The value of thinking and the normativity of logic

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Abstract

1 This paper is about how to build an account of the normativity of logic around the claim that logic is constitutive of thinking. I take the claim that logic is constitutive of thinking to mean that representational activity must tend to conform to logic to count as thinking. **2** I develop a natural line of thought about how to develop the constitutive position into an account of logical normativity by drawing on constitutivism in metaethics. **3** I argue that, while this this line of thought provides some insights, it is importantly incomplete, as it is unable to explain why we should think. I consider two attempts at rescuing the line of thought. The first, unsuccessful response is that it is self-defeating to ask why we ought to think. The second response is that we need to think. But this response secures normativity only if thinking has some connection to human flourishing. **4** I argue that thinking is necessary for human flourishing. Logic is normative because it is constitutive of this good. **5** I show that the resulting account deals nicely with problems that vex other accounts of logical normativity.

1 Introduction

Discussions of how logic relates to thinking tend to take one of two approaches. Some emphasize that logic is normative for thinking: it tells us how we ought to think, or what it is to think well. Others emphasize that logic is constitutive of thinking: it tells us what it is to think at all.[1] This paper is about how to bring these approaches together. In particular, the paper is about how to build an account of the normativity of logic around the claim that logic is constitutive of thinking.

Let me start with some background. First, the term 'thinking' is used in various ways. Sometimes it is used as a catch-all for activity with representational content – as, for example, by Descartes in the Second Meditation: 'Well, then, what am I? A thing that thinks. What is that? A thing that doubts, understands, affirms, denies, wants, refuses, and also imagines and senses.' I am using the term in a more discriminating sense. 'Thinking' is not a term for the genus, representational activity, but for a particular species of representational activity. I take thinking to be the representational activity composed of acts of judging and inferring, acts whose contents are propositions or 'thoughts'. In a full account of thinking, we might also want to include acts such as entertaining a thought or reasoning under a supposition, but in this paper I leave these aside to focus on the core cases. I'm also assuming, for

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[1]For the former approach, see Field (2009). For the latter approach, see Putnam (1994, 247).

purposes of this paper, that judging is binary rather than allowing for varying degrees of confidence.[2]

Second, many discussions of the normativity of logic use 'logic' to refer to a theory of the sort produced by logicians, or to the discipline to which these theories belong.[3] Typically, these theories are about a consequence relation that holds among sentences of a formal language. This is not what I will mean by 'logic'. I will mean a set of inference-rules that apply to thoughts in virtue of the way they are composed. For example, take Modus Ponens:

Modus Ponens From *p* and *if p, then q*, infer *q*.[4]

It is a nice question whether the consequence relation generated by the logical rules applicable to thoughts coincides with any consequence relation studied by logicians, such as classical or intuitionistic consequence, but since nothing in this paper turns on this issue, I take no stand on it here. Throughout the paper, I will use rules such as Modus Ponens as examples, but nothing turns on any particularities of these rules; if you're persuaded by counterexamples to Modus Ponens (McGee 1985; Kolodny and MacFarlane 2010), you can substitute a different example.

There are several further assumptions I'm going to make about logic so that I can focus on the question this paper is really about. I'm going to assume that we have a way of demarcating logical from non-logical rules. I'm going to assume, contrary to the arguments of logical pluralists (Beall and Restall 2005; Shapiro 2014), that there is a unique set of rules that govern thoughts – what is often referred to as the 'One True Logic'. The relation between pluralism and logical normativity is too complex to address here (Kissel and Shapiro 2017; Blake-Turner and Russell 2018; Steinberger 2019b). It's worth noting, though, that my arguments would also hold on the weaker view that, while there are multiple correct logics, there is a 'minimal kit' (Finn 2019; Hale 2002, 299) of rules that hold in any correct logic.[5]

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[2]If we instead conceived of judging in terms of degrees, we might hold that the axioms of probability have a constitutive role similar to that which I assume for logic in this paper; it might then be possible to give an account of the normativity of those axioms similar to the account I propose for logic. This suggestion could find additional support in the claim that the axioms of probability are merely 'a way of applying standard logic to beliefs, when beliefs are seen as graded' (Christensen 2004, 15). But without a detailed consideration of whether logic and probability are so closely related, I prefer to leave this issue open. In sections 2 and 5 I flag two places where relaxing the binary assumption might make a difference to the argument.

[3]For example, in arguing that logic isn't normative, Russell (2020) takes the thing that isn't normative to be a theory specifying a consequence relation on a language.

[4]It's natural to write down logical rules as imperatives, but this notational choice is not meant to beg any philosophical questions: in particular, it is not meant to suggest that the rule on its own has normative force. For this point, see Harman (1986, 5) and for some comments on how my view relates to Harman's, see section 5 below. For present purposes, all we need is a way of specifying the class of transitions that the rule licenses.

[5]It would also seem reasonable to allow for thinkers who follow rules that are proof-theoretically equivalent to those that are required for thinking.

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Most importantly, I am going to assume that logic is constitutive of thinking. When I say that logic is 'constitutive' of thinking, I mean that representational activity must tend to conform to logical rules if it is to count as thinking at all. To be clear, this doesn't exclude the possibility that thinking is also constituted by some non-deductive – or even non-logical – inference-rules. It states a necessary condition for thinking, not a sufficient one. By way of initial motivation for this position, observe that there seems to be a limit on just how illogical someone's representational activity can be while they still count as thinking. As Jane Heal (1989, 89) puts it, '*completely* unsuccessful and chaotic thought, thought in which no shred of truth or rational connectedness is discernible, is an incoherent notion.' This limit on illogicality is just the flip-side of the constitutive role of logic.

In fact, there is not just one constitutive position but a family of positions, all of which hold that some conformity to logic is required for thinking, but which vary according to the kind and extent of conformity required. The strongest constitutive view, that thinking requires perfect conformity to logical rules, is held by Kimhi (2018) and has been attributed to Kant (Putnam 1994; Tolley 2006) and to Wittgenstein (Conant 1992). A weaker constitutive view, that thinking requires only some degree of conformity to logical rules, is held by Quine (1960), Davidson (1973, 1985) and Stich (1990). In this paper, I'm going to work with a view on which a subject's representational activity counts as thinking only if it manifests a disposition to conform to logical rules. Call this 'the dispositional-constitutive position'. Closely related positions have been attributed to Reid (Rysiew 2002) and defended by Heal (1994, 1999) and Wedgwood (2017). However, the main line of argument from sections 2 to 4 will also apply to the other constitutive views. I should note that the view of MacFarlane (2002) and Leech (2015) – that it is constitutive of thinking that it be assessable by logical norms – is not a constitutive view in my sense: as MacFarlane (2000, 54) makes clear, the view does not require any degree of conformity to logic.[6]

This paper does not aim to defend the dispositional-constitutive position. Rather, the paper is about whether and how an account of the normativity of logic can be built around logic's constitutive role. This is a complex issue. One question is whether the dispositional-constitutive position is on its own sufficient to account for

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[6]Beyond this definitional point, there are good reasons not to think of the MacFarlane/Leech view as giving logic a constitutive role. We can see this by asking what makes it the case that some activity X is assessable by logical norms. Not everything is so assessable, after all: snow-shoveling is not. There are three possibilities. First, that what makes X assessable by logical norms is that it conforms to them to some degree. In this case, the MacFarlane/Leech view collapses into a properly constitutive one, but assessability is no longer what is constitutive of thinking – partial conformity is. Second, that what makes X assessable by logical norms is some non-logical feature. In this case, that non-logical feature is what is properly constitutive of thinking; assessability by logic is derivative. The third possibility is that it is a brute fact that X is assessable by logical norms. In this case, logic is properly constitutive of thinking, but at the cost of implausibility. Surely there are many non-normative differences between thinking and snow-shoveling that explain why the former is logically assessable and the latter is not. I think the second interpretation is likely the right one, in which case logic has no properly constitutive role on the MacFarlane/Leech view.

logic's normativity, or, more broadly, whether it plays any part in an account of logic's normativity. Another question is whether the dispositional-constitutive position is even consistent with the normativity of logic.

A 'no' to the second question would, of course, entail a 'no' to the first. To start with the second question, then: the reason why you might worry that the dispositional-constitutive position is inconsistent with logical normativity is as follows. A standard is normative for the members of a given class only if it is possible for there to be a member of the class which fails to meet the standard.[7] But if logic is constitutive of thinking, then there can't be thinking which fails to meet whatever standards logic sets, so those standards cannot be normative for thinking.

Or, to put the worry another way, if logic is constitutive of thinking, then logic doesn't tell us how we ought to think but rather what it is to think. It doesn't divide good thinking from bad thinking – it divides thinking from non-thinking. And the claim that logic divides good thinking from bad thinking (in a broad sense of 'good' and 'bad') seems to be a mere notational variant of the claim that logic is normative for thinking. So if logic is constitutive of thinking, then it is not normative for thinking.

However, this worry rests on misunderstanding the dispositional-constitutive position. That position, as I've stated it, does not entail that any time a subject violates a logical rule, the subject fails to think.[8] What thinking requires is that the subject *tend* to conform to logical rules; mistakes are possible as long as the subject conforms to the requisite degree, where this conformity is explained by an underlying disposition to conform.[9] So there can be thinking which fails to meet the standards logic sets. In other words, logic can both divide thinking from non-thinking and divide good thinking from bad thinking. The constitutive role of logic is at least consistent with logical normativity.

