Degrees of Assertability

Abstract

In considering what we ought to say, we can evaluate a proposition both for *whether* it is assertable and for *how* assertable it is. The latter notion, that of *comparative assertability*, has an important role to play, both in our epistemic evaluations of speech and in our pragmatic reasoning. Yet, despite this, it has received little prior discussion.

This paper takes up the investigation of comparative assertability. §§1-2 provide a preliminary, informal overview of the topic and an operationalization of the target notion. §3 introduces Probabilism, the thesis that a proposition's degree of assertability is determined by its probability. Probabilism has been assumed in much of what prior discussion on comparative assertability there is. In §4 I present two kinds of problem for Probabilism—problems which, I suggest, when taken in combination, should lead us to look for alternatives. In §5, I formulate and defend one such alternative. Under this proposal, comparative assertability is a matter, not of comparative *probability*, but of comparative *normality*. I conclude by demonstrating how adopting this approach allows us to avoid both kinds of problem which beset Probabilism.

1 Introduction[1]

Imagine you are an art historian, tasked with evaluating the authenticity and origins of a newly recovered artwork. The brushwork and manner of composition would be highly uncharacteristic for artist A. However, they leave B and C as possible candidates. Two claims appear plausible in this setting: (i) it would be inappropriate to assert of either A, B or C that they are the painter of the work; (ii) it would be less appropriate to assert of A that she is the painter of the work than to assert of one of either B or C that they are the painter.

Or another case: imagine you are a doctor, diagnosing a patient with a range of unusual symptoms. On the basis of your initial assessment, you think it is unlikely they have syndrome X. However, you nevertheless order some lab tests, which confirm your suspicion. Again, two claims appear plausible in this setting: (i) both before and after receiving the lab results, it would be inappropriate to assert that the patient had syndrome X; (ii) it would be less appropriate to assert that the patient had syndrome X after receiving the lab results than it would have been before.

Cases like these bring out an often overlooked level of granularity in our evaluations of assertion. In addition to judgments about *whether* asserting a particular

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proposition is appropriate, we can also make judgments about *how* appropriate asserting it would be. Our intuitions not only provide guidance regarding absolute claims, such as $\ulcorner\phi$ is assertable$\urcorner$, they frequently also allow us to adjudicate comparative claims, such as $\ulcorner\phi$ is more assertable than $\psi\urcorner$. As demonstrated by the first case, such comparisons can be synchronic, involving distinct propositions evaluated relative to the same evidential state at the same time. Alternatively, they may be diachronic, as demonstrated by the second case, involving a single proposition evaluated relative to different evidential states at different times.

That we can make comparative judgment about the appropriateness of assertion is, from at least one perspective, unsurprising. Assertion is governed by norms. For an assertion to be appropriate (in some specified respect) is for it to conform to the normative requirements on it (of the corresponding kind).[2] Yet, standardly, activities subject to normative requirements can be evaluated both with respect to whether they are appropriate (relative to those requirements) and with respect to how appropriate they are (relative to the same requirements).

It is widely acknowledged that actions can be evaluated for both whether they are morally right and to what extent they are morally right (see e.g., Lockhart (2000), Brown (2016), Gustafsson (2016), Howard-Snyder (2016) and Sinhababu (2018), amongst others; for dissent, see Driver (2011)). Indeed, some have claimed that there are only facts about comparative rightness (e.g., Norcross 2006 and Peterson 2013) or that facts about comparative rightness are explanatorily basic (e.g., McElwee 2010a,b).

For example: imagine you are a doctor, treating a patient suffering from kidney failure. The norms of morality require you to provide the patient with a basic standard of care. However, you do better with respect to what morality requires if you provide a basic standard of care *and* offer to donate one of your own kidneys to the patient than if you merely provide a basic standard of care. Or, another case: imagine you are threatened with dismissal by your line manager unless you falsely accuse a co-worker of stealing. Plausibly, the norms of morality require you not to lie. However, you do worse with respect to what morality requires if you proceed to accuse your co-worker of stealing $5,000 than if you accuse her of stealing $5.[3]

Similar considerations apply to other normative domains. Norms of politeness, prudence, and rationality all give rise to comparative judgments (see, in particular, McElwee (2017) for discussion). For example, imagine you are invited to a friend's house for dinner. The norms of politeness require you to bring either wine or flowers. However, you do better with respect to what politeness requires if you

[2] To claim that assertion is norm governed is not to claim that any norm governing assertion governs assertion essentially. For discussion of the latter claim (in the terminology of Williamson (2000), the claim that there is one or more constitutive norms of assertion), see, e.g., Searle (1969), Williamson (2000), Sosa (2009), Cappelen (2011) and Pagin (2016) amongst others.

[3] Comparative judgments about the moral appropriateness of actions are most naturally accommodated within a consequentialist framework. However, attempts have been made to give accounts of the notion within deontological (e.g., (Calder, 2005), cf. Brown 2016, 25) and virtue ethical (e.g., Reed 2017) frameworks.

bring both wine and flowers than if you merely bring wine. Or imagine you are catching an international flight. The norms of prudence require you to arrive 2 hours in advance.[4] However, you still do better with respect to what prudence requires if you arrive 1 hour in advance than if you arrive 30 minutes in advance. Or, finally, imagine you are playing poker. The norms of rationality require you to believe that chance of your opponent being dealt pocket aces is 5.88%. However, you still do better with respect to what rationality requires if you believe she has a 6% chance of being dealt pocket aces than if you believe she has a .01% chance.

Examples abound. Our sentencing practices reflect the fact that two criminal acts can violate the same law to different extents, incurring different levels of punishment. Our sporting judgments allow us to distinguish egregious violations of the rules from borderline calls. Attending a funeral in either a pink suit or a swimsuit would violate the requirements of good taste—however, one would do so to a greater extent than the other. Considered against this background, it would be surprising if we could not make comparative judgments about the appropriateness of assertions.

Assertion is subject to the requirements of a broad range of norms: norms of propriety, norms of helpfulness, norms of manner, and so on. To the extent that an assertion conforms to these requirements, it can be more or less rude, more or less apposite, or more or less well-phrased. Many norms hold only in restricted circumstances: for example, the requirements on the volume of assertion in effect in art galleries differ from those in shooting galleries. In what follows, I will focus exclusively on those general norms governing assertion which impose requirements on the epistemic state of the speaker.[5] An assertion may satisfy these requirements while failing to satisfy the requirements of many other norms. Asserting that your host could benefit from taking some basic cooking classes might be highly appropriate with respect to the epistemic requirements on assertion. Yet, it will presumably be inappropriate with respect to the requirements imposed by the norms of politeness.

