The Adoption Problem and the Nature of General Belief

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Abstract. The Adoption Problem suggests that it is impossible to rationally choose or adopt new basic logical principles. It aims to refute cognitivist views of accepting logical principles, according to which adopting a logical principle is *accepting* or *coming to believe* a general principle or rule, and then applying it in reasoning – on which it is coming to have a belief whose *content* is a general proposition, and then applying it in reasoning. In this paper, we develop a new solution to the Adoption Problem, inspired by Ramsey's view of general beliefs as 'habit[s] of singular belief' (Ramsey 1929: 148). We argue with Ramsey that beliefs with a general content are special in that they are dispositional states. This feature paves the way for a solution to the Adoption Problem which combines cognitivism with a form of expressivism.

Key words. Adoption Problem; General Belief; Universal Instantiation; Cognitivism; Expressivism; Ramsey.

Introduction

The 'Adoption Problem' suggests that it is impossible to rationally choose or adopt new basic logical principles, such as Universal Instantiation, Modus Ponens or Conjunction Introduction. First presented by Saul Kripke (1974, 2024) and then further elaborated by Romina Birman (2015, 2024), this problem has generated a lot of attention over the past few years as it ultimately suggests that it is impossible to change logic or to revise the logic one has used so far, something which it seems we should be able to do.[1] For instance, logicians disagree over which basic logical principles are the correct ones and it is assumed that, in light of persuasive arguments, one could rationally give up or accept logical principles.

In this paper, we develop a new solution to the Adoption Problem, inspired by Ramsey's view of general beliefs as 'habit[s] of singular belief' (Ramsey 1929: 148). Our central idea is this: the Adoption Problem rests on a certain conception of what it would be to adopt a logical principle, which it aims to refute. On this conception, adopting a logical principle is *accepting* or *coming to believe* a general principle or rule, and then apply it in reasoning: it is coming to have a belief whose *content* is a general proposition, and then apply it in reasoning. Implicit in the way the Adoption Problem is formulated and discussed in the literature is the assumption that believing a logical principle is having a belief, a cognitive or representational state, with a general content.[2]

[1] Kripke and Birman offer slightly different presentations of the Adoption Problem. Kripke's is based on a lecture delivered in Pittsburgh in 1974, where he argues against the anti-exceptionalism of Putnam and Quine on the grounds that one cannot adopt a logical principle in the way that one adopts a scientific hypothesis, since one needs logic to determine what follows from any general principle. Birman elaborates on Kripke's argument, arguing that it is not possible to adopt a basic logical principle and then conform to it, because to determine what the principle implies in particular cases requires that one have a prior practice of reasoning in conformity to the principle. We focus on Birman's presentation, but we think the discussion would extend to Kripke's.

[2] We do not review the many formulations, interpretations and solutions that have been put forward in the growing literature on the adoption problem, but see Besson (2019, forthcoming), Finn (2019), Suzansky (2023), Boghossian and Wright (2024), and Devitt and Roberts (2024). See also Fairbank and Hlobil (2025) for a survey.

However, Ramsey argues that a general belief (e.g. the belief that all Fs are Gs) is distinctive not just because of its general content, but because it is a different kind of mental state from other kinds of beliefs. This state is distinctive in that it is a disposition to form certain particular beliefs (e.g. x is G) from other particular ones (e.g. x is F). We think that this neglected view of general beliefs has many interesting features, including, as we will argue, that of having the potential to solve or debunk the Adoption Problem. And while the view counts as expressivist, since it appeals to a distinctive kind of mental state with a non-cognitive element to explain the nature of general belief, it can retain a central cognitivist element in that it is consistent with the idea that the content of a general belief is a general proposition. So it is a contender to be the kind of view that is meant to be refuted by the Adoption Problem, but one which has the potential to solve it.

The paper is organized as follows. In section I, we present the Adoption Problem as it applies to the principle of Universal Instantiation, which is the logical principle that tends to be in focus in presentations and discussions of the Adoption Problem. In section II, we tease out the assumptions about general belief on which the formulation of the Adoption Problem rests and show how they help generate it. In section III, we sketch Ramsey's view of believing general propositions. In Section IV, we put it to work to show how the Adoption Problem as it applies to Universal Instantiation can be solved. In section V, we explain the kind of expressivist-cognitivist view of believing general propositions that the Ramseyan view suggests. Finally, in section VI we sketch how the considerations put forward to address the Adoption Problem for the case of Universal Instantiation can be extended to how other logical principles, such as Modus Ponens and Conjunction Introduction, may be adopted.

I. The Adoption Problem

The Adoption problem suggests that it is not possible for us to adopt certain fundamental logical principles such as Universal Instantiation. This is because adopting these principles would already require us to apply them in reasoning: it would require us to use what we are trying to adopt and so cannot yet use. Here is the Problem as Birman states it (2015: 41-42, 2024: 39):

> (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.

