Knowledge of Logical Generality and the Possibility of Deductive Reasoning

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Abstract. I address a type of circularity threat that arises for the view that we employ general basic logical principles in deductive reasoning. This type of threat has been used to argue that whatever knowing such principles is, it cannot be a fully cognitive or propositional state, otherwise deductive reasoning would not be possible. I look at two versions of the circularity threat and answer them in a way that both challenges the view that we need to apply general logical principles in deductive reasoning and defuses the threat to a cognitivist account of knowing basic logical principles.

Key Words. General Logical Principles; Deductive Reasoning; Adoption Problem; Carrollian Circularity; Universal Instantiation; Rational Insight; Rule-Following.

Introduction

A central task for the philosophy of logic is to articulate what logical knowledge consists in, and in particular what knowledge of basic logical principles, such as Modus Ponens, consists in. One aspect of this task is to account for how we make use of such knowledge in reasoning: how our knowledge of the principle of Modus Ponens, for instance, can be *employed* in reasoning.[1]

One way to approach this task is *epistemological.* It concerns the questions of whether and how we can know logical principles or be justified in using those principles in reasoning. Another is

[1] I take reasoning (and, interchangeably, inferring) to be a kind of conscious intentional action. I also take the basic logical principles – logical principles not derived using other logical principles – to be those of classical logic, but nothing hangs on doing so.

psychological. It concerns the questions of what form logical knowledge has to take, what kind of state it has to be, so that it can be employed in reasoning.

There are many difficulties surrounding answering both the epistemological and the psychological questions, notably related to threats of regress and circularity. For instance, concerning the epistemological question, some philosophers worry that no non-circular justification of basic logical principles can be given, since the very basic logical principles requiring justification will be needed to provide it.[2] Worries also revolve around so-called 'Carroll's Regress',[3] some of which concern psychological questions. The Regress seem to suggest that knowing a principle of reasoning such as Modus Ponens cannot require having a belief about that principle – e.g. a belief that P, together with if P then Q, entails Q; for that would not be the kind of state that can explain how we can reason using it. Thus suppose that you believe that it is day and that if it is day, then it is light. From this, you are licensed to believe that it is light. If you also had to believe Modus Ponens to draw this conclusion – the very principle that you are using in your reasoning – it would seem that you would have to add this belief to your original set of premises. This would mean that you would then need to believe a new principle that licences you to draw a conclusion from this new set of premises, and so on and so forth; you could never draw a conclusion from a set of premises.

In light of Carroll's Regress – to avoid the infinite proliferation of premises to a given conclusion – many have suggested that *cognitivism* about logic cannot provide the right answer to the psychological question of what form logical knowledge has to take so that it can be employed in reasoning. According to *logical cognitivism*, knowing a basic logical principle is having propositional knowledge of that principle – where this requires that it is explicitly or consciously represented in the minds of speakers (e.g. as a belief). Non-cognitivism about basic logical principles has become a widespread strategy to avoid the threat of Carroll's Regress, whereby knowing such principles is either non-propositional or non-consciously represented in the minds of speakers.[4]

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[2] See Boghossian (2000) for a review/discussion.
[3] See Lewis Carroll (1895).
[4] This line of thought goes back to Ryle (1945-6) and his claim that knowing basic logical principles is (non-propositional) knowing how. I do not review here ways in which we may articulate the contrast between cognitivism and non-cognitivism within debates over the nature of knowledge how. See my (2018 and 2019) for a discussion of non-cognitivist ways of addressing Carroll's Regress.

In this paper, I focus on a specific type of circularity threat to a cognitivist account of knowledge of basic logical principles, in connection with psychological questions.[5] This threat has to do with the fact that such principles are *general principles* and in ordinary reasoning we are typically using *particular* cases or *applied* instances of them. Thus, you might think that to reason from the beliefs that it is day and that if it is day, then it is light, to the belief that it is light, you have to know that the latter follows from the former. And you might think that this has to be an application of your knowledge of a general fact – that Modus Ponens is valid – to this *particular* fact of implication. There is a worry of circularity looming here, in that applying a general principle to a particular instance might itself be a sample of reasoning that requires applying that very general principle. This worry is the topic of this paper, which I label the 'general/particular circularity threat'.

More precisely, we can state the general principle of Modus Ponens as a schema as follows:

(MP): P; if P, then Q ⊨ Q.[6]

Here the letters are schematic letters, devices of generality, roughly expressing the fact that no matter which argument of the same form you substitute for it (through uniform substitution of the schematic letters), this argument is valid. The semantic turnstile '⊨' is a formal representation of 'entails' or 'therefore', here really only used for convenience. A particular instance of (MP) is the following:

(i)-(iii): (i) It is day; (ii) If it is day, it is light ⊨ (iii) It is light.

The general/particular circularity threat revolves around psychological questions such as: how might someone recognise the particular argument (i)-(iii) as an instance of the general pattern (MP) and apply the latter to the former? What form would knowledge (MP) have to have for this recognition to be possible? Is this recognition required to appreciate the validity of the particular argument? Or can this appreciation be arrived at in a different way? Would this appreciation require doing some logical reasoning? If so, would this bit of reasoning lead to circularity? And if so, what would that mean for the notion that we employ (MP) in reasoning? What is the significance of the worry that recognising (i)-(iii) as an instance of (MP) requires you to reason according to (MP)?

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[5] I will thus set aside epistemological questions and presuppose that the basic principles of logic.

[6] There are various ways of stating Modus Ponens – and the other logical principles discussed in this paper: with propositional variables rather than schematic letters, as a normative principle rather than a fact of implication, as a more precisely stated symbolic principle rather than the informal one offered here, etc. I will comment on this issue 1.3. and emphasize that the argument of the paper does not rest on any particular formulation.

In this paper I present two recent versions of the general/particular circularity threat:[7] one offered by Romina Padro (2015) as the 'Carroll-Kripke Adoption problem'; the other offered by Paul Boghossian (2003) as 'Carrollian Circularity'. Both authors acknowledge that they are not really articulating versions of Carroll's Regress, sketched above, since Carroll's concerns are not with the general character of logical principles. The threats have nonetheless a Carrollian character, since they suggest that it is impossible to draw conclusions from premises by applying basic logical principles. Also, both versions are meant to speak against cognitivism, the view that we have propositional knowledge of basic logical principles. The first aim of the paper is to argue against both versions of the threat, indeed against the very way in which they are formulated. Its second aim is to show that we need not take someone who engages in reasoning (i)-(iii) to be applying a general principle such as (MP) in the way suggested by the setting of the general/particular circularity threat.

The paper is organized as follows. Section 2 sketches Padro's Carroll-Kripke version (1.1) and Boghossian's version (1.2) of the general/particular circularity threat, and (1.3) offers some initial discussion. Section 2 argues against both versions: 2.1 shows that they both wrongly rely on employment of the principle of Universal Instantiation to explain deductive reasoning; 2.2 shows that this rests on an implausible account of the role of general principles in deductive reasoning; and 2.3 shows how the general/particular circularity threat can be defused.

