of anti-realism may seem to be undermined. But this is by no means so. As I said above, the distinctive contribution of projectivism plus quasi-realism lies in how we get there: by eschewing false metaphysical, or natural, explanations of our propensities, and substituting ones which enable us to see ourselves better. The theory lies not in the words we end up using, but in the hard-earned title to use them; it is the process, not the bare end point, which matters.

CONDITIONALS

There exist already approaches to propositional and quantificational logic which avoid explicit classical assumptions in their foundations. What is the basis for seeing particular formulas and inferences as mandatory or as having to be avoided? A classical approach cites the properties of truth and falsity. An anti-realist grounds the norms elsewhere – in whatever makes obligatory, or impermissible, a given structure of commitments, or a given practice of inference among them. For example, a classical probabilist says that prob (*-p*) and prob (*p*) must add to one because that is what probabilities or perhaps frequencies *do*; an anti-realist says that they must because if you adopt corresponding degrees of confidence, and thence betting rates in any other way, you stand to lose whatever happens. Incoherence in commitments generates the norms for a logic without supposing that the commitments describe some part of the world, but only provided that we have a firm concept of the consequences of assent to them.

A commitment expresses a state of mind – a belief, disposition or attitude. Let us call this its *assentability* condition. (This is better than the usual term 'assertability condition', for that conflates two issues. There is the issue of assent, and there is the pragmatic issue of when it is felicitous to express that assent, or to express it with a particular vocabulary.) But of course, assent has to be controlled: there will exist *standards* on the basis of which particular commitments may properly be entered into. For example, a disposition to infer propositions like Q from propositions

like *P* will be to some degree improper if it (often, occasionally or even possibly) leads from truth to falsity. Now, if quasi-realism works across the board, when we assess commitments and their standards we will have the right to talk exactly as if we are assessing a proposition for truth. So quasi-realism would close the gap between allowing that an utterance has a disciplined assentability condition, and supposing that it has a (thin) truth condition. It will favour the *passing assumption* (PASS), since it is the prime point at which we pass from talking in terms of assent to talking in terms of truth:

PASS: degree of assentability can be construed as probability of truth.

Of course, in an area in which he is operating, a quasi-realist will suppose that PASS *insinuates* a concept of truth, not that some antecedent notion of truth exists, and can be used to dictate when we should assent.

PASS is not a bland doctrine. In the theory of conditionals, many writers have accepted that there are decisive formal reasons for regarding the conditional as itself lacking truth value but possessed *only* of something less – assentability conditions, in my terminology. Whereas a quasi-realist can perfectly well tolerate putting things this way if it expresses, say, a thick metaphysical worry (about the existence of genuinely conditional facts), it is obviously more surprising if it comes out of abstract, formal or logical considerations – out of thin air, as it were.

The fact that it does so does no disservice to anti-realism about conditionals, of course – it may force a non-truth-conditional theory upon us – but it would give a good and rare example of a consequence of this theory for logic.

Before engaging the technicalities, I shall mention one more general aspect of anti-realism about conditionals. Although this chapter confines itself to the indicative conditional, it seems to me that the case is overwhelming for unifying the theory of indicative and so-called counterfactual hypotheticals. (The differences between them that matter to logic are, I think, mainly attributable to different temporal indications carried by the grammar.[5] But anti-realism then leads to difficult problems of conceiving of the 'stripped' world – the Humean or other ontology which leaves the bare facts which underlie or 'ground' our inferential dispositions. At its worst, we might suppose that all properties are dispositional; dispositions are identified by counterfactuals – so what world is left? I do not know how to answer this question. (I also think that any escape which comforts itself with the idea that dispositions are somehow grounded categorically is illusory. Which categorical properties are non-dispositional?[6]) But before leaping back to realism, it is worth pausing to wonder how that helps. For the usual realist theory of counterfactuals sees their truth as consisting in the distribution of properties in shells of similar possible worlds that surround the actual world. But that theory faces just the same problem. The actual world needs its own nature, quite apart from its surroundings: what is *it* in itself, so much as to have a place in relation to other similar entities? If the anti-realist has problems of stripped ontology, so does the realist.

The arguments to come deny that there can exist a connective $\rightarrow$, forming sentences of the form $A \rightarrow C$ which both have a certain assentability condition, and express propositions. If you have the assentability condition, goes the argument, you cannot regard this sentence as capable of truth and falsity. Or rather, you cannot in the presence of PASS. The arguments deny that the assentability condition in question can be regarded as a probability of truth.

The assentability condition is standard for conditionals, and was first made prominent by Adams, and summed up in what is sometimes called Stalnaker's thesis, that the probability of the conditional is the conditional probability.[7] What is a conditional

5 V. Dudman, 'Conditional interpretations of *if* sentences', *Australian Journal of Linguistics* (1984), section 27ff.

6 For a victim of this, see Gareth Evans, 'Things without the mind', in *Philosophical Subjects*, ed. Z. van Straaten (Oxford, 1980); see also Strawson's reply, p. 278.

7 E.W. Adams, *The Logic of Conditionals* (Reidel, 1975), p.3; R. Stalnaker, 'Probability and conditionals', *Philosophy of Science* (1970), pp. 64–80. Also to be noticed is R. Jeffrey, 'If' (abstract) in *J. Phil* (1964).

probability? A high value for a conditional probability C/A is construed as expressing (or perhaps endorsing) a disposition to accept C, with high degree of confidence, upon acceptance of A. Under idealized circumstances, this disposition could be measured by the value one would give to a bet, to pay $1 if C, given A, but to be called off if $-A$. The price one would pay for this bet measures one's degree of confidence in C, given A. Probabilists in turn equate this with a ratio of the probability of (A & C) to the probability of A (this move detains us later); doing so, we arrive at:

The definition: $A \rightarrow C$ is assentable in proportion to $P\,(A \,\&\, C)/PA$

I write this:

$$\text{ASSENT}\ (A \rightarrow C) = P(A \,\&\, C)/PA$$

For the rest of this chapter I shall call $A \rightarrow C$, whose assentability condition is defined in this way, an *Adams commitment*. But it ought at least to be noted that the definition is not fundamental, for a stance theorist of conditionals. It is the outcome of the theory itself, construing assent as expression of a conditional probability, *and* a further thesis about how that disposition can be equated with a ratio of non-conditional probabilities. If the going gets tough, this second aspect of the theory is not at all immune from query. For although since Kolmogorov there has been a tradition which makes the conditional probability equal the ratio as a matter of definition, there is another – de Finetti, Bayes and de Moivre – which sees it as a substantial matter to equate the two.[8] I return to this below.