For Birman, adopting a principle such as Universal instantiation or (UI) would mean '[picking] up a way of inferring according to UI … *on the basis* of the *acceptance* of the corresponding logical principle.' (Birman 2024: 39). More precisely, the way she defines it, adoption would be a two-phase process (Birman, 2015: 31ff, 2024: 37):

(1) Learning or accepting the general logical principle;
(2) Applying it to particular cases of reasoning or developing a 'practice of inferring in accordance with that principle' (2024; 37).

Learning the general principle in phase (1) is specifically thought of as accepting or coming to believe a proposition, as coming to be in a certain representational, propositional state whose content is the principle. Indeed, the kind of view that is meant to be the target of the Adoption Problem is what she refers to as 'Inferential Cognitivism' (2024: 44) according to which the object of acceptance when

one accepts a general logical principle is a proposition. Applying the principle in phase (2) is then a matter of putting it to work whenever an instance is in play.

Let's run the Adoption Problem for Universal Instantiation. We might state the principle as follows:

(UI): ∀xFx entails Fa.

Applied to (UI), phase (1) would be one in which an agent comes to believe that ∀xFx entails Fa. Phase (2) would be one in which they apply (UI) in practice, to particular cases of reasoning.

(AP) suggests that this picture of adopting a logical principle is faced with a dilemma. We may state it as follows.

Suppose that someone already infers according to (UI). Then it is not *necessary* for them to adopt (UI). In particular, they do not need to complete phase (1): they do not need to accept the principle and then apply it in reasoning; it is pointless for them to do so, as they are already reasoning according to (UI). The fact that adoption is not necessary *eo ipso* means that one cannot adopt (UI) if one already infers according to (UI). To see this, suppose that Sarah already infers according to (UI) and suppose also that she later comes to accept (UI), thus completing phase (1). She might then come to apply (UI) in reasoning but that will not mean that she has adopted (UI), for adopting (UI) means applying (UI) *for the first time* on the basis of accepting it.

On the other hand, suppose that someone does not already reason according to (UI): then, so the argument goes, it is *impossible* for them to adopt (UI). Let's see why. Suppose that Sarah does not infer according to (UI), and then comes to accept (UI), thus completing phase (1) of adoption. Her coming to accept (UI) itself will make no difference to her inferential behaviour: she will not apply (UI) in reasoning as per phase (2) of adoption.

Why is that? Suppose that Sarah accepts that everything is extended and that we want to get her to make her first (UI)-inference to 'A is extended', where 'A' picks out a given object that we haven't yet observed. How would her acceptance of (UI) bring about the desired inference to 'A is extended'? It could only do so if, by accepting (UI), she could thereby come to see that the inference from 'Everything is extended' to 'A is extended' conforms to the principle (UI); i.e. is an instance of that principle. But it cannot do so because to see this Sarah would need to make an inference from (UI) itself to the particular claim (E) that 'everything is extended' entails 'A is extended':

(E) that everything is extended entails that A is extended.

But this is an inference that follows the principle (UI) and we are assuming that Sarah does not make such kind of inference. So she is not going to move from (UI) to (E). If she does not already infer according to (UI), accepting (UI) will not make this possible for her to do so. This means that phase (2) of adoption can never be reached because reaching it would require already having adopted the principle.

So the problem is that for Sarah to reason from her belief that everything is extended to her belief that A is extended, she would have to use (UI) in two ways: she would first have to infer the particular instance (E) from the general principle (UI); and then instantiate from 'Everything is extended' to 'A is extended'.[3] That is, before applying (UI) to her particular reasoning in phase (2), she would have

[3] We bracket here the fact that you would also be instantiating in predicate position in this example, instantiating 'F' with 'is extended'. In effect, there is a further step involved to go from '∀xFx entails Fa' to 'Everything is

to apply (UI) to reason from (UI) to an instance of (UI). Thus, any adoption of (UI) presupposes applying (UI), i.e. presupposes having adopted (UI).

If all this is correct, adopting (UI) in the way described in terms of phases (1) and (2) is impossible: either Sarah already infers according to (UI) and adoption is not needed or, if she doesn't, she cannot get herself to do so, through the two-stages that constitute adoption.