Section 1. The Circularities

1.1. Padro's Carroll-Kripke Adoption Problem

The first version of the general/particular circularity threat is what Romina Padro labels the 'Carroll-Kripke Adoption Problem' or '(AP)'. (AP) is based on a reconstruction of some of Saul Kripke's unpublished work that Padro cites and describes in her (2015, 2016). Here is the problem as she states it (2015: 41-42):

> (AP): certain basic logical principles cannot be adopted because, if a subject already infers in accordance with them, no adoption is needed, and if the subject does not infer in accordance with them, no adoption is possible.

[7] As I highlight in 2.2.2., discussions of this issue go as far back as Francis Bradley (1883).

(AP) is meant to be a challenge to answering psychological questions concerning what form logical knowledge has to take so as to be applicable in reasoning.[8]

Let us have a look at the key moving part of Padro's reconstruction of (AP). According to her, adoption is a two-phase process (Padro, 2015: 31ff, 2016: 74):

(1) Learning the general logical principle;
(2) Applying it to particular instances/using it in particular cases.

(AP) arises in connecting up the two phases. To illustrate, Padro uses the example of the principle of Universal Instantiation (UI) that governs the elimination of the universal quantifier, according to which if all objects satisfy a condition F, a particular arbitrary one does too. Schematically:

(UI): $\forall xFx \vDash Fa$.

Thus, suppose that you believe that everything is extended. You have never used (UI) and you learn (UI) in its general form – you complete phase (1). I then ask you whether you also believe that atom A is extended ('A' is the name we have given to a fundamental particle we have hypothesised). The problem seems to be that for you to reason from your belief that everything is extended to A is extended, you would have to *instantiate in two ways*: you would have to infer the particular application from the general principle (UI); and then instantiate from 'Everything is extended' to 'A is extended'. That is, before applying (UI) to your particular reasoning in phase (2), you would have to apply (UI) to reason from (UI) to an instance of (UI). This means that you cannot complete phase (2), thus cannot adopt (UI) and cannot answer my question: any adoption of (UI) presupposes applying (UI), i.e. presupposes having adopted (UI).[9]

[8] According to Padro, one of Kripke's targets with (AP) is Quine's use of Carroll's Regress in the context of his attack on (Carnapian) conventionalism about logic (see Quine 1936: 121). I will not focus on Quinean issues and whether either conventionalism, or Quine's further views on logic, can escape (AP). See Padro (2015, Ch.5) for discussion of such issues.

[9] Kripke illustrates how (AP) arises for (UI) using the example: 'All ravens are black. Therefore: this raven is black' (see Padro 2015: n.49). Since 'All ravens are black' is typically paraphrased as a universally quantified *conditional* statement, I prefer the example in the text, which is simpler.

Let me reconstruct the argument, as I see it. You complete phase (1) by learning the general principle (UI) and Padro reckons you need two applications of (UI) to complete phase (2) – perhaps as follows:

(UI_1): Everything is extended ⊨ A is extended.
(UI_2): (∀xFx ⊨ Fa) ⊨ (Everything is extended ⊨ A is extended).

Padro's contention is that an application of (UI_1) requires an application of (UI_2), which she construes as an application of (UI) – a contention which I will question in 2.1. This is problematic if your application of (UI_1) is going to partly constitute adopting (UI) for the first time. Schematically, the situation is this:

(I) Everything is extended	Initial belief
(II) ∀xFx ⊨ Fa	(UI)/Adoption phase (1)
Is A extended?	
(III) Everything is extended ⊨ A is extended	(II), (UI_2)
(IV) A is extended	(I), (III) (MP)[10]

You never get to apply (UI_1); for any application of it presupposes an application of (UI_2). Moreover, as Padro stresses, it appears that (MP) too would be required to adopt (UI) – to reach step (IV). She concludes that we need both (UI) and (MP) to adopt (UI), that (UI) cannot be adopted, and that step (IV) cannot be reached.

To see the matter more clearly, let us run (AP) for (MP) and for Conjunction Elimination (&E), a principle not in play in setting up (AP).

Consider (MP) first. Suppose that you have never reasoned according to (MP) and suppose that you learn (MP) in its general form – you complete phase (1). Suppose also that you believe (i) and (iii). Someone then asks you whether you also believe (iii) or are willing to reason to (iii). For you to reason to (iii), you would have to see your reasoning as an instance of (MP) and then apply (MP) to the particular bit of reasoning you are considering (phase (2)). To complete phase (2) you need to apply (MP) to the particular case (i)-(iii). The problem here is that to do so, you

[10] Strictly speaking this is not an application of (MP) – I take advantage here of the connection between an implication and its corresponding conditional. For simplicity, and in keeping with the literature reviewed here, I will use (MP) loosely in this way.

have to see that (i)-(iii) is an instance of (MP) and it would seem that this requires what Padro takes to be an application of (UI):

(UI_{MP}): (P; if P, then Q ⊨ Q) ⊨ (It is day; if it is day, it is light ⊨ it is light)

So the situation seems to be this:

(V) It is day; if it is day it is light	Initial beliefs (i) and (ii)
(VI) P; if P, then Q ⊨ Q	(MP)/Adoption phase (1)
Is it light?	
(VII) It is day; if it is day, it is light ⊨ it is light	(VI), (UI_{MP})
(VIII) It is light	(V), (VII) (MP)

Adopting (MP) presupposes (UI), which, as we have seen, Padro argues cannot be adopted. It also involves an application of (MP). However this is clearly less problematic given how Padro describes phase (2) of adoption, which requires applying the adopted principle to a particular case; this is precisely what happens in step (VIII).

Finally, let us briefly run the adoption template for conjunction elimination (&E):

(IX) It is day & it is light	Initial beliefs
(X) P & Q ⊨ P	(&E)/Adoption phase (1)
Is it day?	
(XI) It is day & it is light ⊨ it is day	(X), ($UI_{\&E}$)
(XII) It is day	(IX), (XII) (MP)

Again, to adopt (&E), you need (UI) and (MP).

Padro, who focuses chiefly on the case of adopting (UI), concludes from her argument that *certain* basic logical principles such as (MP) or (UI) cannot be adopted – since adopting them presupposes their application. Indeed (UI) and (MP) are for her the cornerstones of (AP). However, it appears that a stronger conclusion should be drawn, given her setting: if (UI) and (MP) cannot be adopted, *no* basic logical principle can be adopted, as the case of (&E)

illustrates. It also seems that the problems raised by (UI) and (MP) are different, contrary to what Padro suggests.[11]

Given her construal of adoption, she is committed to saying that if (UI) could be adopted, (MP) could be adopted. Thus consider (V)-(VIII) again. Supposing that (UI) has been adopted, (MP) could be adopted since phase (2) requires that you apply the very principle that you are adopting. If you can reach step (VII), you have seen (i)-(iii) as an instance of (MP). If so, you can use (MP) in reasoning and reach (VIII). In general, it seems that if you can reach steps (III), (VII) and (XI) of the arguments given above, you can complete Padro's phase (2) for adopting the relevant principles. The problem is that she thinks that (UI) is required prior to reaching any of them. It thus seems that (UI) is the cornerstone of (AP), as I will discuss further in Section 2.1.