This leaves us with the first question: whether the dispositional-constitutive position is on its own sufficient to account for logic's normativity, or, more broadly, whether it plays any part in an account of logic's normativity. The aim of the paper is to respond to this question. In other words, the paper is about how to get from the dispositional-constitutive position to the conclusion that logic is normative.

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[7]For detailed discussion see Lavin (2004). Leech has objected (2017, 366-7) that logical normativity requires neither freedom of choice of how to think nor the possibility of failure to accord with logical rules: 'a perfectly rational being would still be *right*'. I agree that normativity does not require free choice, but I do not think normativity can exist without some possibility for error. A perfectly rational being would still be right, but only because there could exist imperfectly rational beings who could be wrong (Nunez 2018, 1156 n. 10). Still, the strength of 'possibility' here is fairly weak: for a standard to be normative for a given class it need only be conceptually possible for there to be a member of the class which fails to meet the standard.

[8]In Lindeman's terms (2017, 235-6), it is Threshold Constitutivism, not Naïve Constitutivism.

[9]Just how robust does the disposition have to be? I don't think there is any precise answer to this question. This fact reflects the vagueness of the concept thinking (Quine 1992, 59). While there is a deep difference between thinking and failing to think, there is no sharp line along the spectrum of logical dispositions where a subject goes from thinking to failing to think. On vagueness generally see Keefe and Smith (1996).

My answer will be that while the dispositional-constitutive position is not on its own sufficient to secure the normativity of logic, neither is it irrelevant to logic's normativity. Rather, the constitutive role of logic is essential to its normativity. The main points of the account I will develop can be compactly stated as follows:

1. Logical rules are constitutive of thinking.

2. Thinking is necessary for human flourishing.

In my view, it is because logical rules are constitutive of a good that those rules are normative.[10]

The paper goes as follows. In 2 I develop a natural line of thought about how to develop the constitutive position into an account of logical normativity by drawing on constitutivism in metaethics. In 3 I argue that, while this line of thought provides some insights, it is importantly incomplete, as it is unable to explain why we should think. I consider two attempts at rescuing the line of thought. The first, unsuccessful response is that it is self-defeating to ask why we ought to think. The second response is that we need to think. But this response secures normativity only if thinking has some connection to human flourishing. In 4, drawing on neo-Aristotelian theories of value, I argue that thinking is necessary for human flourishing. Logic is normative because it is constitutive of this good. In 5 I show that the resulting account deals nicely with problems that vex other accounts of logical normativity.

2   Logical self-constitution

In this section I sketch Christine Korsgaard's constitutivist account of the normativity of practical reason and then develop a parallel account of the normativity of logic.

2.1   The constitutivist account of practical reason

Korsgaard argues that the principles of practical reason are constitutive of action: they are built in to what it is to act. This, she argues, is the source of their normativity.

Take, for example, the principle of instrumental reason: that if you intend some end then you should intend the necessary means to the end. Korsgaard argues that this principle is not imposed from outside on agents: rather, it is constitutive of acting. For what distinguishes an action from a mere event is that an action is the result of the agent's intention, or 'willing an end'. And '[t]o will an end just is to will to cause or realize the end, hence to will to take the means to the end' (2008, 56). Acting on the principle of instrumental reason, then, is not one among various ways of acting; it is what it is to act.

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[10]The two-part structure of my account is distinctive. Some, like Korsgaard (2009) and Nunez (2018), take the constitutive claim to be sufficient on its own for logical normativity. Others, like Wedgwood (2017, 207-8), take the constitutive claim to be (albeit correct) irrelevant to logical normativity.

You might worry that this means we can never will an end and fail to will the means: if we fail to will the means, then we must not have willed the end in the first place. It would follow that we can never violate the principle of instrumental reason. But Korsgaard argues that this is a mistake. It fails to appreciate the first-personal character of the principles of practical reason: they articulate what we commit ourselves to in acting.[11] Thus, 'willing an end just is committing yourself to realizing the end' (2008, 57). As we can fall short of our commitments, we can sometimes will an end without willing the means. We cannot fall short to an arbitrary degree, however: at some point we are no longer acting at all.

Korsgaard gives similar arguments for more robust principles of practical reason, such as the Categorical Imperative. The upshot of these arguments is that the principles of practical reason are 'internal' or 'constitutive' standards: 'standards that a thing must meet in virtue of what it is' (2008, 112). As long as what you are doing is acting, your action is a good action insofar as it meets the internal standards of action. Performing bad actions, therefore, 'is not a different activity from performing good ones. *It is the same activity, badly done*' (2008, 113).

Korsgaard suggests that internal standards do not need the same kind of justification as 'external' ones. If being habitable is part of the internal standard for a house, then if you're going to build a house, there is no room for the question why you ought to build a habitable one. Similarly, if practical reason is the internal standard for action, then if you're going to act, there is no room for the question why you should act in accordance with practical reason.

Of course, the question immediately arises: why should we 'act', in this sense? Why should we 'will' an end, in the sense in which that requires willing the means, rather than just following our desires? Korsgaard's deepest answer to this question is that acting is how we constitute ourselves as unified agents. We are confronted with various sorts of temptations to act in different ways, and this is a sort of disunity. If I simply follow the temptations, my conduct can be attributed to those temptations, but not to me as a whole person. By conforming to the requirements of practical reason, I unify myself in the face of this play of temptations. 'For to will an end is not just to cause it, or even to allow an impulse in me to operate as its cause, but, so to speak, to consciously pick up the reins, and make myself the cause of the end.' If I never will an end, 'this means that I, considered as an agent, do not exist' (2008, 59-60).

2.2   The constitutivist account of logical normativity

Korsgaard suggests (2009, 67) that a parallel account can be given of the normativity of logic. The basic idea must be that logical rules are constitutive of thinking, just as principles of practical reason are constitutive of acting. In this section I sketch

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[11]There's a difficult question about how Korsgaard's notion of *commitment* is related to the notion of a *disposition*. I don't want to claim that commitments are merely dispositions in disguise, but Korsgaard's view that there is a limit on how far we can fall short of our commitments while still having them brings the two notions close together. For further discussion of commitments, see Bilgrami (2012).

such an account. It will be helpful to begin with a line of thought that supports the constitutive position before developing an account of logical normativity.

Let's start with with the claim that having a thought requires a 'setting' (Heal 1994; Stroud 1979). It doesn't make sense to suppose that someone could think a single thought as the entirety of their mental life. Nor does it make sense to suppose that someone could think a thought while being wholly insensitive to its relations to other thoughts. Having any thought requires grasping some of these connections: seeing the ways that other thoughts support it, or follow from it, or stand in tension with it. (It doesn't follow that, as inferentialists claim, there are 'canonical' relations the acceptance of which is a necessary condition on understanding.[12])

Now, it is impossible to grasp these connections between thoughts without being disposed to conform to some logical rules. These rules govern the connections between thoughts which make understanding possible.[13] Some examples will help to make this clear, although I should emphasize that the general thesis can survive even if particular instances turn out to be problematic. First, it seems that it would be impossible to grasp that one thought supports another without being disposed to follow Modus Ponens, which says, in intuitive terms, to believe q if you believe p and you take it that p supports q (Hale 2002; Russell 1912, ch. VII). Or again, it seems that would be impossible to grasp that two thoughts are in tension without some aversion to believing contradictions – in other words, without a disposition not to believe p and *not-p*. Without some tendency to reason in these ways, it would be meaningless to take two thoughts to stand in relations of support or tension.

It follows that thinking requires dispositions to conform to some logical rules; in this sense, logical rules are constitutive of thinking.[14] Now, it can't be the case that such dispositions preclude ever making a mistaken inference, or mistakenly rejecting a valid one. Rather, the dispositions will manifest in a tendency to conform to the rule, except where the disposition is overridden by other factors – for instance, inattention, tiredness or the complexity of the thoughts under consideration. But

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[12]For inferentialism, see Brandom (1994) and Boghossian (2003, 2012). Because it is not committed to inferentialism, the line of thought developed in this section can avoid some of the counterexamples presented by Burge (1986) and Williamson (2006, 2007); see also Wikforss (2009).

[13]As has been observed in connection with Quine's epistemology: see Quine (1951), Dummett (1973, 597), Priest (1979), Wright (1986) and BonJour (1998, 95).

[14]The existence of such dispositions might seem doubtful, given evidence that people tend to reason incorrectly in some situations (Wason 1968). In response, I would make two points. First, while the existence of these dispositions is an empirical question, the way this evidence bears on them is not straightforward. For example, in the Wason selection task it is unclear whether test subjects are engaged in conditional reasoning at all (Sperber et al. 1995, s. 2). Second, the dispositions posited by the constitutivist are general, and can fail to manifest in particular cases, as long as there is an explanation for the failure. There may also be further, independently motivated conditions that the dispositions have to satisfy: they may need to be shared or socially enforced (Kripke 1982; Brandom 1994, ch. 1), or it may be that the subject who has the disposition needs to be able to recognize and correct mistakes. A full specification would also have to address the possibility of finks, maskers and mimickers (Lewis 1997; Choi and Fara 2018). We do not need to settle these questions here; for present purposes it is enough if the dispositions rule out the possibility of wholly illogical thought.

while the dispositions need not manifest in every case, they must exist if the subject is thinking at all.

In this way, the constitutivist will argue, logical rules are standards that thinking must meet in virtue of what it is – internal standards for thinking. If you're going to think, then there is no room for the further question of why you ought to think logically.