Before moving on, we would like to flag an important issue concerning the way the Adoption Problem is typically stated, an issue that is all the more salient when it comes to extending the Adoption Problem to other logical principles such as Modus Ponens and Conjunction Introduction. The standard characterisation of the Adoption Problem as applied to (UI) says in a nutshell that we need (UI) to adopt (UI) and so we can't adopt (UI). The idea that we need (UI) to adopt (UI) presupposes that applying (UI) in reasoning is simply applying a universal generalisation – a universally quantified proposition. But arguably this is not an appropriate characterisation. This is because (UI) is a logical principle, and insofar as it is, it involves a different kind of generality from that of universal quantification – the generality of a schema. More precisely, (UI) is a schema whose content is in part a universal claim. Applying a schema in reasoning is on the face of it not the same as applying a universal generalisation in reasoning, and arguably it does not require competence with (UI) but some other kind of competence that has to do with schematic substitution.[4] That is to say, going from:

UI): ∀xFx entails Fa.

to:

(E) that everything is extended entails that A is extended.

arguably does not require an application of (UI) and so does not require competence with (UI).

In our initial sketch of a solution to the Adoption Problem, we set this issue aside, and go along with this idea that we need (UI) to adopt (UI), and that (UI) is essentially a universal generalisation. But in section VI, we come back to this issue that general principles are schemas and so are general in a different way than universal generalisations are. We argue that this fact alters the nature of the Adoption Problem as it is typically stated not only for (UI) but also for other logical principles such as Modus Ponens and Conjunction Introduction. But we also show that our proposed solution naturally applies to general principles articulated as schemas.

II. General Beliefs

What general beliefs are is crucial to the Adoption Problem. To see this, consider first the kind of morale that is typically drawn from the Adoption Problem. For instance, Birman (2024: 44) argues that Inferential Cognitivism, that is cognitivist accounts of accepting basic logical principles, should be rejected, since, according to her, such kind of account requires these principles to be adoptable in terms of phases (1) and (2). Birman does not offer an explanation of how we get to use logical principles in reasoning, but she suggests that what has to come first is an 'inferential practice' (2024: 52). In her (2015) dissertation she also expresses sympathy for accounts along the lines of non-

extended' entails 'A is extended'. The considerations put forward in the discussion of (AP) also apply to instantiating in predicate position, so for simplicity we set it aside.

[4] See Besson (2019, forthcoming) for a proposed articulation of this competence in terms of a competence for pattern recognition.

propositional knowing how (2015: 196), or ones on which there is no genuine cognitive achievement underpinning our inferential practices but simply a 'habit or instinct, or a process resulting from a mechanism that cannot itself count as a state of knowledge.' (2015: 209)

There is a suggested contrast here between inferential cognitivism, according to which logical inference requires accepting general principles that we apply in inference and some kind of non-cognitivism, according to which logical inference does not require us to be acquainted with such principles, but rather requires us merely to have an inferential practice. In a nutshell, the suggested contrast here is between cognitivist views according to which logical inference requires believing logical principles and non-cognitivist views according to which that is not the case. Logical principles are taken here to be representational states and believing logical principles is taken to be a representational state with a general representation as its content. For instance, believing (UI) is having a belief whose content is the general content that ∀xFx entails Fa.

This is a natural way of thinking about what believing a logical principle is and it is likely that this is the notion of belief that inferential cognitivists have been using.[5] Now, it may be that this view of general belief is ruled out by the Adoption Problem.[6] But we think that there is a way of articulating Inferential Cognitivism that is not susceptible to the Adoption Problem. That is to say there is a way of saying that accepting a logical principle is coming to believe a general proposition in a way that makes adoption possible.

The view we aim to develop concerns the nature of general beliefs specifically and has it that general beliefs are not simply beliefs whose contents are general representations or propositions. Rather general beliefs are different kinds of mental states from beliefs in other kinds of propositions, such as particular ones. That is to say, the belief that everything is extended and the belief that A is extended are not only different in that the former is a belief with a general content and the latter is a belief with a particular content. They are different in that the former is a different kind of state from the latter. While a particular belief is a representational state with a particular content, a general belief is a different kind of state whose content is general, more precisely it is a dispositional state. This state is roughly a disposition to accept relevant particular beliefs. Thus as a first approximation the view would say that believing that everything is extended is not just taking that everything is extended to be true but also to having a disposition to accept propositions such as that A is extended, and as a first approximation, the view would say that accepting (UI) is having a disposition to accept claims such as (E).

The idea that a belief in a universal generalisation is a disposition to believe its instances, rather than that it is simply a belief in a universal content goes back most famously to the work of F.P. Ramsey, whose account we draw on here. In the next section we briefly discuss Ramsey's account as presented in his celebrated paper 'General Propositions and Causality' (Ramsey 1929). The account Ramsey sets out in that paper is just a sketch, but we think it can form the basis of a dispositional account of general beliefs that can help to solve the Adoption Problem.