In light of (AP), Padro argues that we should reject cognitivist accounts of knowledge of basic logical principles, which require these principles to be adoptable in terms of phases (1) and (2). Rather, we should take these principles not to be adoptable. While she does not settle for an account, she is sympathetic to accounts along the lines of non-propositional knowing how (2015: 196) or skills; or else the view that there is no real cognitive achievement underpinning our inferential practices but simply kinds of 'habit or instinct or a process resulting from a mechanism that cannot itself count as a state of knowledge.' (2015: 209). I do not review the various options she considers here, as my discussion is confined to the very the set-up of (AP) and in particular its use of (UI).

1.2. Boghossian's Carrollian Circularity

Paul Boghossian (2003) offers a version of the general/particular circularity threat directed at 'Simple Inferential Internalism', a foundationalist internalist account of knowing basic logical principles, which is clearly cognitivist. It states the following condition (C) for an agent being justified to believe a conclusion of a valid argument such as (i)-(iii) on the basis of its premises:

[11] Her suggestion also seems to be at odds with Kripke's take on (AP): 'Kripke said in passing that UI is a nicer example, though he didn't say why and is now not sure about what he had in mind. Perhaps UI could be thought to be more basic, since MPP as a generally stated principle needs the inference pattern of universal instantiation to be of use: without it we wouldn't be able to conclude that a particular instance is a case of MPP. But this doesn't seem right, since UI also seems to require MPP.' (Padro 2015: 39). I agree that (UI) is a 'nicer example' in that it holds the key to the adoption problem, but that might not be what Kripke had in mind.

> (C) [A subject] S is able to know by reflection alone that his premises provide him with a good reason for believing the conclusion. (Boghossian, 2003: 229)

According to Boghossian's account of Simple Inferential Internalism, being justified in reasoning according to Modus Ponens, for instance, requires knowing that Modus Ponens is valid, which can be done 'by reflection alone'. How might S be in a position to know 'by reflection alone that p and 'p → q' imply q?' (2003: 229). Boghossian considers Laurence BonJour's way of articulating how one might have such direct, non-inferential, cognitive access to such logical facts in terms of rational insight:

> When I carefully and reflectively consider the ... inference ... in question, I am able simply to see or grasp or apprehend ... that the conclusion of the inference must be true if the premises are true. Such a rational insight, as I have chosen to call it, does not seem to depend on any particular sort of criterion or any further discursive or ratiocinative process, but is instead direct and immediate. (Bonjour 1998: 106–107, cited in Boghossian 2003: 230)

Boghossian goes on to raise many objections to this version of Simple Inferential Internalism. The key one, and the one that concerns us here, he labels 'Carrollian Circularity'. Here is how the argument goes. His initial claim is that:

> For obvious reasons, it's not plausible to think of this capacity for rational insight as operating on individual inferences one by one, generating for each of them the insight that if its premises are true, then so is its conclusion. (Boghossian, 2003: 232)

This means for Boghossian that rational insight operates on 'wholly general' principles (2003: 232) such as:

> (MPP) For all p, q: Necessarily: If both p and 'p → q', then q.[12]

Bu then it seems that a 'fatal' circularity looms as follows (2003: 233-4. My emphasis.):

[12] Boghossian formulates Modus Ponens differently – using universally quantified variables for propositions, rather than schematic letters. He labels it (MPP) which I keep to distinguish from mine his formulation of what is essentially the same principle. I discuss his formulation in 1.3.

> To bring knowledge [of (MPP)] to bear on the justifiability of that inference will, it would seem, *require the thinker first to establish its relevance to that inference*, by reasoning as follows:
>
> [XIII] Any inference of the form (MPP) is valid.
> [XIV] This particular inference, from (i) and (ii) to (iii) is of (MPP) form.
> Therefore,
> [XV] This particular inference from (i) and (ii) to (iii) is valid.
>
> Rational insight, we are conceding, gets us as far as the general propositional knowledge that all arguments of MPP form are valid. However, *to bring this knowledge to bear* on the justifiability of any particular inference will require the thinker to be able justifiably to infer the validity of that particular inference from the validity of all arguments of MPP form. And this will require him to be able to reason according to MPP justifiably.
>
> Now, however a fatal circularity looms. To infer from (i) and (ii) to (iii) justifiably, I must be able justifiably to believe that the inference from (i) and (ii) to (iii) is valid. To be able justifiably to believe that this inference is valid, I must be able justifiably to infer that it is valid from the general proposition that all inferences of its form are valid. To be able justifiably to infer that it is valid from the general proposition that all inferences of its form are valid, I must be able justifiably to infer according to MPP. So, on the picture on offer, my inference from (i) and (ii) to (iii) will count as justifying only if I am already able to infer according to MPP justifiably. *The very ability we are trying to explicate is presupposed by the internalist account on offer*.[13]

For Boghossian the problem is two-fold: first, knowing that (i)-(iii) is valid comes out as inferential, with (MPP) as a premise, when the advertised account was meant to be non-inferential;[14] second, the relevant inference requires an application of (MPP) itself: to apply (MP) to (i)-(iii), we need first to apply it to [XIII]-[XV]. Because of this, we have a 'fatal' circularity.

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[13] Boghossian uses a different instance of Modus Ponens and a different numbering for his argument. For convenience, I have harmonized with the example and numbering used so far.
[14] Strictly speaking this charge does not apply: given that he construes rational insight as only applying to (MPP), it is no objection that justification for (i)-(iii) comes out as inferential. I do not pursue this here.

Boghossian (2014) restates the same general/particular circularity threat (although here he calls it a 'regress') against his own view, that reasoning from (i) and (ii) to (iii) is a matter of *following a rule*: i.e. applying a general rule such as (MPP) that one accepts. The threat arises, again, if we give an internalist account of following a rule. The kind of internalist account he considers, 'the intentional view of rule-following', is clearly cognitivist as it requires one to have an explicit representation of the principles one follows – e.g. as a belief or propositional knowledge. This view has an 'Inference Problem':

> [M]y actively applying a rule can only be understood as a matter of my grasping what the rule requires, forming a view to the effect that its trigger conditions are satisfied, and drawing the conclusion that I must now perform the act required by its consequent. In other words, on the Intentional view of rule-following, rule-following requires inference. [S]o, now we face a problem. On the one hand, we have the Intentional View of rule-following, according to which applying a rule always involves inference. On the other hand, we have the Rule-Following picture of inference according to which inference is always a form of rule-following. (Boghossian, 2014: 13)

Boghossian thinks that we need the intentional notion of rule-following to account for what he calls 'Taking Condition', which he takes to be a platitude about basic logical reasoning:

> (Taking Condition): Inferring necessarily involves the thinker *taking* his premises to support his conclusion and drawing his conclusion *because* of that fact.
> (Boghossian, 2014: 5; his emphasis)

For him, any view that does away with intentionality cannot explain the guiding aspect of logical principles captured by Taking Condition (2012:15). For instance, the view that knowledge of rules is intentional but sub-personal, thus not consciously accessible to the thinker, is rejected for failing to underwrite the rational character of inferring. (2014: 16). But given that the intentionalist view is in fact open to Carrollian Circularity, just like the rational insight account, it has to be rejected nonetheless. This means that while reasoning is 'essentially' rule-following (2012: 17), it has to be understood as a kind of *primitive state*, that does not afford analysis – where that state somehow displays the relevant intentionality and guiding character required by Taking Condition. Boghossian thus rejects cognitivism while

hoping that we can still make sense of rule-following as a sort of *sui generis* cognitive personal state.

