The normative status of logic

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1 Introduction

We consider it to be a bad thing to be inconsistent. Similarly, we criticize others for failing to appreciate (at least the more obvious) logical consequences of their beliefs. In both cases there is a failure to conform one’s attitudes to logical structures. In everyday life as well as in our scientific endeavors and in much of the philosophical tradition we generally deem agents who find themselves in such logical binds to be rationally defective. This suggests that logic has a normative role to play in our rational economy; it instructs us how we ought or ought not to think or reason. The idea is deeply anchored in our tradition of thinking about and the way we teach logic. Two consider just two examples, Kant characterizes (pure general) logic as embodying the ‘absolutely necessary rules of thought without which there can be no employment whatsoever of the understanding (A52/B76)’, which instruct us not ‘how the understanding is and thinks’ but ‘how it ought to proceed’ (Kant 1800/1974, p. 16). Similarly, Frege, in numerous passages combatting the threat of psychologism, classifies logic, ‘like ethics’ as a ‘normative science’ (Frege 1897/1979), one whose laws ‘prescribe universally how one should think if one is to think at all’ (Frege 1893/1903/2009). This entry is concerned with the question as to whether the tradition and the intuitions that appear to underwrite it are correct. In other words, does logic has normative authority over us? And if so, in what sense exactly can logic be said to do so?

2 The normative status of what?

Before we can hope to make any headway with these questions a number of clarifications are in order. First and foremost, in asking after the normative status of logic, we had better get clearer on what we mean by ‘logic’. For present purposes,
I will take a logic to be a specification of a relation of logical consequence on a set of truth-bearers. Moreover, I will assume consequence relations to necessarily preserve truth in virtue of logical form. For simplicity, I will use ‘|=’ to denote such a consequence relation. My default assumption will be to take the double turnstile to denote the semantic consequence relation of classical first-order predicate calculus. But not much hangs on this. Partisans of other types of consequence relations, in particular non-classical, may read ‘|=’ as referring to their preferred consequence relation.

Presumably, if logic is normative for thinking or reasoning, its normative force will stem, at least in part, from the fact that truth bearers which act as the relata of our consequence relation and the bearers of other logical properties are identical to (or at least are very closely related in some other way) to the objects of thinking or reasoning: the contents of one’s mental states or acts such as the content of one’s beliefs or inferences for example. For present purposes I will assume the identity between truth-bearers and the contents of our attitudes, and I will assume them to be propositions.¹

2.1 Characterizing logical consequence in terms of its normative role

Now, one may approach the question of the normativity of logic by taking the notion of logical consequence and validity to be settled and to then investigate how these (and perhaps related) notions constrain our attitudes towards the propositions standing in various logical relations to one another.² According to an alternative approach, however, its normative role in thinking or reasoning may be partly definitive of what logic is. Hartry Field, for one, advances an account of va-

¹In so doing I am further assuming a relatively fine-grained notion of proposition. On a conception of propositions as sets of possible worlds, if B is a logical consequence of A, one cannot believe B without already believing A. This is because believing B, on such a view, consists in ruling out not-B worlds. But since the B-worlds are a subset of the A-worlds, the not-A worlds are a subset of the not-B worlds. Hence, any worlds ruled out by A are already ruled out by B. Hence, there is no believing B without also believing A. Clearly, though, when we are interested in the ways in which logical consequence normatively constrains thinking and reasoning, it behooves us to opt for a more discriminating way representing doxastic attitudes.

²To be clear: an argument is valid just in case its conclusion is a logical consequence of its premises.
lidity along the latter lines. In his (Field Forthcoming), he argues that neither the standard model- or proof-theoretic accounts of validity nor the notion of necessary truth-preservation succeed in capturing the notion of validity. More specifically, these approaches fail to do is to capture the notion of validity in a way that does justice to the seemingly genuine (as opposed to merely verbal) disagreements between advocates of competing logics. To render these disputes intelligible what is needed is a workable notion of validity that is not internal to any particular system of logic. We arrive at such a logic-neutral notion of validity, Field claims, by way of specifying its conceptual role. And the validity’s conceptual role is equated with the way in which a valid argument normatively constrains an agent’s doxastic attitudes. Roughly, in the case of full belief, an agent ought not believe the premises of a valid argument while at the same time not believing its conclusion. In other words, validity’s conceptual role is the normative role of valid arguments in reasoning (or at least part of it). It should be noted, however, that Field is not proposing to define validity in terms of its normative role. Rather, he takes the notion of validity to be primitive. Yet it stands in need of clarification, which an account of its conceptual role is thought to deliver. In a similar, though seemingly more modest vein, John MacFarlane (2004) contends that a clearer understanding of how logical consequence constrains the ways we reason will help us settle long-standing questions in the philosophy of logic as for example the dispute between those who maintain that the notion of logical consequence is subject to relevantist restrictions and those deny that it does. (See entry on relevance logic.) He, too, may be read as suggesting that a proper account of logic’s normative role should enable us to pin down the correct consequence relation.

A potential problem with such alternative approaches is that logical consequence does not appear to have a unique normative profile that sets it apart from other types of consequence or implication. For instance, that one ought not believe each of a set of premises while at the same time not believing its conclusion, is a feature that logical consequence seems to share with strict implication. At least in one sense of ‘ought’, I ought to believe that this is colored, if I believe it to be red, just as much as I ought to believe A, if I believe A ∧ B. If the general principles characterizing logic’s normative role fail to discriminate logical consequence among other types of implication, we cannot identify the conceptual role of validity with
its normative role as Field proposes. We cannot do so, at least, unless we impose further conditions to demarcate properly logical consequence. (See entry Logical constants.) The problem discussed here was raised in a more sophisticated form in response to MacFarlane (2004) by Boghossian and Rosen (2004). A related point is made (albeit in a different context) by Harman (1986, p. 17–20) when he argues that logic is not ‘specially relevant to reasoning’. Another possible reply, of course, is simply to concede the point and so to simply broaden the scope of the inquiry. Instead of asking how logic (narrowly construed) normatively constrains us, we might ask how strict implication (Streumer 2007) or perhaps a priori implication does.3

2.2 Logical pluralism

While we said that not much of our discussion below hinges on the choice of one’s logic, a tacit presupposition we have does. For while we countenanced the possibility of disagreement as to which logic is correct, we have simply presupposed that there must be a unique correct logic. And this latter assumption does seem to bear on our question in potentially significant ways. It is worth, then, dwelling on it briefly.

Logical pluralists maintain that there is more than one correct logic. (See entry on logical pluralism.) There are perfectly uncontroversial instrumental senses in which there are various equally admissible logical systems: different logical formalisms might lend themselves more or less well to the purpose of modeling a given phenomenon, e.g. classical propositional logic may be used to model electric circuits, the Lambek calculus naturally models phrase structure grammars, and so forth. If ‘correct’ is merely understood to be synonymous with ‘having a useful application’, monists can readily accept such anodyne forms of pluralism. However, monists maintain that over and above such modelling uses there is a core or ‘canonical’ (Priest 2006, p. 196) role for logic which consists in determining ‘what follows from what—what premises support what conclusion—and why’ (idem). Moreover, the monist holds, there is but one logic best suited to play that core role.

3Indeed Peter Geach states the truth conditions for ‘p entails q’ as ‘There is an a priori way of getting to know that p ∪ q which is not a way of getting to know either that ¬p or q’ (Geach 1958, p. 180).
role. Pluralists, by contrast, insist that there are several logics equally fit to play
the canonical role. Moreover, there is no fact of the matter to choose between
them. Beall and Restall (2006), for instance, aver that the notion of validity is
indeterminate and admits of a specified range of legitimate precisifications.

What does this mean for the question of logic’s normative status. It follows
that it is only once we choose to disambiguate logical consequence in a particular
way—as constructive or relevant consequence, say—that the normative import
of that particular conception of consequence makes itself felt. After all, there is
no sense in which a given conception of consequence might determine how we
ought to pattern our attitudes on the basis of its correctness, i.e. in virtue of
accurately reporting the logical facts. Hence, if I opt for a constructive conception
of consequence and you go in for a classical one, I have no grounds for criticizing
your move, say, from \(\neg\neg A\) to \(A\), save perhaps pragmatic ones. To be sure, such
a move would be impermissible according to my preferred notion of consequence,
but it is perfectly acceptable according to yours. In short, on the pluralist picture
there is no absolute sense, but only system-relative senses, in which a set of logical
norms can be said to be correct. Logical pluralism thus seems to give rise to a kind
of pluralism about logical norms. Consequently, it is hard to see, on this picture,
how normative conflicts could arise; disputes over which logical norms to accept
would appear to be wrong-headed.

Field (2009b) argues for a different form of logical pluralism, one which leaves
more room for normative conflicts.Logical pluralism is not, for Field, the result of
ambiguity in our notion of validity. Rather, it has its source in the non-factualism
of epistemic norms. This requires some explanation. Field (2009c) believes there
to be good reasons for non-factualism about epistemic norms. His non-factualism
is fuelled partly by general concerns\(^4\), partly by the nature of our choice of such
norms. Depending on our epistemic goals we evaluate candidate norms as better
or worse depending how well they promote our goals. Yet, according to Field,
there is no fact of the matter as to which choice of logic is the unique correct one;

\(^4\) Hume-style worries about the impossibility of integrating irreducible normative facts into
a naturalistic world view, Benacerraf-style worries about our ability to gain epistemic access
to such facts, and Mackie-style worries about the ‘queerness’ of such facts—that they not only
appear to have no room within our scientific picture of the world, but that, furthermore, they
are supposed to have a somewhat mysterious motivational pull to them.
there will typically not be a unique optimal system that best balances the often competing constraints. At the same time, however, there is a clear sense in which we may sensibly engage in rational debates over which logic best to adhere to and so a clear sense in which normative conflicts are possible. Now, since Field takes it to be an essential component of the notion of logical consequence that it should induce norms, we choose a logic by finding out which logical norms it makes most sense for us to adopt. But these logical norms are a species of epistemic norms and hence subject to the same indeterminacy (especially in the light of the varied desiderata of having to accommodate phenomena such as vagueness, semantic paradoxes, the world at the level of quantum mechanical description, etc.). The upshot: inasmuch as there may be no principled way of adjudicating between several logical frameworks we again have a (more modest) form of logical pluralism on our hands.

