Logical Non-Cognitivism

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In this paper, I return to issues explored in Wright (2001) and (2004). The abstract for the latter begins with the sentences,

> The essay addresses the well-known idea that there has to be a place for intuition, thought of as a kind of non-inferential rational insight, in the epistemology of basic logic if our knowledge of its principles is non-empirical and is to allow of any finite, non-circular reconstruction. It is argued that the error in this idea consists in its overlooking the possibility that there is, properly speaking, no knowledge of the validity of principles of basic logic.

I would have done better to write that "the *attraction* of this idea *depends on* our overlooking . . ." In the discussion to follow, which is self-contained, I shall reprise and, I hope, improve on some of the considerations that motivate taking the possibility of this somewhat counter-intuitive species of non-cognitivism seriously. I will conclude by reflecting briefly on its relationship to one of the central themes of Wittgenstein's later philosophy of logic, viz. the idea of logic as 'antecedent to truth' bruited in the *Remarks on the Foundations of Mathematics*.

I

To fix ideas, we'll focus primarily on the conditional, and specifically on propositions that, in one way or another, register the validity of *modus ponens* and conditional proof. Our concern here, accordingly, is with the knowledge that we—or most of those of us who understand them —think we have of the propositions expressed by claims such as these:[1]

(i) If a conditional and its antecedent are both true, then so is its consequent

(ii) When it is true that if P is true, so is Q, then if P *is* true, so is Q

(iii) If Q can be shown to follow from P, then if P is true, so is Q

(iv) This inference pattern is valid:

$$\underline{\{A_1......A_n\} \vdash A \; ; \quad \{B_1......B_n\} \vdash \text{if A, then B}}$$
$$\{A_1.....A_n, B_1....B_n\} \vdash B$$

(v) If Q is true on a certain set of assumptions, then if all but one are true, Q is true if the last is true.

(vi) This inference pattern is valid:

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[1] It won't matter for present purposes that some philosophers have raised doubts about these particular principles — at least, it won't matter unless you already think that *no* propositions of the kind illustrated below are ever known, whatever logical operation they may concern. Otherwise, if you are uncomfortable with the idea that the listed propositions are correct, switch to an example where you are more comfortable with the claim to know the propositions associated with it in the manner in which those listed are associated with the conditional.

$$\frac{\{A_1.....A_n\} \vdash B}{\{A_1.....A_{n-1}\} \vdash \text{ if } A_n, \text{ then } B}$$

What is the relationship between propositional knowledge of this kind and knowledge of logic? They are certainly not the same. Any rational subject knows a lot of logic. But for those who have not taken courses in logic, or otherwise thought about it, this knowledge is for the most part *practical* knowledge. It is Rylean 'knowledge how'.[2] Any rational subject, notwithstanding that we are all prone to fallacies and mistakes in our reasoning, has a significant logical-inferential competence. It is a nice question whether this competence is something we are born with like, perhaps, a Chomskyan generative grammar, or whether it is bestowed as part of learning a first language, or whether, like simple arithmetic, it is taught to us in our very early years *in* language — though without, at least in any school of my acquaintance, explicit attention in the curriculum. But even if this last proposal is roughly correct, it is clear at any rate that logic is not, for most of us, learned *by* learning propositions like the above. Our inferential competence precedes the recognition of such propositions and may be well developed in subjects who are not good at recognising explicit statements of logical principles to which they themselves, for the most part, competently conform.

Of what interest or importance, then, is our apparent basic logical *propositional* knowledge? It may be suggested that it is interest or importance enough, from the point of view of the enquiring epistemologist, simply that we seem to have it. For if we have such knowledge, then there must be something to be said about how we get it. And saying something illuminating about that is, familiarly, none too easy a thing to do. We will explore some of the salient difficulties below. But first we should note a special point about the potential significance of the phenomenon. This emerges if we ask: what is the relationship between our basic inferential competences and logic as an explicit scientific-theoretical subject?

There is a possible, perfectly reputable scientific project which would consist in the attempt to codify and systematise our actual deductive inferential habits. This would be an empirical sociological project. It would stand comparison with empirical linguistics or the attempt to write up the rules of Chess, say, in a scenario where the game continued to be widely played in a community — perhaps among the descendants of a small number of survivors after a nuclear holocaust — but where no explicit statement of the rules and object of the game had survived. But to think of logical theory on that model ignores the point that logic, as usually conceived, is a *normative science*.[3] Its project is not, or not merely, the

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[2] I take no stand here on the question, revived by Stanley and Williamson [2001], whether knowledge-how is invariably sourced in propositional knowledge.

[3] In a famous passage in the *Philosophical Investigation*s (§38), Wittgenstein reports Frank Ramsey as having emphasised this to him in conversation. He goes on to remark: "I do not know exactly what he had in mind, but it was doubtless closely related to what only dawned on me later: namely, that in philosophy we often compare the use of words with games and calculi which have fixed rules ... ." Well, there can only be conjecture what Ramsey may have had in mind but it seems not unlikely that Wittgenstein quite misunderstood him: that the remark was, rather, a reaction to the conception of logic enshrined in the *Tractatus*, according to which logic is "the scaffolding" of all possible thought — a network of platonic structural propositional relationships that hold quite independently of actual

systematic general description of actual inferential practices but the development of theory that is apt for the *evaluation* of those practices, a theory at least part of whose brief is to constrain our judgements about what follows from what, about which are good inferences and which are bad, and why.

That is a crucial difference with the example of empirical linguistics or post-nuclear chess. In the latter scenario, we can envisage some of the early attempts of the theorists coming in for criticism based on practitioners' memories and a shared sense of what constitutes allowable play. But we cannot so readily envisage traffic in the other direction. If one of the theorists were to say, "I am not interested in your sense of how the Knight moves, even if a majority share it. The question that concerns me is: how *ought* it to move," there would be a question about the intelligibility of the announced concern. This is not, of course, to say that there is *no* notion of correct chess practice that allows for a potential contrast with what practitioners may happen to agree is correct chess practice. The contrast kicks in if, for example, a copy of the rules is found and it turns out that common practice of the game now diverges from them in certain respects. (Perhaps castling has come to be generally permitted even after the King has previously been moved.) But this is not, save in the context of a certain social conservatism, a normative notion. If there is normativity involved, it is a normativity broadly comparable to that of rules of etiquette. "That's not how it is *done*". It is possible, but intellectually hugely unattractive, to take such a view of logic. The normativity of logic, we think, is an altogether more substantial matter, rather better compared with that of ethics, where the corresponding contrast evinced by, " I know that this is what customarily passes for acceptable behaviour but is it how we *ought* to behave," always has *prima facie* traction.