Naturally, most writers have been centrally interested in whether Stalnaker's thesis is true. Certainly many conditionals seem roughly paraphrasable as 'mostly/usually/naturally, when A

8 B. de Finetti, *Theory of Probability* (Wiley, 1974), p. 136ff. For Bayes, see G. Shafer, 'Bayes's two arguments for the rule of conditioning', *Annals of Statistics*, (1982), pp. 1075–89; also 'Constructive probability', *Synthese* (1981), pp. 1–60.

(in the event that A, on it turning out that A), C'. If 'A' and 'C' are not self-standing propositions (as Dudman has shown they are often not), [9] this equation is particularly appealing. 'In those days, if Granny missed the bus, she walked home' is surely exactly the same as 'in those days, when Granny missed the bus, she walked home', and this in turn will be assertable in proportion to the ratio of cases on which, when Granny missed the bus, she walked home. Thus either assertion might meet the retort 'not always'. But this is not a direct refutation, whereas 'no, she hardly ever did' would be. Even when we have a simple hypothetical, if we think of the 'mostly' interpreted in some fairly airy probability space, the equation is still appealing. 'If the Green Party wins, it will do something about pollution' is surely assessed by imagining futures in which the Green Party wins, and if most, or better, all of the ways these would naturally turn out involve the party doing something about pollution, then the conditional is assertable. And of course, there is direct evidence from inferential behaviour – problems with transitivity, strengthening, contraposition – that this is an accurate model of the import of conditionals.[10]

Another nice property is that the dispositional theory accurately reflects our reaction to bizarre conditionals, which we only with difficulty force into the Protean bed of truth and falsity. Out of a context (such as a game), 'if the Alps are made of tertiary rock, then Russell had a sibling' strikes most untutored ears as simply *disengaged* from anything: one wants neither to assent nor to dissent. The dispositional theorist is beautifully placed to explain this, in terms of there being no unique inferential route that one wishes either to endorse or criticize, located by the expression. That is, outside a context, it is not clear which disposition to move is in question, for dispositions are defined over *kinds*, and the kind remains unspecified. Thus in a game where it is known that the two propositions have the same truth value, the move is known to preserve truth, which is one good point. But in the world, not all moves which are known to yield truth are good moves, for they may be the kind or form of move which is highly dangerous. We

9 Dudman, 'Conditional interpretations', section 3ff.
10 Adams, *The Logic of Conditionals*, chapter 1.

may think that all logicians can concentrate, but we do not endorse 'if all people who can concentrate are logicians, then all logicians can concentrate', just because of that: the invalid form shows that the disposition thus apparently endorsed is a bad one. But we can expect considerable vagueness and contextual relativity in recovering just one *kind* of move to endorse or not from the surface expression.

Conditionals are also freely ascribed truth values, and the proofs to come purport to show that Adams commitments cannot be regarded as true or false. Should this surprise us? One might mistakenly argue as follows. Probabilities are elusive things. But at least, if ordinary probability judgements are true or false, ratios among them will take definite values, and if that is so, then a commitment to a value of the ratio being in a given range ('high') would itself be truth valuable. It might suffer from vagueness, or it might even need 'indexes' attached, to pick out some definite probability space in which to interpret it. But these provide no principled obstacle to truth values. The real question is: is an Adams commitment equivalent to such an assertion?

Apparently not. Suppose firstly that 'is true' is transparent inside probability contexts, so that if $A \rightarrow C$ is assessable for truth, P ($A \rightarrow C$ is true) $= P\ A \rightarrow C$. And second, a probability of 0 corresponds to certain falsity, and a probability of 1 to certain truth. Dorothy Edgington has pointed out that, given these, the truth of $A \rightarrow C$ cannot be equated with the truth of 'the ratio is sufficiently high.'[11] For if 'sufficiently high' were put at $1 - e$, then on this proposal, when the ratio is *certainly* more than $1 - e$ but less than 1, there are contradictory conditions on $P(A \rightarrow C)$. The ratio remains less than 1, but '$A \rightarrow C$' would be *certainly* true; conversely, if the ratio is certainly less than $1 - e$, $P(A \rightarrow C)$ might remain quite high, but $A \rightarrow C$ would be certainly false.

The best way of resisting this argument would be to incorporate 'degrees of truth' for conditionals, corresponding to the degree of probability. There is independent evidence that this is a needed step in any case. Thus an elegant way to block the Sorites paradox is to introduce an intermediate range of such degrees of truth. In

11 In correspondence.

the case of vague predicates, the degree to which an object falls under a concept is semantically relevant, and the value given to 'if a man of height n inches is small, then so is a man of $n + 1$ inches' should reflect this. In the middle ranges of height, it is not false, but only true to a certain degree, and with each successive step the degree of truth of the conclusion drops. At the end of the Sorites the proposition detached is wholly false, but the paradoxical air is explained by each individual step being almost wholly true. In a logic reflecting these ideas, → elimination will only be valid if the degree of truth of the consequent is as great as the degree of truth of the antecedent.[12] In general it is a mistake to think of probabilities as degrees of truth, for intermediate probabilities attach to propositions which for independent reasons can be seen as wholly true or wholly false, but the suggestion is that in the case of conditionals, this assimilation is desirable.[13]

Still, we express our endorsement of these dispositions (those expressed by assenting to conditionals) by talking of truth, and we express wavering or partial confidence by talking of probability. It is certainly true that Edgington's argument may make us doubtful whether we have a 'model' of the truth of an Adams commitment. We have only shifting ratios, but no cutoff points. This may mean that such talk of truth or falsity as we go in for is superfluous, and, in its suggestion of just two values, logically misleading. But it is often part of quasi-realism's strength that there is no model or *reductive* account of the commitments in question, or of what 'their truth consists in', so that we have to approach talk of truth via talk of assentability and standards for it. So it may be that we can yet explain and make legitimate some talk of truth construed in this way.

