(Paper published in in *Quid Est Veritas? Essays in Honour of Jonathan Barnes*,
M. Bonelli and A. Longo (eds), Napoli: Bibliopolis (2010): 233-268.)

Propositions, Dispositions and Logical Knowledge

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ABSTRACT. This paper considers the question of what knowing a logical rule consists in. I defend the view that knowing a logical rule is having propositional knowledge. Many philosophers reject this view and argue for the alternative view that knowing a logical rule is, at least at the fundamental level, having a disposition to infer according to it. To motivate this dispositionalist view, its defenders often appeal to Carroll's regress argument in 'What the Tortoise Said to Achilles'. I show that this dispositionalist view, and the regress that supposedly motivates it, operate with the wrong picture of what is involved in knowing a logical rule. In particular I show that it gives us the wrong picture of the relation between knowing a logical rule and actions of inferring according to it, as well as of the way in which knowing a logical rule might be a priori.

I. (Propositional) and (Dispositional)

Many philosophers think that logical knowledge is a paradigm of a priori knowledge: if any sort of knowledge is a priori, logical knowledge is. The standard rough take on a priori knowledge is (Rough A Priori):

(Rough A Priori) A piece of knowledge is a priori iff it is held independently of sensory experience.

A natural view of logical knowledge is that it is knowledge of logical facts. Some of these facts are standard logical truths, such as (Identity):

(Identity) $\forall x\ x = x$

Others of these facts are logical rules such as Modus Ponens – henceforth (MP):

(MP) From P, and if P, then Q, Q follows.

Characterising logical knowledge as knowledge of logical facts suggests that it is a sort of propositional knowledge, as specified in (Propositional):

(Propositional) Logical knowledge is propositional knowledge of logical facts.

For example knowing (MP) is knowing the fact that from P, and if P, then Q, Q follows.

Thus on this view logical knowledge is propositional knowledge of logical facts; and if that knowledge is a priori, logical knowledge is a priori knowledge of logical facts.

Many philosophers reject (Propositional) and argue for the alternative view that at least part of logical knowledge is fundamentally non-propositional – in particular knowledge of basic logical rules is non-propositional. Although much of what will be discussed in this paper would apply to standard logical truths such as (Identity) without too much

adjustment, I will only be concerned with knowledge of basic logical rules, and of (MP) in particular, which has been the focus of arguments against (Propositional).[1]

This alternative view finds its origin in Lewis Carroll's regress argument in 'What the Tortoise Said to Achilles',[2] which many philosophers take to establish the falsity of (Propositional): (Propositional), they claim, leads to regresses. On most versions of this alternative view, knowing a logical rule such as (MP) is not – at least not in the first instance – knowing a logical fact. Rather, it is having a disposition to infer according to it.[3]

This paper argues against this alternative view. It focuses on Boghossian's account of knowledge of logical rules as a paradigm version of it. Here is a statement of his view:

> Suppose that it is a fact about S that whenever he believes that p, and believes that 'if p, then q', he is disposed either to believe q or to reject one of the other propositions. Whenever this is so… I shall say that S is disposed to reason according to the rule *modus ponens*. In addition to this disposition to reason in a certain way, it can also be a fact about S that he has the full-blown belief that (MP) is necessarily truth-preserving: he believes, that is, that if p is true and that 'if p then q' is true, then q has to be true. As a number of considerations reveal, S's disposition to reason in accordance with (MP) and his belief that (MP) is truth-preserving are *distinct kinds of state*. Footnote: This is at least part of the moral both of Lewis Carroll's 'What The Tortoise Said to Achilles'… and of Wittgenstein's discussion of rule-following in *Philosophical Investigations*.[4]

Boghossian here contrasts between two ways of knowing (MP), one whereby knowing (MP) is merely having a disposition to infer according to it; the other whereby knowing (MP) is having an explicit belief about its logical status. Unlike the latter, the former does not involve any belief about the logical status of (MP). I will frame the distinction as follows. Firstly, I label 'Explicit Knowledge' of (MP) the way of knowing (MP) which involves a full-blown belief about its logical status:

> *Explicit Knowledge* of (MP) is knowledge that involves an explicit belief about the logical status of (MP), for instance that it is truth-preserving.

Secondly, I label 'Fundamental Knowledge' of (MP) the way of knowing (MP) which does not involve any explicit belief about (MP):

> *Fundamental Knowledge* of (MP) is knowledge that does not involve an explicit belief about the logical status of (MP).

Given this distinction, dispositions look like a good candidate for Fundamental Knowledge of (MP): they do not require an explicit belief about its logical status. Indeed they are not beliefs at all. And when philosophers such as Boghossian claim that knowledge of logical rules is dispositional, they have Fundamental Knowledge in mind. Explicit Knowledge is propositional. So the claim that knowledge of logical rules is dispositional is really the claim (Dispositional) below:

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[1] Basic logical rules are rules that are considered fundamental or primitive, i.e., that are not derived. Of course different logical systems may treat different rules as basic. I will simply assume that (MP) is a basic rule. In what follows I omit the label 'basic'.

[2] Carroll (1895).

[3] See for instance Ryle (1946) and (1949), Priest (1979), Boghossian (2000) and (2001), Rumfitt (2001) and Devitt (2006) for endorsements of this view. Fodor (2008) sees the regress as entailing merely that (Propositional) is false for knowledge of some (but not all) logical rules.

[4] Boghossian (2000), p. 230. My italics.

> (Dispositional) Having Fundamental Knowledge of a logical rule is having a disposition to infer according to it.[5]

A few words are in order here about the contrast between Fundamental and Explicit Knowledge of a logical rule. Firstly, it should be stressed that it is of course an open question whether Fundamental Knowledge of (MP) ought to be construed as having a disposition to infer according to (MP). In principle it could be construed as a propositional state – a propositional state that does not require any explicit beliefs about the logical status of (MP). That is to say, a propositional state that is implicit. What kind of state Fundamental Knowledge of (MP) really is is of course what is at stake between (Propositional) and (Dispositional).

Secondly, Boghossian probably presumably does not intend the contrast between Fundamental Knowledge (as merely having dispositions) and Explicit Knowledge (as having explicit beliefs) to be exhaustive. And it does not seem that it should be. For one thing, explicitness comes in degrees. Also, there might be ways of knowing (MP) that are borderline cases between the explicit and the implicit. Bearing these issues in mind, I will simply work with the distinction between Fundamental and Explicit Knowledge. Nothing will rest on finer distinctions.