III. Ramsey

We do not want to commit ourselves to everything Ramsey believed at the time he wrote 'General Propositions and Causality', nor to everything he asserts in that paper; indeed it's not clear what

[5] Birman, when she says that the Adoption Problem targets inferential cognitivists (2024: 44), does not say who views she has in mind. But one might think of for instance Carroll (1895), Russell (1903) and Quine (1936).
[6] However, see Besson (2019, forthcoming) for a defence of cognitivism.

exactly he is asserting in the paper, let alone what he believed at the time. Nor do we want to offer a comprehensive account of general beliefs in every detail. Instead, we will offer a view built on Ramseyan foundations and make some comments on it, before putting its core elements to work in answering the Adoption Problem.

Ramsey's account involves two key commitments that we draw on. The first is that general beliefs are different in kind from ordinary beliefs in propositions, including singular beliefs in the instances of generalisations. Believing that all men are mortal is a different kind of state from believing that Socrates is mortal. The second is that general beliefs involve a disposition or 'habit', as Ramsey puts it, to form beliefs in the instances of the general claim in question. Let's now discuss these two ideas.

It is controversial exactly what Ramsey thought about belief, propositions, truth, and the notion of the cognitive by the time he wrote 'General Propositions and Causality'.[7] However, to motivate his view, he starts by rejecting the theory defended by Wittgenstein in the *Tractatus* of universal generalisations as conjunctions of their instances. He argues that what he calls *variable hypotheticals*, which we would now call open-ended or lawlike generalisations, such as 'all men are mortal', differ from conjunctions of their instances in various important ways and cannot be reduced to them. He does not seem to think these concerns apply to closed or accidental generalisations such as 'everyone in Cambridge voted', which are restricted to a finite set of objects. As Steven Methven (2015, ch.9) points out, Ramsey was particularly concerned by the notion of infinity and the apparently infinite scope of variable hypotheticals. While nothing in our account turns on the difference between open and closed generalisations, we will nevertheless be discussing logical laws which are clearly open generalisations and therefore ripe for a Ramseyan treatment.

Having established that a general statement is not equivalent to a conjunction, Ramsey concludes that 'it is not a proposition at all' (1929, p.146). Ramsey's conclusion must be resting on a Tractarian view of propositions, on which every proposition is either an atomic proposition or a truth-function of atomic propositions. Ramsey had already discarded the atomic option, in his paper 'Facts and Propositions' (1927, pp.48-51). There he denies the (Fregean) view that quantified propositions are atomic ascriptions of higher-order properties to properties, e.g. that 'everything is extended' ascribes a second-order property of *being universally instantiated* to the property *being extended*. So when he comes to deny Wittgenstein's view of universal generalisations as conjunctions in 'General Propositions and Causality', he must conclude that universal generalisations don't express propositions at all. However, he maintains that general beliefs are still 'cognitive', because 'Many sentences express cognitive attitudes without being propositions' (1929, p.147).

Ramsey's narrow Tractarian conception of propositions allows him to see general beliefs as cognitive but non-propositional. But this narrow notion can be discarded. Later we will suggest that on the Ramseyan view we sketch below, general beliefs can be considered cognitive *and* propositional: they have propositions as contents, and their truth-conditions are given by those propositions. This goes beyond what Ramsey says about them, though it is not clear whether he would deny what we want to say about them. Nevertheless, the view we sketch below is in keeping with the spirit of his view, that general beliefs are not just ordinary beliefs with general contents. They need a distinctive account.

Ramsey provides such an account when he says that to believe that all men are mortal is 'partly to say so, partly to believe in regard to any *x* that turns up that if he is a man he is mortal' (1929, p.148). Here is how he puts his theory of general beliefs:

> The general belief consists in
> (a) A general enunciation

[7] See e.g. Holton and Price (2003), Misak (2016, ch.6), Methven (2014, ch.9), Sahlin (1990 ch.4)

(b) A habit of singular belief
These are, of course, connected, the habit resulting from the enunciation according to a psychological law which makes the meaning of 'all'. (Ramsey, 1929, pp.148-9)

A general belief is partly a 'general enunciation', and partly a habit of forming singular beliefs, in particular beliefs in the instances of the generalisation, as indicated by Ramsey's remark about mortal men. Let's discuss Ramsey's view briefly before drawing out from it what we think is most promising.

The most curious aspect of Ramsey's view is that he sees a 'general enunciation' as being part of what a general belief *consists in* – as he says, to believe that all men are mortal is *partly to say so.* It is not clear why he thought this; we do not aim to settle that question here as it relies on some complex questions about Ramsey's theory of belief and its relationship with Wittgenstein's picture theory of representation.[8] If 'enunciation' means some kind of public act of utterance, then it is implausible that general belief partly *consists* in that, since it is clearly possible to silently believe a universal generalisation, and the assertion of such a claim would surely be in part *caused by* the general belief rather than constituting it. Similarly, Ramsey says that the habit results *from* the enunciation, rather than results *in* it, which seems to be the wrong way round: surely having the habit is what causes our utterances of 'all men are mortal', rather than our utterance causing the habit. However, since it is unclear exactly what Ramsey means here, and the answer to that question depends on subtle questions of Ramsey scholarship, we will discard point (a) in our theory and focus on claim (b).