If that is right, then what provides for such traction in the case of logic? Clearly it would be silly to go after a theory that is to be potentially normative in this more exigent sense unless we are able to place controls on the acceptability of logical theory that draw on something other than our actual unreflective patterns of inferential behaviour. There has to be some criterion for the acceptability of the theory other than descriptive adequacy. And of course we think there is. We think we have more than our inferential dispositions to go on. We think we also have *knowledgeable impressions* of what constitutes a valid inference. We credit ourselves with some form of insight into what constitutes a valid inferential step or, at least in cases of sufficient simplicity, with the ability to recognise valid steps by something like 'the light of reason'. It is because it is constructed so as to answer to this reflective sense of how we *ought* to reason, rudimentary though it may initially be, that logical theory is enabled to exert a normative influence over actual inferential practice.

Recognising this point is perfectly consistent with acknowledging an evolving, dynamic relationship between logic as the theory of valid inference and our reflective impressions of validity, a relationship in which each impacts on and may be modified by the other in a two-way developmental synergy. (One will presumably want to say something similar about the relationship between ethical theory and the verdicts of untutored moral common sense or conscience.) The important point remains that the scope for a theory to be normative over a practice depends upon its being answerable to some available conception how that practice

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human inferential practices, but of whose availability to our thought not a glimmering of an account is there ventured. Normativity requires that agents can be cognisant of the norms.

ought to be conducted which is not simply lifted descriptively from the patterns it actually exhibits. The normative interface needs to be provided by some kind of repertoire of *judgements* that are arrived at other than as anthropological generalisations about actual patterns of performance.

One importance of the basic, pre-theoretic propositional knowledge *about* valid inference with which most of us are inclined to credit ourselves is thus that, in this way, it anchors the aspiration of logical theory to the kind of normativity with which, traditionally, it is credited. In describing this knowledge as basic, however, I do not mean to prejudge its cognitive provenance. In particular, I do not mean to presuppose that our access to it is non-inferential — though of course, considering only its characteristic phenomenology, it may sometimes impress that way.[4] "Basic" is intended to caption, rather, what may be thought of as a kind of logical Euclideanism: the idea that the normative science of logic rests on the foundation of a range of what impress us as obvious, certain, apparently a priori truths of which those illustrated above for the conditional are paradigmatic.

<div align="center">II</div>

What, then, is to be said on the question of cognitive provenance? If we have knowledge of this kind, then, as remarked, there has to be *something* to be said about how it is accomplished. So we need to confront the question: is there any plausible epistemological model that explains how we might come to know propositions of the kind illustrated, and come to know them, moreover, in such a way that we might justifiably credit ourselves with this knowledge[5] and thereby justifiably assign such propositions a foundational role in a normative science of logic?

As noted, it is often assumed that the propositions in question tend, characteristically, to impress us as *immediately* obvious. So it is no surprise that philosophers who have confronted our leading question have often made proposals invoking some faculty of a priori immediate 'intuition' or of direct rational sensitivity to the logical relations that these propositions depict. Others, though, have regarded any such idea as *ad hoc* and wholly unexplanatory. We'll have to come back to the matter. But first, are there any viable alternatives?

Well, broadly there can only be two. We can either attempt to make out that, contrary to appearances, our knowledge of such propositions, though a priori, is inferential after all; or we can attempt to make out that it is a posteriori knowledge, grounded in a manner essentially no different to that of our knowledge of propositions of empirical science. Both types of view have been represented by distinguished and influential adherents and it would be

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[4] Actually, I'll question this often claimed 'phenomenology of immediacy' below. What is not doubtful, though, is that the targeted propositions characteristically impress us as *reflectively* obvious.

[5] A distinction between having knowledge and being in position to credit oneself with it is imposed by any conception of knowledge that denies that knowing need be a luminous state. I am going to take it that a satisfying defence of cognitivism about basic logic requires more than that a model be provided of how some thinker, of such-and-such powers, might in principle come to know the kinds of proposition that concern us. What cognitivism should offer is an account of how *we* come by the knowledge that we think we actually have. A successful such account must *vindicate* our claim to basic logical propositional knowledge. This point will be important later.

presumptuous to suggest that decisive grounds for dismissing them might be marshalled in a single short paper. Let me nevertheless remind the reader of some causes for serious misgivings whether any approach of either of these two kinds can be ultimately satisfactory.

A view of the latter kind was of course famously championed in "Two Dogmas of Empiricism". The view there outlined by Quine represents, I think, the best available prospect for a thoroughgoing empiricist epistemology of logic. Its shortcomings are accordingly instructive and important. According to "Two Dogmas", propositional knowledge of logic is, like all theoretical scientific knowledge, fundamentally empirical. Propositions of the relevant kind, if known at all, are known by means in no way importantly different to the way in which any proposition of theoretical science is known. These propositions may indeed be central in the 'web' composed by the totality of our empirical beliefs, where centrality is a function of the depth of their entrenchment in our thinking. Still, they are not epistemologically special. The fundamental grounds for accepting them, like all propositions of theoretical science, are provided by the empirical successes of theory in which they play so central a role.

It is a limitation of any such empiricist account that it has no evident resources to explain the phenomenology of reflective obviousness characteristic of the propositions concerned. That we find such propositions obvious can, for the empiricist, at best be regarded as a kind of motivational prompt, of no particular evidential significance. Knowledge of such propositions, properly so regarded, will come on the scene only after the proven success of empirical theory in which the patterns of inference they codify are perceived to play an essential role. This is unsatisfying. It goes against the grain to suppose that someone who reflects on the pattern of inference by *modus ponens* for the first time and concludes that is obviously valid, has accomplished nothing relevant to the question whether they now *know* that it is valid.

A more fundamental objection, however, concerns whether a Quinean account of the epistemology of basic propositional logical knowledge is so much as coherent. Quine's idea, notoriously, is that in any situation of potential confirmation or disconfirmation of an empirical hypothesis, a holism is activated to the effect that not only that hypothesis but all other ingredients in play, including statements of the evidence, statements of initial conditions, predictions elicited from the hypothesis on the assumption of the initial conditions, *and the underlying logic* that mediates those predictions, are likewise in the firing line and may legitimately be taken as confirmed or disconfirmed. Initially, this is apt to seem incoherent on grounds that resonate with a point that Wittgenstein expressed figuratively in *On Certainty*, when he wrote that "If I want the door to turn, the hinges must stay put".[6] Dispensing with the figure, the point is that a proposition cannot both be up for test and part of the apparatus of testing. An optometrist can test whether my eyes are functioning well by having me try to read the letters on a chart. But she cannot simultaneously test the proposition that the chart configures such-and-such letters in such-and-such an array *and* whether my eyes are functioning well enough to read them. The idea Wittgenstein is gesturing at is that propositions of logic— more specifically, propositions about what follows from what— always play a role in the testing of empirical theory comparable to the role in eye-testing of propositions about the configuration of letters on the chart. For that reason, they cannot be up for test in the same

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[6] §343

context in which a prediction that they sanction is up for test, and the idea that they might be empirically accredited or discredited by a long-running series of such tests, and so come to earn a place at the centre of the 'web', is accordingly not a runner.