Boghossian claims that to at all count as knowing (MP), someone must have Fundamental Knowledge of (MP) – where that means that they must have a disposition to infer according to (MP). Crucially, having that disposition is not having a propositional attitude. But further, according to him they need to have the disposition to infer to even have the concept of material implication. This is because Boghossian thinks that someone's dispositions to infer according to certain logical rules fixes what they mean by the logical words (such as 'not', 'if, then', or 'and') or the logical concepts (such as negation, material implication and conjunction) that figure in them. When someone has this sort of meaning-constituting disposition, they are 'entitled' or have 'the right' to the disposition.[6]

This disposition can be had independently of having the belief that (MP) is truth-preserving. However, to at all have that belief, and for it to be justified, one first needs to be entitled to the disposition: one needs to have the concept as fixed by the disposition. As Boghossian puts it:

> … *without* those dispositions there is nothing about whose justification we can intelligibly raise a question about: without those dispositions we could not even *have* the general belief whose justification is supposed to be in question.[7]

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[5] Boghossian would have a more general principle here, including logical truths such as (Identity). According to him, knowledge of (Identity) is fundamentally dispositional: it is a disposition to accept (as true), rather than a disposition to infer. As I said, discussions have turned mainly on dispositions to infer. Also, to anticipate, (Dispositional) is formulated in this way because Carroll's regress argument only concerns knowledge of logical rules and its connection to actions of inferring; it does not concern knowledge of logical truths and its connection to actions of assenting. The regress cannot be used to argue for the claim that knowing (Identity) is having a disposition to assent to it.

[6] Boghossian, *id*., p. 230. Here I do not go into the details of what exactly makes a logical rule meaning-constituting according to him. See Boghossian (1996).

[7] Boghossian, *id*., p. 250.

For Boghossian, someone's Fundamental Knowledge – i.e., their disposition to infer – supplies the justification for their Explicit Knowledge: the latter is grounded in the former.[8] Someone's Explicit Knowledge is the result of having the disposition to infer according to (MP) and some sort of reflection which makes them form an explicit belief about its logical status. So the view is that to at all count as knowing (MP) someone must have the meaning-constituting disposition to infer according to it, which grounds any sort of justification which they might have for their explicit belief about (MP) (hence the label 'Fundamental'). But of course they may never reach the stage of having Explicit Knowledge.

Now, (Dispositional) and (Propositional) are incompatible. (Propositional) says that, generally, logical knowledge is propositional; (Dispositional) says that having Fundamental Knowledge of a logical rule is having a disposition to infer according to it – where a disposition should not be understood as a propositional attitude along the lines of belief, knowledge, etc. It is a mere disposition.

The aim of the paper is to show that (Dispositional) does not give us a good account of Fundamental Knowledge of logical rules such as (MP). And it is to go some way towards defending (Propositional). The argument will be mainly negative against (Dispositional) and will not provide a full defence of (Propositional). In section II, I will briefly outline some of the 'considerations' (see again Boghossian's long quote above) in favour of (Dispositional), more precisely those arising from Carroll's regress. In sections III, I will argue that there is no good account of dispositions according to which knowing (MP) is having a disposition to infer according to it. In section VI, I will argue that (Dispositional) is at odds with the claim that logic is a priori. Finally, in section V, I will conclude with my views on the significance of Carroll's regress to the question of how to account for our knowledge of logical rules.

II. Motivation for (Dispositional)

The reason why many philosophers claim that (Propositional) does not give us the right account of Fundamental Knowledge of logical rules concerns the relation between knowing such a rule and actions of inferring according to it. A logical rule is the sort of thing knowledge of which guides us or enables us in actions of inferring; and they claim that (Propositional) fails to capture this fact.

This sort of claim has its origin in Lewis Carroll's regress, which many take to show that if knowing a rule such as (MP) were knowing a logical fact, we would have no explanation of the fact that we can reach the conclusion of an inference in Modus Ponens. For if knowing (MP) were knowing a logical fact, we should never reach such a conclusion. So knowing (MP) cannot be identified with knowing a logical fact.

Paraphrasing freely, the regress argument goes something like this:

Suppose that you know (MP).
And suppose also that you know your premises that P, and that if P, then Q.

[8] See Boghossian, *Ibid.*

Then, the argument goes, if knowing (MP) were just knowing the fact that Q follows from P, and if P, then Q, we would have no explanation as to how knowing (MP) enables you to get to the conclusion Q – of how it actually enables you to perform the inference. For knowing (MP) would just be knowing a further fact – just like knowing your original premises. What the regress suggests is that it is no easier to explain how knowledge of three facts enables you to reach Q than it is to explain how knowledge of two facts – your original premises – enables you to reach Q.

Generally, if your knowledge of logical rules were just knowledge of logical facts, that knowledge would never enable you to act. You would just pile up pieces of propositional knowledge forever and never make any inference. You would be stuck forever.

The reason why I chose this free paraphrase over the very way in which Carroll sets up his regress is this. The way in which he sets it up goes by considering someone (the tortoise) who accepts the premises P, and if P, then Q, but refuses to infer the conclusion Q. It is suggested (by Achilles) that accepting (MP) as a further premise to the inference will compel her to accept Q. But she does not feel compelled. Achilles next suggests that she adds yet a further premise to her inference that says that Q follows from (PM), P, and if P, then Q. She still does not feel compelled, and it is easy to see how this could go on forever.

However, there is a straightforward reply that blocks his way of setting up the regress: logical rules should not be added as premises to arguments that follow the very pattern which they dictate.[9] My paraphrase makes no suggestion that logical rules should be added as premises and it emphasises (one of) the point(s) of the regress, namely that there is a gap between knowing propositions and actions – a gap which means that the former cannot account for the latter.[10] This is what defenders of (Dispositional) aim to press.

So the argument against (Propositional) goes something like this:

> (i) Knowing (MP) is (at least at the fundamental level) knowing something that enables one to make a logical transition: to infer Q from the premises P and if P, then Q.
>
> (ii) The regress shows that knowledge of facts is not something that enables one to make a logical transition.
>
> (iii) So knowing (MP) cannot be (at least at the fundamental level) knowing a logical fact.

A natural way to articulate the idea that knowing a logical rule is knowing something that enables someone to make a logical transition is to say that it is having a bit of practical

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[9] See Wisdom (1974) and Smiley (1995) for discussion.

[10] Many different morals have been drawn from Carroll's regress argument; and it is not entirely clear what the argument in his paper is really about. It is unlikely that he just wanted to argue that one should not add a rule as a premise to an argument that follows the pattern which it dictates. One standard moral is that which is at issue here: that Fundamental Knowledge of logical rules is really dispositional. But see for instance Phillie (2007) for a recent contribution on Carroll's regress that focuses on what it might show about the nature of the justification of our inferential practices (i.e., whether they are externalist or internalist).

knowledge – a bit of knowledge whose job is to guide them in their actions of inferring. And what many have taken Carroll's regress to establish is that (Propositional) fails to capture the fact that knowing a logical rule is having a bit of practical knowledge.