The crucial idea, then, is that a belief in a generalisation is a 'habit' – we would call it a disposition – to form beliefs in the *instances* of that generalisation. Even if the latter beliefs themselves involve dispositions – which Ramsey clearly thinks they are as 'all belief involves habit' (1929, p.150) – the distinctive mark of the general belief is that it is a disposition *to form other beliefs*, namely beliefs in the instances of the generalisation in question. So, the Ramseyan view we want to explore is this:

(DG) To believe a universal generalisation is to be disposed to believe its instances

According to (DG), for instance, to accept that everything is extended is to be disposed to accept instances of the form 'x is extended'; to accept that ∀xFx entails any Fa is to be disposed to accept all instances of the form '∀xFx entails Fa'; and so on. Note how (DG) does not try to reduce belief in a generalisation to belief in a conjunction of its instances (you could believe any conjunction without being disposed to accept *new* instances) nor to explain it as a belief in a relationship between a special second-order property *being universally instantiated* and the property the generalisation concerns.

IV. Solving the Adoption Problem for (UI)

Let's now see how (DG) lets us solve the Adoption Problem for (UI). Recall the dilemma from earlier: if Sarah doesn't infer according to (UI), she cannot adopt it because doing so would require applying it to the argument in front of her, and that act of applying it just is making a (UI)-inference. On the other hand, if she does infer according to (UI), she doesn't need to adopt it. Using (DG), we can now refute the claim about the first horn of the dilemma, and show that even if Sarah doesn't infer according to (UI), she can still adopt it.

To see why, let's suppose Sarah doesn't infer according to UI: she does not infer any instance from any universal generalisations she accepts. Given (DG), this actually means that Sarah *doesn't accept any universal generalisations at all*! At best she accepts them in an 'inverted commas' sense e.g. she might

[8] See e.g. Methven (2015 ch.6, ch.9) and Gert (2023) for some discussion.

accept that a sentence 'everything is F' is true in some relevant language, but she does not do this in the same sense that someone who genuinely believes that everything is F may accept that sentence. This also means that she does not really accept the premise of the inference above, that everything is extended. So, Sarah does not accept any universal generalisations, and this is the very same fact as the fact that she doesn't infer instances from them.

Once we accept (DG), we can claim, *pace* Birman, that coming to accept (UI) *does* make a difference to what Sarah infers. It makes a difference in two ways. First, accepting (UI) means that Sarah is disposed to apply it – it means she will be disposed to accept claims like (E) – that 'everything is extended' entails 'A is extended', and similarly for other generalisations. For accepting (UI) means being disposed to accept its instances; it means being disposed, for any a, to believe that ∀xFx entails Fa. Second, it means that Sarah is able to have general beliefs, since it means she's capable of having the disposition (DG) associates with universal generalisations. This in turn means that Sarah is now capable of accepting the premise of her first (UI)-inference – that everything is extended. Accepting that premise, according to (DG), is also having a disposition, to infer its instances. And so Sarah will be disposed to infer that A is extended.

On this view, accepting (UI) has not *led* Sarah to form a disposition to infer according to (UI). Accepting (UI) *is* having that disposition. Perhaps some might say this means that strictly speaking, Sarah has not adopted (UI), because there is not a sufficient gap between her accepting (UI) and that acceptance producing or leading to a disposition to infer according to it, in virtue of accepting it. But if that's so, then we can say that adoption is indeed impossible, but that this doesn't matter, because its impossibility rests on a false distinction between accepting a logical principle and being disposed to infer according to it.

The other horn of Birman's dilemma is that if Sarah *does* infer according to (UI), so that she does happily move from 'everything is extended' to 'A is extended', then she doesn't need to *adopt* (UI), because she already infers according to it. Therefore, accepting (UI) is unnecessary for her to infer 'A is extended' from 'Everything is extended'. And indeed this is true, in a limited sense. For on the one hand, her acceptance of (UI) plays no active part in her inference, since she is disposed to go directly from 'Everything is extended' to 'A is extended' with no help in the middle, simply by virtue of accepting the former. On the other hand, her acceptance of (UI) *is* necessary for her specific inference in the sense that *because* she has the disposition that causes her to move from 'Everything is extended' to 'A is extended' that she counts as accepting (UI). Her acceptance of (UI) is a necessary result of her having the disposition that facilitates the basic inference. Saying that her acceptance of (UI) is unnecessary in this sense is like saying that that to give birth, it is unnecessary to become a parent – this is true in the sense that the state of becoming a parent plays no active causal role in the process of giving birth to a child, and false in the sense that giving birth necessarily makes you a parent.