As before, however, the natural question is why we should think in the first place. The parallel with willing an end suggests the following response: in thinking, we constitute ourselves as unified subjects. We are confronted with a variety of impressions – temptations to take reality to be one way or another. This is a sort of disunity. If we passively followed these impressions, we might have various representations, but we would not be subjects – the loci of points of view on reality.[15] To be subjects, we have to actively commit ourselves to reality's being one way or another; we have to 'make up our minds' (Valaris 2017).[16]

Let's call this the 'constitutivist account of logical normativity'.

3 A problem for constitutivism and two unsuccessful responses

The constitutivist account of logical normativity faces an immediate problem: it does not tell us why we ought to think. In this section I develop the problem and then consider two unsuccessful responses to it. The first response is a dialectical one, suggesting that the problem undermines itself, and the second response appeals to an innate need to think. I argue that both attempts are unsuccessful, but the second one points the way to a better approach.

3.1 The absence of value problem

We can see the problem by considering an objection made by David Enoch against constitutivist accounts of practical reason. In the words of Enoch's skeptic:

> Perhaps I cannot be classified as an agent without aiming to constitute myself. But why should I be an agent? Perhaps I can't act without aiming at self-constitution, but why should I act? If your reasoning works, this

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[15]Compare Lewis's (1982) suggestion that we tolerate inconsistencies by fragmenting our total body of beliefs.

[16]I do not mean to suggest that perfect unity is possible for beings like us. One reason for this comes from cases like the Preface Paradox (Christensen 2004), where you believe $p, q, r \ldots$ and also that, since you are fallible, at least one of your beliefs $p, q, r \ldots$ is false: an inconsistent set of beliefs. The unavoidability of such cases for a rational and fallible subject (Harman 1986, 109) might make them less bad, but they remain a source of disunity. Of course, the Preface Paradox doesn't arise in a picture that uses degrees of belief only, but even in a degree picture there is little reason to think that any of us could achieve a totally coherent body of beliefs.

just shows that I don't care about agency and action. I am perfectly happy being a shmagent – a nonagent who is very similar to agents but who lacks the aim (constitutive of agency but not of shmagency) of self-constitution. I am perfectly happy performing shmactions – nonaction events that are very similar to actions but that lack the aim (constitutive of actions but not of shmactions) of self-constitution. (Enoch 2006, 179)

This is what we might call, following Shamik Dasgupta (2018), an 'absence of value' problem. It may be that a certain concept – being unified, being an agent – will not apply to you unless you meet certain standards. But this fact is, for all that has been said so far, 'normatively inert' (Dasgupta 2018, 310). Why does it matter whether you are an agent?

Precisely the same problem will apply to the constitutivist account of logical normativity. Suppose it is true that your representational activity will not merit the title of 'thinking' unless it tends to conform to logical rules. Why does it matter whether your activity merits this title? Perhaps if you fail to think, you fail to be a subject – but why does it matter to be a subject?

While Enoch puts the problem in the mouth of a skeptic, there is nothing particularly skeptical about it. The problem is better seen as a failure to explain where the normativity comes in. It may be that someone who does not think is not a subject at all, but this is consistent with there being nothing normatively significant about being a subject. More needs to be said in order to explain why failing to be a subject is a normatively significant failure.

We can see what is missing if we look at the problem from a different angle. Enoch rather dismissively refers to the failure to meet an internal standard as a failure to be 'classified' in a certain way.[17] The point of his rhetoric is, I think, this: for any concept K which has an internal standard of the sort we have been discussing, there is, of course, another concept J with a different internal standard, such that something which fails to be a K may still be a J; indeed, there will even be a concept K*, such that something falls under K* if and only if it fails to meet the internal standard for K. For example, you count as 'nonthinking' if and only if you fall below the threshold for thinking. So, for the constitutivist to show that some standard is normative, it is not enough to identify some concept to which that standard is internal. The constitutivist has to show that this concept is distinguished; they have to give a reason why it matters to be thinking rather than nonthinking.

It seems to me, however, that, when we look at the problem this way, things are not as hopeless for the constitutivist as Enoch supposes. Is there really nothing we can say about why it matters to be thinking rather than nonthinking?

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[17]Cf. Railton's worry (1997, 309) that constitutive arguments are 'merely linguistic'.

3.2 The dialectical response

Here is a first response to the problem. Someone who raises the objection discussed in the previous section is asking why they ought to think. In asking this question, however, the objector is inviting the constitutivist to give an argument in response. And in inviting argument, the objector is already committed to the practice of accepting claims on the basis of argument – i.e. to inference. So the objector is already committed to thinking rather than nonthinking.[18]

Why does the objector have to be committed in this way? Well, if they are not so committed, then it is wrong to describe them as making an 'objection', because this presupposes a commitment to thinking rather than nonthinking. And if they have not made an objection, then the constitutivist has nothing to worry about. Call this the 'dialectical response'.

I don't think we should be satisfied with this response. It depends on framing the absence of value problem as an objection pressed by an objector. This is what opens the door to arguing that the objector's position is self-undermining. But we are not obliged to frame the problem in this way.

The constitutivist account was supposed to explain why logic is normative. In terms introduced by Dummett (1974), this is an 'explanatory' project rather than a 'suasive' one: the aim is not to persuade someone who denies that logic is normative *that* it is, but rather to explain to someone who accepts that logic is normative *why* it is.[19] The absence of value problem suggests that the constitutivist has not fulfilled this explanatory task until they have shown why the concept of which logical rules are constitutive – the concept of thinking – is normatively significant. The problem, then, need not be framed as an objection pressed by an objector: we can see it more simply as a gap in the constitutivist's own account.

3.3 The need to think

The second response to the absence of value problem is to argue that we simply have to engage in the activity of which the relevant rules are constitutive. Some of Korsgaard's remarks suggest this approach (2009, 32): 'the laws of practical reason govern our actions because if we don't follow them we just aren't acting, and acting is something that we must do.' Similarly, the response to the question 'why should I think?' may be that you have to.

This claim can be understood in a couple of different ways. One reading would be that it is simply impossible not to think (i.e. there is no possible world where you are not thinking). But this is not the reading we should adopt. First, it seems straightforwardly false, since there are times when we are not thinking – for example,

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[18]For a similar argument in the context of agency, see Silverstein (2015).

[19]Note that some moral constitutivists take their project to be a suasive one, with the aim of refuting a moral skeptic. I am assuming that this is the wrong approach when it comes to logic.

in deep sleep. Second, it is inconsistent with the claim that sometimes we fail to think in virtue of falling too far from the constitutive rules of thinking.

On a different reading, the idea is that the aim of thinking is inescapable. While we we don't always succeed in thinking, we are always driven to do so. This reading seems more promising. To fill it out further, I'm going to appropriate some work by Imogen Dickie on the mind's 'need to represent things outside itself'.[20]

Dickie characterizes a 'need' as a 'personal-level goal-representing state' (2015, 280) which, 'like an intention, can guide action, but which, unlike an intention, does not have propositional content' (100). To be a goal-representing state is, roughly, to represent some target and to guide us towards that target. Needs thus stand to intentions as perceptions (on non-conceptualist views) stand to beliefs.[21] Dickie proposes, then, that the mind has a need to represent things outside itself. The target of the need is representing; the need guides us towards that target, motivating us to represent when we are not already doing so.

We can appropriate this account to respond to the absence of value problem on behalf of the constitutivist about logical normativity. The answer to the question why we should think is that we need to. What distinguishes the concept of thinking from the concept of nonthinking is that only the concept of thinking picks out the target of our need. As Dickie argues, if you have a need for x, and the need motivates you to take certain steps to attain x, and those steps reliably lead to attaining x, then those steps are 'strongly justified'. For example, if your need to eat leads you to take steps which reliably lead to eating, those steps are strongly (albeit not absolutely) justified. So, having proposed that we have a need to think, the constitutivist can argue that, since following logical rules is not only a reliable means to thinking but constitutive of it, following those rules is strongly justified. That following logical rules has some positive justificatory status, which not following those rules lacks, seems like enough to address the absence of value problem.

I agree that needs can play this justificatory role. But Dickie's characterization of what it is to be a need is incomplete. Dickie characterizes a need as a non-conceptual motivational state, but that is not a sufficient condition: a need also has to be a state whose fulfillment is good for the subject who has the need. We can put this point more carefully by drawing on Wiggins' analysis of needs. For Wiggins, I have a need for x (if and) only if 'it is necessary, things being as they actually are, that if I avoid being harmed then I have x' (1997, 10. Being 'harmed' means falling below 'some however minimal level of flourishing that is actually attainable' (13, italics omitted). We have a need to eat not only because we have a non-conceptual motivation to eat, but because there is some minimal level of flourishing we cannot attain if we do not eat.

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[20]I say 'appropriate' because Dickie's account involves a very different set of issues and commitments to those discussed here.

[21]So we can have a need for x without having the concept of x. For this idea of non-conceptual content, see Peacocke (1992, ch.3).

To fix ideas, let us say that a non-conceptual motivational state is a 'drive'. Where a drive's fulfillment is necessary for some minimal level of flourishing, the drive is a 'need'; otherwise, it is a 'mere drive'. Now, the relation between needs (in the proper sense) and flourishing is essential to the justificatory role that needs can play.[22] Mere drives do no justificatory work. Consider, for example, someone who has a drive to do nothing but chop onions all day long. This state may reliably generate its own fulfillment, but all that chopping is not thereby justified. The reason is that the chopping is not necessary for the flourishing of the person with the drive.