What both the Beall and Restall and the Field-style pluralism have in common from the point of view of the question of the normativity of logic, though, is their rejection of the view that logical norms might impose themselves upon us simply as a result of the correctness of the corresponding logical principles. As such, pluralist views stand diametrically opposed to realist forms of monism like that of Gila Sher (2011) according to which logical principles are grounded, ultimately, in ‘formal laws’ and so in reality, which, in turn, ground the corresponding logical norms.\footnote{Indeed one might take the opposition between monism and pluralism and its ramifications for the question of logic’s normative as prefigured in the positions of Frege and Carnap respectively. See Steinberger (2015).}

3 Normative for what?

Next let us ask what it is that logic is normative for, if indeed it is normative. The paradigmatic objects of normative appraisal are actions, behaviors or practices. What, then, is the activity or practice that logical norms apply to?
3.1 Logic as normative for reasoning

One response—perhaps the most common one—is that logic sets forth norms for (theoretical) reasoning. Unlike thinking, which might consist merely of disconnected sequences of conceptual activity, reasoning is presumably a connected, usually goal-directed, process by which we form, reinstate or revise doxastic attitudes (and perhaps other types of states) through inference. Consider the following two examples of how logic might give rise to norms. First, suppose I am figuring where Ann is and that I can be sure that Ann is either in the museum or at the concert. I am now reliably informed that she is not in the museum. Using logic, I conclude that Ann is at the concert. Thus, by inferring in conformity with the valid logical principle of disjunctive syllogism (valid at least by the standards of classical logic), I have arrived at a true belief about Ann’s whereabouts. Second, if I believe that Ann is either at the concert or the museum, while at the same time disbelieving both of the disjuncts, logic instructs me that there is a tension in my belief set, which I am in some sense required to rectify by revising my beliefs appropriately. Logic may thus be thought to normatively constrain the ways we form and revise doxastic attitudes. And it might be thought to do so in our everyday cognitive lives (as in our example) as well as in the context of more self-conscious forms of theoretical inquiry as in mathematics, the sciences, law, philosophy and so on, where her normative grip on us would seem to be even stricter.6

3.2 Logic as constitutively normative for thought

Other philosophers have taken the normativity of logic to kick in at an even more fundamental level. According to them, the normative force of logic does not merely constrain reasoning, it applies to all thinking. The thesis deserves our attention both because of its historical interest—it has been attributed in various ways to

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6Saying that logic is normative for reasoning, is to say that there is a sense in which the materials of reasoning—doxastic attitudes, inferences, etc.—are normatively evaluable. Famously, however, this assumption has been fiercely contested. It has been denied of doxastic attitudes, in particular, that they should qualify as proper subjects of normative appraisal because they are not under the agent’s direct voluntary control and so are not be responsive to reasons in appropriate ways. It would lead too far to pursue this important question here. (See entry on ethics of belief (section 3.3).)
Kant, Frege and Carnap— and because of its connections to contemporary views in epistemology and the philosophy of mind (see Cherniak (1986, §2.5), Goldman (1986, Ch. 13), Milne (2009) as well as the references below in this section).

To get a better handle on the thesis in question, let us agree to understand by ‘thought’ conceptual activity, broadly understood. Judging, believing, inferring, for example, are all instances of thinking in this sense. It may seem puzzling at first how logic is to have a normative grip on thinking in the sense that merely in engaging in conceptual activity one is automatically answerable to the strictures of logic? After all, at least on the picture of thought we are currently considering any disconnected, stream-of-consciousness of imaginings qualifies as thinking. The answer is that logic is thought to put forth norms that are constitutive for thinking. That is, in order for a mental episode to count as an episode of thinking at all it must, in a sense to be made precise, be ‘assessable in light of the laws of logic’ (MacFarlane 2002, p. 37). Underlying this thesis is a distinction between two types of rules or norms: constitutive ones and regulative ones.

The distinction between regulative and constitutive norms is Kantian at root (KRV A179/B222). Here, however, I refer primarily to a related distinction due to John Searle. According to Searle, regulative norms ‘regulate antecedently or independently existing forms of behavior’, such as rules of etiquette or traffic laws. Constitutive norms, by contrast create or define new forms of behavior. The rules of football or chess, for example, do not merely regulate playing football or chess but as it were they create the very possibility of playing such games’ ((Searle 1969, p. 33–34), see also (Searle 2010, p. 97))

Take the case of traffic rules. While I ought to abide by the traffic rules in normal circumstances, I can choose to ignore them. Of course, rowdy driving in violation of the traffic code might well get me in trouble. Yet no matter how cavalier my attitude towards traffic laws is, my activity still counts as driving. Contrast this with the rules governing the game of chess. I cannot in the same way opt out

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of conforming to the rules of chess while continuing to count as playing chess; in systematically violating the rules of chess and persisting in doing so even in the face of criticism, I forfeit my right to count as partaking in the activity of playing chess. Unless one appropriately acknowledges that one’s moves are subject to the rules of chess, one’s activity does not qualify as playing chess.

According to the constitutive conception of logic’s normativity for thought the principles of logic are, so to speak, to thought what the rules of chess are to the game of chess: I cannot persistently fail to acknowledge that the laws of logic set standards of correctness for my thinking without thereby jeopardizing my status as a thinker (i.e. someone presently engaged in the act of thinking).

However, two important clarifications are in order. For one, the thesis of the constitutive normativity of logic for thought is presumably most plausibly understood so as to leave room for the possibility of logical error: an agent’s mental activity may continue to counts as thinking, despite having a committed logical blunders. That is, although one may at times (perhaps even frequently and systematically) stray from the path prescribed by logic in one’s thinking, one nevertheless counts as a thinker provided one appropriately acknowledges logic’s normative authority over one’s thinking. Consider again the game of chess. In violating the rules of chess, deliberately or out of ignorance, I can plausibly still be said to count as playing chess, so long, at least, as I acknowledge that my activity is answerable to the rules, for example, by being disposed to correct myself when the illegal move is brought to my attention. Similarly, all that is necessary to count as a thinker is to be sensitive to the fact that my practice of judging, inferring, believing, etc., is normatively constrained by the laws of logic. It is not easy to specify, in any detail, what the requisite acknowledgment or sensitivity consists in. A reasonable starting point, however, is provided by William Taschek who, in his interpretation of Frege, proposes that acknowledging

the categorical authority of logic will involve one’s possessing a capacity to recognize—when being sincere and reflective, and possibly with

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8 See again Conant (1991), Putnam (1994) and especially Tolley (2006) for arguments that this view is falsely ascribed to Kant.

appropriate prompting—logical mistakes both in one’s own judgmental
and inferential practice and that of others (Taschek 2008, p. 384)

The second upshot of these considerations is that the agent need not explicitly
represent the logical principles she is answerable to. For instance, it may be that
my reasoning ought to conform to disjunctive syllogism in appropriate ways and
that I may be able to acknowledge that (with the right prompting if need be),
all the same I need not have the requisite conceptual resources to entertain the
metalogical proposition that $A, A \lor B \models B$.

With these clarifications in place, let us turn to a central presupposition of the
approach I have been sketching. What is being presupposed, of course, is that
by ‘thinking’ we mean something other than brute psychological or neurophysio-
logical processes or events. If this naturalistic level of description were the only
available level of description, the constitutive account of the normativity of logic
would be a non-starter. What is being presupposed, therefore, is the permissibility
of essentially normative levels of descriptions of our mental lives. In particular, it
is assumed that the boundary between the kinds of mental activity that constitute
thinking and other kinds of mental activity (non-conceptual activity like being in
pain, for instance) is a boundary best characterizable in normative terms. This
is not to deny that much can be learned about the mental phenomena through
descriptions that operate at different, non-normative levels—the ‘symbolic’ or the
neurological level of description, say—the claim is merely that if we are inter-
ested in demarcating conceptual activity from other types of mental phenomena,
we should look to the constitutive norms governing it. Davidson (1980, 1984),
Dennett (1987), Millar (2004) all hold views according to which having concepts
and hence thinking requires that the agent be interpretable as at least minimally
sensitive to logical norms. Also, contemporary ‘normativist approaches’ accord-
ing to which accounts of certain intentional states involve uneliminable appeals to
normative concepts might be seen to advocate at least a partial versions of consti-
tutive conception of logic’s normativity (e.g. Wedgwood (2006b, 2007), Zangwill
(2005)). Take for instance the view according to which it is constitutive of beliefs
that they should aim at the truth. This is often unpacked as the thesis that for
beliefs to be correct they must be true and so that they are subject to the truth
norm:

- (TN) For any proposition \( A \), if an agent \( S \) considers or ought to consider \( A \), \( S \) ought to believe \( A \) if and only if \( A \) is true.\(^{10}\)

is constitutive of belief. But the truth norm immediately entails the consistency norm:

- (CN) For any agent \( S \), the set of propositions believed by \( S \) at any given time ought to be logically consistent.