If we do not, we must deny that $A \rightarrow C$ is evaluable for truth and modify PASS by restricting it to propositions which, for other reasons, have been accorded truth conditions. Of course, it is still

12 G. Forbes, *The Metaphysics of Modality* (Oxford, 1985), p. 169. The formal system Forbes favours is that of J. Goguen, 'The logic of inexact concepts', *Synthese* (1969).

13 The general claim is put forward in John Lucas, *The Concept of Probability* (Oxford, 1970).

possible to identify conditionals with Adams commitments. This is done by van Fraassen, Ellis, Edgington and Appiah, all of whom deny that conditionals are truth valuable.[14] Or, we can suppose that conditionals have truth conditions, but that for some other reason assentability does not go by probability of truth. This is the reaction of Jackson and Lewis.[15]

Perhaps we have already said enough to make it apparent why Adams commitments are not truth valuable. But before accepting this, I want to explore two more arguments to the same conclusion. The first is due to Carlstrom and Hill, and the second is the more familiar, famous argument due to Lewis.[16]

CARLSTROM AND HILL'S PROOF

Definition 1: A partial truth function of two truth values, expressed by a connective →, is strictly partial iff there exists at least one ordered pair of truth values such that, if A has the first value, and C has the second, '$A \rightarrow C$' can be either true or false.

Definition 2: A two-place probabilistic connective is a connective '→' such that there exists a function f for which, for every probability function P,

$$P(A \rightarrow C) = f(P(A), P(A \,\&\, C))$$

14 B. van Fraassen, 'Probabilities of conditionals', in *Foundations of Probability Theory etc.*, eds W. Harper and C. Hooker, (Reidel, 1976); B. Ellis, *Rational Belief Systems* (Basil Blackwell, 1979); A. Appiah, 'Conversation and conditionals', *Philosophical Quarterly* (1982); 'Jackson on the material conditional', *Australasian Journal of Philosophy* (1984).

15 D. Lewis, 'Probability of conditionals and conditional probabilities', *Philosophical Review* (1976); F. Jackson, 'On assertion and indicative conditionals', *Philosophical Review* (1979).

16 Lewis, 'Probability of conditionals'; reviewed by I.F. Carlstrom and C.S. Hill, *Philosophy of Science* (1978), p. 156.

Consider three possible worlds X, Y, Z. In these, the truth values are as follows:

	$A \rightarrow C$	A	C	P	P'
X	T	T	T	0.5	0.5
Y	T	\$	%	0.5	0
Z	F	\$	%	0	0.5

In P, X and Y have (roughly) the probability of 0.5 each, and Z is very unlikely; in P', X and Z have roughly the probabilities shown, and Y is unlikely. Symbols \$ and % can represent any truth value we wish, other than \$ = % = T. The proof goes as follows:

Proof: since $\rightarrow$ is a probabilistic connective, we are now trapped in a *reductio*. On the one hand, $P(A \rightarrow C)$ must be the same in each of these two functions. For by giving the probabilities that each of them gives to the truth values of A and C (and thus of (A & C)) in (all) the worlds either of them allows, we have fixed the value of $P(A \rightarrow C)$, and of $P'(A \rightarrow C)$, and these must be the same because this value is a function of the probabilities of A, C and (A & C), all of which are the same in P and P'. On the other hand, the value has to be different, because the probability of ($A \rightarrow C$) ought to be 0.5 in P', and near 1 in P. So:

Theorem: no strictly partial truth function of two truth values is a two-place probability connective.

Is this proof acceptable? Well, what are P and P'? Suppose they are the probability distributions of two different (coherent, responsible) subjects, called P and P' respectively. How did they get into this fix? A conversation might be as follows:

CONVERSATION

SWB: At least you two will agree about prob (A & C)/prob C.
P: Sure. One thing we can be pretty certain of, is $A \rightarrow C$.

P': Not at all – I give it about 50-50.
SWB: How come? Look, you agree that there is a 50 per cent chance of $A = C =$ T, and a 50 per cent chance of A being \$ and C being %, so you agree about the chance of A, the chance of C, and the chance of A & C. Hence, you agree about prob (A & C)/ prob A. Hence you agree about prob $A \rightarrow C$ because that is what prob $A \rightarrow C$ is.
P': Well, it looks as though we ought to, but it so happens that we don't, because he rules out Z and I rule out Y.
SWB: You two are irrational. You each suppose that you have a degree of freedom left, which in fact you haven't. You think that there is a *further* stance to take, on whether ($A \rightarrow C$), so that you can rule it in or out with more or less confidence, when you have *already* taken up positions which constrain what you have to say about prob ($A \rightarrow C$).
P & P' in chorus: Don't you admit that X, Y and Z are possible? And if they are possible, why can't we put probabilities on them? And why can't one of us favour the fact – for it is to be a fact or not, if only a thin one – that $A \rightarrow C$, while the other does not?
SWB: Perhaps this a real (rare) instance of what van Fraassen was getting at with that otherwise obscure charge of 'metaphysical realism' (see below). You think, wrongly, that because one can say that $A \rightarrow C$ has a truth value, it also introduces a fact about which we can speculate, or that we can att ιch probabilities to it, *independently* of what we do elsewhere. Your image is this: you know what to say about the probabilities of the atomic constituents, and their conjunction. But you don't know how likely is the world in which God has put the fact that $A \rightarrow C$ snug in its little box somewhere, or how likely it is that He has not. You have given yourselves a quite fallacious subject for freedom of opinion or scepticism. What you ought to be saying is: we agree, and indeed know, how probable $A \rightarrow C$ is, given that we agree to know the probabilities of the truth values involved. We *could* be wrong about $A \rightarrow C$, but only if we turn out wrong in one of the proability assessments. We could improve out estimate of prob ($A \rightarrow C$), but only by improving our assessments of prob (A & C), or of prob A.
P & P': Aren't you forgetting that $A \rightarrow C$ is supposed to be truth valuable, and a partial truth function?