Now, the Quinean has, of course, a well-known reply to this, well captured by Neurath's image of boat-repair while at sea. Indeed, the example of eye-testing itself suggests it. For of course the proposition that the chart configures such-and-such letters in such-and-such an array can be *independently* empirically tested. It is just that it cannot be confirmed or disconfirmed by my responses in a context in which it is being relied on to test my vision. And so, likewise, for propositions concerning what follows from what. We have to acknowledge that they cannot be up for test in a context in which the consequences they ascribe to a hypothesis, and thereby that hypothesis itself, are being tested. Still, there is no reason why they cannot themselves be subject to test in a different context. Such a context will necessarily involve further propositions about logical consequence that feature as part of the testing apparatus and so will in turn not themselves be under test therein. But they too will be eligible for testing in yet other contexts . . . So, what's the problem?

Well, if we pursue this reply a little, it transpires that it teeters into incoherence with the proposed empiricist epistemology. Let ϑ be a theory that is to be tested against experience and let L be a formalisation of its underlying logic. Testing ϑ will involve the derivation from it using just resources specified in L of conditional predictions telling us what observations we should expect relative to certain specified initial conditions. Let $I \rightarrow O$ be a particular such conditional prediction. A body of evidence, E, will then count as confirmatory if it provides, or appears to provide, grounds for accepting both I and O but *recalcitrant* — Quine's favoured term — if it provides, or appears to provide, grounds for accepting I but rejecting O. But recall that according to the standpoint of Quine's holistic empiricism, *every* element contributing to such a verdict of overall recalcitrance is potentially open to rational revision. The potential suspects therefore include not only

(i) the theory, ϑ, itself;
(ii) the logic L that mediates the derivation of the testing conditional, $I \longrightarrow O$;
(iii) the claim that E does indeed corroborate both I and not-O and
(iv) the *bona fides* of the evidence E,

but also

(v) the claim that the relevant testing conditional is indeed an L-consequence of ϑ.

The crucial question concerns the epistemological status of potential suspect (v). Should there be any doubt about (v), then we do not yet have a situation where any modification of the theory, or of its underlying logic, or of any of the other components in the situation is called for, nor therefore is there so far any cause to make adjustments that might, all being well, lead to an overall strengthening of our belief system and a justified further entrenchment of core ingredients in it. Thus the very process of gradual improvement of a system of belief in response to the "promptings" of experience demands a relative epistemic security, in any

testing context, for the type of judgement that (v) typifies.[7] Simply: before we can move to consider what improvements apparently recalcitrant data should occasion, we need to know that we are indeed in trouble— that the data, if accepted, are indeed recalcitrant for predictions which are indeed consequences, relative to the logic used, of certain of our theoretical beliefs.

The reader will probably have anticipated the problem this simple point presents for the Quinean account: if the only way in which *any* judgement can acquire the status of knowledge is by increasingly entrenched participation in successful empirical theory, how can our judgement that (v) is true possibly have acquired that status? For (v) is — or so we may suppose— a *new* judgement which we have never made before, attributing a new prediction to the theory, ϑ. Of course (v) may be an instance of a general (meta-) logical judgement that we have already made. But in that case, that it is so will itself be a novel judgement if (v) has not previously been formulated. The point, in short, is that a fully self-conscious process of theory refinement and improvement must, on the Quinean model, commit the theorist to judgements about logical consequence whose epistemic good standing is presupposed if the process itself is to be in epistemic good standing but which cannot in general yet have acquired the only kind of epistemic good standing that Quine's empiricism recognises: viz. entrenchment in successful empirical theory.

When, as the Quinean insists, ϑ's underlying logic, L, is treated as simultaneously participating in the confirmational/disconfirmational 'swim', as it were, the judgements we have focused on will be metalogical and relative: they will concern what follows from what in L, and they will typically be arrived at by reasoning about L. If they indeed *are* knowledgeable, it would seem that we must say that knowledge of them is achieved by such reasoning, and that it will therefore depend on our knowledge of the first principles that determine the metalogic in which the reasoning is given. But these principles will just be versions of the rules for the conditional, the universal quantifier, and so on, our knowledge of whose good standing is what we are at present challenged to vindicate and explain.

We should draw the conclusion that Quine's sophisticated empiricism has nothing whatever to offer to one engaged by that challenge.[8]

<div align="center">III</div>

Let's move on. To the suggestion that our basic logical propositional knowledge might be uniformly a priori but itself *inferential*, a common initial reaction is speedy dismissal. For inference, surely, is at best a means for the transmission of knowledge from premises to a conclusion. It cannot *create* knowledge where there was none before, any more than memory or testimony can. If an inference issues in a priori knowledge, it must have had a priori knowledge as input. So not all a priori knowledge can be inferential.

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[7] As the reader will note, (v) is a *metalogical* statement about the proof-theoretic capacities of L. It could be accepted by someone who rejected L— and indeed would likely be so if in the recalcitrant context envisaged, suspicion fell on L—and, conversely, might be rejected as a misrepresentation of the consequence relation encoded in L.

[8] A related line of criticism of Quine was first presented in Wright (1986), and is further elaborated in Melis and Wright (forthcoming). Further discussion of the significance of the argument may be found in Heal (1989), McFetridge (1990) and Hale (1999).

This common reaction is, of course, an oversight. What it overlooks is the possibility of knowledge-conferring inference which discharges its premises— exactly the kind of inference licensed by conditional proof and by *reductio ad absurdum*. If propositions serving to articulate in one way or another the validity of basic rules of inference could be demonstrated by reasoning in accordance with principles of this character, then maybe knowledge of such propositions could be accomplished in tandem, and hence might be a priori inferential after all.

This is a hope which an important body of work published by Paul Boghossian in the years shortly after the millennium was aimed at substantiating.[9] To be sure, there seems no prospect of accomplishing demonstrations of all the propositions that intuitively fall within the scope of 'basic logical propositional knowledge' using only *reductio ad absurdum* and conditional proof. But the prospects dramatically improve if we allow ourselves the resource of *rule-circular* demonstrations: demonstrations that, in the course of proving a schema, or conditional statement, that encapsulates the transition licensed by a particular rule of inference, make use of that very rule of inference. Consider, for example, the following natural deduction:

1	(i)	P	Assumption
2	(ii)	If P, then Q	Assumption
1,2	(iii)	Q	(i), (ii) *modus ponens*
1	(iv)	If (if P, then Q), then Q	(ii), (iii) conditional proof
	(v)	If P, then if (if P, then Q), then Q	(i), (iv) conditional proof

Here we have used *modus ponens*, along with conditional proof, to establish at line (v) a conditional that encapsulates the kind of transition *modus ponens* itself licenses in a way that discharges all assumptions. Might reasoning somewhat of this character provide a model of the manner in which we characteristically actually, or at least might recognise that *modus ponens* is valid?[10]

It is not a good reason for rejecting this suggestion if, for many of us, propositional formulations of *modus ponens* present with a phenomenology of immediate obviousness. Perhaps it was not always so. Imagine you are trying to help a rather slow student in your *Logic and Argument 101* class who has somehow got stuck on the rule. It is not implausible to suppose that, striving to trigger the needed insight, you might explain matters somewhat like this:

> "Look, remember how we explained the conditional. A conditional statement is true provided that if its antecedent is true, so is its consequent. Right? So suppose you're given that a particular

[9] See especially Boghossian (2000), (2001) and (2003). In those papers, Boghossian works with a template for rule-circular justification that differs from the above in proceeding from (undischarged) semantic premises. Boghossian himself has since moved away from any rule-circularity proposal and now favours an intuitional account.