If we can adjudicate claims about comparative epistemic assertability, then we are in a position to rank propositions with respect to how appropriate their assertion would be. Where asserting p would be more appropriate than asserting q, we will say that p has a greater *degree of assertability* than q.

Degrees of assertability—and the ordering of comparative appropriateness to which they correspond—are the subject matter of this paper. In addressing that subject matter, we will raise such questions as: What structure do degrees of assertability have? Are all propositions comparable with respect to their degree of assertability? Is a proposition's degree of assertability a contingent matter? Is there an upper limit to how assertable a proposition can be? What about a

[4] Allegedly.

[5] This is what Jackson (1987, 8) terms 'assert*i*bility'. DeRose (2010, 12) draws the distinction neatly, noting that if I am in a library, the proposition expressed by 'I am in a library' is assertible but not assertable (in Jackson's sense).

lower limit? How assertable must a proposition be to be assertable *simpliciter*? And how is comparative assertability related to traditional norms of assertion?

Prior work on degrees of assertability has focused almost exclusively on the assertability of conditionals, where it is associated with a barrage of triviality results to do with the conditionals' probability (Lewis 1976, Jackson 1979, 1987, Dudman 1992, §2, Bradley 2007, DeRose 2010, Milne 2012, and Leitgeb 2017). In contrast, I wish to focus primarily on non-conditional assertions, with the hope that results there can be generalized unproblematically.

I will start, in §2, by discussing the various reasons for wanting a theory of degrees of assertability and proposing a method for evaluating comparative claims about the appropriateness of assertion. In §3 I will then introduce the view I term Probabilism, which has been the default position of much preceding discussion, and consider what arguments can be offered in its favor. §4 presents two challenges for Probabilism: the first (§4.1) focuses on problems associated with assertion and certainty; the second (§4.2), assertion and uncertainty. Finally, in §5, I develop an alternative account on which degrees of assertability are determined by facts about comparative normality This alternative is shown to avoid the issues in §4 while also displaying other, desirable properties. §6 concludes.

2 Preliminaries

2.1 Applications

Why be interested in degrees of assertability? Most previous work has focused on their ancillary significance, as a tool for illuminating other notions. A number of authors, starting with Adams (1965, 1970), have suggested that judgments about whether an inference is reasonable sometimes track whether it preserves comparative assertability (i.e., whether the assertability of conclusion is at least as great as the assertability of each premise).

This notion of consequence might be worthy of consideration for a variety of reasons. For one, it offers a criterion for evaluating inferences between sentences which lack truth conditions, as long as they can nevertheless be evaluated for comparative assertability.[6] Even if we restrict attention to utterances with truth-conditional content (as we will below), the property of preserving comparative assertability can be expected to give us a consequence relation which is stronger than truth-preservation in interesting (and potentially desirable) ways. However, there are reasons to think a theory of comparative assertability is also of independent interest. Below are three examples:

i) Co-operativity: Comparative (epistemic) assertability has an important theoretical role to play in pragmatic theorizing. On a Gricean or neo-Gricean account

[6] As, in particular, Adams (1965) took this to be the case for conditionals.

of pragmatics, hearers reason about the requirements of various norms governing co-operative assertion in order to calculate a speaker's communicative intention (e.g., Grice 1967, Horn 1984, 2004, Levinson 1987, 2000, and Blutner 2000). Included amongst these are epistemic norms. For example, under the maxim of Quality, Grice includes the directives: (i) "do not say what you believe to be false", and (ii) "do not say that for which you lack adequate evidence"((Grice, 1967, 46)), both of which impose constraints on a speaker's epistemic state.[7]

In making an assertoric contribution to a conversation, a speaker aims to select the most appropriate proposition to assert given the full range of norms, both epistemic and non-epistemic, and her communicative intentions.[8] However, the requirements of the various norms governing assertion can, and do, come into conflict. Appropriate precision may require prolixity, while adequate concision frequently risks confusion.

One way in which this can occur is for different norms to impose incompatible requirements (what Grice describes as a "clash"(49)). For example, the only relevant contribution a speaker can make to a conversation which meets the requirements of informativity and relevance may fail to be epistemically appropriate. In such cases, however, it still need not be all-things-considered uncooperative to assert. Whether it is will depend, in part, on *how* far short of being epistemically appropriate to assert the proposition is. My suspicion that the 7 train is not running may fail to meet the epistemic requirements on assertion, despite being both highly relevant and informative. Whether it would be co-operative for me to assert nonetheless will depend, in part, on whether it is based on solid though insufficient evidence, or whether it is merely a wild hunch.

Another way this can occur is when multiple possible contributions each satisfy all the relevant requirements on co-operative assertion. For example, there may be more than one candidate assertion which would meet the thresholds of relevance, informativeness and epistemic appropriateness. In such cases, a would-be speaker must evaluate which proposition is all-things-considered *most* co-operative. To do so, she needs to know not just *whether* an assertion of a given proposition would meet the requirements of some given norm, but to *what extent* it would (O'Hair 1969, 45). The claim that Claire is in NYC and the claim that she is in Manhattan may both meet each individual requirement on co-operative assertion. If my epistemic position regarding the former is much stronger than my epistemic position regarding the latter, while the two are roughly equal in relevance and informativeness (given the conversational information), then asserting the former should be most co-operative (even if both

[7]See Benton (2016) for an argument that Grice was also committed to the stronger epistemic requirement that speakers assert only what they know.

[8]Setting aside issues to do with the maxim of Manner, Grice's non-detachability and calculability constraints ensure that we can think about pragmatic principles as working on the selection of propositions to assert, rather than sentences to assert them with. As such, I restrict attention to Gricean considerations of informativeness, relevance and epistemic appropriateness.

would be co-operative *simpliciter*). However, if my epistemic position regarding each is roughly equal, but the latter is much more informative and/or relevant than the former, then that asserting the latter should be most co-operative.[9]

ii) Culpability: Our communicative conventions depend on collective enforcement of the norms governing assertion (for recent discussion, see especially Kelp and Simion (2017), Brown (2019) and Kirk-Giannini (2018)). That violations of norms are met with censure is important. Censure may be direct, in the form of criticism or reprimand, or indirect, in the form absence of uptake or loss of epistemic standing. The particular forms that censure takes can be expected to have a key role to play in understanding how conventions are established (Lewis 1969, 97-100, Sugden 1986).