The next move is to go for (Dispositional): dispositions do not lead us to regresses and they are arguably good candidates to account for the practical knowledge that is displayed in our actions of inferring according to a logical rule. This view has in large part been made popular by Gilbert Ryle who argued that knowing a logical rule is having a bit of knowledge-how, a bit of practical knowledge about ways to do things, i.e., inferences.[11] Crucially, according to Ryle, knowing-how cannot be a sort of propositional knowledge on pain of Carroll-style regresses: Ryle discusses Carroll's regress and takes it to establish exactly this. Ryle further identifies knowing-how with having abilities (or skills or capacities), which are in turn taken to be complexes of dispositions. In particular, knowledge (or knowledge-how) of a logical rule such as (MP) is having a disposition to infer according to it.[12]

One reason why it might be thought that (Dispositional) does not lead to regresses is that there is a tight connection between dispositions and action: (Dispositional) establishes a tight connection between Fundamental Knowledge of (MP) and actions of inferring according to it. If Fundamental Knowledge of (MP) is having a disposition to infer according to it, we seem to have a natural explanation of why knowing (MP) enables someone to perform an inference according to it. Crudely put , it would seem that it is the disposition that sets them in motion – makes them infer – in the right sorts of circumstances. If they believe that P and that if P, then Q, then, other things being equal, they will infer and form the belief that Q.

Another reason that could be invoked here is that since dispositions are not (explicit) propositional states, there can be no suggestion that in order to perform an inference according to (MP), someone has to invoke their knowledge of (MP) in the sort of explicit way that would be required if they had to add it as a premise to their inference – as is suggested by the way Carroll sets his regress. However, this reason is going to have any force only if (Propositional) requires that (MP) is explicitly known when used in inference. But as I have already suggested, we need not think that (Propositional) requires (MP) to be explicitly known whenever it is used in inference. (I shall come back to this issue in the last section.) So the real issue here between (Propositional) and (Dispositional) is really the first, about how tight the connection between knowledge and action should be.

Notice briefly here another 'consideration' which Boghossian mentions in favour of (Dispositional) which relates to Wittgenstein's discussion of rule-following in the *Philosophical Investigations*. The thought here is something like this: propositional knowledge of (MP) cannot explain how someone might correctly (non-accidentally)

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[11] See Ryle (1946), pp. 217 ff.

[12] Ryle's distinction between knowledge-how and knowledge-that is completely general – not confined to knowledge of logical rules: anything that can be labelled 'knowing-how' is a (complex of) disposition(s). He offers his own regress argument against the view he labels 'The Intellectualist Legend', according to which (roughly) knowledge-how is a species of knowledge-that. (See Ryle (1946), p. 213 and (1949), p. 31.) Carroll's regress can be seen as a particular instance of Ryle's. I do not discuss Ryle's regress argument, but see Stanley and Williamson ((2001), pp. 412-17) for a recent discussion.

follow (MP) as opposed to merely (accidentally) acting according to it; but dispositions can account for the non-accidental character of following a logical rule. I will not discuss rule-following considerations here. For one thing, very few people think that appealing to dispositions is really going to satisfactorily address these rule-following considerations (whether or not this is actually what Wittgenstein recommends doing in the *Philosophical Investigations*). Also, when it comes to Wittgenstein's discussion of rule-following, there is nothing like the sort of agreement there is with Carroll's regress about whether it constitutes an argument in favour of (Dispositional).[13]

I will come back to Carroll's regress in the last section. In the next two sections I shall argue that dispositions to infer according to (MP) do not give us a good account of Fundamental Knowledge of (MP). I will first argue that it is by no means clear what kind of disposition Fundamental Knowledge of (MP) could be and then that (Dispositional) is at odds with the claim that logic is a priori.

III. Knowledge and Dispositions

The notion of a disposition is primarily applied to properties of physical objects, for instance to give an account of the fragility of a glass. Ascribing a disposition gives us an explanation of the object's behaviour in certain circumstances; roughly, for a glass to be fragile, it is for it to break easily in certain circumstances, e.g. if it is dropped. Generally, something having a disposition to ϕ entails that it ϕ-es in the right sorts of circumstances. On this basic picture of dispositions, other things being equal, having a disposition guarantees a certain outcome.[14]

Some human mental properties are certainly dispositional in roughly the same way as certain physical properties are. Consider examples such as the tendency to talk loudly or the susceptibility to headaches or irascibility.[15] Roughly, if someone has a susceptibility to headaches, other things being equal, they will have a headache in the right sorts of circumstances (e.g. stress or sleep deprivation). Ascribing such sorts of dispositions to someone serves to explain some recurring aspects of their behaviour (e.g. talking loudly) or some of the things that recurrently happen to them (e.g. having a headache).

These human dispositions do not seem to be like the sorts of properties which we want to ascribe to someone when we ascribe them Fundamental Knowledge of (MP). Dispositions such as irascibility are not the sorts of dispositions that are used to explain some sort of human knowledge or competence: they do not support the ascription of a certain form of knowledge, which is what we are after here. They describe happenings or actions that are the result of mere tendencies. The point can be made in terms of knowledge-how. It would be wrong to describe someone with a disposition to headaches as someone who knows how to have headaches or someone with a disposition to talk

[13] Kripke famously argued against dispositionalist accounts of rule-following. See Kripke (1982). See Boghossian (2004) for replies to Kripke.
[14] I do not consider particular analyses of dispositions. The discussion in the text operates at a basic intuitive level and does not require us to go into any specific analysis.
[15] These are Ryle's examples, see (1949), p. 33.

loudly as knowing how to talk loudly. However, it is correct to say of someone who performs inferences according to (MP) that they know how to infer according to (MP).[16]

Thus a disposition to infer according to (MP) should be construed as one that affords the ascription of knowledge. And notice also that this seems required, if, like Boghossian, we want to say that knowing (MP) is a by-product of some sort of competence or knowledge, namely linguistic or conceptual understanding – for presumably understanding is a form of knowledge.[17]

Thus other sorts of dispositions than these examples of mental ones are required to model the disposition someone has when they have a disposition to infer according to (MP). Here, it is natural to turn to accounts of linguistic (or conceptual) knowledge. For one thing it is natural to think that aspects of logical and linguistic knowledge are similar. And as I said, some philosophers, such as like Boghossian, actually think that they are organically related. But even if we do not think that the connection is so tight, it seems that there should be important points of comparison between the two. Also, turning to linguistic knowledge or competence is especially natural for defenders of (Dispositional) because many epistemologists of language would explain at least some part of our linguistic competence by appealing to dispositions. Further, there are several proposals on aspects of the nature of linguistic knowledge that might help us model knowledge of logical rules, and (Dispositional) in particular.

There are basically three options to model (Dispositional) along the lines of linguistic competence. Knowing (MP) can be modelled along the lines of:

A) Knowing a rule about how to use an English word.

B) Knowing a rule in a Universal Grammar.

C) Knowing a rule about how to use an expression in the Language of Thought.

I shall now consider whether there is a construal of each of A), B), C) in terms of dispositions. And for each of A), B), C), I shall argue that they cannot help modelling a dispositionalist account of Fundamental Knowledge of (MP).