[10] Michael Dummett (1973) is sometimes cited as having anticipated Boghossian in proposing that rule-circular reasoning might be admissible in this context. As I read Dummett, though, his suggestion is subtly different: namely, that rule-circular reasoning might be at the service of the project of *explaining* the validity of a particular principle of inference, where that contrasts with the project of providing a demonstration of its validity that can be rationally cogent for someone antecedently open-minded about it. What the constraints should be on a successful explanation of validity will naturally depend on what we consider 'explanation' here might amount to. But there is no evident reason why such an explanation might not be good and yet unappreciable by someone antecedently unappreciative of the principle of inference whose validity it explained.

statement is true, and that so is a conditional statement in which that statement features as the antecedent. Then it follows that the consequent is true, no? And that will hold no matter which statements you are concerned with. See?"

It is not unthinkable that this might help. If it does, won't your student have been led to acknowledge *modus ponens* by reasoning which actually involves an unreflective employment of that very rule? No doubt we are, most of us, tacit *modus ponens* reasoners from a very early stage in our lives. If we are, and such reasoning is valid, why should our explicit recognition of its validity not be accomplished by means involving an exercise of this tacit competence?

It is an intriguing idea, to which there are four principal objections. Two, I think, can be rebutted but the third seriously restricts its interest in the present context and the fourth, if sound, is lethal.

The first objection is that the kind of deductive routine illustrated can be replicated for rules of inference in general, whatever logical operator, λ, they involve. For an elimination rule, for instance, simply list as separate assumptions each of the premises required by the rule; then carry out a step of λ-elimination to arrive at its canonical conclusion; then apply appropriately many steps of conditional proof to generate, discharging all assumptions, a conditional representing the transition permitted by the rule in the manner that line (v) above represents the transition permitted by *modus ponens*. And the point applies, of course, to introduction rules as well. We can, for example, straightforwardly derive a conditional to represent the transition allowed by conjunction introduction like this:

1	(i)	P	Assumption
2	(ii)	Q	Assumption
1,2	(iii)	P&Q	(i), (ii) & Intro.
1	(iv)	If Q, then P&Q	(ii), (iii) conditional proof
	(v)	If P, then if Q, then P&Q	(i), (iv) conditional proof

But now, once allowed the use of the rules governing a logical operator to underwrite their own validity in this kind of way, we can parody the process for e.g. Prior's *tonk*. Thus we obtain:

1	(i)	P	Assumption
1	(ii)	P *tonk* Q	(i) Tonk-Intro.
	(iii)	If P, then P *tonk* Q	(i), (ii), conditional proof

and

1	(i)	P *tonk* Q	Assumption
1	(ii)	Q	(ii) Tonk-Elim.
	(iii)	If P tonk Q, then Q	(i), (ii), conditional proof

This latter pair of 'demonstrations' had better be no good (at least in any context where the conditional is taken to be transitive.) But then how are those illustrated for *modus ponens* and conjunction introduction any better?

Well, they are certainly better in one respect, namely that the rules they utilise actually are valid! If our question is: how might a rational thinker come to know a proposition or principle of a certain sort, it does seem reasonable to allow that the construction of a model route to such knowledge may incorporate soundly functioning faculties and sound methods in general. So it does not seem reasonable to disqualify rule-circular demonstration as knowledge-

productive just on the grounds that it admits of pathological instances where the rules involved are invalid. Such a local pathology is consistent with the existence of good cases where knowledge can indeed be produced. There is more to say, but I do not think the spectre of *tonk* defeats Boghossian's former proposal.

The second objection, however, is that there are no such good cases, for the simple reason that rule-circular reasoning is indeed *circular*— that is, viciously epistemically circular or 'question begging', as we say. How should we assess that charge?

There is an assumption under which the charge is certainly correct. I will call it, suggestively,

> *Tortoise*: Acquiring knowledge by a logical inference requires independent knowledge of the validity of the rules utilised by the inference in question.

If *Tortoise* is accepted, then before a rule-circular piece of reasoning like the above can be regarded as productive of knowledge of the inferential principle which its conclusion schematises, the subject will have to know that the inference was made in accordance with valid rules; since one among those will be the very principle that the reasoning aims to prove, there will therefore indeed be an epistemic circularity that spoils its credentials as a demonstration.[11]

Tortoise, however, should certainly *not* be accepted as stated. It egregiously over-intellectualises the requirements for inferential knowledge. Children, and others who have no explicit concepts of inference, validity and invalidity, may nevertheless advance their knowledge by reasoning. To require that, in order to do that, a subject must know *that* their reasoning implements valid rules is as impracticable and unwarranted as to require that, in order to gain perceptual knowledge, a subject must know about their perceptual systems and the conditions for their reliable operation and that they are so functioning on the occasion at hand.

If *Tortoise* is wrong, with what should it be replaced? In what epistemic relation should a thinker stand to a logical inference if she is to get knowledge of its conclusion by carrying it out? Consider the more moderate-seeming:

> *Tortoise-light*: Acquiring knowledge by a logical inference requires independent knowledge of the validity of the particular inference made.