So suppose that the constitutivist proposes that we have a non-conceptual motivational state whose target is thinking. The constitutivist must then clarify whether this state is a need or a mere drive. If it is a mere drive, then it cannot solve the absence of value problem. The fact that we are driven to think is just like the fact that someone is driven to chop onions all day: it is normatively inert.

It seems, then, that the constitutivist should claim that thinking is a need: that it is necessary for some level of human flourishing. In fact, I think this is the right way to go, and I will develop this suggestion in the next section. But it's worth noting that if thinking is a good for us, then this is why the constitutive rules of thinking are normative. The feature of needs which does the justificatory work is not that they have motivational force but that their fulfillment is good for the subject who has them.

4 The value of thinking

Let's take stock. We were attempting to build an account of the normativity of logic around the claim that logic is constitutive of thinking. The initial proposal was that logical rules are internal standards for thinking, and that thinking is how we unify ourselves as subjects. The problem was there are many different concepts with their own internal standards, such that it was unclear why it mattered if we fell short of the standards for the concept of thinking in particular: why should we think? The first response was that it is incoherent to ask why we should think, because asking why already shows a commitment to thinking. The second response was that we need to think. I argued that the first response failed, while the second response could succeed only if thinking were necessary for human flourishing – more broadly, only if thinking had some value.

In this section, after briefly considering a range of claims we might make about the value of thinking, I'll argue that thinking is necessary for human flourishing.[23] Before

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[22]To be clear, I think that the 'need to represent' is a need in the proper sense. But the consideration Dickie cites in support of the need's existence – its ability to explain our representational behaviour (2015, 127) – show only that it is a drive. Showing that it is a need would require more normative considerations.

[23]For a different attempt to bring together constitutivism with neo-Aristotelianism, see Hacker-Wright (2012). See also Thompson (Thompson) and Lott (2014).

I start, however, let me comment on the shape of the account and how it relates to constitutivism about normativity. One attraction of constitutivism is the prospect of grounding normativity in the thinner notion of satisfying the internal standard of a concept. Relatedly, constitutivism offers the prospect of an account of normativity which a skeptic can only reject at the cost of literal inconsistency. By supplementing the constitutivist account with a claim about the value of thinking, we abandon both of these prospects. Why, then, should a constitutivist be interested?

At least in the logical case, I don't think these prospects are what is most compelling about constitutivism. What I'm after is an explanation of logical normativity, and what I find compelling in constitutivism is the idea that logic tells us what it is to think: that if we don't even tend to conform to logical rules, we are not thinking at all. This, it seems to me, is an idea we have independent reason to accept. The interest of the account I will develop is that it makes this idea central to (though not exhaustive of) an explanation of logical normativity.

4.1 Possible views of the value of thinking

Once we are willing to supplement the constitutivist account with a claim about the value of thinking, a range of options opens up. Different claims about the value of thinking lead to different views of the normativity of logic. In this section I briefly survey the options, from the most minimal to the more robust, before discussing my preferred option.

1. Thinking is instrumentally valuable as a means to some particular end, which some people have and others do not. On this view, logic would be normative, but only for those who shared this end, and only instrumentally.

2. Thinking is instrumentally valuable as a means to some particular end which everyone has. On this view, logic would be normative for everyone, but only instrumentally. This gives logic its universality, but – as Hilary Kornblith has noted – such a strategy incurs a 'substantial burden of proof':

   > any attempt to gain universal applicability by appeal to goals that all humans in fact have will almost certainly run afoul of the facts. Human beings are a very diverse lot; some of us are quite strange. It is hard to imagine making a plausible case for any particular goal or activity which is genuinely universally valued. (Kornblith 1993, 367; cf. Foot 2001, 44.)

3. Thinking is instrumentally valuable as a means to every end, so that if you have any ends at all, you need to think. This is because thinking is necessary for deciding how best to pursue your ends. Kornblith suggests a similar view of epistemic norms, noting that on such a view, 'they are derived from our desires in a way which removes any mystery surrounding them', but are 'universal in

their applicability and not merely contingent upon having certain values' ([1993], 372).

4. Thinking is valuable for its own sake.[24] However, this is consistent with the possibility of human flourishing without thinking: in other words, thinking may be valuable for its own sake but not be something we need to do.

5. Thinking is valuable for its own sake because it is necessary for human flourishing. In other words, thinking is something we need to do.[25]

Option 1 is implausibly weak: it gives logical rules the same normative force as the rules of chess. Options 2, 3 and 4 are less weak, and I think they are live possibilities. However, I am going to develop Option 5. It seems plausible to me that thinking is as strongly related to human flourishing as this claim says; moreover, I don't think there is any special reason to prefer theoretical austerity from the outset. But I should stress that what comes next is one way of developing the constitutivist position, not the only way.

Let me briefly comment on the way that Option 5 explains the normativity of logic. If we accept Option 5 together with the dispositional-constitutive position, we have the following two claims:

1. Logical rules are constitutive of thinking.

2. Thinking is necessary for human flourishing.

In order to arrive at the conclusion that logic is normative, we need the following principle: if X is constitutive of Y, and Y is necessary for human flourishing, then X is normative.

By way of brief motivation for this principle, consider G.E.M. Anscombe's accounts of the authority of the law ([1978]) and the morality of promising ([1969]), both of which use a strategy parallel to the one I propose for logic. In both cases, there is something constituted by a rule: the existence of a legal order is constituted by the rule 'obey the law'; the institution of promising is constituted by the rule 'keep your promises'. And in both cases, the thing in question is necessary for human flourishing: the existence of a legal order ensures some degree of security from arbitrary violence; the institution of promising underwrites human cooperation. As Anscombe puts it, these things have the kind of necessity Aristotle defined as 'that without which some good will not be obtained'.[26] This, Anscombe suggests, is why the rules in question are normative.

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[24]As several philosophers have argued, this is not the same as 'intrinsic' value: something can be valuable for its own sake in virtue of its intrinsic properties, or in virtue of its relational properties (Korsgaard [1983]; Rabinowicz and Rønnow-Rasmussen [2000]).

[25]Compare Moore ([2003], 128) and Schechter and Enoch ([2006], 707).

[26]Aristotle, *Metaphysics* V 1015a20. The same definition underlies Wiggins' account of needs, discussed above.

The principle that if X is constitutive of Y, and Y is necessary for human flourishing, then X is normative simply makes explicit Anscombe's explanatory strategy. If that strategy is a plausible one, then so is the principle.

4.2 Thinking and human flourishing

In this section I argue that thinking is necessary for human flourishing (Option 5 of the previous section). I don't have a proof of this claim, but will offer four considerations which support it. Following this, I address the absence of value problem.

First, as I noted above, Dickie argues ([2015](), 127) that the need to represent explains why we form beliefs in some situations but not others:

> If you have plenty to think about, you are not hungry for food for thought, and are less likely to take up the opportunity to think about a thing that an attentional perceptual link provides. If you are hungry for food for thought, you will seize upon the opportunity provided by an attentional perceptual feed, sustaining the attentional link, and forming and maintaining a body of ⟨That is Φ⟩ beliefs even if the object you are attending to is an unexciting specimen with which you would not bother in a situation where the need was being fulfilled in other ways.

I suggested that these considerations only support the existence of a drive – not a need in the proper sense. But now it is worth noting that the drive to think does not seem pathological in the way that a drive to chop onions all day does. So there is at least prima facie reason to take this to be a need in the proper sense.

Second, for most other human activities, it seems possible to imagine a scenario in which someone has a flourishing life without the activity. For example, eating is typical of human beings, but we can imagine someone who goes on a fast, perhaps even to their death, for some worthwhile end. And while prior eating might be a necessary condition for fasting, eating plays no role in justifying the fast. But thinking is different. The only way I can imagine someone having a flourishing life without thinking would be if they had intentionally renounced it – perhaps as a religious act.[27] And this just means that the person's nonthinking is only justified if it is itself the result of – that is, justified by – thinking. So some thinking remains necessary.

It's worth emphasizing, too, just how deeply a life without thinking would differ from our own. As suggested in Option 3 in the previous section, thinking is necessary for deciding how best to pursue your ends. So it's not clear that someone who had renounced thinking could exercise agency. And it seems doubtful that we should count as flourishing a life that involved no exercise of agency.

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[27]A referee suggests that someone might renounce thinking as the result of a non-conceptual experience, such as an epiphany or revelation. If this were possible, it would weaken the force of the present consideration, perhaps motivating a retreat to a weaker claim (Option 1, 2, 3 or 4). But I think the possibility is somewhat tenuous: it might be more fitting to say, in such a case, that the person is not flourishing.

Third, we might consider the capacities that are typical of human beings. One capacity that does seem typical is the capacity for rational activity. As Philippa Foot writes (2001, 56),

> there is this great difference between human beings and even the most intelligent of animals. Human beings not only have the power to reason about all sorts of things in a speculative way, but also the power to *see grounds* for acting in one way rather than another; and if told that they should do one thing rather than another, they can ask why they should.

A more traditional way to put this point is to say that human beings are rational animals, or thinking animals. Now, in the classical neo-Aristotelian framework, a member of a given life-form cannot flourish without doing the things that are typical for members of that life-form (Foot 2001, ch. 2).[28] So if thinking is typical for the human life-form, then thinking is necessary for human flourishing.