1.3. Interpretation

Before moving to objections to both Padro and Boghossian's versions of the general/particular circularity threat, I here clarify how exactly I think they should be interpreted as versions of the same argument. Consider again the Carrollian Circularity argument given in Boghossian (2003: 233-4) cited in 1.2. He claims that argument [XII]-[VX]'s key problem is that it requires an application of (MPP). But notice that [XII]-[XV] is an argument in Universal Modus Ponens, which requires an application not only of (MPP) but also of (UI), as follows:

(XVI) Any inference: if it is of the form (MPP), it is valid.	Rational Insight
(XVII) If (i)-(iii) is of the form (MPP), it is valid	(XVI), (UI)
(XVIII) (i)-(iii) is of the form (MPP)	Assumption
(XIX) (i)-(iii) is valid	(XVII), (XVIII), (MPP)

Boghossian's problem then becomes that, on the internalist picture considered, to be justified in reasoning from (i) to (iii) you must believe that the reasoning (i)-(iii) is valid. But you can only have this belief through reasoning from (XVI) to (XIX) – from a general belief about the validity of (MPP) to a particular one about the validity of (i)-(iii); a reasoning that requires applying both (UI) and (MP). It thus appears that Boghossian's Carrollian Circularity, just like Padro's (AP), crucially involves (UI).

The conclusion that Boghossian draws from his argument is that Carrollian Circularity is 'fatal'. The question is why exactly. Notice first that Boghossian endorses a kind of rule circular account of the justification of logical principles (see Boghossian 2000, 2001). So the fatal circularity must be different from that of circularity of justification. The answer becomes clearer if we fix our attention on the passages I emphasised in the long quote of 1.2. from his (2003: 233-4), especially the last sentence: 'The very *ability we are trying to explicate is presupposed* by the internalist account on offer.'

The problem is that we aer presupposing the possession of an ability the very possession of which we are trying to account for. It thus appears that the fatal circularity really concerns the

fact that a subject has to already be able reason according to (MPP) when trying to apply (MPP) in reasoning. And that worry makes sense only if we are trying to 'explicate' how one might be able to reason according to (MPP) in the first place. That is to say, the argument (XVI)-(XIX) is problematic if we think of it as an argument a subject would have to go through as part of acquiring the ability to reason according to Modus Ponens. A subject could not do so because the very abilities they would thus be endowed with would be presupposed. Understood like this, Boghossian presents us with a problem akin to (AP): what it takes to possess (MPP) already requires one to employ (MPP), and indeed (UI).[15]

One last important interpretative point concerns Boghossian's contention that rational insight, taken to operate on general proposition, delivers step (XVI). While I do not think that he is wedded to this formulation, (XVI) strikes me as excessively complicated; fully spelt out, it says that: Any inference: if it is of the form (for all p, q: Necessarily: If both p and 'p → q', then q), it is valid. For one thing, (MPP) is not a statement of an argument but of a necessarily true conditional. This would require the rational insight not to be about general inference forms but about logical truths, something that is at odds with BonJour's formulation and indeed Boghossian's own intentions. To that extent, (MP) represent more closely what the insight might be about, namely a fact of entailment.

One might feel that schemas are not apt to represent knowledge of (MP) and (UI): first, schematic letters lack referents and thus seem contentless; second, schemas are metalinguistic.[16] For our purposes, we can use schemas informally and not fix on a specific interpretation of their meanings: thus, a schema, e.g. (MP), could be thought of as a collection of arguments with a certain form, where knowing a schema is, for each of its instances, recognising that it is valid; or a schema could be thought of as a recipe telling you what expressions you are allowed to substitute for the schematic letters, where, e.g. knowing (MP), is knowing that you are allowed certain types of substitutions for the schematic letters. Further questions concern whether entailment should really be expressed with '⊨' and whether, e.g. (MP,) should be expressed as a normative rule expressed using 'ought' or as an imperative.

[15] These considerations apply equally to Boghossian's argument in (2014: 13) quoted in 1.2. There is nothing fatal in us having to grasp what the rule requires, form a view to the effect that its trigger conditions are satisfied, and draw the conclusion that we must now perform the act required by its consequent in order to apply a rule in reasoning. This seems fatal only as an explication of the very ability to do so.

[16] For instance, Russell calls a schema a 'mere shell, an empty receptacle for meaning, not something already significant.' (1919: 157)

While important, these questions of how to state Modus Ponens do not matter to the substance of my criticism of the general/particular circularity threat. That threat seems to arise for any view that states that reasoning in a particular case is following a general principle – naturally stated using some kind of device of generality, such as quantification over the sentences or propositions of a language. However, these questions may matter to how we take the threat to relate to the issue of cognitivism. For instance, if we frame (AP) for the case of Modus Ponens, in terms of the imperative 'from P, and if P, then Q, conclude Q!', then from the fact that this imperative cannot be adopted, we cannot conclude anything much about cognitivism as I have formulated it, since imperatives are not propositions. However, while the issue would have to be framed in different terms, (AP) could still be taken to threaten the specific aspect of cognitivism as I have spelt it out, according to which these imperatives are explicitly represented by the thinkers using Modus Ponens in reasoning.

With these caveats in place, I will conduct my discussion of the general/particular circularity threat using (MP) and treat it as a threat to cognitivism, and will take Boghossian's argument to be adequately reformulated as follows:

(XVI*): P; if P, then Q ⊨ Q	Rational Insight[17]
(XVII*) If (i)-(iii) is an instance of (MP), (i); (ii) ⊨ (iii)	Assumption
(XVIII*) (i)-(iii) is an instance of (MP)	(XVI*) (UI)
(XIX*) (i); (ii) ⊨ (iii)	(XVII*), (XVIII*), (MP)

This formulation brings Boghossian's argument closer to Padro's, with the relevant principle as the key assumption and as explanatorily prior. I will thus focus on (MP), rather than (MPP), which seems a better candidate to help articulate grasp of general logical principles.

Section 2. Logical Generality and Universal Instantiation

A crucial feature of the general/particular circularity threat is the contention that one's application of knowledge of general logical principles in reasoning requires an application of

[17] If (XVI*) were, like (XVI), stated as a conditional, it would say that: Any inference, if it is of the form P; if P, then Q ⊨ Q, it is valid. But stating that P; if P, then Q ⊨ Q is just stating that any inference of this form is valid; so (XVI*) would start looking a lot like: P → P.

(UI). I start this section by arguing against this contention in two ways. In 2.1 I argue against the idea that it is (UI) that is applied; in 2.2, I argue that reasoning according to logical principles need not even be exercise of one's general knowledge applied to particular cases; and in 2.3, I show that this gives us the resources to block the general/particular circularity threat.

2.1. Universal Instantiation versus Substitution

A feature of the general/particular circularity threat is that to be able to apply (MP) in reasoning we first need to use (UI). Now, with respect to (AP), I argue that what I have labelled (UI_2), (UI_{MP}) and ($UI_{\&E}$) in my reconstruction of Padro's argument should in fact *not* be thought of as applications of (UI). Similarly with respect to Boghossian's Carrollian Circularity, I argue that step (XVIII*) should *not* be thought of as requiring an application of (UI).