Tortoise-light dispenses with any requirement on knowledge-productive inference that one know of the validity of any associated general rules in favour of a requirement merely that one

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[11] The requirement imposed by the principle *Tortoise* is not exactly what Carroll's mischievous Tortoise foists on Achilles in his famous *Mind* discussion note (1896). There, Achilles, standing on the brink of making what is in fact a perfectly valid inference from A to B, is seduced into accepting that before he can properly do so, he is required to make explicit a needed additional *premise*, namely that A entails B. And then, once he agrees on the need to register that as an additional premise, he has no means to resist the suggestion that a further additional premise is needed, namely that {A, and A entails B} entails B. . . . The Tortoise is thus suggesting that Achilles' original proposed inference is *enthymematic*. A proponent of *Tortoise*, by contrast, can allow that Achilles' inference is valid and fully explicit as far as its needed premises are concerned. Her claim will be, rather, that Achilles cannot derive *knowledge of its conclusion* from the inference unless he knows that the rule(s) exemplified by the inference is (are) valid. The inference's merely *being* valid is not enough.

recognise the validity of the *particular inference concerned*. This allows that a rule-circular inference can avoid being flatly epistemically circular: you don't need to know the very thing you are trying to prove—that the pattern of inference in question is valid —in order to get knowledge of it via the inference, but only that a *specific instance* of that pattern is good. Still, how might you come by that knowledge? There will still be epistemic circularity involved in a rule-circular inference unless that piece of particular knowledge is somehow available other than on the basis of the knowledge that the inference in question instantiates a valid rule. But how could that be? Is not knowledge of logical validity always and essentially knowledge of the validity of a logical form? If so, then *Tortoise-light* no less than *Tortoise* will proscribe the possibility of knowledge-productive rule-circular inference.

    Tortoise-light too, though, is arguably independently objectionable, and for the same reason. It a still seems overly intellectualised as a requirement on knowledge-productive inference in general, effectively requiring that a thinker can acquire knowledge by an inference only in the presence of knowledge that she has inferred soundly. That still seems too demanding, just as the corresponding condition would be in the case of visual knowledge and the good functioning of one's vision or knowledge of one's past and the good functioning of one's memory.

    It helps to clarify the dialectical situation here to notice that both Tortoise principles are, as my choice of names suggest, potentially regressive. For knowledge that a prospective inference is valid will not in general, one would suppose, be obtainable without supplementary inference: in order to know that my premises entail a certain conclusion, I will typically have to reason to a conclusion to the effect that they do and now, if one of the *Tortoise* principles is everywhere in force, this supplementary reasoning will be knowledge-productive only if *it* is known to be valid in turn . . . . The threatening regress may naturally be blocked, consistently with e.g. *Tortoise-light*, if we invoke the idea that some knowledge that particular inferences are valid can be non-inferential — can be delivered, perhaps by direct rational insight. But of course that move cannot be an option for a rule-circularity epistemology of basic logical propositional knowledge. On that view, such knowledge is everywhere a species of a priori *inferential* knowledge.[12]

    It follows that a theorist who proposes that basic logical propositional knowledge may be acquired by and only by rule-circular inference must reject any *Tortoise*-type constraint. The theorist will have to hold that legitimate knowledge-productive inference can be, as Boghossian was formerly apt to express the matter, *blind*; that is, unmonitored by any kind of beliefs, however crudely conceived, concerning its own good-standing and process.

    Is there any such legitimate notion of inference? The idea that a movement of thought can be blind in this sense and yet nevertheless rank as a proper inference raises some acutely difficult philosophical problems, foremost among which is the difficulty of explaining what in

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[12] It is also worth noting that a threat of regress remains if the *application* even of non-inferential knowledge that a particular inference is valid to the actual drawing of the inference itself somehow involves an inference. But I will not pursue that here. The basic point remains that a general account of the circumstances under which a valid inference from known premises can be productive of knowledge of its conclusion must not impose conditions that require the subject to make a supplementary knowledge-productive inference. Otherwise we turn knowledge-productive inference into a 'super-task.'

such a case makes a movement of thought from A to B inferential at all, —what, if no monitoring by accompanying beliefs about validity, or "Therefore. . .", or "So . . .", is required, distinguishes inference, properly so regarded, from a case of mere "mental jogging", as John Broome has expressed it,[13] or mere association: a mere thinking of A non-inferentially succeeded, for whatever cause, whether or not content-related, by a thinking of B. But I cannot pursue those issues here and propose simply to assume on behalf of the proponent of rule-circular justification that the requisite notion can be satisfactorily made out.[14] The refined version of the proposal we have to consider for present purposes is accordingly this: that basic propositional logical knowledge may (everywhere) be accomplished by *valid but blind, rule-circular* inference.

It is this refined proposal that encounters the third and fourth of the objections I advertised above and this time, as I said, I think it must succumb.

The third objection concerns a limitation. Remember that our enquiry is proceeding from a *reflective first-personal* point of view. We are not merely asking for the outline of a route whereby basic propositional logical knowledge might be accomplished by some third party but for a plausible account of how *we* can have attained the basic propositional logical knowledge we take ourselves to have and rightly lay claim to it.[15] This makes a crucial difference. The problem with blind reasoning is that the knowledge it generates — if any — will also be, in a corresponding sense, blind: unmonitored by reflective scrutiny. There is an analogue here with a point that is sometimes made in connection with pure reliabilism about knowledge. If the reliability of a process that generates a true belief is held to be what makes the belief knowledgeable, then in order for the subject justifiably to *lay claim* to that knowledge, she will need to be in position to vouch for the reliability of the process. Correspondingly, since our present project is to understand the basic propositional logical knowledge we take ourselves to have, we cannot rest content with a story that gives us only the mere possibility of blind knowledge of the validity of, say, *modus ponens*. We want so to understand the provenance of such knowledge as to be in position justifiably—indeed knowledgeably—to lay claim to it. But this—second-order — epistemic state is nothing that can be achieved by blind reasoning. Rather, attaining it will require, comparably, that we can vouch for the process that leads to the first-order knowledge. And that requires that we can vouch for the (rules of) inference involved. In brief: if a subject's reasoning is not merely to generate knowledge but to put its agent into position reflectively to claim it, it cannot be blind.

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[13] Broome (2014)

[14] The issues are further pursued in Boghossian (2014), Broome op. cit. n. 13 and Wright (20014a). Boghossian there and in other cent work has shifted towards a conception of inference that essentially involves the subject taking her premises to support her conclusion, though this 'taking' state is not required to surface as an explicit propositional attitude. My own inclination is to the view is that there is indeed basic blind inference, properly so described, and that it is to be understood as a kind of basic rational mental action *for* the reasons supplied by the explicit attitudinal states of the agent that encompass her premises — comparable to basic physical action for the reason of a belief and a desire, which is similarly blind; that is, requires no mediation by 'taking' ones belief and desire to rationalise one's action.

[15] Cf. n. 5 above.

There is a yet more fundamental difficulty — the fourth objection advertised. For even allowing that some knowledge-productive inference can be blind, it by no means follows that *every* type of inference that can be knowledge-productive can be performed blind. There is a special doubt about this in the present case. The inferences outlined above culminate in *schematically general* conclusions. Knowledgeably to reach those conclusions thus requires a capacity for schematically general thought: the reasoner has to convince herself that *any instance* of line (v) of the *modus ponens* proof, for example, is good, no matter what propositions are taken for 'P' and 'Q'. That much conceptual sophistication is demanded simply by an understanding of what is purportedly proved. Yet it is doubtful that a rational agent of that degree of sophistication could arrive at the *justified* belief that line (v) is true — effectively a universally quantified belief — by blind reasoning in which no heed was paid to the question whether each of the steps leading to it would be good no matter what propositions were taken for 'P' and 'Q'. But of course to pay heed to that question is in effect to consider whether the rules in accordance with which those steps are made are valid — and to raise that question is to cease to infer blind.