— (Dispositional) and a dispositionalist construal of A)

Some philosophers think that knowing a language such as English largely consists in having dispositions to use words in certain ways or to follow certain grammatical rules. For instance understanding the word ‘cow’ is having a disposition to apply it to cows.

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[16] It is arguable that since it is adequate to say that someone knows how to infer according to (MP) but inadequate to make a similar knowledge-how claim for clearly dispositional mental states such as the tendency to talk loudly, it follows that knowledge-how should not be identified with having dispositions. The argument is this: dispositions cannot underwrite intentional action, which is the sort of action that you perform when you are exercising your knowledge-how. For it is appropriate to say that you know how to ϕ only if ‘ϕ’ stands for a verb for an intentional action. However, ascribing a disposition to someone is not ascribing to them a property that underwrites intentional action. Moreover, ‘inferring according to (MP)’ is a verb for an intentional action; and so, it should not be taken to denote a disposition to infer. I do not pursue this here but see Stanley and Williamson (2001) for discussion. (Note here that in the case of assenting – as in assenting to (Identity) – we cannot say that one knows how to assent to (Identity), but still we presumably want to say that ‘assenting to p’ is a verb for an intentional action. So considerations from knowing how and intentional action are perhaps not entirely clear-cut).

[17] Here see Petit (2002) for discussion.

Now it should be pointed out from the outset that this picture of linguistic competence has some grave basic problems. These have to do with the possibility of error. On a basic dispositionalist account, 'cow' means whatever someone is disposed to use it to refer to. But this implies that if they make a mistake, and use 'cow' to refer to something other than a cow, 'cow' thereby comes to mean whatever they mistakenly use it to refer to. So this basic account needs to be modified so that it does not entail that 'cow' (in their idiolect) just means what they are disposed to use it for. What is needed in this account is some notion correct use. Philosophers often put this requirement by saying that use should capture the fact that meaning is normative. However dispositionalists cannot simply constrain the conditions on understanding 'cow' by saying that 'cow' means whatever we are disposed to use it to refer to when we use it correctly. For then mistakes in use cannot be accounted for. That is, the fact that someone may sometimes make a mistake in their application of the term 'cow' by applying it to something else (that superficially looks like a cow) cannot be accounted for.[18] And it is unclear how exactly dispositionalists could refine the account. However, I will not pursue this matter here because I am not interested in attacking dispositionalism generally, only dispositionalism about (MP).

This dispositionalist view could be used to model (Dispositional) as follows: knowing the meaning of the *English word* 'if then' requires having a disposition to infer according to (MP). And so knowing (MP) is a by-product of a competence in using the English expression "if, then". This is at least one way to articulate Boghossian's claim that a disposition to infer according to (MP) is constitutive of understanding 'if, then' or having the concept of material implication.[19]

The objection to this suggestion is familiar. It is that of deviant speakers. There are speakers who understand the English expression "if then" but do not have a disposition to infer according to (MP). For instance people who think that (MP) is open to counter-examples – such as Van McGee.[20] Thinking that (MP) is open to counter-examples requires one to understand "if, then"; McGee understands it but has no disposition to infer according to (MP). Furthermore, although he understands "if, then", it is natural to think that he does not know (MP).[21] Notice here that we can also construe cases where someone counts as knowing (MP) but has no disposition to infer according to it. For example, someone might know (MP) but might not be willing to perform any inference of that type because they also believe that they will go to hell if they do; every step in such an inference is a step to hell. Rather than inferring according to (MP) they always use other forms of inference which they judge to have less drastic consequences (e.g.

[18] These difficulties with dispositionalism are closely related to those which Kripke raises against dispositional accounts of rule-following (which I mentioned in passing at the end of section II) in connection with the normativity of meaning: he argues that dispositional accounts of rule following cannot account for the fact that meaning is normative – for the fact that (roughly) there are facts of the matter about the correct use of a term. See again Kripke (1982).

[19] N.B. On this model, having the concept of material implication would be similar or at least closely related to understanding the word 'if, then'. Here and below, I will not discuss the two cases separately and I will assume that the discussion can easily translated from expressions to concepts.

[20] See McGee (1987) and See Williamson (2007) for extensive arguments for the claim that such cases show that having a disposition to infer according to (MP) cannot be required for understanding 'if, then' or having the concept of material implication.

[21] See my (2009) for further arguments that you can understand (MP) without knowing it.

disjunctive syllogism). In this case, they might indeed know (MP) but they have no tendency or even willingness to infer according to it; rather, they avoid inferring according to it. And of course if they know (MP), they understand 'if, then'. So someone can understand 'if, then' without having a disposition to infer according to (MP).

Here again the point can be made in terms of knowledge-how. I said in section II that Ryle argues that knowing (MP) is having a piece of knowledge-how (where knowledge-how is non-propositional). But it appears that someone may know how to do something without having a disposition to do it. For instance, someone may know how to ski without having any disposition to skiing, for instance if their legs are paralysed.[22] This point also holds in the case of knowing how to infer according to (MP): someone may know how to infer according to (MP) without having any disposition or tendency to infer according to it. The second example above is an illustration of this fact.

Now, the fact that someone can understand the English expression 'if, then' without having a disposition to infer according to (MP) is troublesome for the current suggestion about how to model the dispositions in (Dispositional). For these examples seem to be counter-examples to the claim that having a disposition to infer according to (MP) is part of understanding 'if, then' or having the concept of material implication. Defenders of (Dispositional) who go for this option have to argue that they are not genuine counter-examples. Something they could say is that in these examples one still has the disposition to infer according to (MP). What is going on in them is that their disposition is prevented from manifesting itself – it is masked or has an antidote.

Here is a classic example of a masked disposition. Suppose that a mushroom is poisonous for humans. If someone ingests it, it will make them sick. However if they ingest it together with an antidote it will not make them sick. In this case, it is natural to think that the ingested mushroom still has the disposition of being poisonous but that the disposition was prevented from manifesting itself: it was masked by the antidote.

By analogy, one way to go with these apparent counter-examples to (Dispositional) is to say that one still has the disposition to infer according to (MP), but that disposition is masked. The most natural way to do this is to go sub-personal: one has the disposition at some sub-personal level but conscious activity – theoretical commitments or deviant beliefs – acts as an antidote and prevents its manifestation. Our construal A) of linguistic knowledge is not designed to be sub-personal: it is concerned with average speakers' understanding the English language. The two options which I consider next are sub-personal. And so they are possible ways of making good this claim about masked dispositions to infer and avoiding counter-examples.