However, not all inappropriate assertions are equally inappropriate. As with other norms, punishment should be proportional (Kant 1996, Hart 1968, Braithwaite and Pettit 1992, von Hirsch 1996, and Kagan 2005). It is a core component of the enforcement of traffic conventions that drivers who violate the speed limit by 5mph face less significant sanctions than those who violate it by 40mph. Similarly, speakers whose assertions fall somewhat short of the threshold face less significant censure than those which fall far short (cf. Williamson (2000, 258)). Accordingly, we should expect a notion of comparative assertability to have an essential role to play in any account of how our practices of censure underwrite our communicative conventions.

iii) Practical Considerations: How we evaluate assertions depends in part on what is at stake. A speaker who asserts that the bus arrives at 7.30am will be held to a higher epistemic standard if the consequences of error are grave than if they are trivial (Hawthorne 2003, Williamson 2005, Brown 2008, 2012, and Levin 2008).[10]

Many authors have resisted the conclusion that we should allow the primary normative requirement(s) on assertion to vary with practical considerations.[11] Rather, they argue, our judgments in such cases are driven by the agents success or failure in meeting the requirements of a secondary, derivative norm (Williamson 2000, 2005, 2020, Boyd 2015 cf. Stanley and Hawthorne 2008). The precise formulation of the relevant derivative norm is a matter of controversy, but consideration of other domains suggest comparative appropriateness will

[9] I have focused on speaker-orientated considerations of co-operativity, but we can expect hearers to be able to draw corresponding inferences. For example, from the fact that you chose to assert that Claire is in Manhattan over asserting that she is in NYC, I can infer that you have a stronger epistemic position if the two are roughly equal in informativeness and relevance in context than I can if the former does significantly better than the latter on both counts.

[10] Note that the consequences of error should not simply be identified with the stakes. If I tell you that your bus leaves from lot #416, the consequence of error may be low, even if the stakes of catching it are high, since inaccurate information is not much worse than no information, despite accurate information being significantly more valuable.

[11] A notable exception is Goldberg (2015), who holds that what epistemic state is required for appropriate assertion varies according to the mutual expectations of interlocutors, which themselves can be expected to be sensitive to practical considerations.

have an important role to play (Husak 2010). The requirements of rationality, for example, do not change according to what is at stake: what call is rational in a game of poker is independent of how much we are betting. Yet players' behavior is also seemingly subject to a derivative norm that requires them to do better with respect to those requirements when the cost of error is high than when it is low.

Assertion is plausibly governed by a similar derivative norm which says that how well an assertion should do with respect to the primary norm is proportional to how significant the cost of error would be. Where the consequences of error are grave, an assertion may meet the requirements of the primary norm, while failing to satisfy this derivative norm (in virtue of not meeting them well enough). In contrast, where stakes are low, one may meet the requirements of the derivative norm, despite failing to satisfy the primary norm.[12] Note that it is unimportant, for our purposes, whether the relevant derivative norm should be classified as an epistemic norm itself. What matters is simply that our assessments can be explained by derivative norms tying practical considerations to comparative appropriateness.

2.2 Operationalization

In some cases, we may have direct judgments about whether it would be more appropriate to assert one proposition than another. However, in many cases we will not. As such, we need to find a way to operationalize the notion of a proposition's degree of assertability. An adequate operationalization should provide concrete criteria—criteria about which we *do* have direct judgments—by which we can evaluate claims of comparative appropriateness.

In the case of claims of comparative moral appropriateness, there is a natural strategy for achieving this. One action does better with respect to the requirements of morality than another iff conditional on one of the two being performed, it ought to be the former (cf. Lockhart (2000)).

The same strategy can be generalized to degrees of assertability by restricting our attention to the permissible answers to questions. The idea is that one proposition does better with respect to the epistemic requirements on assertion than another iff, conditional on answering a question to which they are the only two answers, one ought to assert the former. This should, I hope, be near platitudinous. One ought, given the epistemic norms of assertion, to assert the answer to a question which is most appropriate with respect to the requirements of those norms, if one asserts any answer. Officially:

> p has a greater degree of assertability than q for an agent S with evidence E iff, for any question Q with the possible answers $\{p, q\}$, if

[12] Plausibly, cases of practical urgency have this form, as discussed by Williamson (2000), Benton (2012). In these cases, the cost of error is low, despite the stakes being high.

> S asserts an answer to Q on the basis of E, then (given the epistemic norms of assertion) S ought to assert p.

For example, that B is the painter of the work has a greater degree of assertability for you, *qua* art historian, given your evidence than that A is the painter of the work, iff, if you answer the question 'Is it A or B who painted the work?', you ought to answer with the former. That the patient has syndrome X has a lesser degree of assertability for you, *qua* doctor, given your evidence than that she does not iff, if you answer the question 'Does the patient have syndrome X?', you ought to assert the latter. Crucially, note that denying the negation of a presupposition of the question should not treated as a potential answer for the purposes of the test—an assertion of 'neither', while perhaps appropriate, does not qualify as an answer to the former. [13] The strategy permits two propositions to differ in their degree of assertability, despite neither (or both) being assertable. What is appropriate to assert conditional on answering a question, may not be appropriate to assert *simpliciter*. [14,15]

Clearly, this strategy does not provide a criterion for evaluating diachronic comparisons of the appropriateness of assertions. It requires that we judge the assertability of pairs of propositions with respect to a single evidential state at a single time. As such, adopting it engenders a reduction in the scope of the present investigation to synchronic comparisons only. However, we might nevertheless hope that, by investigating the latter notion, we can shed light on the former (much as investigation into synchronic constraints on rationality might be hoped to shed light on diachronic constraints). Indeed, we will see that the synchronic framework proposed in §5 generates diachronic constraints

[13] All that is strictly essential to the operationaliztion is that we restrict our attention what an agent ought to do, given that they perform one of a pair of alternative assertion. Considering potential answers to questions merely provides a relatively natural means of enforcing this restriction for the purposes of eliciting judgments.

[14] cf. Whiting (2013, §2), Greco (2014, §4) and Williamson (2018, §6) for related discussion of questions and forced-choice assertion).

[15] A referee raises the concern that this operationalization permits inappropriate 'bootstrapping'.Wherever the antecedent of the right-hand clause is satisfied (in virtue of S asserting either p or q), it seems we should be able to conclude that the consequent is true. Yet this is absurd. It might be that one ought assert neither p nor q, despite the fact that one does so. This kind of concern has led some to posit that modals expressing normative requirements should always take wide-scope with respect to conditionals (Greenspan 1975, Wallace 2001, Broome 1999, 2004, 2007, cf. Kolodny 2005).

Contemporary treatments of modals in conditional consequents alleviate this worry. On an orthodox, contextualist account, '*if*'-clause are taken to restrict the domain of quantification of the modal in their consequent (Kratzer (1986, 2012)). Crucially, however, no corresponding restriction is to be expected for unembedded occurrences of the modal, even in those cases in which the antecedent is, in fact, true. Accordingly, detachment will fail to be generally truth-preserving: the truth of the conditional and its antecedent together imply the truth of the '*ought*'-claim in the consequent only when it is appropriately restricted; they fail to imply the truth of the unrestricted claim. Since it is the latter which is relevant for assessing what a given norm requires one to do all-things-considered, bootstrapping worries are avoided (see Dowell (2012), Silk (2014), Saint Croix and Thomason (2014) and Worsnip (2015) for recent discussion).

of precisely this kind.