Similar ideas are implicit in some constitutivist writing. Tyke Nunez (2018), for example, argues that logic is normative because logical rules specify the proper exercise of our capacities: 'every exercise of the faculty ought to accord with its laws' (2018, 1162). On its own, Nunez' claim is not enough to secure normativity, as we can ask why we ought to exercise our capacities properly rather than improperly. Nunez' claim needs to be supplemented with the claim that the capacity to think is characteristic of human beings, such that the proper exercise of this capacity is necessary for human flourishing.

Fourth, recall what I referred to as Korsgaard's 'deepest answer' to the question of why we should act: that acting is how we constitute ourselves as unified agents. Along similar lines, I suggested that thinking is how we constitute ourselves as unified subjects. On their own, I argued, these ideas fail to secure normativity. But now we can see these ideas in a different, more Aristotelian light. We are living things of a particular sort – human beings. As living things, we are organized in a teleological way: we need to maintain our unity in the face of a tendency to disunity (Tenenbaum 2011; Moosavi 2019). As a general rule, then, a necessary condition for a living thing to flourish is that it maintain its unity.

But different sorts of living things are unified in different ways. Every animal is unified by maintaining the distinctness of its body from its surroundings. But as human beings, we are unified in a further, particularly self-conscious way – as agents and, more importantly for present purposes, as subjects. Given that thinking is how human beings constitute ourselves as unified subjects, and that such unity is a necessary condition for a living thing to flourish, it follows that thinking is necessary for human flourishing.

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[28]We might worry about the consequences of this Aristotelian claim for human beings who are, in various ways, unable to do what is 'typical for the life-form'. In my view, the right response to this worry is to place less emphasis on the human essence and more emphasis on the idea that flourishing consists in the full exercise of the capacities which one actually has. (Compare Wiggins' emphasis on the degree of flourishing that is 'actually attainable'.)

Finally, let me tie this back to the absence of value problem. One way of looking at that problem is that, even if there is a concept K to which some standard is internal, it's not clear why it matters to be a K rather than something else. In other words, the constitutivist has to show that the concept they care about is distinguished in some normatively significant way. We're now in a position to address this problem. What distinguishes thinking from nonthinking is the role that thinking plays in the life of human beings. It is simply part of being a human being that thinking is necessary for your flourishing.

Of course, you might ask: why does it matter to be a human being, rather than a human being*, where the latter is like a human being, but without a need to think? Perhaps a human being* has a need to engage in some different representational activity, thinking*, which is somewhat like thinking, but not constituted by logical rules. Moreover, perhaps thinking* is better than thinking, so that we might be better off trying to be human beings* rather than human beings.

We should go slowly here. First, it's not clear what it would mean for thinking* to be better than thinking. Better how? To make sense of this claim, we would need some idea of a standard, applicable to both thinking and thinking*, which thinking* comes closer to meeting than thinking. And it is at least difficult to see what that standard would be.[29] (Consider the parallel question of whether thinking is better than perceiving.)

Second, it's not clear how to understand the idea that we might be better off trying to be human beings* rather than human beings. In particular, it's hard to distinguish this from the question whether it would be better if human beings were replaced by human beings*.[30] For it's not clear in what sense the resultant beings would be *us*.

The right response to the absence of value problem, then, is that there are limits on our ability to live by alternative concepts: it is not the case that for any concept K, we can invent a concept K* which is an intelligible alternative for beings like us. There are some concepts – we might think of them as 'bedrock concepts' (Chalmers 2011, s.8) – for which we have no alternatives. I have suggested that the concept of thinking and the concept of a human being are bedrock in this sense. We are human beings, with a need to think: these facts are not up to us.

For these reasons, we should accept that thinking is necessary for human flourishing. Supposing that logic is constitutive of thinking, it follows that logic is normative.

5   Vexing issues about logical normativity

That concludes the main part of my case for the proposed account of logical normativity. In this section, I argue that this account deals nicely with some vexing issues that arise

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[29]Indeed, it is unclear what thinking* is supposed to be. For thinking is not just a name for representational activity which meets certain constraints: it is representational activity whose contents are thoughts. So we can ask what kind of content thinking* is supposed to have, if not thoughts.

[30]For discussion of this question, see Williams (2006) and Moore (2018, ch. 17).

in the literature on logical normativity. This will help to clarify the kind of normativity that logic has in my account and the role of this normativity in an explanation of how logic relates to thinking.

The issues I have in mind are about various implausible consequences that follow from certain formulations of the claim that logical rules are normative. For example, consider the Simple Formulation:

Simple Formulation If p entails q, then if you believe p, you ought to believe q.[31]

This has a welter of implausible consequences: first, it seems to entail that if you believe p, you ought to believe *if p, then p*, and then you ought to believe *if p, then, if p, then p* and so on. This seems a waste of cognitive resources Harman (1986, 12).[32] Second, it seems to entail that if you believe p and *if p, then q*, then you ought to believe q – even if q is false (Harman 1984; MacFarlane 2004).[33] And surely we ought not to believe things that are false. Third, given that p entails p, and there is nothing in the Simple Formulation to exclude the case where $q = p$, it seems to entail that if you believe p, you ought to believe p. This seems like an objectionable kind of bootstrapping: believing something doesn't on its own give you a reason to believe it Broome (1999).

Now, the claim that logical rules are normative need not be committed to the Simple Formulation. But the underlying concern is that any formulation of the claim that logical rules are normative will entail similar consequences, or else be too weak to be interesting. Defenders of the normativity of logic have tended to respond by developing 'bridge principles', weakenings of the Simple Formulation that avoid the implausible consequences. Here, I begin with some general comments on how these issues appear in my account. Next, I respond to each of the implausible consequences mentioned above. Finally, I compare my treatment of these issues with recent accounts centred on bridge principles, showing that, in my account, while a bridge principle holds, it is not fundamental in explaining the relation of logic to thinking.

5.1 Three questions about logical rules

To begin the response, we need to distinguish three questions about logical rules and their corresponding answers. The first question is: what are the logical rules

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[31]A fully general formulation of this thesis would have to make provision for multiple-premise entailments. However, this detail doesn't matter for our purposes, as the problems arise even in the single-premise case. Also, if we conceived of believing in terms of degrees of confidence, we would need to reformulate the thesis to impose a constraint on the degrees of belief in p and q: for discussion, see Field (2009) and Milne (2009).

[32]In fact, depending on what a belief is, the 'cluttering' beliefs might not count as additional beliefs. (For example, they don't narrow the set of possible worlds in which the subject's beliefs are true.) But for purposes of argument I will waive this point. Harman (1986, 14) responds to a related point by specifying that the objection applies to explicit rather than implicit beliefs.

[33]Parallel arguments are often given against the claim that meaning is normative: see Hattiangadi (2006) and Glüer and Wikforss (2009).

constitutive of thinking? For present purposes, I will take Conditional Proof and Modus Ponens to be logical rules constitutive of thinking.[34] I formulate them as follows:

Conditional Proof If by assuming *p* you can deduce *q*, infer *if p, then q*.

Modus Ponens From *p* and *if p, then q*, infer *q*.

All rules define a standard of correctness, specifying some acts as correct in light of the rule (Broome 2014, 24). It would be equivalent, then, to formulate the rules as follows:

Conditional Proof If by assuming *p* you can deduce *q*, it is correct to infer *if p, then q*.

Modus Ponens From *p* and *if p, then q*, it is correct to infer *q*.

As I mentioned earlier in the paper, the choice of how to present logical rules is a notational one; it doesn't yet answer any philosophical question about the normative force of the rules.

The second question is: what relation must a subject have to the rule in order to think? So far, I've said simply that a subject must have a disposition to conform to the rule, a disposition which is manifested in a subject's tendency to conform to the rule. But now I need to say a bit more about what this amounts to. Claims about dispositions play an explanatory role: when X has a disposition to do Y, and then X does Y, we can explain why X did Y by appeal to its disposition. But where the bearer of the disposition is a subject, we also have to say what it is first-personally for the subject to have, and to exercise, the disposition.

Borrowing from Peacocke (1987), I am going to say that when a subject has a disposition to conform to some logical rule, the subject finds the transitions that the rule specifies as correct 'primitively compelling'.[35] That is, they are compelling, and the subject need not have any further idea of why they are compelling. To be clear, this means that the subject is tempted by particular inferences which evidently fall under the rule. It does not mean that the subject is tempted to accept a general representation of the rule.[36] The subject can act on the resulting compulsion by making the transition, but there is no guarantee that they will do so: the question may never arise, or the compulsion may be overridden by competing factors. These factors might include inattention, tiredness, the complexity of the thoughts involved (making it unobvious that the transition falls under the rule) or other reasons not to

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[34]I am not assuming that these are the only rules with this status.

[35]Harman discusses a related notion of 'psychological immediacy' in Appendix A of his (1986).

[36]Most people would find it hard to resist the following reasoning: *Either I left my keys at home or in the car. They're not in the car. So they must be at home.* But they need not find a representation of Disjunction Elimination intuitive.

make the transition.[37] Unless the subject finds the transitions compelling, however, they are not thinking.

The third question is: why ought we to think? And here my claim is that thinking is necessary for human flourishing. By contrast, there are other rules such that we must have a similar relation to them in order to do a certain activity, but there is no general reason why we ought to do that activity. For example, we must have a similar relation to the rules of chess in order to count as playing chess, but there is no general reason why we ought to play chess.