— *(Dispositional) and a dispositionalist construal of B)*

Consider Chomsky's Universal Grammar. Roughly, according to him, we have an innate language faculty or module, which contains at the initial stage some sub-conscious knowledge of very general grammatical facts which constitutes a Universal Grammar. This faculty explains our innate propensities or dispositions to obey certain very general

[22] See Stanley and Williamson (2001), p. 416, and Williamson (2008, pp. 86ff.) for similar sorts of examples.

syntactic rules when we learn/speak a particular language such as English, for instance (syntactic) rules about binding.[23] The following is a rule about binding:

> (Binding) If α is an anaphora, interpret it as co-referential with a c-commanding phrase in the relevant local domain D.[24]

The suggestion is now that having Fundamental Knowledge of (MP) is somewhat like knowing a rule of a Universal Grammar: it is part of some logic sub-conscious module or faculty that explains our actions of inferring according to that rule. (Here I do not want to insist on modularity as opposed to a conception of the mind as a unitary system.) Moreover knowing a rule in a Universal Grammar is often thought to be merely dispositional, which is what defenders of (Dispositional) would require.

The objection to this suggestion is completely general, and does not rest on a specific problem with disposition. The objection is that (MP) is too specific a rule to have the sort of foundational status that general rules such as rules about binding have. It is a rule that contains reference to a particular concept or word. Now, having said that, it is probably true that we have some general inborn disposition to make inferences or to learn specific inferential patterns that would explain our overall inferential competence; perhaps this general disposition is part of our genetic makeup, and perhaps we share it with some non-human creatures. But that is far from saying that a specific rule like (MP) could be known in that way – in a way similar to that in which rules such as (Binding) are. For instance, someone who knows English knows, amongst other things, specific ways in which the rules of Universal Grammar can be embodied. And on the face of it, it seems that, if knowing (MP) is really anything like knowing a rule of grammar, it should be like knowing a specific grammatical rule for a particular language or a specific concept, and not like knowing a general rule of the Universal Grammar such as (Binding).

Notice here an old view of the logical constants which was common in Medieval Logic and which would be compatible with the claim that knowing (MP) is somewhat like a rule about binding – or at least like a general grammatical rule of sorts. On this view, logical constants are not really meaningful bits of language but syncategorematic expressions – expressions that merely serve to connect meaningful bits of language and indicate their specific mode of combination: for instance 'if, then' indicates a conditional mode of combination. On this account, the logical constants belong to the structure rather than to the content of the proposition expressed by a sentence that contains it. And they can be thought of along the lines of punctuation marks or grammatical particles. This is supposed to account for the idea that logic is topic-neutral: if the logical constants are not really meaningful, they do not introduce any specific subject matter.[25]

Now there might be something to the distinction between matter and form; but if it involves saying that the logical constants are not really meaningful or do not really

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[23] See *inter multa alia* Chomsky (1981), esp. Ch. 3, (1986) and Cook and Newson (2007), Ch. 4. Note that if the further claim is made that these rules about binding are in some sense represented in the mind, i.e., that we have at the initial state propositional knowledge of these rules, then the view entails that we have innate concepts. Chomsky seems to suggest that this is the case when he says that the child possesses an innate 'linguistic theory'. See for instance Chomsky (1965), p. 25.

[24] The relation of c-commanding is a relation between two expressions (nodes) in a tree whereby a phrase c-commands another iff the first branching node dominating the former also dominates the latter.

[25] See for instance Buridan (1976) for a medieval exposition of this view. In the modern era, it can notably be found in Wittgensein (1922).

express concepts, the distinction has gone wrong somewhere. Also, many think that logical form is relative to interest and to a choice of logical constants, e.g. the same expression can be a logical constant in some system and not in some other – it would be odd to say that such a constant is ambiguous between these two uses. Furthermore, there is of course the case of the identity-predicate, which is treated as logical constant by standard logical systems. Being a predicate, it is not of the right sort of syntactic category to be something that could be assimilated to a punctuation mark. Also, given that it is simply a relational predicate (just like the predicate 'x loves y'), it is hard to see why it does not get to have a meaning just like any other relational predicate.[26]

One last point here on using dispositions to use the rules of Universal Grammar to model dispositions to infer according to logical rules such as (MP): part of the motivation for the idea that we have inborn knowledge of a Universal Grammar is that although an English speaker, say, may make many mistakes using English grammatical rules, mistakes are extremely rare when it comes to the rules of Universal Grammar such as (Binding).[27] Saying that these rules are unlearned contributes to explaining why mistakes are rare in their use.

However, mistakes are widespread with (MP) – people who should count as having Fundamental Knowledge of (MP) – and even Expert Knowledge – regularly make mistakes with it: they know the rule but they often misuse it or commit fallacies such as that of asserting the consequent.[28] This suggests, again, that (MP) should not be thought of along the lines of a rule of a Universal Grammar. Fundamental Knowledge of (MP) is not to be modelled along the lines of knowledge of a rule such as (Binding).

— *(Dispositional) and a dispositionalist construal of C)*

At times Boghossian adverts to the possibility that logical rules such as (MP) are part of the Language of Thought; for instance he says that certain inferential dispositions:

> '... fix what we mean by our logical words (in the language of thought)'.[29]

According to the Language of Thought Hypothesis (LOTH), we have innate concepts that are part of a fully-fledged innate conceptual language – the Language of Thought or Mentalese. The Language of Thought is a (largely) innate mental language in which thought and thinking take place, and which is prior to and independent from one's knowledge of a public language such as English.[30] The language is (largely) innate in that it is (largely) hard-wired in the brain.

This last option is different from A) because unlike English, the Language of Thought is a sub-personal language. So it might help avoiding the counter-examples to (Dispositional) mentioned above. It is also different from B) because the Language of

[26] However note here the view that goes back to Kant according to which 'x is red' is a predicate (an expression that denotes a property), but 'x exists' is not a predicate – because, like identity, it trivially applies to everything.
[27] See Smith, (2004), p. 168.
[28] That people make many mistakes with (MP) incidentally highlights even more the problem faced by dispositionalist accounts with the possibility of mistakes (see again section III.A)). Dispositions are meant to guarantee a certain outcome, and if you have a disposition to infer according to (MP) it should be by far the norm that you succeed. But it is unclear that knowledge of (MP) guarantees success in this way.
[29] Boghossian (1996), p. 250.
[30] See Fodor (2008).

Thought is itself an interpreted language – that is, by contrast with a Universal Grammar, it is not merely a grammar. And if (MP) is part of this conceptual language, the objection made in B) that knowing (MP) is too specific to have the same sort of foundational status as a rule of a Universal Grammar does not apply: if anything, knowing (MP) was a bit like knowing a rule of English rather than a rule of Universal Grammar, but that is equally a bit like knowing a rule of Mentalese. They are at the same level of specificity.