3 Probabilism

Let Ω be a set of atomic states of affairs, $i,i',\ldots$.[16] Let $\mathcal{F}$ be an σ-algebra over Ω. For simplicity, we will tend to assume that $\mathcal{F} = \mathcal{P}(\Omega)$. The set of propositions, $\{p, q, \ \ldots\}$, and set of evidential states, $\{\mathrm{E},\mathrm{E}',\ldots\}$ will both be identified with $\mathcal{F}$.[17] Thus, the propositions and evidential states comprise sets of states forming a σ-algebra over Ω. Let Δ be a partially ordered set of degrees, $\{\delta, \delta' \ldots\}$. Let $\mathrm{D}^{(\cdot)}(\cdot) : \mathcal{F} \times \mathcal{F} \to \Delta$ be a function from an evidential state and proposition to a degree. Intuitively, $\mathrm{D}^{\mathrm{E}}(\cdot)$ maps a proposition to its degree of assertability for a speaker in evidential state E. $\mathrm{D}^{\mathrm{E}}(p) \geqslant \mathrm{D}^{\mathrm{E}}(q)$ iff the degree of assertability of p given E is at least as great as the degree of assertability of q given E.

Most prior discussion of degrees of assertability has focused on the view that a proposition's degree of assertability is determined by its conditional probability on the evidence of the speaker. Where $P(\cdot)$ is some specified classical probability measure on $\mathcal{F}$, we can articulate this idea in a couple of different ways:[18]

STRONG PROBABILISM: $\mathrm{D}^{\mathrm{E}}(p) \propto P(p|\mathrm{E})$.

WEAK PROBABILISM: $\mathrm{D}^{\mathrm{E}}(p) \geqslant \mathrm{D}^{\mathrm{E}}(q)$ iff $P(p|\mathrm{E}) \geqslant P(q|\mathrm{E})$.

STRONG PROBABILISM says that a proposition's degree of assertability is proportional to its probability conditional on the speaker's evidence. WEAK PROBABILISM says that p has at least as great a degree of assertability as q given E iff the conditional probability of p on E is at least as great as the conditional probability of q on E.

Though the differences between STRONG and WEAK PROBABILISM are substantial, for present purposes they are not significant. The discussion below will address the disjunction of the two formulations, which I will term simply PROBABILISM. Since the latter is assymmetrically entailed by the former, this amounts, in principle, to restricting attention to the weaker variant. As I will argue that even the WEAK PROBABILISM is untenable, this simplification is harmless.

At least when restricted to non-conditional assertion, PROBABILISM has a number of proponents. For example, here is Jackson (1979):

> "As a rule, our intuitive judgements of assertability match up with

[16] I take states of affairs to be partial characterizations of reality, up to—but not limited to—complete possible worlds

[17] I will take it as an assumption that evidence can be modeled propositionally. For discussion, see in particular Williamson (2000, §9.6).

[18] Throughout, open formulae are treated as true iff true under every every assignment of values to free variables.

> our intuitive judgements of probability, that is, [p] is assertable to the extent that it has high subjective probability for its assertor."(565)[19]

And, similarly, here is Leitgeb (2017):

> "The degree of rational assertability of [p] for a perfectly rational agent (at a time) equals the agent' degree of belief in [p] (at the time)."(278)

Lewis (1976, 297)'s claim that "assertability goes by subjective probability" is, likewise, most naturally read as an endorsement of some form of PROBABILISM for non-conditional assertions.[20]

On a natural interpretation of PROBABILISM, the relevant probability function will correspond to something akin to the evidential or epistemological probability distribution over the possibility space (Kyburg 1971, Moser 1988, Williamson 2000, §10). Elucidating this notion, Moser writes that: "[Epistemological] probabilities are not opinions, or beliefs, or degrees of belief"and they are also "not propensities or chances". Rather, he proposes, they "reflect an objective inferential relation between a body of evidence and p"(232). Presumably, such a view would take a proposition's degree of assertability to be invariant across individuals with the same evidence.

However, while the evidential/epistemic interpretation of PROBABILISM is perhaps the most natural, there is no requirement that the probability function be interpreted in this way. For example, one alternative would be to take a proposition's degree of assertability to be proportionate to the subjective probability assigned to it by the speaker (as Lewis (1976) and Jackson (1979) do).Clearly, on such a view, degrees of assertability would no longer be invariant across individuals with the same evidence. As such, the formulation of the thesis would need to be revised to include indexation to speakers.

[19] Jackson (1987, 9) notes that two sentences which express the same proposition may differ in how appropriate they are to assert in virtue of non-truth-conditional aspects of their meanings. For example, depending on what is presupposed about desirability of extended conversations about decision theory (†.a-b) may differ in how appropriate their assertion would be, despite being equiprobable (in virtue of being truth-conditionally equivalent):

(†) a. Mary can talk about Newcomb's puzzle for hours and is a lot of fun to drink with.
b. Mary can talk about Newcomb's puzzle for hours but is a lot of fun to drink with.

Understood as a thesis about the epistemic assertability of *propositions*—rather than the sentences used to express them—such examples to do not pose a challenge to PROBABILISM. We should bear in mind that two sentences expressing equiprobable propositions may differ in all-things-considered assertability in virtue of the requirements of other norms which govern not only *what* proposition is asserted but also *how* it is asserted.

[20] It is more questionable whether Lewis accepts PROBABILISM for conditional assertions. While he explicitly claims that a conditional with a high subjective probability may be highly inappropriate to assert, the notion of appropriateness he is interested in is not exclusively epistemic. It is not implausible to take him to endorse the unrestricted variant of PROBABILISM for degrees of epistemic assertability.

While these differences between interpretations of Probabilism are significant, they can be set aside for the moment. What matters for present purposes are the implications Probabilism has for the *structural* features of degrees of assertability. These features will hold regardless of how the relevant probability function is determined. For example, under any interpretation, Strong Probabilism implies that the ordered set of degrees, Δ, is isomorphic to the unit interval. Accordingly, Δ must be a complete metric space with a minimum and maximum element.[21] Weak Probabilism preserves some, but not all of the structural commitments of Strong Probabilism. For example, while it retains the requirement that Δ have an minimum and maximum element, it gives up the requirement that it be a metric space.