We can place this objection in what may be a helpful perspective if the reader will allow that the schematic generality of line (v) requires that the proof as displayed is, strictly but harmlessly, incomplete— that is, if it is acknowledged that, if (v) is to be understood as carrying the required generality, then our reasoner needs to understand what she has accomplished in such a way as to sustain the inference on to the explicitly universally quantified

(vi) $(\forall P, Q)$ (If P, then if (if P, then Q), then Q).

For now the transition from (v) to (vi) is in effect, a universal generalisation step. But universal generalisation is not *syntactically* individuated. If all we know is that an agent has made the step from 'Fa' to '$(\forall x)Fx$', then, the inference could also be either of, e.g., a chancy single-case induction or an inference to a presumed best explanation. What will make it into a universal generalisation step, if it is one, is the agent's taking it to be supported by collateral grounds that entitle her to treat 'a' as *parametric*, so that the soundness of the reasoning to 'Fa' in no way depends on the choice of a referent for 'a'. Since it is thus *individuated* in the reasoning agent by being based on considerations which are taken to implicate the thought, roughly, that anything (perhaps in a contextually relevant range) could here be taken for 'a' without compromise of the good standing of the reasoning, it follows that universal generalisation is a species of inference that *constitutively* cannot be made blindly, but must be monitored by a certain kind of reflection.[16] The thought is then that the same is already true of schematically general inference of the kind we are concerned with.

IV

So, we are driven back to the initial and, many will feel, the most natural-seeming proposal: that our propositional knowledge of basic logical relationships is, in at least some instances,

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[16] Cf. Dogramaci (2010).

the product of a special capacity for rational insight, delivering non-inferential knowledge a priori. Proposals of this general kind — I'll dub the genus *the intuitional proposal* —are quite widely supported in the literature, although there are, as one would expect, significant differences of detail among their proponents.[17] Here, though, we can prescind from those differences.

Now, one should not expect to be able straightforwardly to *refute* a proposal of this character.[18] There is a phenomenon of widespread non-collusive agreement about the validity of basic inferences, and the suggestion that this should be explained by postulating a special kind of cognitive sensitivity to the facts concerning which such inferences are valid is not going to be shown to be false unless further, no doubt controversial constraints are imposed on how it needs to be elaborated. Indeed, the proposal of a 'direct sensitivity' hypothesis will be an option in every area of our thought and talk which assumes, in Simon Blackburn's nice phrase, a "propositional surface" and in which there is a sufficient measure of agreement to call for explanation. The direct sensitivity move is thus available for each of ethics, aesthetics, basic culinary taste and comedy. The question, accordingly, is not whether we can show that e.g. the ethical intuitionist is wrong but, rather, whether the intuitionist proposal provides the best explanation of the provenance of our ethical judgements; and there is, of course, a wide range of ethical theories that each deny that it does. To be sure, in the case of basic logic, the remaining available options— at least if the conclusions of the preceding discussion are accepted— are somewhat thin on the ground. In fact, there are essentially only two. These are, respectively, to continue to allow that our beliefs about basic logical truth and validity can, in the best case, be knowledgeable but to deny that, when they are, this knowledge is the product of any specific mode of cognitive achievement; and to deny that we actually have any such knowledge, properly so termed. Neither may seem terribly attractive.[19] So what causes are there for discontent with the intuitional proposal?

Historically, a certain kind of naturalism has provided one such prominent cause. There seems to be simply no prospect of any kind of, by normal natural-scientific standards, adequate explanation of how a faculty of intuitional sensitivity to basic logical relationships is supposed to work. But why exactly do we need an explanation in the first place? Why should we not rest content with the idea that a certain judgmental capacity of ours is purely cognitive even though no account is in prospect of how it accomplishes what we take it to do? To what extent should the postulation of a cognitive capacity be hostage to the possibility of an account of how it works?

The question is given an edge by the reflection that what is a stake here is presumably a *sui generis* capacity: a capacity to recognize, a priori and non-inferentially, necessary connections that are neither explicitly axiomatic nor definitional. Thus we cannot assume that an explanation of its workings should proceed by way of an assimilation, or subsumption of

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[17] Thus compare Bealer (1992 and 1998), BonJour (1998), and Sosa (1996 and 1998) with each other and with Bengson (2015).

[18] I here use "refute" with its traditional meaning, whereby to refute a proposition is to show it to be false, and not merely to deny it.

[19] We will consider one version of the former in the next section.

the capacities in question under something more familiar and better understood—as when the navigational abilities of honey bees are explained by the sensitivity of their visual systems to polarized light, or the computational abilities of mathematical prodigies are explained by the ascription to them of certain sub-personal recursive routines. The explanation of a *sui generis* capacity cannot be a special case of the explanation of anything else we do. But what other kind of account might reasonably be expected? The senses and memory provide examples of *sui generis* cognitive capacities whose workings are unmysterious enough to foreclose on any doubt about their *bona fides*. But in those cases, the workings are of course causal. Nothing amounting to a causal sensitivity is to be expected in the basic logical case since the logical relationships putatively recognised are not, presumably, among the causal antecedents of anything all.

These considerations tend towards the thought that, if there *were* a capacity of non-inferential yet productive recognition of truth/validity at work in our ratifications of propositions of basic logic, it might not have been be reasonable to expect any explanation of its working in the first place. But then, absent that, why believe in it? Even if not an explanation of its working, ought we not at least to demand some *evidence* that a genuinely cognitive sensitivity is at work?

The rationalist will likely respond that ample evidence for that is provided by the near universal agreement in judgement that these propositions generally provoke: all (normal) people, it will be alleged, agree about their cogency. But this is dialectically a very weak consideration, even if it is true. The sense of humour is sufficiently widely shared to make comedy a practicable profession, and it is readily conceivable that it might indeed be near enough universally shared, even though the kinds of psychological process involved in our comedic responses were no different to what they actually are. That would not be enough to transform the sense of humour—if it is not already so—into a genuinely cognitive capacity, a capacity to 'track the comedic facts'. By contrast, the (alleged) near universal agreement about the acceptability of the basic logical truths might wane: young children might increasingly not 'get' them, even though competent enough with simple reasoning routines. The 'immediate obviousness' of such propositions might increasingly elude us, rather as the ability to find one or the other aspect of the Necker Cube in the standard diagram sometimes goes missing for some people. If that happened, it would do nothing to suggest that the competence we actually have is not purely cognitive.