It may be the case that (MP) is a rule in the Language of Thought and this perhaps means that the concept of material implication is innate. But the problem here is that it does not seem that (Dispositional) could make this claim hold good. Here is why. (LOTH) is part of a representationalist theory of the mind according to which the thoughts in questions are propositional attitudes: attitudes towards mental representations. It is a form of mental realism whereby mental processes require mental representations. It is actually in direct opposition to what Fodor calls 'pragmatism about content', which yields that attitudes towards concepts or contents are really merely dispositions to use those concepts or contents. That is, in Fodor's words, according to (LOTH):

> There is no tokening of a (cognitive) mental state or process (by a creature at a time) unless there is a corresponding tokening of a mental representation (by that creature at that time).[31]

The point here is that the Language of Thought is a compositional language with a referentialist semantics for its basic constituents. Having the concept of a cow is knowing that it refers to cows or that the word 'cow' in Mentalese refers to cow. According to Fodor, the Language of Thought has to be referential and compositional if it is to do the explanatory work which it is supposed to do: it has to capture the compositionality of thought, which, according to him is at the heart of the productivity and systematicity of thought, and which determines the relation between thoughts and their constituent concepts – i.e., the fact that thought have concepts as their constituents. According to Fodor, only a representationalist theory of the mind can do this explanatory work.[32]

So on this view, if (MP) were part of the language of thought, knowing (MP) would be knowing a proposition and exercising knowledge of (MP) would be exercising propositional knowledge of that rule. So before they can at all avail themselves of (LOTH), defenders of (Dispositional) would have to successfully argue that a version of it is compatible with (Dispositional), which is precisely what defenders of (LOTH) deny.[33] It may of course be that dispositions can somehow be involved in (LOTH): perhaps we would like to say that these representational states can be had dispositionally or that they essentially connect with some dispositions. But that claim would be different from that made in (Dispositional) and indeed it would be compatible with (Propositional).

Let us take stock. There does not seem to be a good account of what sort of mental disposition Fundamental Knowledge of (MP) could be. Having a disposition to infer according to (MP) is not like having a disposition to talk loudly. The former, but not the latter supports the ascription of a certain sort of knowledge or competence. It is however also unclear what kind of knowledge a disposition to infer according to (MP) could be. It

[31] Fodor, (2008), p. 6.
[32] See Fodor (2008), pp. 19 ff.
[33] See, Fodor *Ibid*., pp. 25 ff.

cannot be modelled along the line of dispositionalist accounts of linguistic or conceptual capacity in any of the senses in A), B) or C). And there does not seem to be any other natural option here. So there is really a story to be filled here by the dispositionalist, and it does not seem that she can fill it out. If that dispositionalist is Boghossian, who thinks that Fundamental Knowledge of (MP) is a by-product of some linguistic or conceptual competence, then the prospect is really dim.

VI. (Dispositional) and A Priori Knowledge

In the introductory section, I said that logic is a paradigm of a priori knowledge. In this section I argue that (Dispositional) is at odds with the claim that knowledge of logical rules is a priori. I will not here defend the claim that logic is a priori. So the argument is for a conditional conclusion. I consider three construals of (Rough A Priori) and look at the ways they interact with (Dispositional).[34]

1) Standard

On this construal, apriority is explained in terms of a priori justification (or warrant), which is in turn explained in terms of independence of evidence from sensory experience. This is what most philosophers mean by apriority – hence the label 'standard'. This makes apriority explicitly an epistemological concept about the nature of one's justification for a piece of knowledge:

> (Standard A Priori) A piece of knowledge is a priori iff its justification (or warrant) is independent of evidence from sensory experience.

(Standard A Priori) requires a piece of knowledge to be propositional to qualify for apriority. This is because justification is a relation between a justifier and a proposition or propositional attitude (e.g. a belief). What gets to be justified is propositional in form.[35] Thus, given (Standard A Priori), if knowing (MP) is at all going to be a candidate for apriority, knowing (MP) has to be a propositional attitude. But this is precisely what is denied in (Dispositional). Dispositions are not propositional attitudes and so are not a priori according to (Standard A Priori).[36]

Consider again Boghossian's claim that Fundamental Knowledge of (MP) is a kind of state distinct from Explicit Knowledge of (MP) – explicit knowledge that (MP) is truth-preserving. The latter is a propositional attitude; the former is a mere disposition. As we have just seen, according to (Standard A Priori), the disposition is not a candidate for apriority. However, in principle the propositional attitude is. But now consider also Boghossian's claim that we are entitled to the disposition to infer according to (MP) because (MP) is meaning-constituting of the word 'if, then' (or partly defines the concept of material implication). Whatever that entitlement exactly is for Boghossian (more on this shortly), it must be a warrant of sorts: and here that warrant is not a priori, again precisely because it is an entitlement for a disposition. Consider next his claim that

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[34] Other construals of apriority are possible. Those presented here suffice to illustrate the problems raised by (Dispositional) in connection with the apriority of logic.

[35] Of course that does not mean that the justifiers themselves have to be propositional in form. The issue of what can justify a proposition need not concern us here.

[36] Dispositions are not a posteriori either if (Standard A Posteriori) is defined as follows: A piece of knowledge is a posteriori iff its justification (or warrant) is dependent on evidence from sensory experience.

Fundamental Knowledge justifies Explicit Knowledge. The problem with this combination of claims is that if the entitlement for the disposition to infer according to (MP) is not a priori according to (Standard A Priori) and if the belief that (MP) is truth-preserving inherits its justification from this entitlement, then the belief is not going to be a priori either. So neither Fundamental nor Explicit Knowledge of (MP) come out as candidates for apriority according to (Standard A Priori).

One possible reply here would be to say that Explicit Knowledge is not justified by Fundamental Knowledge – then the former might come out a priori on some other grounds. However, this is not an attractive option. It is unattractive to postulate two different kinds of states both labelled 'knowing (MP)' with no interesting epistemological relation between them. The original idea was to explain what justifies someone in their explicit belief that (MP) is truth-preserving in terms of their meaning-constituting dispositions to infer according to (MP). If we cannot do that, then it is somewhat a mystery where the justification for my belief comes from, and we lose the connection between understanding (MP), and 'if, then' in particular, and having the explicit belief.

Another possibility would be to deny that Fundamental Knowledge of (MP) counts as logical knowledge: only Explicit Knowledge of (MP) counts as such and thus is a candidate to apriority. But that would entail that most people do not have any logical knowledge, which is also unattractive. The point of appealing to dispositions is that it enables us to explain why people who know how to infer according to (MP) but who do not have Explicit Knowledge of (MP) can be credited with knowledge. So it seems wrong to say that only Explicit Knowledge of (MP) counts as knowledge of (MP). This is especially the case if Explicit Knowledge of (MP) is going to be thought of as Fundamental Knowledge of (MP) made explicit through reflection.

(Standard A Priori) is not compatible with (Dispositional). If we want to hold on to (Dispositional) and to the claim that logic is a priori, we need a conception of apriority that is not defined in terms of justification.

2) Innate

On this construal, a priori knowledge of (MP) is literally prior to experience:

(Innate A Priori) A piece of knowledge is a priori iff it is innate.

There are many ways in which the claim that we have some innate knowledge can be made. I will focus on the way whereby a piece of knowledge is innate in that it is in some sense part of one's biological makeup (e.g. it is genetically hard-wired into the brain).