While Probabilism is widely assumed, it is rarely explicitly defended. However, we can identify at least two arguments which could be made in its favor:

i) Assertion Aims at Truth: According to a number of authors, the aim of assertion is truth (Williams 1966, 16-20, Dummett 1973, 302, and, more recently, Marsili 2018). On this view assertions have speaker-independent success conditions which they fail to achieve unless the proposition asserted is true: just as a basketball shot which fails to score is unsuccessful regardless of the intentions of the player, an assertion that Rio de Janeiro is the capital of Brazil is unsuccessful regardless of the intentions of the speaker.

Probabilism follows from the view that assertion aims at truth (and truth only) on the hypothesis that the appropriateness of an act is proportional to the likelihood that it satisfies its aims (conditional on the agent's evidence). This has at least some *prima facie* appeal. For example, imagine you are a mountain climber with the sole aim of summiting. Three routes, x, y, and z, are available to you which, you calculate, give you a 75%, 50%, and 25% chance of success, respectively. The following claim, at least, seems uncontroversial: all else being equal, attempting route x would be more appropriate than attempting route y, and attempting route y would be more appropriate than attempting route z. It is less obvious, though not clearly false, that the difference in appropriateness between attempting route x and route y is the same as the difference in appropriateness between attempting route y and route z.[22] If the latter claim is accepted, however, it should confer some support on Probabilism for adherents of the truth aim.

Note that one may accept that assertion aims at truth while denying that truth is the epistemic norm of assertion (more carefully: that an assertion satisfies the requirements of its epistemic norm iff it is true).[23] Aims and norms differ. While

[21] Strictly speaking, it implies only that the range of $\mathrm{D}^{(\cdot)}(\cdot)$ in Δ has these properties. However, in what follows, I will assume that $\mathrm{D}^{(\cdot)}(\cdot)$ is a surjection onto Δ.

[22] Note that one might accept this claim while insisting that there is an important asymmetry between the comparison of x and y and y and z. Plausibly, as the most appropriate alternative, only attempting route x is appropriate *simpliciter*. y and z are alike in being inappropriate, while x differs from both in being appropriate.

[23] See, in particular, Marsili (2018) for detailed discussion of this point.

the former determine the success conditions for an act (and, on the proposed view, how appropriate it is), the latter determine whether it is appropriate *simpliciter*. Many speech acts, such as hypothesizing, conjecturing, swearing, etc. to could be reasonably thought to aim at truth, but to differ in the normative requirements they are subject to (Williamson 2000, 244-245).

Normative requirements on an act frequently take the form of constraints on how it relates to its aim. For example, the epistemic norms of assertion might be thought to require that assertion satisfy its aim in a non-risky manner or that it be certain/likely to satisfy its aim.[24] Thus, a proponent of Probabilism who held that truth is the aim of belief could coherently go on to subscribe to a wide range of different normative requirements on assertion. She would merely need to accept in addition that, where a norm takes the form of epistemic requirements on how assertion satisfies its aim, the appropriateness of an assertion with respect to that norm is proportionate to its likelihood of satisfying, not the requirements of the norm itself, but rather the aim from which it derives.[25]

ii) The Belief/Assertion Parallel: Another argument for Probabilism can be made on the basis of what Adler (2002) calls the belief/assertion parallel. As he presents it, this amounts to the broad claim that the belief and assertion are relevantly similar along some specified dimension(s), and, as a result, can be expected to share a some range of important feature. Versions of this idea have also been endorsed by Williamson (2000), Douven (2006) and Sosa (2010), amongst others. For example, Williamson suggests that "occurrently believing p stands to asserting p as the inner stands to the outer "(255), while Douven claims that "belief is a species of assertion, to wit, subvocalized assertion "(453).

One commonly proposed parallel between belief and assertion is that both are subject to the same epistemic norms. That is, the requirements which an agent's epistemic state must satisfy for her belief that p to be appropriate are the same as the requirements which it must satisfy for an assertion that p to be appropriate. As such, if the appropriatenesss of believing p while in evidential state E is proportionate to the probability of p given E, we would expect the appropriateness of asserting p to be so too. To the extent that the antecedent appears plausible, adherents of this variant of the belief/assertion parallel might be thought to have a seemingly short route to Probabilism.[26]

[24]For example, Sosa (2010, 176) argues for a knowledge norm of assertion on the basis that an agent who aims to assert the truth by asserting that p is subject to a norm requiring that she know that her assertion satisfies its aim.

[25]Indeed, from at least one appealing perspective, Probabilism does not sit comfortably with the claim at a proposition is assertable (given E) iff p is true. Combined, they require the denial of either Threshold (see page 14, below) or the principle that p is assertable given E only if $\neg p$ is not assertable given E.

[26]Note that it is important to distinguish the claims that (i.) the degree of appropriateness of an agent's belief that p is proportional to the probability of p on her evidence and (ii.) the degree of belief in p that is appropriate for an agent is proportional to the probability of p on her evidence. The latter is widely accepted, but insufficient to support Probabilism via the belief/assertion parallel. It may be, for example, that if p has a high probability on an agent's evidence, it is appropriate for her to have a correspondingly high degree of belief in p,

Despite these considerations in its favor, in what follows I will argue that both WEAK PROBABILISM and, *a fortiori*, STRONG PROBABILISM are false. The first argument, in §4.1, involves consideration of the assertability of propositions with extremal probabilities. The second argument, in §4.2, involves the interaction between the distribution of probabilities over Ω with the assertability of propositions.

4 Problems for Probabilism

4.1 Maximality

As already observed, we can ask both *how* assertable a proposition is and *whether* it is assertable.[27] We will let $\mathrm{A^E}$ be the set of propositions assertable *simpliciter* given E; with these resources, we can formulate a number claims about epistemic assertability. One such claim, to which I will appeal, below, is EXCLUSION:

EXCLUSION: If $p \in \mathrm{A^E}$, then $\neg p \notin \mathrm{A^E}$.

EXCLUSION says that it is never both appropriate to assert a proposition and appropriate to assert its negation. Since EXCLUSION follows from all dominant accounts of the epistemic norm of assertion I will assume we can take it for granted here.[28]

It also appears reasonable to think that whether a proposition is assertable (given a speaker's evidential state) will be related, in some way, to how assertable that proposition is (given that evidential state). THRESHOLD is a simple way of formulating this idea:[29]

yet highly inappropriate for her for her to believe p outright.

[27]Throughout, I will treat the claims that p is assertable and that asserting p is appropriate as interchangeable.

[28]i.e., it is a trivial consequence of factive norms such as the knowledge norm (Unger 1975 Williamson 1996, 2000, DeRose 1996, 2002, Adler 2002, Hawthorne 2003, Stanley 2005, Engel 2008, Schaffer 2008 Turri 2011, 2015), the truth norm (Weiner 2005 and MacFarlane 2011) and the certainty norm (Stanley 2008). It is also plausibly a consequence of rational belief/rational-to-believe norms (Douven 2006, Lackey 2007, Hill and Schechter 2007, and Kvanvig 2009).