For if the set of propositions I believe at a particular point in time is inconsistent, they cannot all be true, which is to say that I am violating the truth norm with respect to at least one of my beliefs. Furthermore, suppose I believe \( A \) and \( A \) entails \( B \). Clearly, \( \{ A, A \supset B, \neg B \} \) is inconsistent. Hence, if my belief in \( A \) is correct, I ought not disbelieve its logical consequence \( B \).

The upshot of these considerations is that if the truth norm is taken to be constitutive of belief, then so are certain logical norms like the consistency norm. Hence, supposing that believing is an essential part of thinking, it follows that those who advocate a constitutive role for the truth norm with respect to belief, are also committed to a version of the constitutive normativity of logic for thought.

### 3.3 Logic as normative for public practices

So far the answers to the question What is logic normative for? had in common that the ‘activities’ in question—reasoning and thinking—are internal, mental processes of individual agents. But logic also seems to exert normative force on the external manifestations of these processes—for instance, it codifies the standards to which we hold ourselves in the practices of assertion, dialogical exchanges and the like. While much of the literature on the normativity of logic focuses on internal processes of individuals, some authors have instead emphasized logic’s role as a purveyor of standards for public normatively regulated practices.

\(^{10}\)See Boghossian (2003), Gibbard (2003, 2005), Shah (2003), Wedgwood (2002) to name but a few proponents of versions of the truth norm. Others have opted for the closely related knowledge norm to the effect that one ought to have knowldgable beliefs, e.g. (Williamson 2000, pp. 47, 255-56).
Take the practice of asserting. Assertion is often to ‘aim at truth’ (or knowledge (Williamson 2000, Ch. 11)) as well as being a ‘matter of putting forward propositions for others to use as evidence in the furtherance of their epistemic projects’ (Milne 2009, p. 282). Since I take the asserted propositions to be true and since truths entail further truths, I am ‘committed to standing’ by the logical consequences of my assertions or else to retract them if I am unable to meet challenges to my assertion or its consequences. Similarly, if the set of propositions I assert is inconsistent at least one of my assertions must fall short of being true and the set as a whole cannot be regarded as part of my evidence. Plausibly, therefore, logic does a normative role to play in governing the practice of assertion.

Milne takes an interest in assertion mainly in order to ‘work back’ from there to how logic constrains belief. He concludes that logic exerts normative force at least on the stock of beliefs that constitute the agent’s evidence Milne (2009, p. 286). Other authors explicitly prioritise the external dimension of reasoning, conceived of as a social, inter-personal phenomenon (Dutilh Novaes (Forthcoming), MacKenzie (1989)). According to them, it is reasoning in this external sense (as opposed to intra-personal processes of belief revision, etc.) that is the primary target of logical norms. The norms govern our rational interactions with our peers. For instance, they might be thought to codify the permissions and obligations governing certain kinds of dialogues. Viewed from this perspective, logic’s normative impact on the intra-personal activity of reasoning is merely derivative, arrived at through a process of interiorization.

We will here follow the bulk of the literature in asking after the normative role logic might play in reasoning understood as an intra-personal activity. Yet, much of the discussion to follow applies mutatis mutandis to the other approaches.

4 Normative in what sense?

Assuming that logic does have a broadly normative role to play, one may further ask in what sense exactly logic may be said to be normative. This question admits of answers along several dimensions.

First, logic might be thought to give rise to synchronic norms—norms that instruct us which patterns of doxastic attitudes are, in a specified sense, obligatory,
permissible or reasonable at a given point in time; or it might be thought to provide *diachronic* norms—norms that instruct us how an agent’s doxastic state should or may evolve over time. To illustrate the distinction, let us briefly return to our example involving Ann’s whereabouts from §3.1. The reasoning by which we concluded that Ann was at the concert could either be conceived of as following a synchronic norm involving disjunctive syllogism, e.g.:

- (Synchronic) For every agent $S$, for all propositions $A$ and $B$ and for any time $t$, $S$ ought not believe $A \lor B$ and disbelieve $A$, unless she also believes $B$.

The principle does not, in of itself, instruct the subject which inferences to make, it merely rules out certain patterns of belief and disbelief. Alternatively we might conceive of it as a diachronic norm:

- (Diachronic) For every agent $S$, for all propositions $A$ and $B$ and for all instances of time $t$ and $t'$ (where $t$ ‘immediately precedes’ $t'$), if $S$ believes $A \lor B$ and disbelieve $A$ at $t$, $S$ ought to believe $B$ at $t'$.

As we will see in §5.1, the diachronic interpretation often faces severe difficulties. Therefore, all of the principles mentioned below should be read as synchronic principles in the absence of explicit instructions to the contrary.

To get clear on the sense in which logic might be normative, there is another important set of distinctions to consider. Norms, broadly understood, can serve different purposes. Of particular interest for our present concerns are the following three purposes. According to this threefold distinction, norms may serve as

1. *directives* which may guide a subject in deliberating over what to do, choose or believe.

2. *evaluations* by setting standards by which to classify acts, states or the like as, in some sense, good or bad, correct or incorrect.

3. *appraisals* by again setting standards that lay the basis of our attributions of praise or blame to others (or ourselves).
Of course, these normative roles are not wholly independent of one another. Typically, we follow normative directives with an aim to conduct ourselves in a way that meets or at least approximates an evaluative standard. Likewise, in appraising one another we typically take into account how things present themselves to the agent—that is, whether the agent correctly followed a directive or what directives were available to her in her epistemic situation.

To see how these distinctions are relevant consider a slight reformulation of the norm we have considered above.

- (DS) For every agent $S$, for all propositions $A$ and $B$, if $A \lor B$, $\neg A \models B$, then $S$ ought not believe both $A \lor B$ and $\neg A$, unless she also believes $B$.

Understood as a directive, the norm is to be understand as a guide to the agent engaged in first person deliberation. Clearly, our principle can fulfil its guiding role only if the agent is in a position to apply it. In order for an agent to be able to actually apply a rule, it must be transparent to her, when the conditions for its application obtain. In particular, in order to be able actually to apply a bridge principle, she must be in a position to recognize whether the logical relations mentioned in the antecedent of the principle obtain or not.

The same is not true if DS is read as an evaluative principle. Principles of this sort function, as their name makes plain, as evaluative yardsticks. They set the standards against which to assess the doxastic states of others according to the logical properties and relations holding of and between the contents of these states. Unlike directives, evaluations operate from a third person standpoint. (Though we may of course evaluate our own doxastic states.) Since their aim is neither that of guiding the agent, nor that of attributing praise or blame, evaluative principles are not sensitive to what the agent under evaluation is in a position to recognize to follow from what. They merely classify belief sets into coherent and incoherent ones. In the case of DS, belief sets where $A \lor B$, $\neg A$ and $\neg B$ are all believed are ruled out.

We have already touched upon the third kind of normative role that deals in praise and blame: appraisals. Like evaluative bridge principles, appraisals are made from a third-person point of view (though they may also take the form of second person advice). However, unlike evaluations which assess belief states,
appraisals assess agents. Since agents can only be blamed or praised for what they can be reasonably be held responsible for, appraisals are ‘by-the-lights-of the agent’-assessments. That is to say, appraisals—and in this respect they are more similar to guiding principles than to evaluations—do take into account how things present themselves from the viewpoint of the agent. The agent can only be held responsible for failing properly to take into account those logical entailments that she is (or at least can be expected to be) relevantly aware of. In the case at hand, the agent is to be blamed for believing $A \lor B$, $\neg A$ as well as $\neg B$, provided she can be expected to be aware of the logical implication. In this case, presumably, the expectation is reasonable.\textsuperscript{11} In other cases, in which, for example the logical implications are rather less immediate, an assumption of the agent’s awareness may be misplaced. We might think of appraisals as involving varying degrees of idealization, depending on how much logical acumen is deemed exigible from our agent. At one extreme—degree zero of idealization, if you like, an appraising principle just is relativized to the agent’s actual logical beliefs or abilities of recognition: the agent’s logical obligations extend no further than her momentary state of logical competence. At the other extreme—at a maximal degree of idealization—the agent is expected to be disposed to recognize any logical entailment (or at least all the logical entailments believed by the assessor). At degree zero, appraisals, in a sense, mimic, from a third-person point of view, the corresponding directives; at the maximal level of idealization, appraising principles converge with the corresponding evaluative principles (one is, at it were, appraising a potentially logically perfect agent). Typically, appraising principles operate at an intermediary degree of idealization. For instance, even when we are assessing an agent by her own ‘logical lights’, we may abstract away from whimsical logical beliefs that the agent would readily revise were she to pay the matter sufficient thought. But how much idealization is permissible? For instance, might we even correct for systematic errors in logical reasoning like those frequently documented in the findings of cognitive psychologists? Presumably there are no firm rules here. Everything depends on what degree of idealization the evaluator deems most useful in the context in question.

What this shows is that the question as to whether logic is normative is am-

\textsuperscript{11}Assuming she does not have theoretical reasons leading her to reject disjunctive syllogism.
ambiguous between three kinds of normative roles (even once we have specified the remaining parameters—i.e. what we mean by ‘logic’, what logic is supposed to be normative for, etc.). In order to stand any chance of making progress on the question, we must therefore be clear which question we are trying to answer by indicating which of the three normative roles we have in mind. As we will see below, this distinction between normative roles, though it tends have received insufficient attention in the literature, has an important role to play in formulating and assessing so-called bridge principles, principles that seek to spell out the normative impact of logical consequence (or our attitudes towards it) on reasoning (see Steinberger (MS) for further discussion).