SWB: No. Given the definition, what we are to *say* about the truth of $A \rightarrow C$ must depend upon what we are to say about the probabilities. A high enough correct probability ratio for A & C/A is the norm to aim for. Then you can get cases where A is $ and C is % and the ratio is very high, and you can get cases where A is $ and C is % and the correct ratio is very low. In the one case it will be correct to call it true that $A \rightarrow C$, and in the other not. So $A \rightarrow C$ is in good standing as a partial truth function.
(End of conversation.)

Since P and P' each had an *irrational* attitude, the most the theorem can be read to show is that no partial truth functor is the two-place probability connective expressing the commitments of irrational subjects.

Now this illustrates a central tactic of quasi-realism. It tries to earn its legitimate, thin, conception of truth by concentrating upon the procedures which are to be properly used in assessing, improving, debating, commitments. To use a parallel, according to me, P and P' display the same mistake as someone who acknowledges that moral commitments express attitude, and acknowledges some constraint on his attitudes, but then goes on to think as if moral truth were something else yet again. I actually think this psychology can exist. For instance: someone might admit that proper moral attitudes were constrained by a supervenience demand, but go on to express doubt about whether the moral 'truth' is, and this would display a false metaphysic of moral truth.

LEWIS'S TRIVIALITY PROOF

The crux is the thesis I shall call COND:

COND: in all acceptable probability functions,

$$P\ A \rightarrow C/B = P\ C/A\ \&\ B$$

Proof:

ASSENT $(A \rightarrow C) = P\ A\ \&\ C/P\ A$	the definition
For all Q, ASSENT (Q) = prob of truth Q	PASS
And prob of truth Q = prob Q	transparency
So $P\ A \rightarrow C = P\ A\ \&\ C/P\ A$	

This is just construing ASSENT as a probability function. We now suppose that there exists a new probability function, P′, representing the result of conditionalizing upon B. We suppose further that this is defined over all propositions. So:

$$P'\ A = PA/B$$
$$P'\ C = P\ C/B$$
$$P'\ A\ \&\ C = P\ A\ \&\ C/B$$
$$P\ A \rightarrow C/B = P'\ A\ \&\ C/P'\ A \quad \text{(by the definition)}$$
$$= PA\ \&\ C/B\ /\ PA/B$$
$$= P(A\ \&\ C\ \&\ B)/P\ A\ \&\ B$$
$$= P\ C/A\ \&\ B$$

This proves COND and, once it is accepted, the rest is silence. For using standard probability theory we can:

Expand $P\ A \rightarrow C$ into $P((A \rightarrow C)\ \&\ C) + P((A \rightarrow C)\ \&\ -C)$.

Express the probability of conjunctions as the conditional probability $(P\ (X\ \&\ Y) = PX \times PY/X)$:

$$= P(A \rightarrow C/C).PC + P(A \rightarrow C/-C).P-C$$

But from COND this is:

$$P\ C/A\ \&\ C.PC + PC/A\ \&\ -C.P-C = 1.PC + 0.P-C$$

and we have the Lewis *reductio*, that $P\ A \rightarrow C = P\ C$.

The result is of course quite inconsistent with the motivation behind the $\rightarrow$ function in the first place, which was to define a conditional probability; under this result, the conditional probability has just collapsed into the initial probability of *C*. And Lewis goes on to display the unacceptable ('triviality') consequence of this. That is, there cannot be three possible but mutually inconsistent propositions in a language of which this is true.

Lewis's result seems to come out of thin air. Part of its power comes from the difficulty of seeing quite which steps are, in principle, vulnerable. It may help to have a slightly more perspicuous proof of COND, due to Stalnaker,[17] in front of us:

Proof: As before, P' is the probability function arrived at by conditionalizing upon *B*. Then there are two distinct ways of evaluating P' (A & C):

$$
\begin{aligned}
P'(A \,\&\, C) &= P(A \,\&\, C)/B \\
&= P(A/B) \,.\, P\ C/A \,\&\, B \\
&= P'A \,.\, P\ C/A \,\&\, B \\
P'\ (A \,\&\, C) &= P'A \,.\, P'\ C/A \\
&= P'A \,.\, P'\ (A \rightarrow C) \quad \text{(by the definition)}
\end{aligned}
$$

Hence, equating these and dividing by $P'A$, we get COND:

$P'(A \rightarrow C) = P\ C/A \,\&\, B$ as before.

The effect of COND is to roll iterated conditionals into one: $B \rightarrow (A \rightarrow C)$ is evaluated as $(A \,\&\, B) \rightarrow C$. This of course clearly gives us a probability of 1 for $C \rightarrow (A \rightarrow C)$, and of 0 for $-C \rightarrow (A \rightarrow C)$, and this perhaps makes it easier to see why Lewis's result will emerge. It also suggests that there ought to be *a* way of avoiding it. There ought to be a way, it would seem, of evaluating Adams commitments relatively independently of whether we *actually* know *C*, and take it into account in our reasonings. For it need not be so that the 'probability space' in which we assess the commitment is entirely determined by actuality. That is, although we may suppose that actually *C* (or $-C$) we may still wish to assess whether $A \rightarrow C$, in a 'space' which leaves that open. This is merely another way of putting the point made above, that a particular

17 R. Stalnaker, 'Stalnaker to van Fraassen', in Harper and Hooker (eds), *Foundations*.

disposition to arrive at *C* from *A* may not gain endorsement even when *C* is true – not if the disposition is one to perform a dangerous *kind* of move.