The question now is whether a disposition to infer according to (MP) could be a priori in the sense of (Innate A Priori). To some extent, this question was answered in the negative in section III, when discussing ways of modelling Fundamental Knowledge of (MP) along the lines of some linguistic or conceptual competence. First, there was the possibility of saying that Fundamental Knowledge of (MP) is innate in the way in which knowledge of a rule of a Universal Grammar is. The problem with this was that a disposition to infer according to (MP) would be too specific to be the sort of thing that is innate in this way. The alternative was that knowing (MP) could be innate because it is part of the Language of Thought. According to (most versions of) (LOTH), most of our

concepts are innate, and so it would be fitting to say that the concept of material implication is innate. But again, (LOTH) is part of a representationalist account of conceptual and linguistic competence and so is at odds with (Dispositional).

Another problem concerns not so much the interaction between (Dispositional) and (Innate A Priori) but the very suggestion of construing apriority in terms of (Innate A Priori). It is a problem of overgeneration. (Innate A Priori) does not yield a distinctive way in which the basic logical rules might be a priori, as opposed to, for instance, the basic rules of a particular language or, for that matter, of Mentalese. That is, (Innate A Priori) does not yield a conception of apriority in the sense that epistemologists have in mind when they talk about logic being a priori: for, according to it, (at least parts of) linguistic knowledge would also be a priori.

Now, rather than saying that knowledge of (MP) is a priori by being innate, we could say that knowledge of (MP) is a priori in being innately determined to be acquired (as opposed to being learned from scratch).[37] But that is not going to make the epistemologist any happier. For example no epistemologist would accept that because we have an innate propensity to follow certain grammatical rules, it follows that we know a priori that English has a certain grammar. On the contrary, knowledge of the rules of grammar for a particular language is precisely the sort of thing epistemologists agree is a posteriori.

Harman aptly calls the sort of conception of apriority illustrated in (Innate A Priori) a 'Vanilla Conception' of apriority – a harmless conception of apriority without any real epistemological bite.[38] If defenders of (Dispositional) could make sense of a way in which Fundamental Knowledge of (MP) might be innate, the resulting conception of apriority would make the apriority of logical rules no different from that of the basic rules of, say, Mentalese.

3) Grounded in Understanding

On this account, a priori knowledge is independent of sensory experience in its formation or in the way it is grounded. One way to expand this idea goes by saying that a priori knowledge is grounded in some faculty. A paradigmatic example is Kant, according to whom a priori knowledge (or a priori cognitive content) arises from our cognitive capacities, such as understanding or intuition.[39]

Another way to expand this idea is by saying that apriority is grounded in some cognitive activity (without appealing to a special faculty). Consider Boghossian's proposal further. We have seen that according to him someone's knowledge of (MP) is grounded in their understanding of (MP); for (MP) partly defines the logical constant 'if, then' or the concept of material implication. But also for him the knowledge of (MP) obtained in this way is a priori: someone's understanding (MP) grounds their a priori knowledge of (MP) because it gives them all the entitlement needed for knowing (MP): (MP) is a priori in that merely understanding (MP) is sufficient for knowing it.

[37] See Carruther (1992), p. 51 for this construal of innateness.
[38] See Harman (2003).
[39] See Kant (1781), A320 (B376).

Thus consider:

> (Understanding A Priori) A piece of knowledge is a priori iff it is grounded in understanding.

If we combine (Understanding A Priori) with (Dispositional), Fundamental Knowledge of (MP) is a disposition to infer according to (MP) which is a priori because it is grounded in understanding (MP). Here 'grounded in' does not mean 'justified by' in the sense of (Standard A Priori) otherwise dispositions would not be candidates to be grounded in this way. The idea of grounding here is really that of originating.[40] But how does this grounding manage to confer apriority to a disposition?

As we have seen before, one thing that Boghossian says is that if a disposition is grounded in understanding we are entitled to the disposition. So at this point it is appropriate to try to clarify what he means by being 'entitled to a disposition'. Burge (1993) introduced the notion of entitlement to debates about a priori knowledge. For him there are two sorts of warrants: justification, which is internalist, and entitlement, which is externalist. Boghossian says ((2000), p. 230) that his use of entitlement is different but related to that of Burge. It is different because Burge's notion of entitlement is meant to apply to propositional states; it is related because in the same way as for Burge, entitlement need not be cognitively accessible to a subject.

Boghossian glosses his use of entitlement by saying that we have the 'right' to the disposition, (*Ibid*. n. 18, p. 250) or that the disposition is 'reasonable' ((2001), p. 60). These paraphrases do not go very far by way of clarification. And one problem is that these paraphrases do not quite make the notion of entitlement an epistemological one, whereby being entitled gives one some sort of positive warrant. They do not explain how being entitled in this way enables one to go all the way up to a priori knowledge and, in particular, all the way up to Explicit Knowledge of (MP) being a priori; for, given that having the latter would require being in a propositional state, it would have to be a priori justified in the sense of (Standard A Priori). But it is unclear how (Understanding A Priori) might explain (Standard A Priori).

I think that the problem can be traced back to the fact that there is a tension between applying the notion of entitlement to dispositions and requiring that these entitlements connect with apriority. The idea of being entitled to a disposition seems to be advertising to the disposition being appropriately or correctly manifested – to things having been wired in the right way. But it is hard to see how to go from there to apriority. There is a real explanatory gap that has to be filled by the dispositionalist here.

So, on this picture, it is unclear how entitlement could come out a priori and give a sort of positive a priori warrant which can in some cases be transmitted to a belief so that for instance Explicit Knowledge of (MP) is a candidate for apriority. There are of course other problems with appealing to understanding, which I will not rehearse here: as we

[40] In discussions of dispositions philosophers talk about whether dispositions are grounded in non-dispositional, or categorical, properties – e.g. about whether the fragility of a glass is grounded in some categorical property such as the glass's microstructure. It may be that a disposition to infer according to (MP) has a ground in this sense (a categorical property of the brain). But this sense of 'ground' is of course not what is at issue here.

have seen in section III, when considering counter-examples to modelling knowing (MP) along the line of linguistic or conceptual competence, understanding 'if, then' and having a disposition to infer according to (MP) can come apart.

(Dispositional) is not compatible with (Standard A Priori). It is in principle compatible with (Innate A Priori) and (Understanding A Priori). However it is implausible to think that (MP) could be known in the way required by (Innate A Priori), and it appears that (Understanding A Priori) is unclear at a crucial point and open to counter-examples. So it does not seem that defenders of (Dispositional) can make sense of knowing (MP) being a priori.

VI. Conclusion and Diagnosis on Carroll's Regress

I have argued that (Dispositional) faces two decisive objections: first, no sort of mental disposition can adequately model Fundamental Knowledge of (MP) as construed in (Dispositional); secondly, (Dispositional) is at odds with the claim that logic is a priori – at least if that claim is at all going to be an epistemologically interesting one. This means that having Fundamental Knowledge of (MP) is not having a mere disposition to infer according to it.