Let me start by spelling out clearly how I think we should contrast the generality of the quantifier that figures in (UI) and the generality (UI), (MP) and (&E) insofar as they are schemas: these are two kinds of generality that are involved in two different kinds of transition to different kinds of instance. (UI) contains a universal quantifier that is *prima facie* unrestricted. If interpreted objectually, as is natural to do, the quantifier ranges over absolutely everything (over uncountably many objects).[18] Thus an unrestricted application of (UI) takes us from a claim about all objects whatsoever to a claim about a particular one, as illustrated in (UI_1):[19]

(UI_1) Everything is extended $\vDash$ A is extended

The generality of schemas is different. It is restricted in that the generality of schematic letters is limited to (the countable set of) formulas or sentences of a given language. Accepting (UI), (MP) and (&E) is respectively accepting the validity of any argument with the same form, that is, of each of their respective *substitution instances*. The crucial feature of substitution instances is that they are of the *same form* as the formulas that they are instances of. But within (UI) we

[18] There are debates over the coherence of absolute generality – of the notion that we can quantify over absolutely everything – mostly concerning the threat of paradoxes, especially Russell's Paradox. See Rayo and Uzquiano (2006) for a survey.

[19] How exactly to interpret (UI) is a complicated matter, where a lot depends n how we interpret the individual constants. I cannot review here all the possible semantic interpretations that may be given of the individual constants (as schematic letters, as expressions which make arbitrary reference to objects, as expressions which refer to arbitrary objects, as expressions which indicate objects arbitrarily, as quantifiers of sorts, etc.). See Fine (1986) for an excellent discussion, and also my (2014).

do not transition from one formula having a given form to another having the same one. Thus, in (UI_1) the formulas on the right-hand and left-hand side of '⊨' have different forms, whereas in (UI_2), where we are going from one formula to its substitution instance, the formulas on the right-hand and left-hand side of '⊨' have the same form. That is, (UI_2), unlike (UI_1) cannot be seen as an application of (UI) and neither can (UI_{MP}) and ($UI_{\&E}$).

With this in mind, consider again (AP) in connection with adopting (UI). Suppose that you believe that everything is extended and conclude that A is extended as a result of applying (UI_1). This is a genuine application of (UI): that takes you from a universally quantified statement to a particular one. As just emphasized, the transition from (UI) to (UI_2) itself is different: the latter is a substitution instance of the former. Crucially, the transition from (UI) to (UI_1) does not require any detachment of a conclusion from a premise and arguably does not constitute an inferential transition, requiring reasoning from premises to conclusion.

Indeed, logicians tend not to think of substitution as an inferential step governed by the basic logical principle of a logical system, but rather as a non-inferential transition governed by meta-principles of that logical system. So-called 'substitution rules' specify how general logical principles should be interpreted – what the forms they have really mean – rather than being further principles alongside them. For instance, they tell you about which substitutions are permitted in a general form such as (MP): you can substitute the argument (i)-(iii) but you cannot substitute the argument 'It is light; if it is day, it is light; therefore: it is day'. Rather than logical principles, substitutions are thus taken to be kinds of syntactico-semantic transitions and substitution rules are taken to codify what kinds of syntactico-semantic transitions can occur for a given schema or pattern.[20]

These considerations about how to think of substitution, as opposed to universal instantiation, naturally lend themselves to the following picture. What it is to recognise instances of a pattern, or to appreciate that two patterns have the same form, is simply to apply a cognitive capacity that enables us to recognise two (simple enough) forms or patterns as the same – as having the same kind of syntactico-semantic features. It is natural to think that this capacity also enables us to see that two sentences share the same semantic structure or are composed in the same way:

[20] There is little written about the status of substitution. Frege makes abundant use of substitution in his *Begriffsschrift* (1879) and it is clear that he does not think of it as an inferential step. Since then it seems to have become common not to think of substitution as an inferential step and to think of substitution rules as kinds of meta-rule of a logical system. See Lemmon (1965: 53ff.) and Corcoran and Hamid (2016).

for instance, to see that while they have different meanings, 'Brutus killed Caesar' and 'Oswald killed Kennedy' have the same semantic structure.[21] It might thus be the same competence that enables us to process compositionality and substitution, and perhaps other structural phenomena.[22] It is also natural to think that this capacity is not an inferential capacity but a kind of direct cognitive capacity: there does not seem to be an inference involved in my recognition that 'Brutus killed Caesar' and 'Oswald killed Kennedy' share a form', just as there seems to be none involved in my recognition that (i)-(iii) and (MP) share a form.

If the transition from a general pattern to a substitution instance is *not* an inferential transition, at least not inferential in the sense of deriving a conclusion from a set of premises using a basic logical principle, but essentially an application of our capacity to recognise patterns, this again means that it is not an application of (UI). It is thus wrong to characterise the transition as was done in 1.1, in the set-up of (AP). We should think of the transitions I labelled (UI_2), (UI_{MP}) and ($UI_{\&E}$), *neither* as inferences using (UI) *nor* as transitions characterisable in terms of '$\vDash$'. Rather they are exercises of our capacity to recognise patterns as the same.

These considerations about how (AP) should not be set up in terms of (UI_2), (UI_{MP}) and ($UI_{\&E}$) equally apply to my expansion (XVI*)-(XIX*) of Boghossian's argument (XIII)-(XV) in 1.3. We should not think of step (XVIII*) as requiring an application of (UI) but as an exercise of our non-inferential capacity to apprehend patterns as the same. If this is the case, we are some way towards addressing the general/particular circularity threat in its contention that we are *reasoning* from general principles to particular applications: we are not reasoning if we are directly apprehending that instances share patterns with general principles.

2.2. The Alleged Priority of the General over the Particular

The general/particular circularity threat requires the psychological direction of explanation to go from grasping a general logical principle to grasping its substitution instances. This issue is perspicuous in the sharp division between the two phases (AP). It is also perspicuous in

[21] See Cohnitz and Nicolai (ms) for a similar suggestion.
[22] Jose Zalabardo (2011: 130-1) offers a very interesting general proposal about how such types of capacities might work and be knowledge conducive. He takes us to be able to develop a kind of general non-inferential cognitive ability for 'feature or pattern recognition', that enables us to (falliblly) recognize generics such as 'colors, shapes, human faces, voices, accents, melodies, chord progressions, pictorial styles, grape varieties, grammatical sentences, friendly strangers, dangerous situations. . . .' and of course valid inferences. While I do not have the space to discuss the proposal, it could be taken to offer a systematization of the picture sketched here.

Boghossian's Carrollian Regress, where one has to reason from (MP) to one of its substitution instances (see again his argument [XIII]-[XV] and my reconstruction in [XVI]-[XIX*]). I now argue that while we may be able to apprehend general principles, this need not occur prior to reasoning with their substitution instances.