[29]One alternative way to capture the idea that assertability *simpliciter* is related to comparative assertability would be to endorse the weaker thesis, WEAK THRESHOLD, instead:

WEAK THRESHOLD: $\forall E : \exists \delta : \forall p : p \in \mathrm{A^E}$ iff $\mathrm{D^E}(p) \geqslant \delta$

As demonstrated by Leitgeb (2013, 2014, 2017), adopting WEAK THRESHOLD can allow a proponent of PROBABILISM to avoid the argument from AGGLOMERATION/CONSISTENCY to MAXIMALITY. Suppose that, for any E, $p \in \mathrm{A^E}$ iff there is some $q \in \mathcal{F}$ such that $q \subseteq p$ and q is P^{E}-stable (where $P^{\mathrm{E}}(\cdot)$ is the probability function derived from $P(\cdot)$ by conditionalisation on E). q is P^{E}-stable iff there is no $r \in \mathcal{F}$ such that $q \cap r \neq \emptyset$ and $P^{\mathrm{E}}(q|r) \leqslant \frac{1}{2}$. This will determine, for each E, a degree of assertability, $\delta_{\mathrm{A^E}}$, exceeding which is necessary and sufficient for assertability, and, more importantly, will do so in a way that is compatible with AGGLOMERATION and CONSISTENCY.

THRESHOLD: $\exists \delta : \forall p : \forall \text{ E} : p \in \text{A}^{\text{E}}$ iff $\text{D}^{\text{E}}(p) \geqslant \delta$.

THRESHOLD says that there is some degree—call it δ_A—such that for any proposition and evidential state E, that proposition is assertable (given E) iff its degree of assertability (given E) is at least as great as δ_A. To see the appeal of THRESHOLD, note what it would take for the principle to fail. Assuming that not all propositions are assertable, it's denial implies that there is some unassertable proposition with at least as great a degree of assertability as an assertable proposition.[30]

Yet I will argue that, given THRESHOLD and EXCLUSION, proponents of PROBABILISM are under considerable pressure to accept MAXIMALITY:

MAXIMALITY: If $p \in \text{A}^{\text{E}}$, then $\nexists q : \text{D}^{\text{E}}(q) > \text{D}^{\text{E}}(p)$.

MAXIMALITY says that no proposition has a greater degree of assertability than an assertable proposition. Given THRESHOLD, this amounts to the claim that δ_A—the threshold degree of assertability—is maximal.[31] I will offer two arguments that THRESHOLD, EXCLUSION, and PROBABILISM require MAXIMALITY. Both are structurally analogous to familiar arguments concerning degrees of belief (Kyburg 1961, Makinson 1965), and have been raised in previous discussion of degrees of assertability. I will then argue that MAXIMALITY is untenable. Given the plausibility of EXCLUSION and THRESHOLD, I take this to give us *prima facie* reason to deny PROBABILISM.

i) Lotteries: For any value n in the unit interval less than 1, we can imagine a fair lottery such that the chance of an individual ticket winning is n. According to a widely reported judgment, regardless of the value of n, it is inappropriate for the owner of a single ticket to such a lottery to assert that her ticket will lose on the basis of its probability of losing alone (DeRose 1996, Williamson 2000, Hawthorne 2003). Yet, as observed by Dudman (1992, 204-207) and DeRose (2010, fn11), if this judgment is correct then the proponent of PROBABILISM is

However, as argued convincingly by Staffel (2016), such an account will struggle to accommodate, in a non-*ad hoc* manner, the intuition that no proposition can be appropriately asserted on statistical evidence alone. In particular, it will fail to predict that lottery propositions will be unassertable in certain non-fair lotteries without adopting MAXIMALITY. Similarly, adopting a theory of assertability as P^{E}-stability of this kind will do nothing to avoid objections to PROBABILISM raised in §4.2.

[30] Where Ω is non-finite, we need to formulate THRESHOLD slightly more carefully. If the space of degrees is dense, then there need be no lower bound on the set of degrees which are sufficient for assertability. Accordingly, to cover such cases, we should adopt THRESHOLD* as the official version of the principle, where X ranges over intervals of Δ:

THRESHOLD*: $\exists X : \forall p : \forall \text{ E} : p \in \text{A}^{\text{E}}$ iff $\forall \delta \in X : \text{D}^{\text{E}}(p) > \delta$.

Since the arguments below are unaffected by the choice between the two, I adopt the former for simplicity.

[31] Note that MAXIMALITY, EXCLUSION and THRESHOLD do not by themselves imply that the ordering on degrees is total, so do not imply that δ_A is the maxim*um* degree of assertability.

committed to the claim that a proposition is assertable for a speaker only if it is certain given her evidence.

By Threshold, for any proposition p, p is assertable (given E) only if there is no q with a greater degree of assertability which is unassertable (given E). For all p, if $P(p|\mathrm{E}) < 1$, there is some lottery proposition q such that $P(p|\mathrm{E}) < P(q|\mathrm{E})$ and q is unasseratble given E. But, by Probabilism, if $P(p|\mathrm{E}) < P(q|\mathrm{E})$, then q has a greater degree of assertability than p (given E). Hence, for all p, if $P(p|\mathrm{E}) < 1$, then p is not assertable (given E). Contraposing, for all p, if p is assertable (given E), then $P(p|\mathrm{E}) \geq 1$. Yet, given Probabilism and Threshold, this immediately implies Maximality; if p is assertable, then there is no q with a strictly greater degree of assertability than p.

Some authors have tried to resist the claim that lottery propositions are epistemically unassertable on the basis of mere probabilistic evidence. Lackey (2007, 618), in particular, argues that such assertions *do* in fact satisfy the requirements of the epistemic norm(s) governing assertion, but that they also implicate that the speaker has non-probabilistic evidence that the relevant ticket will not win. Accordingly, they are not all-things-considered assertable, since they violate the requirements of non-epistemic norms governing co-operative communication. In effect, she offers an error theory, arguing that (in lottery cases, at least) our judgments about epistemic appropriateness are misled by factors to do with non-epistemic considerations.

Yet, any implicature that the speaker possesses additional non-probabilistic evidence should be cancellable. Given Lackey's view, cancellation of the false implicature would be expected to recover (all things considered) assertability for the assertion. Yet this is not what we find. An assertion of the sentence 'My ticket will lose (though I have no reason to think it is more likely to lose than any other ticket)' is hardly *better* than a simple assertion of the sentence 'My ticket will lose'. Plausibly, it is worse.

ii) Agglomeration and Consistency: Agglomeration is the principle that assertability is closed under n-ary intersection. Consistency is the principle that no set of assertable propositions is inconsistent.