The point may be put like this. We have seen that, on a non-propositional account, assent to $A \rightarrow C$ would be expression or perhaps endorsement of a disposition to infer *C*, upon learning *A*. What then can $B \rightarrow (A \rightarrow C)$ be? We face the Geach–Frege problem of construing an occurrence of a fundamentally non-propositional element in what we take to be a propositional context.[18] But as with the same problem in other areas, there is an answer. In a quasi-realist construction of moral contexts, 'if it causes harm, then lying is wrong' is also an endorsement, in this case of a sensibility which is so organized that the attitude identified by the consequent follows upon the belief identified in the antecedent. The parallel here will be to endorse cognitive systems so organized that the disposition identified in the consequent follows upon the belief identified in the antecedent. But this endorsement can be quite different from endorsing a system which is disposed to infer *C* from (A & B). For example, on acquiring the belief that $-C$, I would not normally become 100 per cent *against* dispositions to infer *C* from *A*, or from the addition of *A* to an arbitrary stock of belief. And on acquiring the belief that *C*, I need not become immediately *for* dispositions to infer *C* from *A*, or from the same addition of *A*.

Yet as a consequence of COND, we derive that $PA \rightarrow C/-C$ is 0. Now this clashes with the point I have just made. My commitment to 'if Regan weighs 100 kg, then he weighs an even number of kilograms' just does not alter, if I am told that in fact he weighs 73 kg. Imagine me coming up with the conditional, and you saying 'Ah, but aren't you forgetting that he weighs 73 kg' or 'but now see what you would say if we make the supposition that he actually weighs 73 kg.' My commitment to the conditional remains, and would remain even if I learn that neither he nor anybody else weighs so much. Let's call this a $-C$ *resistant*

18 P. Geach, 'Assertion', *Philosophical Review* (1965). For a discussion of the impact of this argument on moral contexts, see my *Spreading the Word* (Oxford, 1984), section 6.2.

conditional: I would say that $A \rightarrow C$ is still highly credible, even if I learned $-C$. This is an example where the conditional is logically true, but there are perfectly adequate examples where the conditional is contingent, but highly assentable, and resistant to $-C$. If I put my hand on this stove I will burn it, and my commitment to this quite survives my confidence – certainty – that I am not going to burn it. All that is required, in general, is that the disposition endorsed by commitment to $A \rightarrow C$ should be unaffected by the kind of thing which alters confidence in C. Mathematics is unaffected by Regan's weight. Conditionals held, for example, on grounds of well-established natural law will equally resist $-C$. Similarly there is the converse case. I am sure that C: nothing substantial will be done in the near future about industrial effluent. But I do not believe that $(A \rightarrow C)$: if the Green Party wins the next election, nothing substantial will be done about industrial effluent. This is a C resistant *rejection* of a conditional. In short there ought to exist rational assentability functions in which attachment to $A \rightarrow C$ is unaffected by certainties of A, and of C. (After all, this is why the things are *conditionals*: it is often just irrelevant to assessing whether $A \rightarrow C$, to start talking about the certainty of C or of $-A$.) Put functionally, the endorsement of the disposition, expressed in Adams commitment or in conditionals, need not be determined by actuality. (Of course, there is room for indeterminacy here. Someone might want to endorse a disposition which comes up with the right result on a *particular* occasion regardless of its falsity-yielding general nature. We *can* hear ourselves saying: if Regan weighs 73 kg then (dammit!) if he weighs 100 kg he weighs 73 kg.)

A possible line is to suggest that, in these examples, the object of interest has changed from the original indicative conditional to a related counterfactual. Certainly subjunctive expression becomes quite natural when we think about knowing that C is false. But the original indicative conditional was perfectly correct – the assent was absolutely proper – in spite of that. The person saying that if Regan weighs 100 kg, then he weighs an even number, or that if I put my hand on the stove I will burn it, is not *refuted* by evidence that the consequent is false. Nor is he saying something which, in that circumstance, we simply cannot evaluate! Of course we can, and of course he was right. This will raise the technical question of whether the mathematical ratio is in fact an adequate measure of endorsement of dispositions, or it may mean that we need an arithmetic of infinitesimals. In any event, the examples show that we would not expect to treat indicative conditionals, or Adams commitments, in accordance with COND. How then to avoid Lewis's proof?

Before turning to that, notice that not all conditionals are $-C$ resistant. Here is an example. I believe that if it rained, the picnic was to be cancelled. And I think it probably rained. But if I were to learn, to my surprise, that the picnic was not cancelled, this would shake my commitment to the conditional. I mightn't say that any more – it becomes unassentable for me. For these conditionals, one would take the other tack. One would say: 'Given what we've learned, there's no chance of C, so *either* $-A$ (it didn't rain after all) or $-(A \rightarrow C)$. Perhaps after all they went ahead in the rain.' The same freedom is apparent when we turn to the antecedent A. Some conditionals are stochastically independent of their antecedents, as we have seen. But not all. I may think it is not raining, but that if it rains the picnic is to be cancelled. I may also have other beliefs – for example, that if the picnic is even likely to be cancelled there will be a great deal of telephoning and fuss. When I look out of the window and find that it is raining, my commitment to the conditional diminishes: in the light of the evidence that there has been no telephoning and fuss, I may become insecure again. In possible worlds of talk, I evaluate the conditional in what I take to be the probability space of 'near' possibilities in which A. Learning that mine is actually an A world may alter what I think about that space.