2.2.1. The Epistemological Perspective

Let us briefly consider the issue from the perspective of the epistemological question of justification. In this respect, it is far from clear that it is the general pattern that justifies its substitution instances, and not vice-versa, or indeed a mix of the two. Indeed this was the point famously made by Nelson Goodman in his 'New Riddle of Induction':

> Principles of deductive inference are justified by their conformity with accepted deductive practice. Their validity depends upon accordance with the particular deductive inferences we actually make and sanction. If a rule yields unacceptable inferences we drop it as invalid. Justification of general rules thus derives from judgments rejecting or accepting particular deductive inferences. (Goodman, 1954: 63-64)

According to Goodman, justification between substitution instances and general principles is largely circular but the circle is a virtuous one that enables us to reach 'agreement' between the two. My aim is not to promote the method of reflective equilibrium or forms of coherentism as a way of justifying logical principles.[23] It is simply to emphasise that justification of basic logical principles need not concern general forms rather than substitution instances. Indeed, there does not seem to be any genuinely interesting epistemological question to be raised concerning the justification of the general principle prior to the justification of its substitution instances.[24]

A congenial argument is given by Graham Priest (2016), who argues that what counts as evidence for a given logic or set of logical principles might be chiefly our intuitions about the validity of inferences *in the vernacular*. This evidence is 'soft' and can be can be 'overturned by

[23] Notice that this kind of circularity in justification is different from that which Boghossian is endorsing as justification for basic logical principles (see again 1.2). Goodman's has to do with the relation of general principles to its (vernacular) substitution instances. Boghossian's has to do with his project of justifying basic logical principles in terms of their relation to the meanings of the logical constants. See for instance his (1996).

[24] However see my (2014) for a discussion of how certain types of existence assumptions and existential commitments may require us to treat the epistemology of vernacular substitution instances differently from that of general principles.

a strong theory, especially if there is an independent explanation of why our intuition is mistaken' (2016: 42).[25] But the intuitions that yield it are still more reliable than intuitions about general patterns of inference: given that it is difficult to foresee all the possible instances of that pattern, it is harder to justify a general pattern than it is to justify a given instance. It is easier to see that (iii) follows from (i) and (ii), or that (iii) couldn't be false if (i) and (ii) were true, than it is to see that any instance of (MP) whatsoever is valid or that the pattern could not ever be invalidated.[26]

Thus intuitions about the vernacular can be taken to wear the justificatory trousers and Priest in my mind correctly suggests that it may be 'best to think of our views about forms of inference as low-level theoretical generalisations formed by some kind of induction.'[27] Or we might also think of them as inferences to the best explanation. Such generalisations need not be as sophisticated conceptually or as general as (MP). They might be along the following lines: 'arguments that are like (i)-(iii) seem correct'; or 'arguments of the same kind as (i)-(iii) are good'; where the notions of *being like* or *being of the same kind,* as well as the measures of goodness and correctness, can be left relatively unspecified just like the sort of generality so attributed. There thus seems to be room for some kind of recognition of generality and validity that falls short of recognition of principles such as (MP) and that is posterior to the recognition of the validity of particular instances.

2.2.2. The Psychological Perspective

When it comes to psychological questions concerning what form logical knowledge has to take to underwrite the possibility of reasoning, similar considerations hold as those offered in the context of justification. There seems to be no compelling reason to think that ordinary thinkers need to grasp general logical principles prior to/in order to grasp their vernacular substitution instances. If anything like the justificatory processes described by Goodman and Priest occur, we need to be able to reason with instances, not just as a by-product of reasoning with general principles. We equally need to be able to adopt general principles on the basis of, or as a by-product of, reasoning with its substitution instances (which would not initially be conceptualised as such).

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[25] What Priest means here is that those intuitions may be overturned by our best theory about, say, the Liar Paradox, which might mean that certain inferences we find obvious are in fact not valid.

[26] Indeed counterexamples or challenges have been offered to pretty much every standard basic logical principle. See for instance Putnam, (1969), McGee (1985), Priest (1987), and Dummett (1993).

[27] Priest (2016: 44). Priest writes these remarks in the different context of his defense of anti-exceptionalism about logic: the view that logic is not exceptional in its methods for justifying logical theories – it operates in much the same way as scientific disciplines.

With this in mind let me go back to the general/particular circularity threat as it applies to internalism, and to rational insight in particular. It is useful to note here that these worries concerning the relation of the general to the particular in the psychology of reasoning are not new. For instance, John Cook Wilson and Bertrand Russell both offer a kind of rational insight view of how logical facts are apprehended. Cook Wilson suggests that the psychological direction of apprehension has to go from the instance to the general principle:

> The validity of the general rule of inference can only be apprehended in a particular inference. If we could not see the truth directly in the particular inference, we should never get the general rule at all. Thus, it is impossible to deduce the particular inference from the general rule. (1926: §237, 445).

Russell makes a similar point in (1903: §45), attributing it to Bradley (1883):

> The fact is, of course, that any implication [i.e. relation between particular premises and a particular conclusion] warranted by a rule of inference [i.e. general principle] does actually hold, and is not merely implied by the rule. [T]he fact that our rule does imply the said implication, if introduced at all, *must be simply perceived*, and is not guaranteed by any formal deduction; *and often it is just as easy and consequently just as legitimate, to perceive immediately the implication in question as to perceive that it is implied by one or more of the rules of inference*. (My emphasis.)

Thus both Cook Wilson and Russell suggest that recognising an argument such as (i)-(iii) as valid need not be mediated by the recognition of a general pattern: it is 'immediate', indeed 'perceived' (Russell).

With this in mind let us go back to 1.2., where I quoted Boghossian quoting BonJour's characterisation of rational insight. Looking at the context in which BonJour offers this characterisation, it is clear that he takes it to be crucial to his view that rational insight operates on particular propositions – not the general patterns they may or may not be instances of – such as: 'nothing is red all over and green all over at the same time', 'if Alice is taller than Jeanne and Jeanne is taller than Clara, then Alice is taller than Clara', 'two plus three equals five' or inferring the 'conclusion that David ate the last piece of cake from the premises, first, that either David ate the last piece of cake or else Jennifer ate it and, second, that Jennifer did not eat it'

(see 1997: 100-106). Of the last example, he writes: 'if I understand the three propositions involved, I will be able to see or grasp or apprehend directly and immediately that the indicated conclusion follows from the indicated premises. [I]t is obvious, of course, that I might appeal in this case to a formal rule of inference, namely the rule of disjunctive syllogism. But there is no reason to think that any such appeal is required in order for my acceptance of the inference as valid to be epistemically justified.' (1997: 106).

So there seems to be a long tradition of taking rational insight to apply directly to particular propositions/arguments and taking the formal principles to be secondary in the order of apprehension and justification of such propositions/arguments. This is completely at odds with Boghossian's contention that (see again his quote from 2003: 232 in Section 1.2.) it is obvious that rational insight cannot operate on individual arguments such as (i)-(iii).

So where does this contention come from? My sense is that the requirement that rational insight has to operate on general patterns arises from the following sorts of consideration. To have a rational insight into the truth/validity of the relevant proposition/inference, you need to *understand* these propositions/inferences. But understanding these requires that you grasp general principles because these principles in some way spell out the concepts or the meanings that are involved in these propositions/inferences. For instance, Boghossian (1996) argues that the meanings of the logical constants, such as the conditional 'if, then', 'everything' and 'and', is given by their introduction and elimination rules – e.g. the meaning of 'if, then' is given by Modus Ponens and Conditional Proof. If so, grasping Modus Ponens, in its generality, is required for understanding 'if, then'. On that picture, any insight into the validity of a piece of reasoning such as (i)-(iii) is derivative from an insight into the validity of a principle such as (MP): there is no understanding what is going in (i)-(iii), what the sentences that compose (i)-(iii) really mean, without grasping (MP).