Agglomeration: If $\Gamma \subseteq \mathrm{A}^{\mathrm{E}}$, then $\bigcap \Gamma \in \mathrm{A}^{\mathrm{E}}$.

Consistency: If $\Gamma \subseteq \mathrm{A}^{\mathrm{E}}$, then $\bigcap \Gamma \neq \emptyset$.

Both principles derive their motivation, in part, from the observation that assertion incurs certain commitments. In asserting p one takes responsibility for p being used in multi-premise reasoning by hearers (see, e.g., Peirce (1934), Brandom (1983), Ross (1986), Harman (1986), Watson (2004) and Leitgeb (2017), amongst others).[32] To say this is to say nothing more controversial than that speakers are liable to be taken to have acted inappropriately, if, on the basis of

[32]For example, here is Peirce (1934):

their assertion and further, true, premises, a hearer can infer a false conclusion. For example, if on the basis of my assertion that every bachelor lives a life of sin and your knowledge that the Pope is a bachelor you infer the false conclusion that the Pope lives a life of sin, I will be liable to censure for my assertion.

It is appropriate to assert p (given E) only if it is appropriate, given E, to take responsibility for p being used as a premise by hearers. Yet, it is appropriate to take responsibility for p being used as a premise and appropriate to take responsibility for q being used as a premise only if it is appropriate to take responsibility for p being used as a premise and to take responsibility for q being used as a premise. As Milne (2012) notes, this is will follow directly as long as it is appropriate to take responsibility for p being used as a premise in other's reasoning only if it is appropriate to treat p as a premise in one's own reasoning. Yet given this picture of the commitments induced by assertion, he argues, we should accept both AGGLOMERATION and CONSISTENCY:

> "In making sincere and serious assertions, we take on commitments to the consistency of what we assert and commitments to the logical consequences of what we assert: challenged on a consequence of what one has said, one stands by the consequence or withdraws one of the assertions."(Milne 2012, 332).

Let's consider how this argument works for the pair of principles more carefully. Starting with AGGOLMERATION, if one takes responsibility for each of some set of propositions being used in multi-premise reasoning, then one thereby takes responsibility for the consequences of that set being used. By the transitivity of entailment, anything which can be derived from a consequence of the set can be derived from the set. Thus, if it is appropriate to assert each member of a set of propositions, then it is appropriate to assert the strongest consequence of that set. CONSISTENCY then follows immediately on the assumption that it is inappropriate one take responsibility for reasoning from the contradiction.

The proponent of PROBABILISM who wishes to resist commitment to AGGLOMERATION and/or CONSISTENCY might invoke the above-mentioned belief/assertion parallel. After all, both principles are widely rejected for (epistemically appropriate) belief.[33]

> "To assert [a] proposition is to make oneself responsible for it, without any definite forfeit, it is true, but with a forfeit no smaller for being unnamed. "(5.554, 384)

Here is Brandom (1983):

> "[A]sserting is issuing an inference license.[...] To put a sentence forward as information is thus to present it as fodder for inferences leading to further assertions."(83).

And here is Watson (2004):

> "To assert that p is, among other things, to endorse p, to authorize others to assume that p, to commit oneself to defending p, thereby (typically) giving others standing to criticize or challenge what one say. "(58)

[33] I am grateful to an anonymous referee for raising this response.

Matters are not so simple, however. The primary motivation for denying analogues of Consistency and Agglomeration for appropriate belief derives from lottery and preface cases (Kyburg 1961, Makinson 1965).[34] It is often held that, in such scenarios, it is epistemically appropriate for an agent to believe each member of a set of propositions, while also being epistemically appropriate for her to believe the negation of their conjunction (Kyburg 1961, Foley 1993, Christensen 2005, Sturgeon 2008)).[35] If this is right, what it is appropriate to believe need not be consistent. And assuming it is epistemically inappropriate to believe a contradiction, it need not agglomerate either.

Yet, in both types of case, there are grounds to doubt whether it is epistemically appropriate to assert everything that it is epistemically appropriate to believe. As just observed, it is widely accepted that asserting, of any given lottery ticket, that it is a loser is epistemically inappropriate. If this is right, then those who take lottery cases to constitute counter-examples the agglomeration/consistency of appropriate belief will need to deny the parallel between what it is appropriate to assert and what it is appropriate to believe in this case.

Turning to the preface, the situation appears the same, though reversed. In the preface, it *would* be appropriate for the author to assert, of any given claim in the body of her book, that it is true. Yet it appears inappropriate for her to assert the negation of the conjunction of these claims. That is, she ought not assert, merely on the basis of statistical evidence, that some claim in the body of her book is false. The belief/assertion parallel appears to break down in precisely those cases in which it would need to be applied to motivate rejecting agglomeration and consistency for assertability. As such, it does not seem to offer a decisive argument against either for the probabilist.

There are strong grounds for accepting Agglomeration and Consistency. But Agglomeration and Consistency lead to Maximality:

Fact 1. i. Agglomeration, Probabilism, Threshold, and Exclusion entail Maximality.

ii. Consistency, Probabilism and Threshold entail Maximality

[34] In the preface scenario, an author composes a book comprising a body of individually well-researched claims, along with a prefatory claim that some claim in the body of the book is false. The standard judgment is that it is appropriate for the author to believe each claim in the body of the book (on the basis of her research) and also appropriate to believe the prefatory claim (on the basis of the statistical likelihood of error).

[35] Often, but by no means always. See Nelkin (2000), Bird (2007), Sutton (2007), and Smith (2010, 2016) for recent arguments that we are never justified in believing a lottery ticket is a loser on the basis of statistical evidence alone. Such authors might appeal to the belief/assertion parallel to deny that lottery cases motivate accepting either Consistency or Agglomeration. The preface poses a trickier cases for such a response, since such authors have typically accepted that we are justified in believing each claim in the body of the book. It is an open—and interesting—question whether we are justified in believing the preface claim on such views (see Carter and Goldstein (2020b), Carter and Goldstein (2020a) for discussion of this point, arguing that agglomeration fails for belief).

For the former, suppose for reductio that a proposition is assertable given E iff it has a probability of at least n conditional on E, where $0 < n < 1$. Let Γ be a set of propositions such that: (i) for each $p \in \Gamma$, $P(p|\mathrm{E}) \geqslant n$ but (ii) $P(\bigcap \Gamma|\mathrm{E}) < n$. Then, by Agglomeration, since each proposition in Γ is assertable given E, $\bigcap \Gamma$ is assertable given E. But, by hypothesis, $\bigcap \Gamma$ is not assertable given E. So, the threshold for assertability must either be 0 or 1. By Exclusion, it cannot be 0. Thus, it must be 1.