(Propositional) does not face these two objections. Propositions and propositional states are the paradigmatic sorts of things that can be a priori (or a posteriori). They are compatible with all three conceptions of apriority considered in section V, and in particular, they are compatible with (Standard A Priori), which, again, is what most philosophers mean by apriority. The reason for this is simple: propositions and propositional states are the paradigmatic sorts of things that are amenable to justification.

Also, it is natural to think that linguistic or conceptual knowledge requires some propositional states and (Propositional) is in principle compatible with all of the three models of knowledge of a logical rule discussed in section IV. Of course not all of A), B), C), of section III actually are good options: as I argued, modelling knowing (MP) along the lines of (UG) is implausible on general grounds. But linking knowing (MP) to some sort of linguistic or conceptual knowledge, as long as this is not understood dispositionally, is an available option for the propositionalist. Now specifying the exact connection between having propositional knowledge of (MP) and linguistic or conceptual knowledge is no small task – but it does not face the objections of principle that (Dispositional) does: it is in principle compatible with (LOTH) and it is not open to counter-examples designed to show that one can understand 'if, then', and indeed know (MP), without having a disposition to infer according to it.

Another significant task for the propositionalist is to make good sense of the contrast between Fundamental and Explicit Knowledge, and in particular to make good sense of the idea that propositional knowledge may be non-explicit. (LOTH) provides us with a way of understanding how that might be. But many defenders of (Propositional) will not want to sign up to (LOTH) and will rather look for a notion of an implicitly known proposition that does not go sub-personal in this way (and that does not entail any innateness hypothesis). It was not the aim of this paper to give such an account.

What about Carroll's regress – the dispositionalist's main argument against the propositionalist? Consider again the argument (i)-(iii) of section II against (Propositional). Premise (i) says that knowing (MP) is knowing something that enables one to infer. Premise (ii) says that knowing a fact is not knowing something that enables one to infer. This is supposed to be the upshot of the regress. Carroll' s suggested picture is this. Rules of inference are the sorts of things knowledge of which enables one to act in the sense of compelling one to act or guaranteeing that one acts in the relevant sorts of circumstances. Only then do we have an explanation of why someone does not end up piling up premises: it is because they feel compelled. For instance, Carroll writes the following (where things have been going on for a while, the tortoise refuses to infer and is piling up premises and so Achilles says):

> Then Logic would take you by the throat, and force you to do it! … Logic would tell you "You can't help yourself. Now that you have accepted A and B and C and D, you must accept Z!" So you've no choice, you see. [41]

If we want to construe Fundamental Knowledge of (MP) as a sort of state that would compel someone to infer when the circumstances are right, dispositions are a natural candidate: dispositions set them in motion in the right sorts of circumstances. (Propositional) does not seem to give you anything like that.

In section II, I distinguished between dispositional mental properties that do not support the ascription of a certain form of knowledge (e.g. irascibility) and dispositional mental properties that might – such as perhaps linguistic or conceptual dispositions. The former sort of dispositional properties are tendencies or propensities – things that compel in some way. But dispositions of the latter sort are not necessarily like that: they need not be propensities. And so it is wrong to construe the dispositions that are supposed to constitute Fundamental Knowledge of (MP) as propensities – such that they set one in motion in certain circumstances; that makes the disposition to infer according to (MP) look like a disposition such as irascibility (which is not the sort of disposition which connects with knowledge).

That is to say, there is a tension in a dispositionalist account of (MP) which aims at both characterising Fundamental Knowledge of (MP) and avoiding Carroll's regress. To get out of the regress, we want the disposition to infer according to (MP) to be a propensity – to be something that compels to act in the relevant sorts of circumstances. But the dispositions that might support the ascription of knowledge of (MP) are not propensities. Again, someone can know (MP), they can know how to infer according to it, without having any propensity to do so nor even any sort of pro-attitude towards doing it. Consider again the dispositionalist account of knowing English outlined in section III A). On this account, it would be wrong to think of these dispositions as propensities or tendencies – perhaps the label 'abilities' would be more appropriate. But again dispositions so-understood are not going to be the sorts of dispositions that get out of Carroll's regress. The sorts of dispositions that are meant to take us out of Carroll's regress do not seem to be the sorts of dispositions that might support the ascription of a certain form of knowledge or competence. So the regress and its solution by way of (Dispositional) put a completely misguided requirement on Fundamental Knowledge of (MP). We should abandon this idea that we need something that compels someone to act in suitable circumstances in order to account for Fundamental Knowledge of (MP). But if

[41] Carroll (1895), p. 280.

we abandon that idea, we also abandon the idea that considerations arising from Carroll's regress justify a dispositional account of Knowledge of (MP).

Here, briefly, is a suggestion about how knowing (MP) enables someone to act according to it: knowing (MP) enables them to infer according to it because it gives them a reason to infer according to it. The best candidates to be reasons for action are propositional states (or things that can be the objects of propositional states). The suggestion is that knowing (MP) is a propositional state that enables them to infer in that it is a reason for them to infer according to it when the circumstances are right – a reason that can sometimes be overridden by other reasons. But of course on this understanding of enabling someone to act, what enables someone to act does not guarantee that they will act: there is no guarantee that someone who has a reason to act will, other things being equal, act according to that reason or even act at all. In some contexts a reason for action might lead someone to act, and in others not – if, for instance, it is overridden by another reason. It is a complicated matter how exactly to characterise reasons for action and how to account for the fact that a reason may lead someone to act – it has to do with its nature, its context of employment and its interaction with other mental states.[42] But it gives us a natural explanation of how someone's piece of knowledge sometimes leads them to action and sometimes does not.

With this construal of knowledge of (MP) as enabling to infer according in the sense of giving one a reason to infer according, we can reject premise (ii) of our argument, according to which knowing a logical fact is not something that enables one to act. Knowledge of logical facts is something that enables someone to act in that it is a reason for them to act. More precisely, we should reject the reading of (ii) according to which what is required for a piece of knowledge to enable someone to act is that it compels them to act. Again, the picture of Fundamental Knowledge of a logical rule that supports that reading is implausible. This is the picture that arises from Carroll's regress, and the sort of dispositionalist account that I have been considering. So the diagnosis on Carroll's regress is this: it operates with the wrong picture of the relation between knowing a logical rule such as (MP) and actions of inferring according to it. Resorting to (Dispositional) to answer the regress springs from sharing that same misguided picture.[43]

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[42] Here many issues would need to be sorted out, such as whether reasons are facts, propositions, beliefs or a hybrid sort of propositional states, how they connect with other mental states, whether they are internal or external, etc. See Dancy ((2000), esp. Ch. 1) for a discussion of most of the available options here.

[43] Many thanks to Bill Brewer, Pascal Engel, Katherine Hawley, Andrew Hudson, Thomas Kroedel, Hemdat Lerman, Ian Rumfitt, Nico Silins, Bruno Whittle and Timothy Williamson for very useful comments on a draft of this paper. I am also grateful to audiences in Geneva, Oxford, Paris and St Andrews for helpful discussions.

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