The crux, then, in escaping the proof of COND lies in noticing an ambiguity which arises whenever we are asked to evaluate a proposition 'confining ourselves' to B, or supposing that B. This can mean: remembering , or taking for granted, that actually B. Or it can mean: discarding possibilities under which $-B$. The ambiguity is sometimes benign. But in the case of conditionals, or other propositions where spaces of possibilities are in play, it emphatically is not. Its impact on the proof is quickly seen. What am I to think about $A \rightarrow C$ if I suppose $-C$? What am I to think about it if

I suppose C? As we have seen, sometimes I *do* suppose $-C$ – in fact, I am sure of it – but still assent to $A \rightarrow C$. What we actually do is to think in terms of an abstract space of possibilities, and ask 'in how many cases' (i.e. what proportion of times) when A is true is C true? What proportion of times, when Regan weighs 100 kg, does he weigh an even number of kilograms? Every time. Would you say this, even remembering that he actually weighs 73 kg? Yes. What proportion of times, when you put your hand on the stove, do you burn it? Every time. Would you say that, remembering that you are not going to burn it? Yes. Weighing up the space of possibilities, we do *not* restrict ourselves to those which conform to (merely) *actually* true assumptions or suppositions. We do not do this *even* if these are given to us as certain. Thus 'How many times (in the worlds in which he weighs 73 kg) does Regan weigh 100 kg and an even number of kilograms?' is a question of sorts, perhaps, and it gets the answer zero. But it is not the question naturally considered when we are asked to evaluate the conditional 'if he weighs 100 kg, then he weighs an even number', *even supposing* that he weighs an odd number. In fact, as I have already remarked, since knowing Regan's weight has no impact on my adherence to arithmetic, making this supposition does not alter attachment to the conditional.

So evaluating conditionals 'on a supposition' can mean one of two things. It could mean that we allow the supposition that B is actually true to affect the relative proportions we suppose appropriate. Sometimes, as we have seen, the supposition has no effect. The supposition is made that we are *actually* at a B world, and we envisage what to say about the ratios in the light of that. But this does not mean that we restrict ourselves to B worlds as the only ones relevant to assessing the ratios. We restrict ourselves, on the contrary, to the A worlds (if A . . .). If B would not be true if A were, then we evaluate the conditional 'on the supposition that B', *allowing ourselves to consider worlds in which B is false*. I suppose that in the actual world, nothing will be done about pollution. But when I consider 'if the Green Party win, they will do something about pollution', I think of ways and ways things would turn out if they win, and come to a verdict in the light of that. I do not restrict myself to worlds in which nothing is done about pollution, just because of the supposition about actuality. And if you heard me assert the conditional, and then said 'yes, but remember that nothing will actually be done about pollution – now take that into account', nothing changes. The conditional is assertable because of standing dispositions or policies of the Green Party, and these exist regardless of whether they are bound to lose.

Evaluating conditionals 'on a supposition' on the *other* reading means something quite different. It means restricting ourselves to proportions among the supposed B worlds. As I shall shortly explain, the model of unfolding games of chance encourages this reading, and it is on this reading that we have to take $P\ A \rightarrow C/C$ to be one, and $P\ A \rightarrow C/-C$ to be zero. But this reading is not forced upon us by the assent conditions of $A \rightarrow C$.

So the crucial move in Lewis's deduction is now apparent. The expression we get for $P(A \rightarrow C)/B$ is expanded exactly *as if* the '$/B$' locution confined us to B worlds, when in fact it does not. The effect is predictable: confining our ratios to those obtaining in B worlds is equivalent to evaluating $A \rightarrow C/B$ in exactly the same way as if we were evaluating $C/A\ \&\ B$, and the result follows.

CONDITIONALIZING VERSUS EMBEDDING

Because of these considerations, B, the proposition conditionalized upon, may have a different impact on the elements A, C and on $A \rightarrow C$. For atomic constituents, the probability function P' is indeed one which arises when we 'confine ourselves' to B worlds and to things which happen or may happen consistently with B. But when the disposition is assessed in the light of ours being a B world, this is just what we do not do. Is this enough to forbid us from regarding Adams commitments as kinds of proposition? The usual reaction to Lewis's proof is to deny that Adams commitments are propositional, or in other words, evaluable for truth and hence probability. Of course, it is not clear how that helps: if ASSENT behaves much like a probability function, it will not help at all. The idea is that Adams commitments will not occur in the right embeddings, so that $B \rightarrow (A \rightarrow C)$, or $P(A \rightarrow C)/B$ will not be defined for them. But Adams commitments ought to permit these embeddings, for dispositions need assessment in the light of different suppositions, just as ordinary beliefs do. Some notion parallel to conditionalization must be allowed, whether or not ASSENT is construed as a probability. Will it be real conditionalizing?

Since a lot now hinges on this notion, it is important to be clear what it means. Conditional probability has its original home in the unfolding of events in structured games of chance. Within such an arrangement there exists what the statistician Glen Shafer calls a protocol: enough structure is fixed to give the rational subject an opinion on the odds he would post for a proposition (Nathan will throw an eleven) upon acquisition of information (Nathan has thrown a six).[19] Eliciting conditional probabilities is eliciting opinion on what odds to post *if* information about the subsequent event is included in the basis of assessment. Within such a structure antecedents will roll together. $B \rightarrow (A \rightarrow C)$ (if she plays the ace, then if he plays the King I shall have to discard . . .) evaluates as $(A \& B) \rightarrow C$. As events unfold we will confine our future reasonings to probability spaces set by what has actually happened. In this circumstance COND is acceptable, and the ambiguity I have stressed is benign. But it does not follow that this is always so.

Conditional probabilities may not be too thick on the ground. There exist good reasons for requiring that a rational subject stand by such odds, once elicited, in that once information *Q* does come in, his subsequent probability for *P* should be what he originally gave as his conditional probability, for agents who systematically default upon the original odds can be made to lose whatever happens.[20] But there exist no good reasons for requiring that an agent should have an opinion (be prepared to post particular odds) for a conditional probability for any old pair of propositions. I might just not know what I would say about *C* given information *B*. I might neither have nor wish to endorse any disposition to take *B* in one particular way. I may not see any unique kind of reasoning to tell me where to move from *B*. I might need to know what else is supposed to have happened as well as the arrival of *B*.

19 G. Shafer, 'Bayes's two arguments'; 'Constructive probability'.
20 P. Teller, 'Conditionalization and observation', *Synthese*, (1973).