Now, I think that full answers to these three questions would be an exhaustive account of the sense in which Conditional Proof and Modus Ponens are normative. But at no point in answering these questions are we committed to the Simple Formulation. The Simple Formulation is neither an answer to the first question (what the logical rules are), nor to the second question (how a subject must relate to logical rules in order to think), nor to the third (why the subject ought to think). Nor does it follow from the answers to these questions taken jointly.

5.2   The implausible consequences of the Simple Formulation

Let me now consider the implausible consequences that follow from the Simple Formulation. The first was that if you believe *p*, you ought to believe *if p, then p* and so on. The second was that if you believe *p* and *if p, then q*, then you ought to believe *q* – even if *q* is false. The third was that if you believe *p*, you ought to believe *p*. Let me start with the first two cases, as the third raises some additional issues.

Here is what I want to say about the inferences in the first two cases. First, both inferences are correct in light of logical rules which we are supposing to be constitutive of thinking: the first in light of Conditional Proof, the second in light of Modus Ponens.

Second, this means that anyone who thinks has a disposition to conform to these rules. As I suggested above, this means that anyone who thinks finds the transitions that the rules specify as correct primitively compelling. But it does not follow that anyone who thinks must draw these inferences: the question may never arise, or the compulsion may be overridden by competing factors. In the case of the move from *p* to *if p, then p*, it seems plausible that the question will never arise. In the case of the move from *p* and *if p, then q* to *q*, where *q* is false, the fact that *q* is false is a competing factor that can, and should, override the compulsion to draw the inference.[38]

Third, however, if the subject does not have the disposition to conform to these rules – i.e. if the question does arise, and there are no competing considerations, but

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[37]There is a helpful discussion of the various possibilities here in Moore (2003, 48-49).

[38]An alternative solution to this problem is to weaken our characterization of the dispositions required for grasping logical rules. Rather than dispositions to *infer* a conclusion on the basis of *judging* the premises, Murzi and Steinberger (2013) propose dispositions to *consider* a conclusion on the basis of *entertaining or supposing* the premises. I am sympathetic to this solution, but accepting it would require discussion of the role of entertaining and suppositional reasoning in thinking, which I have no room to do here.

the subject does not find the transitions compelling – then the subject is not thinking.

Consider a parallel case. Suppose that you believe *x is an F G* (for example, 'This is a tall tree'). This entails – not logically, but bracket this for now – *x is a G* ('This is a tree'). By analogy with the Simple Formulation, it might be proposed that if you believe *x is an F G*, you ought to believe *x is a G*. The same problems will arise: first, that this is a waste of cognitive resources, and second, what if *x is a G* is false?

Here is what I would say instead. First, the inference from *x is an F G* to *x is a G* is correct in light of the rule for thoughts of this structure.[39] Second, anyone who understands *x is an F G* must have a disposition to conform to this rule; they must find the transition to *x is a G* primitively compelling. However, this does not mean they must draw this inference: the question may never arise, or the compulsion may be overridden. But, third, if they do not have this disposition at all, then they simply do not understand *x is an F G*. The fact that *x is a G* is false is a good reason to override the disposition, but it is not a good reason for denying the existence of the disposition altogether. (The parallel is only partial because the rule in question is not a logical one: you can fail to understand the relevant structure in *x is an F G* while still thinking. In general, this is the difference between the normativity of logic and the normativity, if there is any, of non-logical elements of content.)

Finally, the third implausible consequence of the Simple Formulation was that if you believe *p*, you ought to believe *p*. This raises somewhat different issues from the previous two cases because it doesn't depend on the rules for any logical connective. Rather, it depends only on Reflexivity, which is a structural rule – that is, an inference rule that is not about any logical connective.

Reflexivity From *p*, infer *p*.

This rule guarantees that *p* entails *p*, and then the Simple Formulation tells us that if you believe *p*, you ought to believe *p*.

In the discussion so far, I've implicitly taken 'logical rules' to refer only to operational rules – rules for logical connectives – and haven't said anything about the role of structural rules, or how thinkers must relate to such rules. Structural rules may raise different issues. While it seems plausible that we have dispositions to infer in accordance with Conditional Proof and Modus Ponens, it's less clear what it would mean to have a disposition to infer in accordance with, say, Transitivity. On the other hand, it's hard to draw a clear distinction between operational and structural rules, as operational rules can be seen as reflecting structural rules (Došen 1989), and operational rules can be seen as containing information about structural rules (Dicher 2016). These facts favour a uniform treatment of operational and structural rules.

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[39]For discussion of such 'structurally valid' inferences, see Evans (1976) and Balcerak Jackson (2007). To give a full account of these inferences we would need to distinguish bad cases like '*x is a rubber duck, so x is a duck*'. I'm going to assume that there is some way of distinguishing these cases, as it seems plausible that in good cases the inference in question is closely tied to understanding (Balcerak Jackson 2009).

Without taking a conclusive position on how other structural rules should be treated, it does seem plausible to me that any thinker has to have a disposition to conform to Reflexivity. If you judge *p* but do not find it primitively compelling to judge *p*, then there is reason to doubt that you are judging at all. The unintelligibility of judging *p* and refusing to judge *p* is even stronger than the unintelligibility of judging *x is an F G* and refusing to judge *x is a G*. So I think we should take Reflexivity to be constitutive of thinking, and this means that we need a response to the bootstrapping problem raised above.

At this point my response is fairly similar to my response to the first two problems. First, the inference from *p* to *p* is correct in light of Reflexivity. Second, anyone who understands *p* must find this transition (really a degenerate case of 'transition') primitively compelling. Third, if someone does not find this transition primitively compelling, they are not thinking. None of this means that if you believe something, you ought to believe it.

5.3 Bridge principles

In this section I compare my approach to logical normativity with recent approaches centred on developing 'bridge principles'.

A general strategy common to recent approaches to logical normativity is to argue that the normativity of logic consists in the holding of a 'bridge principle', which is a weakened version of the Simple Formulation above, of the following form:

Bridge Principle If *p* entails *q*, [normative statement about cognitive attitudes to *p* and *q*].[40]

Bridge principles are developed so as to avoid the implausible consequences of the Simple Formulation. For example, a principle which avoids all three problems might be:

If *p* entails *q*, you ought not to believe *p* while disbelieving *q*, unless *q* is false.

As this principle does not enjoin you to believe anything, it does not enjoin cluttering your mind with useless consequences, nor believing the things you happen to already believe. Nor does the rule prohibit disbelieving a consequence of your beliefs if the consequence is false. I'd like to make three remarks by way of comparing my account to the bridge principle strategy. This comparison will shed light on my own account, provide additional motivation for a particular class of bridge principles, and also raise a question about the larger explanatory role of bridge principles. First, I will show that it is possible to generate a bridge principle from my account. Second, however,

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[40]This literature begins with MacFarlane (2004); for more discussion see Field (2009), Broome (2013) and Steinberger (2019a). A fully general bridge principle would, of course, allow for multiple premises. It is also possible that more than one bridge principle is required, in order to capture different varieties of logical normativity (Steinberger 2019c), but I will ignore this detail here.

the bridge principle is open-ended, rather than attempting to specify when we should, or should not, draw a valid inference, and I will offer some principled reasons to think this is the right approach. Third, I will contrast the explanatory role of bridge principles on my account from the role they have in many discussions: it is often suggested that bridge principles bridge a gap between logic and thinking, but on my account this is not so.

First, then, it is possible to state a bridge principle in my account. To do this, we have to make a modification to the form above. The antecedent of the form above is 'If p entails q', but in my account the relation that thinkers must be responsive to is not entailment in general, but entailment in light of particular logical rules. Let us say that p 'directly entails' q if and only if the transition from p to q is correct in light of a single application of a logical rule.[41] (For example, p directly entails *if p, then p*, but does not directly entail *if p, then if p, then p*.[42] The antecedent of my bridge principle must invoke direct entailment rather than entailment.

What about the consequent of the bridge principle? Initially, it seems like all we have is:

> If p directly entails q, then if you believe p you must find the transition to q primitively compelling.

If we wanted to build in more detail, we could say:

> If p directly entails q, then if you believe p, and if the question arises whether q, you have a reason to believe q, unless other factors override this.

But we have to be careful about 'reason' here. This 'reason' is just an articulation of the primitive compulsion a subject feels in virtue of having a disposition to conform to a logical rule. It is not a justifying reason (an 'other things being equal it would be good if…' reason), because a subject could have a similar reason in virtue of being disposed to conform to the rule for 'tonk' (Prior 1960). Rather, it is an explanatory reason – a motivational state which could explain the subject's action (Parfit 1997; Alvarez 2017). And this means that we do not yet have a genuine bridge principle: a bridge principle has a normative statement as its consequent, but a claim about explanatory reasons is not a normative statement. Similar remarks apply to 'must' in the previous formulation of the principle.

However, in my account thinking does have genuine normative status, and a failure to find the right transitions primitively compelling means a failure to think. In other words, while the principle above simply describes what it is to have a disposition to conform to logical rules, the value of thinking means that we have a reason – indeed, a need – to have such a disposition. This, I think, allows us to say that if p directly

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[41]We can define entailment as the transitive closure of direct entailment. p entails q if and only if for some set $\{p_1, p_2,\dots p_n\}$, p directly entails p_1, p_1 directly entails p_2, … and p_n directly entails q.

[42]Compare Field's (2009) notion of 'obvious' entailment and the diachronic norms discussed by Hlobil (2015).)

entails *q*, someone who believes *p* does have a justifying (as well as explanatory) reason to believe *q*. If they refuse to believe *q*, this raises doubts about whether they are thinking. So we have:

> If *p* directly entails *q*, then if you believe *p*, and if the question arises whether *q*, you have a reason to believe *q*, unless other factors override this.