This is not the place to argue against this account, which makes it a condition on understanding logical constants such as 'if, then', that one follows a logical principle such as (MP) in reasoning. Let me just make three quick points. First, this view faces serious challenges[28] and there are of course alternative accounts, which do not construe understanding the connection between (i) and (iii) as requiring grasp of (MP); because, for instance, they simply take 'if, then' to be a truth-function. Second, this view need not be part of the internalist/rational insight package. It is typically part of another package that conceives of reasoning as rule-following

[28] Notoriously from Williamson (2003) and (2007).

and rule-following as constitutive of understanding certain types of proposition/inference. Third, this package is not only open to the general/particular circularity threat, but it also does not capture a natural way to understand the epistemology and psychology of reasoning according to logical principles, according to which we generalise (from particular facts of entailment to general ones) rather than instantiate (from general facts to particular ones). It is indeed worth stressing that the transitions from particular facts to general ones, through low-level generalisations, gives us the resources to show how relatively untrained thinkers may be granted knowledge or proto-knowledge of basic logical principles while falling short of appreciation of the conceptual complexities associated with grasping something like (MP) or (UI).

2.3. Reasoning without Generality

Let us consider again the general/particular circularity threat in light of the arguments of Sections 2.1 and 2.2. Consider first Padro's Adoption Problem (AP) in connection with (UI) – as summarised in argument (I)-(IV). Suppose again that you do not know (UI) and that you believe that everything is extended. Suppose also that you are asked whether A is extended. The following story, radically different from Padro's, can be coherently told: once you consider this question, it strikes you that the fact that everything is extended entails that A is extended, and so you are happy to reason from the fact that everything is extended to the fact that A is extended. Your reasoning need not go through the recognition of a general logical principle, it can be direct.

Of course this does not (yet) constitute adopting (UI) nor does it constitute knowing (UI). This is merely reasoning with an instance of (UI) and what is known is simply that: that everything is extended entails that A is extended. But what is crucial is that this reasoning – the fact that it can occur – requires neither phase (1) – adopting the general principle (UI) – nor an application of (UI), with its consequent application of (MP). Thus it does not require steps (II) and (III) of that argument. It proceeds from (I) to (V) – from premise to conclusion – through a direct apprehension of the validity of a particular inference.

To further adopt (UI) would require first to engage in the sorts of low-level generalisations mentioned in 2.2.1 – some kind of generalisation across instances. How? Here we can draw on our discussion of substitution instances and pattern recognition of 2.1. What underpins these generalisations is our capacity to recognise patterns as the same: this capacity underpins the

mechanism of generalisation and helps explain how we may feel justified in generalising from our apprehension of particular instances to fully general principles such as (UI). That is to say, recognising that two instances share a form is non-inferential, recognising that (UI) is a substitution instance of (UI_1) is non-inferential, but *arriving at* the general form for the first time is a product of inference – namely of generalisation. Thus, on this picture, insofar as we may wish to speak of phases in adopting a logical principle, Padro's phases (1) and (2) are to be reversed. On this picture, there is a lot of reasoning that is in fact reasoning with instances of (UI) that proceed not from the recognition that (UI) is valid to its application in reasoning but directly from apprehending instances as valid. Rather, (UI) is a by-product of generalisations underpinned by a capacity for pattern-recognition.

The same considerations offered here for (UI) hold of the issue of the adoption of (MP) and argument (V)-(VII) and of (&E) in argument (IX)-(XII). Concerning (MP), I can directly apprehend that (iii) follows from (i) and (ii). I do not need first to adopt (MP) and then to apply it in my reasoning. I can apprehend that the inference is valid directly. And then I can generalise over this insight. Such generalisations are underpinned by grasp of similarity. This may eventually yield full grasp and knowledge of (MP).

Finally, we can apply these considerations to Boghossian's Carrollian Circularity and argument (XVI*)-(XIX*). Rational insight can be an insight into the fact that (i) and (ii) entail (iii) – the recognition of that entailment need not proceed from an insight into (MP) first, from which the validity of (i)-(iii) is then inferred through the use of (UI) and (MP).

3. Closing Discussion: Internalism, Rule-Following and Cognitivism

The general/particular circularity threat rests on faulty assumptions concerning both the relation between general principles and their instances and how we apprehend and justify general patterns and their instances. Where does this leave us with regard to internalism, rule-following and cognitivism?

Concerning internalism, and rational insight in particular, there is room for the view that rational insight provides justification for directly apprehended individual substitution instances in the vernacular as a ground for apprehension of general patterns of inference. This is at odds with Padro's and Boghossian's order of explanation. But my suggested order is both

epistemologically and psychologically compelling and also avoids the general/particular circularity threat. Of course I have not here offered a defense of rational insight or internalism more generally, but merely suggested ways of developing them in a way that blocks a key objection – the general/particular circularity threat.[29]

Concerning rule-following, the view sketched here is not compatible with *characterising* reasoning deductively as following logical rules in reasoning. In the closing remarks of his (2014), Boghossian suggests the following possibility as a way of addressing the general/particular circularity threat:

> 'A [p]ossible lesson of the present discussion [of rule-following] concerns the question of the generality of reasons. Particularism, the view that we act out of reasons that are particular rather than general, is increasingly influential in many quarters (see Dancy 2004) for the moral case). The rule-following approach to reasoning would seem to militate against Particularism by claiming that our best prospects for making sense of reasoning sees us as guided by general rules of reasoning. I am not saying that this consideration by itself defeats Particularism in any specific domain, just that it poses a further challenge for it to overcome.' (Boghossian, 2014: 18).

The view advocated here is not a form of particularism about reasoning. It does not spring from a kind of scepticism about there being valid principles such as (MP). For instance, it can assume that there are such general principles and also, as is commonly thought, that the kind of generality they display speaks to the essence of logic: logic is concerned with the most general truths and the most general facts of entailment. The view can moreover appeal to these general facts as grounds for the validity of their particular instances: to the metaphysical question of why (i)-(iii) is valid, we may well reply that this is because (MP) is valid. Crucial to the view is that this need not reflect a justificatory and psychological order. The general patterns need not come first in accounts of why I am justified in reasoning to (iii) from (i) and (ii) and of what it is for me to appreciate or know that (i) and (ii) entail (iii). The view can thus avoid both the

[29] Philosophers who appeal to rational insight typically want to underwrite the fact that logic is a priori – while Cook Wilson and Russell are not concerned with this issue, this is certainly the case for BonJour. This is in principle compatible with the rational insights operating on substitution instances in the vernacular, rather than on general patterns directly. Similarly, low-level generalisations over instances might well be taken to operate on a priori propositions, which could pave the way for the justification for general patterns such as (MP) that is consistent with their apriority.

pitfalls of rule-following (general/particular circularity threat) and of particularism (scepticism about general patterns).[30]

The proposed view can also vindicate Taking Condition of Section 1.2,[31] which is meant to capture the idea that reasoning is a rational activity. Indeed, Taking Condition is a principle about particular inferences, such as (i)-(iii). It thus can be satisfied by someone who, rather than applying a general rule, simply sees that this particular set of premises entails this particular conclusion and draws the conclusion for this reason.