In short, we are in effect thinking in subjunctive terms – 'were one to learn *B*, *this* would be the right thing to say about *C* – and often no verdict can be given. These indeterminacies are ruled out in structured games of chance – this is what is meant by there being a protocol – but they are not ruled out in the full world. Indeed, indeterminacy at this point is responsible for the standard paradox of conditional probability (Freund's paradox of the two aces, or the paradox of the three prisoners).[21] In such paradoxes there are two equally proper ways of looking at the acquisition of new information, but they have different consequences for the probabilities. Thus in the three-prisoner version, I and two other prisoners know that two of us will be shot on the morrow. I sidle up to the guard, and ask: will one of the others be shot? 'Yes' he says (merely confirming what I already know), and adds as an afterthought 'Fred will'. Looked at one way this is good news, since I am left with a 1/2 chance of being shot, which is better than 2/3. But how can it be, when I already knew that some proposition of that form was true, and it is indifferent which? The solution must be to insist that there need not be any one right way of taking this acquisition of information. It depends on what can be discerned behind the guard's releasing just that proposition, and in the absence of an antecedent structure, or protocol for the acquisition of this information, no way of taking it is uniquely right.

So we should not let the mathematics delude us into thinking that conditionalization is going to be a well-defined operation interpreted over any pair of propositions. And conditional probability has other curiosities which may be relevant. I have already remarked that the arithmetical ratio may come under suspicion as a measure of the endorsement of the disposition expressed when we assent to a conditional probability. Certainly, the need for careful interpretation of conditional probabilities is quite hidden if we imagine conditional probability *defined* by the usual equation

21 J. E. Freund, 'Puzzle or paradox?', *American Statistician* (1965); F. Mosteller, *Fifty Challenging Problems in Probability with Solutions* (Addison-Wesley, Mass., 1965). Also I. Copi, *Introduction to Logic* (Macmillan, New York, 1968), p. 433. Discussions of the paradox occurred in *Philosophy of Science* from 1972 to 1976. My reaction is that of Shafer.

$$\text{prob }(A/B) = \text{prob }(A \,\&\, B)/\text{prob } A$$

for this suggests that the notion is no more perplexing than attribution of probability to conjunctions. Indeed it may not be, but the illumination is brief if we remember how probabilities of conjunctions are introduced. To avoid the fallacy of supposing that in general prob (A & B) = prob $A \times$ prob B, we have to build upon an antecedent understanding of conditional probability anyhow, meaning that in the *ordo cognoscendi* this equation comes first:

$$\text{prob }(A \,\&\, B) = \text{prob }(B/A) \times \text{prob } A$$

Probabilities of conjunctions do not stand to probabilities of their components in the same transparent relation that conjunctions do to theirs! In fact, the matter is even worse than this. For, as is pointed out in Huw Price,[22] there are cases where it is much more evident that we have a conditional probability, than it is that there are any absolute probabilities. I believe that if it is raining in Moscow, then the Kremlin roof is wet. But I have no subjective probability, or particular degree of confidence, that it is raining there, or that the roof is wet. What I do have is a standing disposition to adjust assignments of the one probability in the light of the other. Any way of firming up the first probability carries a consequential effect on the second. But the inferential disposition is in much better standing than any *actual* absolute subjective probabilities whose ratios could be alleged to define it. The disposition has the fundamental psychological reality, not the elements of the ratio.

With this in mind, we can ask how similar the difficult embeddings, with Adams commitments, are to conditionalization. If I am asked what chance I give to X/Y, what I first do is turn in my head what one ought to say about X, upon learning Y. I hypostatize the additional state of information that learning Y would create, and decide what it does to the assentability of X. This corresponds to pondering the question: what to think about

22 H. Price, 'Conditional credence', *Mind* (1986).

X, if we make the supposition that Y? Now this thought process occurs when X is itself an Adams commitment. I believe that if my total corresponds to that in today's *Times*, I will win a lot of money. But if I learned a lot of things that commitment would become less assentable. So if I now ponder what to say about the conditional, on the supposition that some one of those things is true, I can given it a lower assentability. If I learned that *Times* employees rig the way they deal with queries, I might abandon that conditional. If I do not learn this depressing fact, but merely start to give it a higher chance of being true, then again that has an impact on the assentability of the conditional. Since this thought process conforms exactly to our explanation of what attributing a conditional degree of confidence is, it seems then right to say that, in my subjective 'assentability function', ASSENT $(A \rightarrow C)/B$ is low. The assentability of the conditional 'if this government is re-elected, inflation will stay down', may be high. However, that would alter if we also suppose B: this government has secret plans to overheat the economy after the next election. On that supposition, the conditional changes plausibility dramatically. The same argument will go through for $\rightarrow$, regardless of whether Adams is right about conditionals. If we just took directly the probability ratio, $P(A \,\&\, C)/PA$, then clearly there is an intelligible question not just of the value we give it, but of what we would say about it under the supposition that B. So it will not be a satisfactory response to Lewis to simply deny the propriety of the contexts in which $A \rightarrow C$ gets put.

One could concede the brute facts about embedding, but resist interpreting them as equivalent to conditionalization. One could admit that evidence leads us to alter our assent both to conditionals and to Adams commitments, and that in advance we can consider what the evidence would or would not do. But conditionalization is not the only way to 'model' change of commitment on addition of evidence, and, in default of other reason to regard $A \rightarrow C$ as itself truth conditional, we cannot assume that it is happening in these cases. I agree with this. But we cannot assume either that it is *not* happening because so far the needed contrast between ASSENT and probability has simply not emerged.