5 Harman’s challenge

Despite its venerable pedigree and its intuitive force, the thesis that logic should have a normative role to play in reasoning has come under heavy fire. Gilbert Harman’s criticisms have been particularly influential. Harman’s rejection of the thesis is rooted in a diagnosis: we have conflated (or at least run too closely together) two very different kinds of enterprises, viz. that of formulating a theory of deductive logic, on the one hand, and what Harman calls ‘a theory of reasoning’ on the other. Begin with the latter. A theory of reasoning is a normative account about how ordinary agents should go about forming, revising and maintaining their beliefs. Its aim is to formulate general guidelines as to which mental actions (judgments and inferences) to perform in which circumstances and which beliefs to adopt or to abandon (Harman 2009, p. 333). As such, the subject matter of a theory of reasoning are the dynamic ‘psychological events or processes’ that constitute reasoning. In contrast, ‘the sort of implication and argument studied in deductive logic have to do with [static, non-psychological] relations among propositions’. Consequently, ‘logical principles are not directly rules of belief revision. They are not particularly about belief [or the other mental states and acts that constitute reasoning] at all’ (Harman 1984, p. 107). It is this conflation that our deep-seated intuition that logic has a substantive normative role to play is rooted in. Once we disabuse ourselves of this confusion, Harman maintains, we should not expect that any interesting and systematic connection between logic and reasoning
is to be found.

At least two lines of response come to mind. One reaction to Harman’s sceptical challenge is to take issue with Harman’s way of setting up the problem. In particular, we might question his initial diagnosis of the source of our intuitions to the effect that logic is normative for reasoning. That is, we might reject his explanation of the provenance of these intuitions as stemming from a mistaken identification of deductive logic and theories of reasoning. It might be thought, for instance, that Harman is led to exaggerate the gulf between deductive logic and theories of reasoning as a result of a contestable—because overly narrow—conception of either logic or reasoning, or both. Advocates of broadly logical accounts of belief revision (belief revision theories, non-monotonic logics, dynamic doxastic logic, etc.) may feel that Harman is driven to his skepticism out of a failure to consider more sophisticated logical tools. Unlike standard first-order classical logic, some of these formalisms do make explicit mention of beliefs (and possibly other mental states) and they do try to capture the dynamic character reason in which beliefs are not merely accumulated but may also be revised. Harman’s response, however, is that such formalisms all tacitly rely on mistaken assumptions about the normative role of logic. And even if one ultimately rejects Harman’s skepticism, one can still agree that that logical formalisms modelling do not obviate the need for a philosophical account of the normativity of logic. Rather such an account would furnish a clearer picture of the presuppositions that undergird such theories. On the other hand, some philosophers—externalists of various stripes, for instance—are likely to find fault with Harman’s internalist, broadly Cartesian conception of a theory reasoning. The most fruitful way to describe our practices of belief formation and revision is not, perhaps, from the first person perspective of the deliberating subject. In short, there are alternative conceptions both of logic and of epistemic rationality on which the claim that logic central to an account of epistemic rationality may appear more plausible than it looks on Harman’s account.

The second line of response is to (for the most part) accept Harman’s assumptions regarding the natures of deductive logic and of reasoning but to challenge his conclusion that there is no interesting normative link between the two. In what follows, I focus primarily on this second line of response.
There seems to be a straightforward motivation for questioning Harman’s skeptical conclusion. After all, saying that deductive logic and theories of reasoning are distinct is one thing, affirming that there could not be an interesting normative connection between them is quite another, or so it would seem. As a first stab at articulating such a connection, we might try the following: theoretical reasoning aims to provide an accurate representation of the world. We accurately represent the world by having true (or perhaps knowledgable) beliefs and by avoiding false ones. But our doxastic states have contents—propositions—and these contents stand in certain logical relations to one another. Having an awareness of these logical relations would appear to be conducive to the end of having true beliefs and so is relevant to theoretical reasoning. In particular, the logical notions of consequence and consistency seem to be pivotal. If I believe truly, the truth of my belief will carry over to its logical consequences. Conversely, if my belief entails a falsehood it cannot be true. Similarly, if the set of propositions I believe (in general or in a particular domain) is inconsistent, they cannot possibly afford an accurate representation of the world; at least one of my beliefs must be false.

Notice that this simple reflection on the connection between logic and norms of reasoning leads us right back to the basic intuitions with which we began: that there is something wrong with us when we hold inconsistent beliefs or when we fail to endorse the logical consequences of our beliefs (at least when we can be expected to be aware of these shortcomings). Let us spell them out in the form of the following two principles. Let $S$ be an agent and $P$ a proposition.\footnote{The following principles are roughly those discussed by Harman. Harman’s formulations of IMP differ in the deontic modals they feature (e.g., in his (Harman 2002, p. 172) Harman’s mentions ‘should’ and ‘may’, in his (Harman 1986, p. 11) he uses ‘can be a reason for’.}

- Logical implication principle (IMP): If $S$’s beliefs logically imply $A$, then $S$ ought to believe that $A$.

- Logical consistency principle (CON): $S$ ought to avoid having logically inconsistent beliefs.

Notice that on the face of it IMP and CON are distinct. IMP, in and of itself, does not prohibit inconsistent or even contradictory beliefs, all it requires is that my beliefs be closed under logical consequence. CON, on the other hand, does
not require that I believe the consequences of the propositions I believe, it merely
demands that the set of propositions I believe be consistent. However, given certain
assumptions, IMP does entail CON. Against the background of classical logic, the
entailment obtains provided we assume that one cannot both believe and disbelieve
one and the same proposition and that disbelieving a proposition is tantamount
to believing its negation. For let $S$ be an agent with an inconsistent belief
set $\{A_1, \ldots, A_n\}$. By classical logic, $A_1, \ldots, A_{n-1} \models \neg A_n$. Since $S$’s beliefs are
closed under logical consequence, $S$ believes $\neg A_n$ and hence, by our assumption,
disbelieves $A_n$. So, $S$ both believes and disbelieves $A_n$.

5.1 The objections

IMP and CON are thus a first—somewhat flatfooted, as we will see—attempt at
pinning down the elusive normative connection between logic and norms of rea-
soning. Harman considers responses of this form. The following four objections
against our provisional principles can, in large part, be found in the writings of
Harman.

(1) Suppose I believe $A$ and $A \supset B$ (as well as Modus Ponens). The mere fact
that I have these beliefs and that I recognize them to jointly entail $B$ does not
normatively compel any particular attitude towards $B$ on my part. In particular,
it is not the case in general that I ought to come to believe $B$ as IMP would
have it. After all, $B$ may be at odds with my evidence in which case it may be
unreasonable for me to slavishly follow Modus Ponens and to form a belief in $B$.
The rational course of ‘action’, rather, when $B$ is untenable, is for me to relinquish
my belief in at least one of my antecedent beliefs $A$ and $A \supset B$ on account of their
unpalatable implications. Thus, logical principles do not invariably offer reliable
guidance in deciding what to believe (at least, when the relation between logical
principles and our practices of belief-formation are understood along the lines of

\[13\] Both assumptions can be challenged. On a more course-grained conception of propositions
we face Fregean puzzles. For instance, the propositions expressed by ‘Superman can fly’ and
‘Clark Kent can fly’ might be taken to be one and the same. Yet, Louis Lane does not appear
to be irrational if she believes that which is expressed by the former sentence, but disbelieves
what is expressed by the latter sentence. The second assumption is rejected by advocates of
paraconsistent logicians. See e.g. Priest (2006, Ch. 6) for discussion.
IMP). In a sense, IMP offers too much information; it accords logic too strong a role in our belief forming processes. Let us therefore call this the Too Much Information Objection.

John Broome (2000, p. 85) offers a closely related objection, which nevertheless deserves separate mention. Broome observes that any proposition trivially entails itself. From IMP it thus follows that I ought to believe any proposition I in fact believe. But this seems patently false: I might hold any number of irresponsibly acquired beliefs. The fact that, by mere happenstance, I hold these beliefs, in no way implies that I ought to believe them. Call this variation of the Too Much Information Objection, Broome’s Objection.

(2) A further related worry is that a reasoner with limited cognitive resources who blindly heeds the precepts of logic acts irrationally because she espouses countless utterly useless beliefs. This is because any of the propositions I believe entails an infinite number of propositions that are of no interest to me whatsoever. Not only do I not care about, say, the disjunction ‘I am wearing blue socks or pigs can fly’ entailed by my true belief that I am wearing blue socks, it would be positively irrational of me to squander my meager cognitive resources of time, computational power and storage room on idly deriving implications of my beliefs when these are of no value to me. Harman fittingly dubs the principle of reasoning in question Principle of Clutter Avoidance. Let us call the corresponding objection the Objection From Clutter Avoidance.

(3) There is another sense in which both principles—IMP and CON—place excessive demands on agents whose resources are limited. Consider the following example. Suppose I believe the axioms of Peano arithmetic. Suppose further that a counterintuitive arithmetical proposition that is of great interest to me is entailed by the axioms, but that its shortest proof has more steps than there are protons in the visible universe. According to IMP, I ought to believe the proposition in question. However, if the logical ‘ought’ implies ‘can’ (in the sense even remotely related to the abilities of human agents), IMP cannot be correct. An analogous objection can be leveled at CON. An agent may harbor an inconsistent belief set, yet detecting the inconsistency may be more difficult than can reasonably be ex-
pected from an ordinary agent. We may summarize these objections under the label *Objection from Excessive Demands*.