Finally, concerning cognitivism, it should be clear by now that the view suggested is compatible with cognitivism. Cognitivism was meant to be the target of the general/particular circularity threat. This threat has been defused: we do not believe general principles first that we then try to apply to instances in the vernacular through a hopelessly circular argument. We may thus know *that* the argument from (i) to (iii) is valid, know *that* (MP) is valid, and indeed know *that* that the former is a substitution instance of the latter. The combination of these beliefs leads to a general/particular circularity threat only when they are put in a certain explanatory order in accounting for our capacity for deductive reasoning. Obviously this is only a local defence of cognitivism since, as I suggested in the introduction, there are many more regresses and circularity threats, Carrollian or otherwise, for it to overcome.[32]

[30] One might wonder here how these considerations relate to Wittgenstein's famous discussion of rule-following in the *Philosophical Investigations* (1953: 185ff) offered as a criticism of the view that we (explicitly) know abstract general rules. On the view suggested here there is reasoning without rule-following; so trivially there can be indeterminacy about which rule is being followed in a particular case and trivially our reasoning behaviour in a particular case is consistent with any number of rules being followed. Following a rule on this view would be a by-product of reasoning with instances and not the result of simply grasping an abstract and general rule. There are issues to be addressed about which generalisations are right – which logical principles are the correct ones – and how we might be justified in thinking they are. This is a topic for another paper. But given that we are not presupposing that a rule has to be explicitly known prior to reasoning according to it, the view is not susceptible to Wittgenstein's criticism.

[31] I am not here endorsing Taking Condition – simply pointing out its compatibility with the view offered here. See for instance McHugh and Way (2016) for criticisms of it.

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Works Cited

Besson, Corine. (2019). 'Logical Expressivism and Carroll's Regress'. *Philosophy*, 86, 35-62.

— (2018). 'Norms, Reasons and Reasoning: a Guide Through Lewis Carroll's Regress Argument', in Daniel Star (ed.), *The Oxford Handbook of Reasons and Normativity*: Oxford: Oxford University Press: 504-528.

— (2014). 'A Note on Logical Truth', *Logique et Analyse* 57 (227): 309-331.

Boghossian, Paul. (2014). 'What is Inference?', *Philosophical Studies*: 1-18.

— (2003). 'Blind Reasoning', *Proceedings of the Aristotelian Society*, Supp. Vol. 77: 225–248.

— (2001). 'How are Objective epistemic Reasons Possible?', *Philosophical Studies*, 106: 1–40.

— (2000). 'Knowledge of Logic', P. Boghossian and C. Peacocke (eds), *New Essays on the A Priori*, Oxford: Oxford University Press: 229–254.

— (1996). 'Analyticity Reconsidered', *Noûs*, 30: 360–91.

BonJour, Laurence. (1998). *In Defence of Pure Reason*, Cambridge: Cambridge University Press.

Bradley, Francis H. (1883). *The Principles of Logic*, London: Oxford University Press.

Carroll, Lewis. (1895). 'What the Tortoise Said to Achilles', *Mind* 4: 278–280.

Cohnitz, Daniel and Nicolai, Carlo. (ms). *How to Adopt a Logic*.

Cook Wilson, John. (1926). *Statement and Inference*, Oxford: Clarendon Press.

Corcoran, John and Hamid, Idris Samawi. (2016). 'Schema', *The Stanford Encyclopedia of Philosophy,* Edward N. Zalta (ed.),
URL = <https://plato.stanford.edu/archives/fall2016/entries/schema/>.

Dummett, Michael. (1993). *The Logical Basis of Metaphysics*. Cambridge, Mass.: Harvard University Press.

Fine, Kit. (1986). *Reasoning with Arbitrary Objects*. Oxford: Blackwell, Aristotelian Society Series.

Frege, Gottlob. (1879). *Begriffsschrift, Eine der Arithmetischen Nachgebildete Formelsprache des Reinen Denkens*. Translated as *Concept Script, a Formal Language of Pure Thought Modelled upon that of Arithmetic*, S. by Bauer-Mengelberg in J. vanHeijenoort (ed.), *From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931*, (1967), Cambridge, MA: Harvard University Press.

Goodman, Nelson. (1954). *Fact Fiction and Forecast*, Atlantic Highlands, NJ: The Athlone

Press.

Lemmon, E. John. (1965). *Beginning Logic*, London: Chapman & Hall.

McGee, V. (1985). 'A Counterexample to Modus Ponens', *The Journal of!Philosophy*, 82 (9): 462-471.

McHugh, Conor and Way, Jonathan. (2016). 'Against the Taking Condition', Philosophical Issues 26(1): 314-331.

Nir, Gilad. (ms). *On Russell's Account of Inference*.

Padro, Romina. (2016). Interview in the *Reasoner* 10(9).

— (2015). 'What the Tortoise Said to Kripke: the Adoption Problem and the Epistemology of Logic'. *CUNY Academic Works*. https://academicworks.cuny.edu/gc_etds/603

Priest, Graham. (2016). 'Logical Disputes and the A Priori'. *Logique et Analyse* 59: 347-366.

— (1987). *In Contradiction: A Study of the Transconsistent*. The Hague: Martinus Nijhoff. 2nd (extended) edition, Oxford: Oxford University Press, 2006.

Putnam, Hilary, (1969). 'Is logic empirical?', in R. Cohen and M. Wartofsky (eds.), *Boston Studies in the Philosophy of Science*, 5, pp. 216-241. Dordrecht: Reidel.

Quine, W.V.O., (1936). 'Truth by Convention', in O. H. Lee (ed.), *Philosophical Essays for Alfred North Whitehead*, New York: Longmans, Green and Co.: 90–124.

Rayo, Augustín and Uzquiano, Gabriel. (2006). 'Introduction' in Augustín Rayo and Gabriel Uzquiano (eds), *Absolute Generality*, Oxford University Press, 2006.

Russell, Bertrand. (1919) *Introduction to Mathematical Philosophy*, London: George Allen and Unwin.

— (1903). *The Principles of Mathematics*. Cambridge: Cambridge University Press.

Ryle, Gilbert, (1945-1946). 'Knowing How and Knowing That', *Proceedings of the Aristotelian Society,* 46 Reprinted in (1971) *Collected Papers*, vol. 2, London: Hutchinson: 212-225.

Wittgenstein, Ludwig, (1953). *Philosophical Investigations*, G.E.M. Anscombe and R. Rhees (eds.), G.E.M. Anscombe (trans.), Oxford: Blackwell.

Williamson, Timothy, (2007). *The Philosophy of Philosophy*, Oxford: Blackwell.

— (2003). 'Blind Reasoning', *Aristotelian Society Supplementary Volume* 77(1): 249–293.

Zalabardo, Jose (2011). 'Boghossian on Inferential Knowledge', *Analytic Philosophy* 52: 124-139.