Are the dynamics different in the case of Adams commitments (probability ratios)? Is the value we give to a conditional 'assentability' not that which we would give if it were a proposition whose probability we were imagining to be affected by evidence? This is held by van Fraassen, who calls it denying metaphysical realism. He says (endorsing a way of putting it due to Stalnaker) that the way to escape Lewis's proof is to realize that there is a suppressed 'metaphysical realist' assumption, namely 'the proposition expressed by a conditional sentence is independent of the probability function defined on it.'[23] Certainly, if we deny that, we break the proof of COND. There will be no certain way of expressing the assentability, or probability, of this *new* proposition as a function of what was true of the old ratio. But of course by itself the explanation is entirely mysterious. On the face of it there is no shift of proposition at all. We are surely interested in the same commitment, and what we would say about *it*, given further evidence (would you still say *that* if I tell you that employees rig the lottery?). The question that bothers us might be, for instance, whether if Henry comes the party will be ruined, and this single topic retains its identity through all the additions and diminutions of evidence. A better diagnosis (but one which has nothing to do with metaphysical realism) might try to see the conditional as containing a concealed indexical element, for instance indexing it to some possible world, or space of such worlds, and arguing that the index changes as evidence accrues. But it is much better to get the same effect without incurring the cost of shifting content. We get the effect because the background against which we are evaluating the inferential disposition changes, and this is itself sufficient to explain why COND fails as a general principle.

In supposing that there is a unique function taking us from one probability distribution P to another P', 'remembering B', we are supposing that what we are to say about $A \rightarrow C$, given B is defined in terms of what we are to say about A, and C, remembering B. And this is just what is not so, for the reasons I have given. So the escape from Lewis's proof lies, as it must do of course, in disallowing that the class of admissible probability functions is closed under conditionalizing (for Lewis proves a *theorem* for a language in which there is a total conditionalization function). The work lies in showing that this absence of a function is not an argument against treating $A \rightarrow C$ as propositional, but only as a kind of proposition which admits a different behaviour in the relevant embeddings. Since conditionalization should not even be expected to be well defined over all propositions, this is not itself an argument for refusing to treat $A \rightarrow C$ as propositional.

23 Stalnaker, 'Stalnaker to van Fraassen', p. 302; van Fraassen, 'Probabilities of conditionals', p. 307.

Probability changes of (A & C), as already argued, are downwind of what we think about the conditional probability – the probability of one conjunct being true if the other is. Now in Stalnaker's proof, P' (A & C) represents what to say about (A & C), given B. This is rightly expanded in the second way, to $P(A/B) \times P'(A \rightarrow C)$. But on the reading of conditionalization of Adams commitments that I have been exploring, it is not rightly expanded the first way. For the new probability function may not treat C/A in any way represented as a function of their value in the old function P. A & C is on the 'infected' side of things, where the impact of B cannot be assessed as a function of its impact on the atomic constituents. Is it right to blame PASS? It seems not. It was not the view that conditionals, or Adams commitments, have *probabilities* which gave this line of the deduction, but a particular view about how those probabilities should behave under conditionalization. Remember, as I urged above, there is no particular reason to expect prob (A/B) to be well defined for all undoubtedly bona fide propositions. The well-ordered mind need have no measurable dispositions at every point. So it would not by itself be an argument against PASS if we found no general way of defining a conditional probability for conditionals, in terms of P' – the conditionalized probability function which gives values for their constituents. Of course, it is possible to see how in the cases in which there exist protocols the rolling together of the antecedents occurs. But this does not give us the general identity which the proof needs. Once we have seen how and why this occurs, PASS is unscathed.

What is at stake in seeing $A \rightarrow C$ as behaving logically *like* a proposition-forming operator, if the basic philosophy sees it otherwise? Perhaps not too much. Our propensity for propositional forms of expression is fairly easily explained. Dispositions and attitudes demand justification and discussion: there is correctness and incorrectness, improvement and deterioration here as there is in belief. Discussion is conducted by focusing upon a unit of acceptance or rejection – a proposition – and this is apparently what we do, here, as when we moralize, or modalize. At least, that is so if it is right to identify conditionals with Adams commitments. I have not directly defended this: the question of the propositional appearance of Adams commitments is interesting whether or not Stalnaker's thesis is true. In fact, I have independent reservations about whether it is true, but they are not germane to this issue.

The upshot is that there is enough doubt about conditionalization to destroy the idea that there should be any well-defined function carrying P into P', for conditionals as well as atomic propositions. Since that is so, the propositional nature of conditionals, construed as Adams commitments, need not be impugned: their behaviour in these indirect contexts does not betray their non-propositional origins. One might indeed react to all this by saying that $A \rightarrow C$ has no truth conditions after all. But it can behave as if it does: it can mark an objective commitment, one that people can fail to know, about which improved opinions are possible, which added to other sets of commitments quite changes their consequences, and which can be argued for and from. I have not discussed all the arguments bearing on the extent to which conditionals, and Adams commitments, emulate propositions.[24] But for all that the two discussed arguments to the contrary show, there is no mistake in treating such a commitment as capable of truth, falsity and probability. There may not be much gain in doing so, but the fact that we do so (to the extent to which we do) will not refute an anti-realist theory of the commitments we have.[25]

24 Further considerations are given in Allan Gibbard, 'Two Recent Theories of Conditionals', in *Ifs*, ed. W.C. Harper, R. Stalnaker, and G. Pearce (Reidel, 1980).

25 I am grateful for conversations and correspondence with Anthony Appiah, Dorothy Edgington, Geoffrey Hellman, Frank Jackson, Glenn Shafer, and Charles Travis, which helped to mould this paper.

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Edited by Charles Tra

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First published 1986

Basil Blackwell Ltd
108 Cowley Road, Oxford OX4 1JF, UK

Basil Blackwell Inc.
432 Park Avenue South, Suite 1505,
New York, NY 10016, USA

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British Library Cataloguing in Publication Data

Meaning and interpretation.
1. Semantics (Philosophy)
I. Title
149'.946 B820

ISBN 0-631-14644-X

Library of Congress Cataloging in Publication Data

Meaning and interpretation.
Bibliography; p.
Includes index.
1. Semantics (Philosophy)—Addresses, essays, lectures. 2. Meaning (Philosophy)—Addresses, essays, lectures. I. Travis, Charles, 1943–
B840.M45 1986 121'.68 85-26708
ISBN 0-631-14644-X

Typeset by Photographics, Honiton, Devon
Printed in Great Britain by Page Bros, Norwich

Red on white