So the Adoption Problem (at least for (UI)), rests on false foundations. Primarily, it rests on the false claim that you could, in principle, accept a universal generalisation and that this could be, so to speak, *inferentially inert*, waiting to combine with further knowledge of yours in order to facilitate inference. This is why on the first horn of Birman's dilemma, Sarah can simultaneously accept a generalisation while she doesn't infer instances from generalisations. If such beliefs are inferentially inert, there can be no logical principle whose acceptance can make a difference to its application, because any such principle is also a generalisation, and belief in it would be inferentially inert too.

This inferential inertia is simply not possible, on the dispositional view (DG). But it *is* possible, or at least *seems possible*, on the alternative view that accepting a generalisation is just accepting a proposition, like any other ordinary belief is. For in general, there *is* a gap between accepting a proposition and

making inferences involving the concepts in it. These inferences are often facilitated by beliefs in propositions that link these subject matters. For instance, I may understand what champagne is without knowing it comes from France. Later I learn that (F) all champagne comes from France; this leads to a tendency to infer *x comes from France* from *x is champagne*. Or I learn about the NAND operator, and over time I develop a disposition to infer ¬A from NAND(A,A). This is because I believe a principle (N) for all X, NAND(X,X) entails ¬X, which is itself something I may infer from the basic general principle governing NAND, that NAND(X,Y) is true in case X or Y is false. In both cases, my disposition to infer is partly explained by a general belief I have, in (F) or (N), rather than my mere possession of the concepts *NAND*, or *champagne*.

But this kind of explanation is simply unavailable in the case of basic inferences involving concepts like *all*. This is precisely the lesson of the Adoption Problem. For the generalisations like (F) and (N) that we would need to accept could not make any difference in such cases, since they constitutively involve the very concepts whose inferential behaviour we are trying to determine. If accepting a universal generalisation does not, in and of itself, require a disposition to infer according to it, then there is simply no explanation of how it produces such a disposition. For the only way to explain that would be to appeal to things that I know about universal generalisations – but those things that I know are themselves universal generalisations, and my dispositions to infer according to them are therefore also in need of explanation, and so on.

On the dispositional view of general beliefs, however, these difficulties do not arise. Accepting a generalisation is not just accepting a proposition – or at least, it is not interestingly characterised like that. It is having a disposition to accept other propositions. The inferential behaviour is built in from the beginning, and does not need a separate explanation or cause. Thinking of general beliefs on the same lines as other beliefs in propositions is a trap we needn't fall into.

V. Expressivism and Cognitivism

How 'expressivist' is this view? What makes a view count as expressivist is a notoriously tricky question; we think the view we sketch here is expressivist in several important respects, but crucially it is still *cognitivist* in that it allows that general beliefs are still genuine beliefs, and have propositions as their contents. Some might take this latter claim to make our view not really expressivist, since many expressivist views, especially earlier ones, involve the claim that the relevant sentences do not express beliefs and do not have propositional content.[9] Nevertheless, we think our view is expressivist or at least relevantly similar to expressivism in two important ways. The first is that it explains a distinctive kind of judgement – in this case, general judgements – not in terms of (belief about) a distinctive subject matter, but in terms of a distinctive mental state (that is not itself characterised in terms of a special subject matter). We don't characterise acceptance of a universal generalisation as belief in a special state of affairs, or even a mundane state of affairs under some distinctive guise, but rather as a distinctive kind of state. This is the core of all expressivist views, whether about morality, causation, probability, modality, or something else.[10]

The second way in which this theory is expressivist is that it is motivated primarily by the thought that we cannot explain the distinctive behaviour of a given class of judgements in terms of a distinctive subject matter they are about. The most famous application of this thought is in ethics,

[9] See Dreier (2004) for discussion of the development of expressivist theories in this respect.

[10] See Simpson (2020) for discussion of this characterisation of expressivism. For reasons of simplicity we avoid connecting our view, or our use of 'expressivism', with Robert Brandom's 'logical expressivism'; see Price (2013, ch.2) for useful discussion of the various uses here.

where expressivists argue that the distinctive *practical nature* of our moral judgements simply cannot be explained by treating them as beliefs with a special subject matter. In that case, the expressivist argument is typically facilitated by a defence of the Humean theory of motivation, which makes beliefs motivational only contingently and with the help of non-cognitive mental states. In our case we can find motivation in the role generality plays in our cognitive lives. General claims, *all-* or *every-*claims are distinctive in that they are essentially tied to their instances. The thought here is similar to a familiar thought about the nature of logic that we find for example in Gottlob Frege (1893): what makes logic distinctive according to him is its generality, where this is understood to mean that it is universally applicable. We might think with him of a hallmark of generality in terms of applicability and we might think that a theory on which believing general judgments is having a disposition to believing its instance is an apt way to articulate the idea of universal applicability: applicability is an essentially practical matter that is embodied in an essentially practical state such as a disposition.