Bats have a *sui generis* capacity to track the positions and movement of objects in their vicinity by echolocation. But we know this only because we have *independent knowledge* of the things that bats are thereby sensitive to—so know that they are getting something right—and have presumably been able to verify what kind of disruption to their abilities is involved if they are prevented from making the relevant noises and receiving echoes. Scientists have further been able to construct a physiologically attested account of how echolocational sensitivities are realised in bats' sensory and neural systems, thereby providing a best explanation of how they are able to get the relevant matters right. With basic logical propositions, in contrast, we don't so much as get to first base for a project of that kind. For we have no independent check on the matters with which, on the rationalist proposal, our impressions of logical truth put us in touch: there is no independently certified body of such truths which our intuitive rational capacity could then be verified as enabling us to keep track

of. We have, as it were, only our own word for which the basic logical truths are, and can accordingly run no independent check on the efficacy of our apparently immediate responses to them. That particular form of scrutiny of the hypothesis of a *sui generis* cognitive capacity cannot apply in the present case.

To take stock. The force of the point against the intuitional proposal provided by the lack of any prospect of a scientific-naturalist account of the workings of the cognitive capacity it postulates is qualified by the case for saying that, on reflection, it is perhaps unreasonable to expect such an explanation. But any pro-intuitionalsignificance of *this* point is qualified in turn by the further consideration that nor do we have any independent evidence that the judgements we are focused upon are by and large aligned with the matters they concern.

The situation is dialectically thoroughly unsatisfactory. Can we improve it? Consider one of our post-nuclear chess players who has never explicitly encountered a formulation of the rule controlling the movement of the Bishop but has, as we say, picked it up by immersion in the practice of the game. Suppose that now, for the first time, they consider a formulation of the rule—say

(B)   From the square it occupies, a Bishop may move diagonally, backwards or forwards, through any number of consecutively unoccupied squares, and may only so move.

Their assent to this proposition is to be expected. Indeed they may find the so-formulated rule immediately and *obviously* correct. But what they assent to is a proposition whose normative force concerns acceptable practice—that this is one aspect of how the game is properly played. And the proposition that corresponds to practice in accordance with *modus ponens* in the way that B corresponds to performance in accordance with the Bishop's rule is, notably, *not* the proposition that *modus ponens* is valid but rather the proposition, roughly, that here is how to infer from a conditional premise, that this is one aspect of how acceptable conditional inference goes. Assent to that proposition, based on reflection on one's practice, is nothing to our purpose and nothing remarkable. It is a close relative of the general capacity we all have for knowing our own intentions. Knowing that this is correct play in the sense of: play in accordance with the rules we follow, is not, in the case of rules of inference, the same thing as knowing that how one plays is *correc*t in a sense of 'correct' correlative to validity. In the case of the Bishop's rule, there is of course no further issue about correctness in any such further sense. But in the case of *modus ponens*, crucially, we think, *pace* Wittgenstein, that there is.

This point gives rise to a new challenge to an intuitional account of basic propositional logical knowledge: the challenge to justify the description of the process that leads to such an explicit acknowledgement of a (propositional schematisation of a) logical rule as implicating a recognition of *validity* rather than merely a becoming explicitly conscious of one aspect of one's sense of acceptable inferential 'play'. A solid motive needs to be provided for describing the matter in the former way if the intuitional proposal is to be vindicated. Can one be provided?

I foresee that this new objection may meet with some impatience. "Just look", it may be said, "at the overt content of the propositions in question. They explicitly talk not about how things are done or about one's sense of acceptable inferential practice but about truth, validity and entailment. Why is there suddenly an issue about their real purport? Why should we not just take their content at face-value?"

Well, because so to do without further question is, naively, to assume that we can straightforwardly read metaphysical commitments off the surface of the way we are accustomed to express ourselves — as if the Humean idea that, in at least some areas of our thought and talk, our judgements "gild and stain" rather than merely report, was hopeless from the get-go.

Readers will have to consult their own intellectual experience but, for myself, I have to report that I am moved by the following consideration. When I do focus explicitly on the overt content of one of the propositions in question, — acknowledging they don't explicitly talk about what we find to be acceptable practice, or how we are generally accustomed to infer, but about *truth*, *validity* and *what follows* when what else is true,— when I *do* take this content at face-value and ask whether I undergo a 'pure intellectual seeming' that it is correct, the answer is simply, "No". These judgements do not owe their appeal to pure 'seemings-to-be-true' — pure presentations of how things (obviously) are— but to informal *rule-circular reasoning*. Consider, for instance, a propositional codification of *reductio*:

> If a collection of premises have inconsistent consequences, and all but one of them are true, then the last one must be untrue.

Maybe that strikes you as just obvious, but it is surely very telling that we can perfectly properly and intelligibly ask you *why* — an inappropriate question in any case where an intuitional epistemology properly belongs —and you can sensibly answer, e.g:

> Well, just think about it. The consequences of the envisaged premises are hypothesised to be inconsistent. So they cannot all be true. But if all the premises were true, so would all their consequences have to be. So if all but one are true, it has to be that the remaining one isn't, surely?

No doubt variations are possible but some such routine, I surmise, is essentially what happens when we persuade ourselves on first encounter with an explicit formulation that reasoning by *reductio* is valid. Or consider a proposition schematising disjunction elimination, simplified for the case where there are no side premises:

> If a disjunction is true, and its disjuncts have a consequence in common, that consequence is true.

Again, a plausible account of the aetiology of conviction runs like this:

> Suppose a given disjunction is true. In that case, at least one of its disjuncts will be true. Whichever that may be, we know that any common consequence of them will have to be true, since it will be true either way. So the hypothesised common consequence is true.

I don't expect this suggestion to silence the friends of intuition (probably nothing will). But if correct, it does, in my estimation, present a very significant challenge. "Intuition" in this context is a philosophical term of art: a theoretical term that needs to be properly theoretically controlled if it is to subserve a debatable epistemological proposal. And we may take it for the purposes of the present context that, when the term *is* properly theoretically controlled, — rather than used in the loose and popular sense in which all manner of judgements, from forebodings about the future to a detective's suspicions of guilt, may count as 'intuitive', — it is intended to advert to a form of pure receptivity, a putative source of *immediate* knowledge

which, if we conceive it as evidence-based, is based just on the evidence of *how things are presented to one*.[20] Intuitive knowledge had better be knowledge sourced in such a way that, as in the case (plausibly) of the deliverances of perception and episodic memory, any request of its author —"Why do you think so?"—for further supportive *reasons* for a claim based just on intuition betrays a misconception of her grounds. The proper reply to such a request should be "That is just how it strikes me", as in "That is just what I (seem to) see", or "That is just what I (seem to) remember". So if the informal rule-circular accounts illustrated do indeed hit-off something of the essential aetiology of our judgements of the truth of basic logical propositions, that is exactly *not* the situation of those judgements. Rather, we base them on informal reasoning. And in that case, we should reject the intuitional proposal. Our judgements of the truth of basic logical propositions are not cases where conviction is fundamentally sourced in intuition.[21]

The rub, of course, is that if the negative findings of the previous section about the prospects for rule-circular *justification* are right, then the conclusion has to be that the most basic springs of our conviction of the truth of basic logical propositions are not a source of knowledge at all. If rule-circular reasoning is the root of these convictions, then the role it plays can only be *heuristic* rather than warrant-conferring.