This (fairly weak) bridge principle is true in my account.

To be clear, this bridge principle is not particularly novel. It is a reasons-based, rather than ought-based principle, like that of Sainsbury ([2002](#)). This puts it in tension with the 'Strictness Test' that MacFarlane ([2004](#)) draws from Broome ([1999](#)): essentially that *pro tanto* reasons are too weak to properly capture logical normativity. The intuitive worry is that reasons-based bridge principles make it too easy for other considerations to override logical reasons. In my view, some of the force of this objection comes from conflating explanatory and justifying reasons. The explanatory reasons generated by logical dispositions may, indeed, be hard to override: if you believe *p*, and *p* directly entails *q*, you can't choose not to believe *q* merely because you are offered some money. But the justifying reasons generated by logic are *pro tanto*, as there may be good reason, all things considered, to try to bring it about that you disbelieve *q*, even if it follows from some *p* which you accept.

This leads to the second remark I want to make. The bridge principle in my account is open-ended, containing a reference to overriding considerations, rather than attempting to specify when we should, and when we should not, draw a valid inference. This is a feature it shares with other reasons-based bridge principles (MacFarlane [2004](#)). This contrasts with some other investigations of the normativity of logic, which aim at finding a plausible bridge principle which avoids implausible consequences while still providing some reasonably strong normativity. The way these accounts avoid implausible consequences is by building a bridge principle explicitly to avoid them – for example, building in an exception for cases where the conclusion of the entailment is false. The resulting bridge principle satisfies the Strictness Test, specifying when we should, and should not, draw a valid inference. My account generates some novel reasons of principle to think this is the wrong strategy.

To show this, I want to develop an analogy. Consider the normativity of promising. I think – as did Anscombe ([1969](#)) – that an account of the normativity of promising should be composed of two parts. First, there is the rule of promising – the rule you have to tend to follow in order to count as promising. Plausibly, this rule is simply 'keep your promises, unless released from doing so by the promisee'. Second, however, there is an account of why promising is something we should go in for. Here there are a range of options: virtue theories, contract theories, consequentialist theories and so on (Habib [2018](#)).

Now, what about a promise to commit murder? Such a promise should not be kept: so should we say that the rule of promising is really 'keep your promises, unless released from doing so by the promisee, or unless the promise is to commit murder'?

In my view, we should not. Having a tendency to follow the rule of promising does not require that you follow the rule in every case; it is consistent with this tendency that you sometimes override it when there are good reasons to do so. If we built all the exceptions there are into the rule of promising, what we would end up with would not be an account of the normativity proprietary to promising; it would be an account of general morality contained as exceptions to promise-keeping.

Similarly, I do not think we should incorporate the rule against believing false-hoods, or other good epistemic rules, into an account of the normativity of logic. The result would no longer be an account of the normativity proprietary to logic; it would be an account of good epistemic conduct. Of course, an account of the normativity of logic will be part of an account of good epistemic conduct – this much is reflected in the open-endedness of my bridge principle – but that does not mean that we should be able to read off the latter from the former, any more than we should be able to read off the wrongness of murder from our account of the normativity of promising. If this is right, then there are reasons of principle for rejecting the Strictness Test as a constraint on bridge principles.

Finally, I'd like to end by spelling out a deep difference between my account and a view of logic and thinking that motivates much work on bridge principles: namely, that these principles bridge a gap between logic and thinking. The idea that there is such a gap derives from Gilbert Harman (1986, 6). Steinberger explains the idea as follows (2019a, 307; citation omitted):

> The traditional conception whereby logic occupies a normative role in our cognitive economy rests upon the mistake of conflating (or at least running too closely together) principles of deductive logic with what Harman calls 'a theory of reasoning'. Yet the two enterprises—formulating a deductive logic and formulating a normative theory of reasoning—are fundamentally different according to Harman. A theory of reasoning is a theory of how ordinary agents should go about managing their beliefs. ... In short, Harman's explanation of our intuitions to the effect that logic must have a normative role to play in reasoning is that we conflate deductive logic and theories of reasoning. Little wonder, then, that we take there to be an intimate relation between logic and norms of belief: the relation is simply that of identity! However, once we are disabused of this confusion, Harman maintains, we are left with 'a gap'. The question is whether that gap separating logic and norms of reasoning can be bridged.

Bridge principles are then conceived as a way to bridge the gap. This is reflected in the form of the principles: the antecedent is a claim about thoughts or sentences, saying nothing about thinking, while the consequent is a claim about thinking. Given that the claim about thinking is a normative one, the suggestion is that what bridges the gap between logic and thinking is the normativity of logic.[43] If normativity is

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[43]This suggestion is not essential to the study of bridge principles: it would be possible to frame them

what bridges the gap between logic and thinking, and the correct bridge principle specifies that normativity, then the correct bridge principle is not just true, but also fundamental in an explanation of how logic relates to thinking.

The account I've developed in this paper has a very different shape. On my account, a bridge principle is true, but it is derivative, rather than fundamental, in an explanation of how logic relates to thinking. Of course, this point isn't meant as an objection to Harman, or to the bridge principles literature: that would require defending the constitutive position, which I haven't done here. But it is still worth spelling out the difference in approach, because it helps us to clarify the theoretical ambitions of an account of logical normativity.

On my own account, the correct bridge principle does not bridge a gap between logic and thinking. If there is such a gap, then what bridges it is that logic is constitutive of thinking – i.e. that thinkers have to tend to conform to logical rules in order to think. But given the way I defined 'logic' as a set of inference-rules operating on thoughts, it might be better to say that, on my own account, there is no gap at all between logic and thinking. As a result, it would be possible to give an explanation of how logic relates to thinking, and of why logic is normative for thinking, without any reference to bridge principles.

This possibility should force us to clarify what we are after in studying bridge principles. We might simply be interested in finding some truth about the normative force of logic. In that case, seeking a satisfactory bridge principle may be a good strategy. But – as suggested by talk of a 'gap' between logic and thinking – we might also be interested in giving a fundamental explanation of how logic relates to thinking. In that case, we should not take for granted that bridge principles are the place to start.[44]

References

Alvarez, M. (2017). Reasons for action: Justification, motivation, explanation. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2017 ed.). Metaphysics Research Lab, Stanford University.

Anscombe, G. E. M. (1969). On promising and its justice, and whether it needs be respected *in foro interno*. *Critica 3*(7/8), 61–83.

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as attempting to specify the way in which logic is normative, but not attempting to make any claims about what is explanatorily fundamental. However, as is clear from MacFarlane (2004) and Steinberger (2019a), the gap idea does motivate much of this research.

Anscombe, G. E. M. (1978). On the source of the authority of the state. *Ratio 20*(1), 1–28.

Aristotle (1984). *Metaphysics*. In J. Barnes (Ed.), *The Complete Works of Aristotle: the Revised Oxford Translation*. Princeton University Press.

Balcerak Jackson, B. (2007). Beyond logical form. *Philosophical Studies 132*(2), 347–380.

Balcerak Jackson, B. (2009). Understanding and semantic structure: Reply to Timothy Williamson. *Proceedings of the Aristotelian Society 109*(1pt3), 337–343.

Beall, J. and G. Restall (2005). *Logical Pluralism*. Oxford University Press.

Bilgrami, A. (2012). *Self-Knowledge and Resentment*. Harvard University Press.

Blake-Turner, C. and G. Russell (2018). Logical pluralism without the normativity. *Synthese*, 1–19.

Boghossian, P. (2003). Blind reasoning. *Aristotelian Society Supplementary Volume 77*(1), 225–248.

Boghossian, P. (2012). Inferentialism and the epistemology of logic: Reflections on Casalegno and Williamson. *Dialectica 66*(2), 221–236.

BonJour, L. (1998). *In Defense of Pure Reason*. Cambridge University Press.

Brandom, R. (1994). *Making It Explicit: Reasoning, Representing, and Discursive Commitment*. Harvard University Press.

Broome, J. (1999). Normative requirements. *Ratio 12*(4), 398–419.

Broome, J. (2013). *Rationality Through Reasoning*. Wiley-Blackwell.

Broome, J. (2014). Comments on boghossian. *Philosophical Studies 169*(1), 19–25.

Burge, T. (1986). Intellectual norms and foundations of mind. *Journal of Philosophy 83*(December), 697–720.

Chalmers, D. J. (2011). Revisability and conceptual change in "Two Dogmas of Empiricism". *Journal of Philosophy 108*(8), 387–415.

Choi, S. and M. Fara (2018). Dispositions. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2018 ed.). Metaphysics Research Lab, Stanford University.

Christensen, D. (2004). *Putting Logic in its Place: Formal Constraints on Rational Belief*. Oxford University Press.

Conant, J. (1992). The search for logically alien thought: Descartes, Kant, Frege, and the Tractatus. *Philosophical Topics 20*(1), 115–180.

Dasgupta, S. (2018). Realism and the absence of value. *Philosophical Review 127*(3), 279–322.

Davidson, D. (1973). Radical interpretation. *Dialectica 27*(3-4), 313–328.

Davidson, D. (1985). Incoherence and irrationality. *Dialectica 39*(4), 345–354.

Dicher, B. (2016). A proof-theoretic defence of meaning-invariant logical pluralism. *Mind 125*(499), 727–757.

Dickie, I. (2015). *Fixing Reference*. Oxford University Press.