(4) Finally, I may find myself in epistemic circumstances in which inconsistency is not merely excusable on account of my ‘finitary predicament’ (Cherniak 1986), but where inconsistency appears to be rationally required. Arguably, the Preface Paradox constitutes such a scenario (Makinson 1965). Here is one standard way of presenting it. Suppose I author a meticulously researched non-fiction book. My book is composed of a large set of non-trivial propositions \( P_1, \ldots, P_n \). Seeing that all of my claims are the product of scrupulous research, I have every reason firmly to believe each of the \( P_i \) individually. But I also have overwhelming inductive evidence for \( Q \): That at least one of my beliefs is in error. The \( P_i \) and \( Q \) cannot be jointly true since \( Q \) is equivalent to the negation of the conjunction of the \( P_i \). Yet, it would seem irrational to abandon any of my beliefs for the sake of regaining consistency. The preface paradox thus tells against CON: arguably, I may be within my rational rights in holding inconsistent beliefs (at least in certain contexts). However, it also constitutes a direct *prima facie* counterexample to IMP. For in the Preface scenario I believe each of the \( P_i \) and yet it looks as if I ought to disbelieve an obvious logical consequence thereof: their conjunction (because \( Q \) is transparently equivalent to \( \neg(P_1 \land \ldots \land P_n) \)).

So much for the objections to IMP and CON. Harman not only rejects IMP and CON on the basis of these objections, he seems to deny that any comparably general principles stand a chance of being philosophically viable.

6 Bridge principles

Let us focus on IMP for now. Harman’s objections establish that IMP, at least in its current formulation, is untenable. The question is whether IMP can be improved upon in a way that is invulnerable to Harman’s objections. In other words, the question is whether a tenable version of what MacFarlane (2004) calls a ‘bridge principle’ is to be had. A ‘bridge principle’, in this context, is a general principle that articulates a substantive relation between ‘facts’ about logical consequence (or perhaps an agent’s attitudes towards such facts) on the one hand, and norms.
governing the agent’s doxastic attitudes vis-à-vis the propositions standing in these logical relations on the other.

Harman’s skepticism about the normativity of logic can thus be understood as the claim that there is no serviceable bridge principle. In order properly to adjudicate this claim, we need to know what ‘the options are’. But how? John MacFarlane (2004) offers a helpful taxonomy of bridge principles which constitutes a very good first approximation of the range of options. This section briefly summarizes MacFarlane’s classification.

Let us begin with the general schema—the blueprint, if you like—for bridge principles:  

\[ \star \text{ If } P_1, P_2, \ldots, P_n \models Q, \text{ then } \Phi \]

A bridge principle thus takes the form of a material conditional the antecedent of which states a fact about logical consequence while the consequent involves a (broadly) normative claim featuring the agent’s doxastic attitudes towards the propositions in question. Taking this schema as his point of departure, MacFarlane now introduces three parameters. Each parameter allows for multiple discrete settings. We can think of the ‘logical space of bridge principles’ as the range of possible combinations among these parameter settings.

1. In order to express the normative claims, we will need deontic vocabulary. Bridge principles may differ in the deontic operator they deploy: does the normative constraint take the form of an ought (o), a permission (p) or merely of having (defeasible) reasons (r)?

2. What is the polarity of the normative claim? Is it a positive obligation/permission/reason to believe a certain proposition given one’s belief in a number of premises (and, perhaps, given one’s belief or disposition to accept the entailment of the former by the latter) (+)? Or rather is it a negative obligation/permission/reason not to disbelieve (−)?

\[ \star \alpha \text{ If } \alpha(P_1, P_2, \ldots, P_n \models Q), \text{ then } \Phi \]

where \( \alpha \) designates the agent’s attitude towards the instance of \( \models \).

\[ ^{\text{14}} \text{We will soon also encounter what I call attitudinal bridge principles. They take the slightly different form: } \]

\[ \star \alpha \text{ If } \alpha(P_1, P_2, \ldots, P_n \models Q), \text{ then } \Phi \]

where \( \alpha \) designates the agent’s attitude towards the instance of \( \models \).
3. Different bridge principles result from varying the scope of the deontic operator. Let $O$ stand generically for one of the above deontic operators. Given that the consequent of a bridge principle will typically itself take the form of a conditional, the operator can take

- narrow scope with respect to the consequent ($C$) ($P \supset O(Q)$);
- wide scope ($W$) $O(P \supset Q)$;
- or it can govern both the antecedent and the consequent of the conditional ($B$) ($O(P) \supset O(Q)$).  

These parameter settings generate a total of eighteen bridge principles. The symbols in parentheses associated with each parameter setting combine to determine a unique label for each of the principles: The first letter indicates the scope of the deontic operator ($C$, $W$ or $B$), the second letter indicates the type of deontic operator ($o$(bligation), $p$(ermissions), $r$(easons)) and the ‘+’ or ‘-’ indicate positive and negative polarity respectively. For example, the label ‘Co+’ corresponds to our original principle IMP: ‘If $A_1, A_2, \ldots, A_n \models B$, then if you believe $A_1, A_2, \ldots, A_n$, you ought to believe $B$’.

Many will regard the bridge principles we have presented thus far to be problematic. They all relate ‘facts’ about logical entailment—assuming there are such things—to certain normative claims regarding the agent’s relevant beliefs. They therefore are not sensitive to the cognitive limitations of ordinary agents. In terms of the distinctions introduced in §4, such principles are unsuitable to play the role

\[\text{15} \text{Notice that MacFarlane’s classification only recognizes B-principles in which the deontic operator occurring in the antecedent and the operator occurring in the consequent are identical. MacFarlane’s classificatory scheme might thus be extended by allowing for ‘mixed’ Bs in which the deontic operators featuring in the antecedent and in the consequent of the embedded conditional could be distinct. For example, in addition to (Bo+), we could consider also}
\]
\[- \text{(Bop+): If } P_1, \ldots, P_n \models Q, \text{ then if } S \text{ ought to believe all the } P_i, S \text{ may believe } Q.
\]
\[- \text{(Bor+): If } P_1, \ldots, P_n \models Q, \text{ then if } S \text{ ought to believe all the } P_i, S \text{ has reason to believe } Q.
\]
\text{and so on for all the possible combinations. Intuitively, only those mixed principles have any plausibility in which the deontic operator in the consequent is of equal strength or weaker than the operator in the antecedent: It would seem odd, for instance, if my having a reason to believe a proposition, should have the entailment that I ought to believe its logical consequences.}

\[\text{16} \text{See (MacFarlane 2004, p. 7) for an exhaustive list of all bridge principles that can be generated in this way.} \]
of directives or to form the basis of appraisals. For agents, if they are even remotely like us, are not apprised of all logical ‘facts’. Especially the ‘ought’-based principles (at least on some understanding of ‘ought’) are therefore vulnerable to Harman’s objection from Excessive Demands.

Consequently, if bridge principles are not to play the role of evaluations, there seems to be a good prima facie case for considering ones whose antecedents are restricted to logical implications which the agent actually recognizes. For instance, \( \text{Co}+ \) now becomes:

- (Co+a) If \( S \) recognizes that \( A_1, \ldots, A_n \models B \), then if \( S \) believes the \( A_i \), \( S \) ought to believe \( B \).

Let us call this the *attitudinally constrained* variant of \( \text{Co}+ \) (whence the ‘a’ in the label). Different authors may go in for different types of attitudes. Recognizing, I take it, is a factive attitude. Some will wish to leave room for the possibility of (systematic) logical error. For instance, an agent might mistakenly comply with the principle \( A \supset B, B \models A \). Perhaps even someone with erroneous logical convictions such as this should, for the sake of internal coherence, comply with the principles he deems correct. An agent who sincerely believed in the principle but failed to reason in accordance with the principles she endorses may seem to be even more irrational than someone who at least conformed to their erroneous principles. But we can also imagine more interesting cases of systematic error. Suppose I am impressed with an argument for a particular non-classical logic as a means of parrying the semantic paradoxes. I thus come to espouse the logic in question and begin organizing my beliefs accordingly. Yet, unbeknownst to me, the arguments are not in fact sound. Although I am mistaken in my adherence to the logic, so long as I had good reasons to espouse it, it may nevertheless be proper for me to comply with its principles. If logical error in either of these two senses is to be accommodated, the appropriate attitude would have to be non-factive.

A further issue is that many ordinary agents can presumably be normatively constrained by logical principles without being able to articulate those principles or representing those principles to themselves explicitly. The attitudes borne by such logically untrained agents to the logical principles therefore cannot be belief-like. Perhaps, such agents are better thought as being disposed to recognizing such
implications.

Having thus outlined the classificatory scheme, a number of additional comments are in order. First, notice that disbelieving $A$ is to be distinguished from not believing $A$. One cannot rationally believe and disbelieve the same proposition. Hence, I ought to ensure that when I disbelieve $A$, I do not believe $A$. The converse, however, obviously does not hold since I can fail to believe $A$ without actively disbelieving it. I may, for instance, choose to suspend my judgment as to whether $A$ pending further evidence, or I may simply never have considered whether $A$. Furthermore, I will stay neutral on the question as to whether the attitude of disbelieving $A$ should be identified with that of believing $\lnot A$.