Where this theory is less than traditionally expressivist is that we think that it allows us to assign propositions and truth-conditions to general beliefs. Following the approach D.H. Mellor and Richard Bradley apply to conditionals (2020), we can say that an inferential disposition has a proposition as its content – the proposition that is true just in case every belief that the disposition in question might produce is true. For instance, consider the disposition that is, on our view, the belief that everything is extended. Let's use S to refer to the set of beliefs this disposition may produce – S is the set of every possible belief whose content is of the form *x is extended*, since that is the range of beliefs that this disposition causes. There is a proposition that is true just in case every belief in S is true: it is the proposition that everything is extended! And that proposition is the content of the belief that everything is extended. This also applies to (UI) itself. The set S* of every possible belief that the disposition to infer all of ∀xFx's instances causes is the set of beliefs whose content is of the form *∀xFx entails Fa*. So, the proposition that is true iff every belief in S** is true is the proposition that any universal generalisation entails all of its instances – this is the proposition that (UI) expresses.

The view developed here is thus the kind of view that is meant to be refuted by the Adoption Problem as formulated in section I, which targets views on which believing a general logical principle requires having a belief with a general content – a general, truth-apt, representational, propositional content. The commitment to such beliefs having truth-conditional contents is essential if we are to make sense of the fact that such general beliefs are essentially tied to beliefs in their instances, which themselves have truth-conditions. On this view, then, believing a logical principle such as (UI) is being in a cognitive state, with a propositional content. But this state that is not inferentially inert, contrary to what is suggested by discussions of the Adoption Problem, and so is not susceptible to it.

VI. Extending the Solution

We think that a dispositional account of universal generalisations solves the Adoption Problem for (UI): it shows that that principle is in fact adoptable. However, it is important to be clear about the limitations of this solution. There are two remarks we want to make here. The first concerns the scope of the solution we have presented. The second concerns the nature and form of logical principles themselves, and how this affects the nature of and Ramseyan solution to the Adoption Problem.

First, on scope. The Adoption Problem does not just concern (UI): it covers other principles too. Let's say that a logical principle is *putatively unadoptable* if it applying it to perform a particular inference – in using it to reach a conclusion from some premises – requires making the very sort of inference it endorses. In our setup of the Adoption Problem, (UI) is clearly like this: applying (UI) to a particular case requires making an inference from the general claim (UI) to a particular one (E). This is why

there was (apparently) a problem: if you do not infer according to the principle, you cannot start doing so because getting that inference going requires already inferring according to the principle.

But (UI) is not the only putatively unadoptable principle. Consider *modus ponens* (MP), which says that any conditional and its antecedent entail its consequent. The Adoption Problem suggests that to apply this principle to perform a particular inference, we need to make an MP inference. Suppose someone already infers according to this principle; then there is no need for them to adopt it. On the other hand, consider someone who doesn't infer according to it, and let's suppose we get them to accept (MP) and then try to get them to make a *modus ponens* inference from (A) 'it is day' and (B) 'if it is day, it is light' to (C) 'it is light'. In virtue of accepting (MP), (and given the dispositional account of universal generalisations) they will come to accept:

(F) that it is day and if it is day, it is light together entail that it is light.

But accepting (F) will make no difference to bringing about the desired inference to (C), because the inference from (A), (B), and (F) to (C) will itself involve an application of (MP) – first it will involve conjoining (A) and (B) (on which more in a moment), and then moving from that conjunction plus (F) to the consequent (C). But that is a *modus ponens* inference; if this thinker does not already make such inferences, accepting (F) won't help.[11]

Similar remarks go for Conjunction Introduction (CI) (or 'adjunction' as it's sometimes known). Suppose someone doesn't infer a conjunction from its conjuncts. We then get them to accept (CI) – that any two conjuncts entail their conjunction. Suppose they accept (A) and (B) above and we want to get them to accept the conjunction of the two. In virtue of accepting (CI), they accept that (A) and (B) entail their conjunction. But this can only help them make the inference to the conjunction if (alongside being willing to make a Modus Ponens inference) they are willing to infer the conjunction of (A) and B from (A) and (B). But this is precisely what they're not willing to infer. So again, accepting (CI) will not help.