Došen, K. (1989). Logical constants as punctuation marks. *Notre Dame Journal of Formal Logic 30*(3), 362–381.

Dummett, M. A. E. (1973). *Frege: Philosophy of Language*. London: Duckworth.

Dummett, M. A. E. (1974). The justification of deduction. In M. A. E. Dummett (Ed.), *Truth and Other Enigmas*. Oxford University Press.

Enoch, D. (2006). Agency, shmagency: Why normativity won't come from what is constitutive of action. *Philosophical Review 115*(2), 169–198.

Evans, G. (1976). Semantic structure and logical form. In G. Evans and J. McDowell (Eds.), *Truth and Meaning*, pp. 49–75. Oxford University Press.

Field, H. (2009). What is the normative role of logic? *Aristotelian Society Supplementary Volume 83*(1), 251–268.

Finn, S. (2019). The adoption problem and anti-exceptionalism about logic. *Australasian Journal of Logic 16*(7), 231.

Foot, P. (2001). *Natural Goodness*. Oxford University Press.

Glüer, K. and A. Wikforss (2009). Against content normativity. *Mind 118*(469), 31–70.

Habib, A. (2018). Promises. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2018 ed.). Metaphysics Research Lab, Stanford University.

Hacker-Wright, J. (2012). Ethical naturalism and the constitution of agency. *Journal of Value Inquiry 46*(1), 13–23.

Hale, B. (2002). Basic logical knowledge. *Royal Institute of Philosophy Supplement 51*, 279–304.

Harman, G. (1984). Logic and reasoning. *Synthese 60*(1), 107–127.

Harman, G. (1986). *Change in View*. MIT Press.

Hattiangadi, A. (2006). Is meaning normative? *Mind and Language 21*(2), 220–240.

Heal, J. (1989). *Fact and Meaning: Quine and Wittgenstein on Philosophy of Language*. Blackwell.

Heal, J. (1994). Semantic holism: Still a good buy. *Proceedings of the Aristotelian Society 94*(325).

Heal, J. (1999). Thoughts and holism: Reply to Cohen. *Analysis 59*(2), 71–78.

Hlobil, U. (2015). There are diachronic norms of rationality. *Thought: A Journal of Philosophy 4*(1), 38–45.

Keefe, R. and P. Smith (1996). *Vagueness: A Reader*. MIT Press.

Kimhi, I. (2018). *Thinking and Being*. Harvard University Press.

Kissel, T. K. and S. Shapiro (2017). Logical pluralism and normativity. *Inquiry: An Interdisciplinary Journal of Philosophy*, 1–22.

Kolodny, N. and J. MacFarlane (2010). Ifs and oughts. *Journal of Philosophy 107*(3), 115–143.

Kornblith, H. (1993). Epistemic normativity. *Synthese 94*(3), 357–376.

Korsgaard, C. M. (1983). Two distinctions in goodness. *Philosophical Review 92*(2), 169–195.

Korsgaard, C. M. (2008). *The Constitution of Agency: Essays on Practical Reason and Moral Psychology*. Oxford University Press.

Korsgaard, C. M. (2009). *Self-Constitution: Agency, Identity, and Integrity*. Oxford University Press.

Kripke, S. (1982). *Wittgenstein on Rules and Private Language*. Harvard University Press.

Lavin, D. (2004). Practical reason and the possibility of error. *Ethics 114*(3), 424–457.

Leech, J. (2015). Logic and the laws of thought. *Philosophers' Imprint 15*.

Leech, J. (2017). The normativity of Kant's logical laws. *History of Philosophy Quarterly 34*(4).

Lewis, D. K. (1982). Logic for equivocators. *Noûs 16*(3), 431–441.

Lewis, D. K. (1997). Finkish dispositions. *Philosophical Quarterly 47*(187), 143–158.

Lindeman, K. (2017). Constitutivism without normative thresholds. *Journal of Ethics and Social Philosophy 3*(XII), 231–258.

Lott, M. (2014). Why be a good human being? Natural goodness, reason, and the authority of human nature. *Philosophia 42*(3), 761–777.

MacFarlane, J. (2000). *What Does It Mean to Say That Logic is Formal?* Ph. D. thesis, University of Pittsburgh.

MacFarlane, J. (2002). Frege, Kant, and the logic in logicism. *Philosophical Review 111*(1), 25–65.

MacFarlane, J. (2004). In what sense (if any) is logic normative for thought? (ms.).

McGee, V. (1985). A counterexample to modus ponens. *Journal of Philosophy 82*(9), 462–471.

Milne, P. (2009). What is the normative role of logic? *Aristotelian Society Supplementary Volume 83*(1), 269–298.

Moore, A. W. (2003). *Noble in Reason, Infinite in Faculty: Themes and Variations in Kants Moral and Religious Philosophy*. Routledge.

Moore, A. W. (2018). *The Infinite* (Third Edition ed.). Routledge.

Moosavi, P. (2019). From biological functions to natural goodness. *Philosophers' Imprint 19*.

Murzi, J. and F. Steinberger (2013). Is logical knowledge dispositional? *Philosophical Studies 166*(S1), 165–183.

Nunez, T. (2018). Logical mistakes, logical aliens, and the laws of Kant's pure general logic. *Mind 128*(512), 1149–1180.

Parfit, D. (1997). Reasons and motivation. *Aristotelian Society Supplementary Volume 71*(1), 99–130.

Peacocke, C. (1987). Understanding logical constants: A realist's account. In *Proceedings of the British Academy, Volume 73: 1987*, pp. 153.

Peacocke, C. (1992). *A Study of Concepts*. MIT Press.

Priest, G. (1979). Two dogmas of Quineanism. *Philosophical Quarterly 29*(117), 289–301.

Prior, A. N. (1960). The runabout inference-ticket. *Analysis 21*(2), 38.

Putnam, H. (1994). Rethinking mathematical necessity. In J. Conant (Ed.), *Words and Life*, pp. 245–263.

Quine, W. V. O. (1951). Two dogmas of empiricism. *Philosophical Review 60*(1), 20–43.

Quine, W. V. O. (1960). *Word and Object*. MIT Press.

Quine, W. V. O. (1992). *Pursuit of Truth, Revised Edition*. Cambridge: Mass.: Harvard University Press.

Rabinowicz, W. and T. Rønnow-Rasmussen (2000). A distinction in value: Intrinsic and for its own sake. *Proceedings of the Aristotelian Society 100*(1), 33–51.

Railton, P. (1997). On the hypothetical and non-hypothetical in reasoning about belief and action. In G. Cullity and B. N. Gaut (Eds.), *Ethics and Practical Reason*, pp. 53–79. Oxford University Press.

Russell, B. (1912). *The Problems of Philosophy*. Home University Library.

Russell, G. (2020). Logic isn't normative. *Inquiry: An Interdisciplinary Journal of Philosophy 63*(3-4), 371–388.

Rysiew, P. (2002). Reid and epistemic naturalism. *Philosophical Quarterly 52*(209), 437–456.

Sainsbury, R. M. (2002). What logic should we think with? *Royal Institute of Philosophy Supplement 51*, 1–17.

Schechter, J. and D. Enoch (2006). Meaning and justification: The case of modus ponens. *Noûs 40*(4), 687–715.

Shapiro, S. (2014). *Varieties of Logic*. Oxford University Press.

Silverstein, M. (2015). The shmagency question. *Philosophical Studies 172*(5), 1127–1142.

Sperber, D., F. Cara, and V. Girotto (1995). Relevance theory explains the selection task. *Cognition 57*(1), 31–95.

Steinberger, F. (2019a). Consequence and normative guidance. *Philosophy and Phenomenological Research 98*(2), 306–328.

Steinberger, F. (2019b). Logical pluralism and logical normativity. *Philosophers' Imprint 19*.

Steinberger, F. (2019c). Three ways in which logic might be normative. *Journal of Philosophy 116*(1), 5–31.

Stich, S. (1990). *The Fragmentation of Reason: Preface to a Pragmatic Theory of Cognitive Evaluation*. Cambridge, Massachusetts: MIT Press.

Stroud, B. (1979). Inference, belief, and understanding. *Mind 88*(350), 179–196.

Tenenbaum, S. (2011). Review of Christine Korsgaard's *Self-Constitution*. *Ethics 121*(2), 449–455.

Thompson, M. Three degrees of natural goodness (ms.).

Tolley, C. (2006). Kant on the nature of logical laws. *Philosophical Topics 34*(1/2), 371–407.

Valaris, M. (2017). What reasoning might be. *Synthese 194*(6).

Wason, P. C. (1968). Reasoning about a rule. *Quarterly Journal of Experimental Psychology 20*(3), 273–281.

Wedgwood, R. (2017). *The Value of Rationality*. Oxford University Press.

Wiggins, D. (1997). *Needs, Values, Truth: Essays in the Philosophy of Value*. Oxford University Press.

Wikforss, A. (2009). Are there understanding-assent links? *The Baltic International Yearbook of Cognition, Logic and Communication 5*(12).

Williams, B. (2006). The human prejudice. In *Philosophy as a Humanistic Discipline*. Princeton University Press.

Williamson, T. (2006). Conceptual truth. *Aristotelian Society Supplementary Volume 80*(1), 1–41.

Williamson, T. (2007). *The Philosophy of Philosophy*. Wiley-Blackwell.

Wright, C. (1986). Inventing logical necessity. In J. Butterfield (Ed.), *Language, Mind and Logic*. Cambridge University Press.