### 6.1 Evaluating bridge principles

With the logical terrain of bridge principles charted, the question now arises as to which principles (if any) are philosophically viable. Arguably, the claim that logical consequence imposes systematic normative constrains upon our belief system stands and falls depending on whether there is a defensible bridge principle. But how are we to decide whether a bridge principle is up for the job? One crucial test consists in how a bridge principle fares in the face of the objections in §5.1. In addition, MacFarlane (2004, p. 12) advances the following desiderata:

\footnote{A note on deontic modals is in order. ‘You ought not Φ’ ($O\neg Φ$) is not the same as saying ‘It is not the case that you ought to Φ’ ($\neg O Φ$). But rather ‘You are forbidden from Φing’. Consequently, ‘You ought not disbelieve $A$’ should be read as ‘disbelieving $A$ would be a mistake’, as opposed to ‘it is not the case that you ought to disbelieve $A$', which is compatible with the permissibility of disbelieving $A$. Moreover, $ought$ and $may$ are understood to be strict or ‘all-things-considered’ notions. By contrast, $reason$ is a pro tanto or contributory notion. Having reasons to $φ$ is compatible with simultaneously having reasons not to $φ$ and even with it being the case that I ought not to $φ$. Reasons, unlike $oughts$, may be weighed against each other; the side that wins out determines what ought to be done. Finally, I will treat all deontic modals as propositional operators. This too is not uncontroversial. Peter Geach (1982) and more recently Mark Schroeder (2011) have argued that so-called deliberative or practical $oughts$ are best analyzed not as operators acting on propositions but rather as expressing relations between agents and actions. Nevertheless I will assume without argument that the operator-reading can be made to work. For defenses of this position see e.g. Broome (2000, 2013), Chrisman (2012) and (Wedgwood 2006a). We can capture the particular connection between an agent and the obligation she has towards a proposition at a particular time, by indexing the operator: $O_{S,t}$. I will drop the indices in what follows.}

\footnote{Although see fn. 13.}

\footnote{17}
• **The Strictness Test:** At least when it comes to ordinary, readily recognizable logical implications leading to conclusions that the agent has reasons to consider, there is something amiss about an agent who endorses the premises but fails to believe the conclusion. (MacFarlane’s criterion is inspired by (Broome 2000, p. 85).)

• **The Priority Question:** The attitudinal variants have a distinctive advantage when it comes to dealing with Excessive Demands worries. But relativizing one’s logical obligations to one’s logical beliefs or one’s logical knowledge invites problems of its own, according to MacFarlane.\(^2\) The problem according to MacFarlane is that ‘we seek logical knowledge so that we will know how we ought to revise our beliefs: not just how we will be obligated to revise them when we acquire this logical knowledge, but how we are obligated to revise them even now, in our state of ignorance’ (MacFarlane 2004, p. 12). In other words, according to this intuition it is the facts about logical consequence that constrain our doxastic attitudes regardless of whether we are able to recognize them.

• **Logical Obtuseness:** Suppose someone professes to believe \(A\) and \(B\), but refuses to take a stand (neither believes nor disbelieves) the conjunction \(A \land B\). Intuitively, such a person is liable to criticism. However, so long as the agent does not actively disbelieve \(A \land B\), our bridge principles with negative polarity find no fault with such scenarios. If this intuition carries any weight, it may will negative polarity are ultimately too weak.

As is already becoming apparent, our desiderata are at times in tension with one another. For instance, the Strictness Test favors ought-based principles, whereas Excessive Demands and the Preface Paradox tell against them and hence pull in the opposite direction. There can thus be no one bridge principle that satisfies all of them. Consequently, in evaluating our bridge principles against these criteria, we will need to decide on the relative importance of our various desiderata. Each principle will be assessed according to how well it performs when judged against the appropriately weighted desiderata. The principle (or group of principles) that

\(^2\)The only attitudinal principles MacFarlane (2004) considers are factive ones.
performs best across the board takes the prize. At least this is the route taken by MacFarlane (2004) and apparently Field (2009a). Steinberger (MS) instead appeals to the aforementioned three-way distinction between different normative roles—directives, evaluations and appraisals. Desiderata are weighted differently according to the normative role a principle is supposed to play, thus dissolving the tension between the competing constraints.

Let us take IMP (aka Co+) as our point of departure again. As we have already observed, IMP falls victim both to Too Much Information and to Broome’s Objection. A natural reaction in light of these failings is to retreat to the weaker reasons operator, thus giving rise to the following two principles (and their various attitudinally constrained counterparts):

- (Cr+) If $A_1, \ldots, A_n \models B$, then if $S$ believes all the $A_i$, $S$ has (defeasible) reason to believe $B$.

- (Cr-) If $A_1, \ldots, A_n \models B$, then if $S$ believes all the $P_i$, $S$ has (defeasible) reason not to disbelieve $B$.

Though this move does show some initial promise, this group of narrow scope principles does not ultimately succeed either. While, arguably, the (Cr)s are immune to Harman’s objections things look less promising when it comes to Broome’s Objection. According to the (Cr)s believing $A$ automatically gives rise to a reason to believe $A$. Many will view this kind of doxastic bootstrapping with some suspicion, to say the least.\(^{21}\) What is more, almost by definition, the (Cr)s violate the Strictness Test.

Let us turn to the Bs. The Bs, recall, are characterized by the fact that deontic operators act both on the antecedent and on the consequent of the embedded conditional. But these two deontic operators are generally underwritten by norms

\(^{21}\)Arguably, this is a feature of what Harman (2002) has dubbed general foundations theories in epistemology. Such theories promote what we might call an innocent-until-proven-guilty policy concerning belief maintenance. The approach amounts to a type of conservatism about belief: An agent’s belief set enjoys a kind of default justification until she encounters sufficiently strong countervailing evidence. On such views, then, it seems proper to say, at first blush at least, that I do have reason to believe any proposition I in fact believe. I have reason to stick to my beliefs unless and until I am presented with sufficiently strong grounds for abandoning them. It may well be that the best case for the (Cr)s can be made in the context of such theories.
stemming from different sources. For simplicity, let us focus on (Bo+) (the dis- 
sussion to follow generalizes to the remaining Bs). In the embedded conditional ‘if S 
ought to believe all the $A_i$, S ought to believe $B$’, the ought in the antecedent has 
its source in whatever epistemic norms make it the case that S ought to believe the 
$A_i$ (we may assume that the $A_i$ are not themselves acquired by logical inference 
and so the norms in question will not themselves be logical or logic-induced), an 
evidential norm perhaps. It is in virtue of their compliance with this norm that 
the premises enjoy a positive epistemic status. $B$’s positive epistemic status, by 
contrast, is only derivative; it is inherited by dint of $B$’s logical relation to the 
$A_i$. Thus, on this picture the normative force of logical consequence resides in 
its ability to propagate whatever epistemic goodness the premises might enjoy to 
their logical consequences.

As a result of this, the Bs are, unlike the Cs, immune to the Too Much Informa-
tion worry as well as to Broome’s Objection. That is not to say, however, that the 
Bs do not face potential difficulties of their own. The chief drawback, according to 
MacFarlane, is that the Bs are too weak: ‘according to the Bs, logical consequence 
is a channel through which existing norms of belief (obligation, permission, reason) 
can be extended’ (p. 10). Bo+, for instance, says that if you ought to believe the 
$A_i$, you ought to believe their (joint) entailments. But if it is not the case that you 
ought to believe the premises, it provides little guidance as to what you should 
do. And therein lies the source of MacFarlane’s worry: ‘according to the Bs, then, 
logic is only normative for those whose beliefs are already in order—that is, for 
those who believe what they ought to believe (or may believe, or have reason to 
believe). To the unfortunate others, logical norms simply do not apply (idem).’

Now, the Bs do offer some guidance. After all, according to (Bo+), for instance, 
upon discovering that an unacceptable proposition $B$ follows from my belief that 
$A$, I can immediately conclude that it is not the case that I ought to believe $A$. 
Nevertheless, it may be felt that one should be bound by logic even when one has 
beliefs of which it is not the case that one ought to have them. That is, it might 
be thought that it would constitute an additional strike against an agent whose 
beliefs are not in good order, if he failed to be logically coherent. It is a legitimate 
question, however, whether logic really is normative in this way. We will return to 
this question in §7.1.
This brings us to the Ws. The Ws have considerable intuitive upside, which have earned them a number of followers (although in many cases classification is not needed. Broome (2013) appears to go in for a weak attitudinal restriction of Wo+. Sainsbury (2002) seems to advocate (Wr-a), while Streumer (2007) adopts a version of the slightly stronger (Wr-) with respect to strict implication. MacFarlane (2004) himself settles on a combination of (Wo-) and (Wr+). But not all of them. The (Wp)s, for one, are out of contention for being too weak. Let us therefore focus on the remaining Ws. For simplicity, let us begin by considering Wo+:

• (Wo+) If $A_1, \ldots, A_n \models B$, then S ought to (if S believes all the $A_i$, S believes $B$).

Wo+ elegantly dodges both Too Much Information and Broome’s Objection. As for the former, the wide-scope reading provides just the wiggle room needed to neutralize Harman’s objection: suppose I believe $A$ and $A \supset B$. According to Wo+, I may meet my logical obligations in one of two ways: by either retaining my beliefs and also coming to believe $B$, or by ditching at least one of my antecedent beliefs in $A$ and $A \supset B$ so as to absolve me from the obligation to believe $B$. When $B$ turns out to be untenable, the latter course of action recommends itself: we revise our beliefs in the light of their unpalatable consequences. This not only meets Harman’s challenge; it paints an attractive picture of the interaction between logic and other norms of reasoning: logic, on the whole, does not require us to have any individual beliefs (except to believe logical truths, perhaps). Rather it prohibits certain constellations of doxastic attitudes. When we reason we must negotiate these global constraints on our system of beliefs with other epistemic norms—local norms that guide us in determining whether a given proposition is to be believed. This element of negotiation is well captured by the wide-scope reading.

Moreover, provided one is willing to accept that deontic modals are best read as propositional operators, (Wo+) is untroubled by Broome’s reflexivity worries. It yields that, for any proposition $A$ that I happen to believe, I ought to (believe $A$ or not to believe $A$).

Things look less rosy when we consider (Wo+)'s performance with respect to some of the other desiderata. It requires us to have an attitude (namely the
attitude of believing) towards any consequence of the beliefs I retain, thus placing Excessive Demands on us. Moving to (Wo-) avoids not only that problem, but also that of Clutter Avoidance. It does not, however, stave off the Preface problem. What is more, as a principle of negative polarity (Wo-) faces the Logical Obtuseness problem.