So, at least universal instantiation, *modus ponens*, and adjunction are putatively unadoptable.[12] What follows for our solution to the Adoption Problem? All we have shown is this: while it may be true that in applying (UI) to make a specific inference, we need to make a (UI) inference, this fact does not make (UI) unadoptable. We have not, however, shown that the same is true in general: that *any* logical principle is still adoptable even if applying it to make a specific inference requires making the kind of inference it endorses. What we have said about universal generalisations does not show anything about conditionals, for instance. So what we can say is this: the fact that (UI) is a universal generalisation does not make it unadoptable. In this sense then, we have a solution to the Adoption Problem *for (UI) only*.

What we can see here is that applying *any* logical principle to a specific inference is going to involve inferring according to (UI), (MP), and (CI). And that means that if we want to explain how adoption of (MP) and (CI) works, we also need to show how accepting them is not inferentially inert. The original challenge we took on was that accepting a generalisation is inferentially inert – Ramsey's account solves that challenge, but says nothing about whether accepting a conditional, or any other claim that is involved in a putatively unadoptable logical principle, is inferentially inert.

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[11] Strictly speaking, (MP) is not itself a conditional, since it makes a claim about entailment. But arguably, entailment claims entail conditionals – if P entails Q, then if P is true, Q is true. So applying (MP) will result in a conditional like (F), even if (MP) is not itself a conditional but an entailment claim.

[12] Arguably a similar situation applies to basic inference rules involving truth (Nava 2025).

We now want to say something about the nature and form of logical principles. We have been treating them as universal generalisations: they say that any collection of premises of a certain kind entail a conclusion of a certain kind. However, some might argue that this is not the right kind of generality in terms of which to think of logical principles. Indeed, arguably, general principles are schemas and their generality or universal applicability is not conveyed through the use of quantifiers but through the use of schematic letters.[13] This issue of how to understand the generality of logical principles would deserve more attention than we can give it in this paper. But what is important to see here is that while in some sense this is an important issue, it does not ultimately affect our Ramseyan solution to the Adoption Problem.

If logical principles are not universal generalisations but something else, like schemas, then the Ramseyan account of universal generalisations simply does not apply to them, since it is about universal generalisations not schemas. However, two important points become relevant at this stage. First, if logical principles are not universal generalisations, then the key argument for (UI)'s unadoptability fails. For the key point behind (putative) unadoptability, as we saw earlier in this section, is that the principle in question can only be applied to an inference by means of making the very inference that the principle endorses. In our account above, (UI) is like this because it is a generalisation and so applying it means making a (UI) inference from generalisation to instance: it is putatively unadoptable because it is a generalisation about generalisations. But if (UI) is not a generalisation, then applying it to get an instance of it is not a (UI) inference, and so the Adoption Problem argument is just going to fail right away. The question becomes whether our would-be (UI) inferrer infers instances of schemas from schemas, but that is a different question from whether they make (UI) inferences.

Second, the Ramseyan account of universal generalisations is plausibly extendable to schemas anyway. Even if we explain logical principles as schemas, for the Adoption Problem to get going we need a notion of what it is to *accept* a general logical principle, since the unadoptability claim is that we cannot come to infer according to a principle on the basis of having accepted it. The Ramseyan story about universal generalisations is extremely plausible as a story of what it is to accept a schema: it is to be disposed to accept its instances. So any worries about inferential inertia as applied to schemas rather than universal generalisations will be resolved in that way by applying the Ramseyan account.

Concluding Remarks

The Adoption Problem is meant to refute cognitivist views of what it is to be competent with a logical principle. On these views, such competence requires accepting or believing the principle, where this is construed as being in a representational, propositional state. We have sketched a view that is cognitivist but also avoids the Adoption Problem. It draws on the fact that logical principles are general propositions or generalisations, and that believing such propositions might plausibly be construed as a disposition to accept their instances. This introduces an expressivist element to the cognitivist account targeted by the Adoption Problem, which assumes that general beliefs are inferentially inert. They are not on this account, which is why it avoids the Adoption Problem.

In this paper, we have merely sketched the view, and applied it mainly to the problem of adopting (UI), which is central to the Adoption Problem. So it needs to be developed further. But at least we

[13] Some of the remarks here draw on Besson (2019 and forthcoming) who argues that the fact that logical principles are schemas, means that the standard set-up of the Adoption Problem rests on an incorrect account of what logical principles are and how they relate to their particular instances.

hope to have shown that it is a serious contender to account for what logical competence consists in, which has the potential of saving cognitivism from the Adoption Problem.[14]

[14] We'd like to thank an anonymous referee to this paper for their insightful comments, especially in helping us clarify the significance of the fact that general principles are not universal generalisations for our proposed solution to the Adoption Problem.

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