V

If basic logical propositional knowledge can satisfactorily be viewed as a product neither of empirical-scientific theorising, nor a priori reasoning, nor pure intuition, then we seem to have exhausted the possibilities for explaining it as any specific form of epistemic *achievement*, gained by dint of a specific kind of cognitive processing. That finding may seem to call into question its very status as knowledge — for with respect to anything we know, surely there must be an answer to the question: How do you know? By what means was this knowledge accomplished? But that might be resisted. Earlier we canvassed *en passant* the notion of knowledge based on no specific form of cognitive accomplishment. Might our mere *acceptance* of suitable basic logical propositions somehow count as knowledgeable without being rendered so by (their truthfulness and) any specific form of cognitive path leading to them?

There is one, historically hugely influential thought that says, "Yes". It is the inferentialist's ur-idea that the basic logical propositions in question do no more than present stipulative implicit *definitions* of the logical operations they concern. Knowledge of a correct

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[20] Bengson (2015) and Boghossian (forthcoming) are emphatic about this.

[21] I should perhaps stress that I am not, in drawing this conclusion, dismissing all prospect of a useful role in epistemology at large for some properly disciplined notion of intuition. But I would want to say something similar to the preceding about the much-touted intuitions that we are supposed to have about a large range of philosophical thought-experiments, including in particular Gettier cases. Someone of the opinion that Mr. Smith does not, in Gettier's famous scenario, know that the man who will get the job has ten coins in his pocket can perfectly properly be asked, Why do you think so? And the appropriateness of the reply, "Well, because it is just a coincidence that he is right" shows that the source of the original claim is not a 'pure-seeming' but a discussible philosophical opinion to the effect that knowledge, properly so regarded, should preclude a certain kind of luck.

such definition, surely, may rest on no substantive cognitive accomplishment yet deserve the title of 'knowledge' nonetheless?

Well, perhaps. And we can grant that the propositions of the kind we are concerned with *could* be stipulatively laid down as purported constitutive principles for the principal operators they involve. Even when that is granted, there is till a great deal to say— and to worry—about how the effect of such stipulations might somehow be to underwrite knowledge of the propositions concerned 'for cheap'.[22] No matter. There is in any case a stark and fundamental difficulty with the implicit-definitional proposal when it is applied to the case of basic logical propositional knowledge. It is that the propositions that concern us simply *are not*, as a matter of sociological fact, stipulated as definitional of the logical operators they concern but come to our attention only *after* inferential practices in which those operators feature are already up and running. There is therefore no room in the first place for the idea that our acceptance of these propositions is concept-constitutive, ergo knowledgeable, in the fashion the implicit definition model requires. A plausible inferentialist account of our understanding of the logical operators will do better to regard the *practices* as definitive of the operators concerned. But then the problem becomes: by what epistemic route are we led to recognition of the truth of the relevant *propositions*. There just is no fast, or even obvious, track from the notion — even if it is granted —that our basic inferential practices are meaning-determinative to an explanation of how and why our acceptances of the relevant propositions can constitute the objective knowledge that we take it we have.

VI

Is non-cognitivism about basic logical propositions anything we can live with? In part I of the *Remarks on the Foundations of Mathematics*, Wittgenstein writes that

> . . .the reason why [the steps in a logical inference] are not brought into question is not that they 'certainly correspond to the truth' -- or something of the sort, -- no, it is just this that is called 'thinking', 'speaking', 'inferring', 'arguing'. There is not any question at all here of some correspondence between what is said and reality; rather is logic *antecedent* to any such correspondence; in the same sense, that is, as that in which the establishment of a method of measurement is *antecedent* to the correctness or incorrectness of a statement of length."[23]

The interpretation of Wittgenstein's experimental jottings in his journals— for remember that the *Remarks on the Foundations of Mathematics* is nothing other than a posthumous anthology of such—is, as we know, a fraught enterprise. Nevertheless we can discern in the above and surrounding passages two core claims:

> *On the a priority of logic*: the claim that our judgements of logical relationship, both of basic principle and on-going, belong to the *apparatus* of enquiry rather than composing a *separate topic* of enquiry— they need to be stable, shared and dependable if there is to be

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[22] The issues here are explored in detail in Hale and Wright (2000).

[23] Wittgenstein *Remarks on the Foundations of Mathematics*, I, §156.

such a thing as empirical enquiry, just as a unit of length needs to be agreed and stable if there is to be such a thing as determination of length. In this attenuated sense, they are indeed a priori. But that is less than saying that they are known a priori to be correct.

*On the correct understanding of the notion of validit*y: that it is not the responsibility of logic to correctly reflect internal relationships among propositions of truth-dependency, incompatibility, etc., which are fixed independently of our logical practices. Which propositions are true is not settled, from a metaphysical perspective, in advance of their integration into a system of inference.

These proposals constitute a most thoroughgoing pragmatism about the relationship between our thought and the world. They renounce all vestige of the Tractarian picture of a fixed totality of worldly facts and a stable repertoire of representational contents objectively fit for their capture. The motivation for this pragmatism is a topic for another occasion but it is clear at least that the logical non-cognitivism we have scouted is a natural partner, indeed a requirement of it. What is worth stressing is that the converse is not true. Non-cognitivism about a region of thought is consistent with factualism. In particular, it is consistent with a robust realism about logic — with the idea that internal truth-conditional interrelationships among propositions are indeed fixed 'in advance', so that it is a constraint on logic to codify them correctly, and our responsibility to try to ensure that it does.

To be sure, non-cognitivism allied with factualism presents as a *tragic* combination, threatening that we cannot ultimately meet what we would otherwise judge as an absolutely fundamental epistemic responsibility. For what epistemic status, in that case, should be assigned to our basic logical propositional *beliefs*? How can they be better than mere congenial guesses?

On Wittgenstein's view of logic, of course, there is no such tragedy. But I would suggest that there is none in any case. In previous work[24] I have explored the notion of a kind of non-evidential *epistemic entitlement*: a type of belief[25] which we cannot avoid in reflective enquiry, which — in the best case —there is no reason to doubt, but which enquiry cannot be made to engage and corroborate satisfactorily, which "lie apart from the road travelled by enquiry".[26] If, as I have argued, such beliefs may be regarded as epistemically rational, then non-cognitivism need not threaten the rationality of our beliefs about basic logic, even when the "antecedence" doctrine is rejected in favour of what may impress as common-sense realism.[27]

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