We could alternatively try out luck with an attitudinal principle. To fix ideas, let us opt for

- (Wo+b) If \( S \) believes that \( A_1, \ldots, A_n \models B \), then \( S \) ought to (if \( S \) believes all the \( A_i, S \) believes \( B \)).

The upside is that (Wo+b) takes care of the problem of Excessive Demands. It does not, however, take care of Clutter Avoidance. At least not as it stands. To fix this, we could further try the following addendum:

- (Wo+b*) If \( S \) believes that \( A_1, \ldots, A_n \models B \) and \( S \) considers \( B \) or has reasons to consider \( B \), then \( S \) ought to (if \( S \) believes all the \( A_i, S \) believes \( B \)).

However, even if the amended principle successfully wards off Clutter Avoidance, it remains vulnerable to Preface Paradox-type considerations.

To deal with it, we could weaken our wide scope principle by replacing the strict \( \text{ought} \) operator by the defeasible \( \text{reasons} \) operator. The thought is that one’s reasons for being logically coherent may trumped in Preface-like situations. We will return to this point in the next section. Let us note already, however, that such a non-strict principle arguably solves the Excessive Demands problems.

To deal with Clutter Avoidance, the principle can be modified along the lines of (Wo+b*), to yield the analogous (Wr+b*). However, as we noted, principles of this type fail to meet the Strictness Test. But perhaps the lesson to be learned just is that the normative force of logic is non-strict. This bitter pill would be considerably sweetened if \( \text{reasons} \)-based principles really did offer a way around the Preface Paradox. Before turning specifically to this question, given that the

\[ \text{Reference: Notice that it would not be enough merely to add the clause ‘and \( S \) takes an attitude towards \( B \)’ because there may be cases in which an agent fails to take an attitude to a logical consequences she has good reasons to consider. For example, I might, out of intellectual dishonesty, fail to take into account a damning consequence of my philosophical position of which I am otherwise aware.} \]
Preface Paradox constitutes a major stumbling block for many otherwise plausible principles, to give a brief overview of the ways in which one deal with the Preface Paradox.

6.2 The Preface Paradox

One way of dealing with the Preface Paradox is to deny it its force. That is, one might try to outright solve, or in some way dissolve the paradox. Since it seems fair to say that no such approach has won the day (see entry epistemic paradoxes), I will assume that the Preface Paradox intuitions are to be take seriously.\(^{23}\)

Alternatively, one might acknowledge the force of the Preface Paradox intuitions while at the same time trying to hold on to a strict, *ought*-based principle. But how? According to all such principles, I ought to believe (or at least not disbelieve) the conjunction of the proposition in my book, given that I firmly endorse each conjunct individually. MacFarlane’s response is that we must simply reconcile ourselves to the existence of an uneliminable normative conflict: our strict logical obligations clash with other epistemic obligations, namely, the obligation to believe that some of my beliefs must be mistaken. Our agent becomes a tragic heroine. Through no fault of her own, she finds herself in a situation in which, no matter what she does, she will fall short of what, epistemically speaking, she ought to do.

It might be retorted that as a matter of sound methodology, admitting an irresolvable normative clash should only be our last resort. A better approach (all other things being equal) might be thought to consist in finding a way of reconciling the conflicting epistemic norms.

Among the qualitative principles we have been considering, the only way out is via non-strict principles like (Wr+b*), which we considered at the end of the previous section. On this principle I, the author, merely have reasons (as opposed to having sufficient reasons) for believing the conjunction of the claims that make up the body of my book, given that I believe each of the claims individually. The crucial difference resides in the fact that this leaves open the possibility that my

\(^{23}\)See David Christensen (2004) for a lucid discussion of the importance and inevitability of the Preface Paradox. Milne (2009, p. 285) is a particularly relevant example of a dissenting view.
reasons for being logically coherent can be overridden. In particular, they can be outweighed by reasons stemming from other epistemic norms. In the case at hand, it might be thought that our logical obligations are superseded by a norm of epistemic modesty. This, of course, is not uncontroversial. Some maintain that what the Preface Paradox shows is not merely that the normative grip of logic does not take the form of a strict ought, but rather that we in fact have no reason at all to believe in multi-premise closure of belief under logical consequence: my reasons for believing in the conjunction of my claims are not being trumped by weightier reasons for disbelieving it, I have no logic-based reason whatsoever to believe the conjunction in the first place.

So far, then, we have considered the following reactions to the Preface Paradox: reject the Preface Paradox altogether; follow MacFarlane and cling to the strict ought-based principle at the cost of accepting an irresolvable normative clash; or opt for the weaker reasons operator and give up the intuition motivating the Strictness Test. But none of these proposals incorporate what is perhaps the most natural response to the Preface Paradox outside of the debate surrounding the normativity of logic. A standard response to the Preface Paradox consists in appealing to graded credal states in lieu of ‘full’ (‘qualitative’, ‘binary’ or ‘all-or-nothing’) beliefs. Such ‘credences’ or ‘degrees of belief’ (I will use the two labels interchangeably) are typically modeled by means of a (possibly partial) credence function (which we will denote by ‘cr’) that maps the set of propositions into the unit interval. Probabilists maintain that an ideally rational agent’s credence function ought to be (or at least ought to be extendable to) a probability function (i.e. it ought to satisfy the standard axioms of probability theory). In other words, an ideally rational agent should have probabilistically coherent credences. Probabilists have no trouble accounting for the Preface phenomena: the subjective probability of a (large) conjunction may well be low—even zero, as in the case of the Lottery Paradox—even if the probability assigned to each of the individual conjuncts is very high (reflecting the high degree of confidence the author rightly has in each of her claims).

A tempting strategy for formulating a bridge principle capable of coping with the Preface Paradox is to incorporate these insights. This might be done by going beyond the MacFarlane’s classification and devising instead a quantitative bridge
principle: one in which logical principles directly constrain the agent’s degrees of
belief (as opposed to constraining her full beliefs).

Hartry Field (2009a,b, Forthcoming) proposes a bridge principles of just this
form. Here is a formulation of such a principle:

- (DB) If \( A_1, \ldots, A_n \models B \), then \( S \)’s degrees of belief ought to be such that:

\[
cr(B) \geq \sum_{1 \leq i \leq n} cr(A_i) - (n - 1)
\]

Note first that DB is a wide scope principle: it requires that our degrees of belief
respect the specified inequality, which can be achieved in one of two ways: by
suitably raising one’s degree of belief in the conclusion or else by readjusting one’s
degrees of belief in the premises.

DB is based on a well-known result in probability logic, which is usually stated
in terms of ‘uncertainties’.\(^{24}\) Define the uncertainty of a proposition \( A \), \( u(A) \) as
\( u(A) = 1 - cr(A) \). Put in this way, DB says that the uncertainty of the conclusion
must be less than or equal to the sum of the uncertainties of the premises. DB
can be seen to share a number of important features with standard probability
theory. Plug in 0 for \( n \) and you get that one should assign 1 to any logical truth.
Plug in 1 and you get that one’s degree of belief in the premise of a valid single-
premise argument should not exceed your degree of belief in the conclusion. The
idea underlying DB is that uncertainties can add up and therefore need to be
accounted for when we are trying to determine how the logical relations between
our belief contents should affect our degrees of belief in those contents. Even if my
uncertainty about each of a large number of premises is next to negligible when
taken individually, the uncertainty may accumulate so as to make the conclusion
highly (perhaps even maximally) uncertain. It is for this reason that DB gets
us around the Preface Paradox; in the Preface case the number of premises is
sufficiently high for the conclusion to admit of a very low credence.

\(^{24}\)See (Adams 1998) for more details. For a helpful overview, see (Hájek 2001).
7 Further challenges

7.1 Kolodny’s challenge

Logical norms are naturally regarded as a species of rational requirements. If I believe a set of propositions and at the same time disbelieve an obvious logical consequence thereof my set of beliefs presumably exhibits a rational defect. Rational requirements are characterized by their demand for coherence: they demand either a particular kind of coherence among our attitudes or else coherence between our attitudes and the evidence. Niko Kolodny has dubbed the former ‘requirements of formal coherence as such’ (Kolodny 2007, p. 229). They are formal in the sense that they concern logical relationships between attitude contents or the arithmetical relationships between the degrees of confidence we invest in those contents. The qualification ‘as such’ indicates that an internal coherence among the attitudes is demanded to the exclusion of other epistemologically relevant factors (evidential considerations, for example). Requirements of this type, it has been argued ((Broome 2000), (Dancy 1977)), take the form of wide scope principles. Hence, they do not generally prescribe a particular attitude, but are satisfiable in a number of ways. Or, to put it another way, they prohibit particular constellations of attitudes. For instance, Wo- proscribes states like the one just imagined, in which the agent believes all of the premises while disbelieving the conclusion. It may be satisfied, as we have seen, by either coming to believe the conclusion or by abandoning some of the premises.

The status of logical norms as a species of rational requirements raises weighty questions. For one, Kolodny (2005) has challenged the seemingly natural assumption that rationality is normative at all. That is, he has questioned whether, we in fact have reasons to do what rational requirements require of us. It might be that rationality makes certain demands on us, but that it is an open question as to whether we should want to be rational. Here is not the place to develop these ideas, let alone to try to resolve the ‘normative question’ for rationality (see Way (2010) for an overview). In the absence of a convincing response to Kolodny’s challenge, some might take umbrage at our talk of logical norms. Strictly speaking, we should speak of them as necessary conditions for rationality, leaving open
whether we have reason to be rational.

While it would take us too far afield to address the question of the normativity of rationality, there is a strand of Kolodny’s argument that is more directly relevant to our discussion. The claim in question, put forth in (Kolodny 2007, 2008), is that there simply is no reason for postulating the existence of formal coherence requirements as such at all. This may seem surprising. After all, to take Kolodny’s simplest example, we certainly do have the intuition that an agent who, at a given time, believes both \( A \) and \( \neg A \) is violating a requirement—a requirement, presumably, of something like the following form:

- (NC) For any subject \( S \), for any proposition \( A \) and any time \( t \), \( S \) is required not to both believe \( A \) and \( \neg A \) at \( t \).

If Kolodny is right that there are no pure formal coherence requirements like NC, how are we to explain our intuitions? Kolodny’s strategy is to devise an error theory, which shows how coherence (or near enough coherence) in the relevant sense emerges as a by-product of our compliance with other norms, norms that are not themselves pure formal coherence requirements, thus obviating the need for postulating pure formal coherence requirements.

Consider how this plays out in the case of NC. Kolodny proposes an evidentialist response. Any violation of NC is indeed a violation of a norm, but the relevant norm being violated is a (narrow scope) evidential norm: the norm, roughly, that one has reason to believe a proposition only in so far as ‘the evidence indicates, or makes likely, that’ the proposition is true. The thought is that any instance of my violating NC is \( eo ipso \) an instance in which my beliefs are out of whack with the evidence. For when I hold contradictory beliefs, at least one of the beliefs must be unsupported by the evidence. As Kolodny puts it,

The attitudes that reason requires, in any given situation, are formally coherent. Thus, if one has formally incoherent attitudes, it follows that one must be violating some requirement of reason. The problem is not, as the idea of requirements of formal coherence as such suggests, that incoherent attitudes are at odds with each other. It is instead that when attitudes are incoherent, it follows that one of these attitudes is
at odds with the reason for it—as it would be even if it were not part of an incoherent set. A case in which one holds contradictory beliefs is Kolodny (2007, p. 231).

Another way of making Kolodny’s point is to note the following. Suppose I find myself believing both $A$ and $\neg A$, but that the evidence supports $A$ (over its negation). If NC were the operative norm, I could satisfy it ‘against reason’, that is by coming to believe $\neg A$. But adherence to NC contra the evidence seems like an unjustified ‘fetish’ for ‘psychic tidyness’. (Kolodny proposes similar maneuvers for other types of putative formal coherence norms, and for norms of logical coherence in particular.)

What Kolodny assumes here is that there are, in Broome’s words, ‘no optional pairs of beliefs’ (Broome 2013, p. 85). That is, it is never the case that belief in $A$ and belief in $\neg A$ is equally permissible in light of the evidence. As Broome points out, Kolodny’s assumption is founded on a commitment to evidentialism. However, even we accept Kolodny’s argument along with its evidentialist presuppositions, there may still be a room for logical norms. Such norms would not constrain beliefs directly, since only evidence constrains our beliefs on Kolodny’s view. However, the evidence itself would be structured by logic. For instance, if $A$ entails $B$, then since $A$ cannot be true without $B$ being true, any evidence that counts in favor of $A$ should also count in favor of $B$.

### 7.2 Consistency and coherence

At the outset we identified two logical properties as the two central protagonists in any story about the normative status of logic: consistency and logical consequence. So far our focus has been almost exclusively on consequence. Let us now briefly turn to norms of consistency.

The most natural and straightforward argument for consistency, as we have seen, is that the corresponding norm—something along the lines of CON—is entailed by (any version of) the truth or knowledge norm for belief (we saw a version in §3.2). Some objections to the consistency norm are closely related to the considerations of Excessive Demands. And even in cases where we could discover an inconsistency given our resources of computational power, time and so on, it may
be reasonable to prioritize other cognitive aims rather than expending significant resources to resolve a minor inconsistency (Harman 1986). Objections like these rest on the assumption that the consistency norm is to be read, as Harman does, as playing the role of a directive or an appraisal (see §4). They have no force if consistency is understood as an evaluative notion.

Another reason for rejecting CON is dialetheism (see entry on dialetheism). Clearly, if there are true contradictions, one ought, at times, to be inconsistent.

But there is a further worry about consistency borne out of less controversial assumptions. It stems from the aforementioned fact that we not only evaluate our beliefs according to their truth status but also in terms of their reasonableness in light of the evidence. Accordingly, there would seem to be an epistemic norm that one ought to (or may) believe a proposition only if that proposition is likely to be true given the evidence. But if that is so, the following well-known scenario may arise: it may be that, for a set of propositions, I ought to (may) believe each of them in light of the evidence, yet—because evidential support is not factive—the resulting belief set turns out to be inconsistent. Therefore, if rationality demands that I align my beliefs with the evidence, rationality is no guarantee for logical consistency. Of course, it is precisely this clash between our local evidential norm and the global coherence norm of logical consistency that is dramatised in the preface and in the lottery paradoxes.

In the light of (some of) these considerations, no small number of authors have come to reject the consistency norm (see e.g. Kyburg (1970) and ). A particularly interesting positive alternative proposal was recently made by Branden Fitelson and Kenny Easwaran (Easwaran and Fitelson (2013), Easwaran (Forthcoming)). They advance a range of sub-consistency coherence norms for full belief inspired by Joyce-style accuracy-dominance arguments for probabilism as a norm for credences (See Joyce (1998, 2009) and also the entry on epistemic utility arguments for probabilism). One important such norm is, roughly, that a belief set is coherent if there is no alternative belief set that outperforms it in terms of its lower measure of inaccuracy across all possible worlds, i.e. just in case it is not weakly dominated with respect to accuracy.
7.3 Logic vs. probability theory

Even if there is a plausible sense in which logic can be said to be normative for thought or reasoning, there remains a worry about competition. Let me explain. Logic-based norms usually apply to full beliefs. If that is correct, a significant range of rationally assessable doxastic phenomena fall outside of the purview of logic—most significantly for present purposes, degrees of belief. Degrees of belief, according to the popular probabilist picture, are subject not to logical, but to probabilistic norms, in particular the synchronic norm of probabilistic coherence. Consequently, the normative reach of logic would seem to be limited; it does not exhaust the range of doxastic phenomena. Worse still, some philosophers maintain that degrees of belief are the only doxastic attitudes that are, in some sense, ‘real’, or at least the only ones that genuinely matter. According to them, only degrees of belief are deserving of a place in our most promising accounts of both theoretical (broadly Bayesian) and practical (broadly decision-theoretic) accounts of rationality. Full belief talk is either to be eliminated altogether (Jeffrey 1970), or reduced to talk of degrees of belief (ontologically, explanatorily or otherwise). Others still acknowledge that the concept of full belief plays an indispensable role in our folk-psychological practices, but nevertheless deem it to be too blunt an instrument to earn its keep in respectable philosophical and scientific theorizing (Christensen 2004). Virtually all such ‘credence-first’ approaches have in common that they threaten to eliminate the normative role of logic, which is superseded or ‘embedded’ in probabilism Williams (Forthcoming).

A number of replies might be envisaged. Here we mention but a few. First, one may question the assumption that logical norms really have no say when it comes to credences. Field’s quantitative bridge principle is a case in point. As we have seen, it does directly connect logical principles (or our attitudes towards them) with constraints on the allowable ways of investing confidence in the propo-

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25One might also consider comparative beliefs. That is, doxastic states which are partially ordered according to relative certainty. The idea goes back at least to Keynes (1921). More recently, it has received renewed attention in Hawthorne (2009) and Fitelson (In preparation). For reasons of space I do not pursue comparative beliefs further here.

26This claim is backed by an impressive array of arguments: so-called Dutch-book arguments, Representation theorem-based arguments and accuracy-dominance arguments. See entry epistemic utility arguments for probabilism.
sitions in question. To this it might be retorted, however, that Field’s proposal in
effect presupposes some form of (i.e. a possibly non-classical form of) subjective
probability theory. After all, in order to align one’s credences with the demands of
logic, one must be capable of determining the numerical values of one’s credences
in logically complex propositions on the basis of one’s degrees of belief in simple
propositions. This is most naturally done by appealing to probability theory.\textsuperscript{27}
But if so, it looks as if probability theory is really doing all of the normative work
and hence that logic would seem to be little more than a redundant tag-along. Sec-
tond, one might try to downplay the importance of degrees of belief in our cognitive
economy. In its strongest form such a position amounts to a form of eliminativism
or reduction in the opposite direction: against credences and in favor of full belief.
Harman (1986), for instance, rejects the idea that ordinary agents operate with
anything like credences. Harman does not deny that beliefs may come in vary-
ing degrees of strength, however he maintains that this feature can be explained
wholly in terms of full beliefs: either as belief in a proposition whose content is
probabilistic or else ‘as a kind of epiphenomenon resulting from the operation of
rules of revision’ [e.g. you believe $P$ to a higher degree than $Q$ iff it is harder to
stop believing $P$ than to stop believing $Q$] (Harman 1986, p. 22). More moderate
positions accord both graded and categorical beliefs along with their respective
attendant norms a firm place in our cognitive economies, either by seeking to give
a unified account of both concepts (Foley (1993), Sturgeon (2008), Leitgeb (2013))
or else by reconciling themselves to what Christensen (2004) calls a ‘bifurcation
account’, i.e. the view that there is no unifying account to be had and hence that
both types of belief and their attendant norms operate autonomously (Buchak
(2014), Kaplan (1996), Maher (1993), Stalnaker (1984)).

\textbf{References}


\textsuperscript{27}Though not necessarily. For there are generalizations of probability measures—what Joseph
Halpern has called \textit{plausibility measures} (Halpern 2003)—which satisfy the constraints imposed
by Field’s principle, but which are not probabilistic.


K. Easwaran. Dr. Truthlove, or, how I learned to stop worrying and love Bayesian probability. *Noûs*, Forthcoming.


F. Steinberger. Three ways logic might be normative. MS.