Turning to the latter, suppose for reductio that a proposition is assertable given E iff it has a probability of at least n conditional on E, where $n < 1$. Let Γ be a set of propositions such that: (i) for each $p \in \Gamma$, $P(p|\mathrm{E}) \geqslant n$ but (ii) $\bigcap \Gamma = \emptyset$. By Consistency, some element of Γ is not assertable given E. But, by hypothesis, every proposition in Γ is assertable. So, the threshold for assertability must be 1.

I have considered two arguments that any proponent of Probabilism will also be committed to Maximality. In the remainder of this section, I will argue that Maximality should be rejected (and therefore, likewise, Probabilism). Before doing so, however, I want make note of a different reason that the combination of Maximality and Probabilism might be thought to be unsustainable, in order to set it aside.

Some (in particular, Dudman (1992)) have argued against Probabilism and Maximality on the grounds that the requirement of certainty is an implausibly strong necessary condition on assertability (cf., Stanley 2008, Brown 2010). The worry is that, if a proposition is assertable only if it possesses probability 1 conditional on the speaker's evidence, very few assertions will meet the standards of appropriateness. However, the strength of certainty as a necessary condition on assertability will be inversely proportional to the weakness of the sufficient conditions for constituting evidence. In particular, those who endorse the K⇒E direction of Williamson (2000)'s E=K thesis, on which an agents evidence includes those propositions she knows, will take certainty to be at least as achievable as they take knowledge to be.

Rather than arguing that, conditional on Probabilism, Maximality makes assertability unattainable by requiring certainty, I instead wish to highlight the problems with Maximality itself.[36] Maximality implies that the threshold for assertability *simpliciter* constitutes an upper bound on how assertable a proposition can be—no proposition is more assertable than an assertable proposition. At least on the assumption of totality,[37] every assertable proposition has the same degree of assertability.

Yet this conflicts dramatically with our judgments about comparative assertability. According to those judgments, two assertable propositions may differ substantially with respect to their degree of assertability. Consider the following two cases:

[36] Analogues of these problems arise in the case of practical rationality, see, in particular, Brown (2008, 1144-1147).

[37] Which is itself a consequence of both Strong Probabilism and Weak Probabilism.

Imagine you are at a racecourse. From the stands, you see *Amber Dancer* win the 3.10pm race (good news for you, as you had $10 on the horse). As you go to collect your winnings, you overhear a stranger say that *Burgundy Rose* has won the 3.15pm race. Two claims appear plausible, in this setting: (i) it would be appropriate for you to assert, given your evidential state, that *Amber Dancer* won the 3.10pm and, likewise, appropriate for you to assert that *Burgandy Rose* won the 3.15pm; (ii) it would be more appropriate, given your evidential state, for you to assert that *Amber Dancer* won the 3.10pm than to assert that *Burgundy Rose* won the 3.15pm. In favor of the latter claim, note that in answer to the alternative question 'Did *Amber Dancer* win the 3.10pm or did *Burgundy Rose* win the 3.15pm?', given the epistemic norms of assertion, you ought to assert the former.

Or another case: imagine you have been walking on the beach. In the distance, you saw a figure who, despite being wrapped in a large overcoat and scarf, clearly appeared to be your friend, Andrei. Again, two claims appear plausible: (i) it would be appropriate for you to assert, given your evidential state, that there was someone else on the beach and, likewise, appropriate for you to assert that Andrei was on the beach; (ii) it would be more appropriate, given your evidential state, for you to assert that someone else was on the beach than to assert that Andrei was on the beach. In answer to the question 'Was Andrei, or, at any rate, someone other than yourself on the beach?' you ought to assert the latter. While asserting the former might be more appropriate all-things-considered (given, for example, the requirements of norms of informativeness), asserting the latter is more appropriate with respect to the requirements of the epistemic norms governing assertion.

Two assertable propositions can differ in their degree of assertability. Yet, if assertable propositions can differ in their degree of assertability, Maximality must be rejected. Since, as I have argued, proponents of Probabilism must accept Maximality if they are to avoid issues with (i) lotteries, and (ii) Agglomeration/Consistency, denying Maximality provides strong reasons for denying Probabilism.[38]

4.2 Error

The previous section argued that Probabilism commits its proponent to an inadequate account of the relationship between degrees of assertability and assertability *simpliciter*. In this section, I will argue that it also provides an inadequate account of degrees of assertability themselves. Specifically, I want to suggest, there are cases in which comparative probability and comparative assertability diverge.

[38] Or, to put it another way, the proponent of Probabilism faces a dilemma. She must either accept Maximality—in which case she faces difficulties accommodating differences in the assertability of asssertable propositions—or deny Maximality—in which case she faces difficulties with lotteries and Agglomeration/Consistency. Given this dilemma, I want to suggest, there is strong reason to consider rejecting Probabilism.

Our sources of evidence about the world are frequently subject to error. Clocks slow, eyesight fails. In all but the very best cases, the instruments by which we receive information about the world are beset by noise. When our sources of evidence are subject to error, we face limits to what we can be certain about.[39] This uncertainty produced by random error will, under common conditions, take the form of a Gaussian probability distribution over the value of a continuous variable (i.e., a 'bell-curve').

For example: imagine a room equipped with a thermometer. The thermometer is subject to random regular measurement errors. Conditional on it reading n°F, the thermometer generates a standard normal probability distribution over possible temperatures for the room, with a mean of n°F and standard deviation of 4°F. Suppose, for example, that the thermometer reads 75°F. Then Figure 1 displays the probability distribution over possible room temperatures.

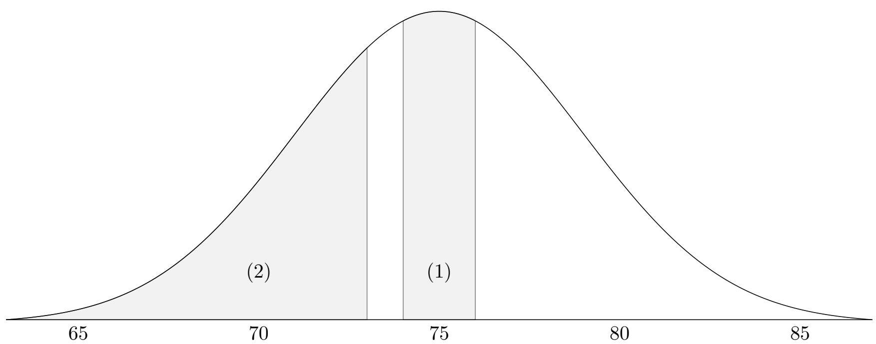

Figure 1: $\mu = 75°\mathrm{F}, \sigma = 4°\mathrm{F}$.

Consider (1)-(2)—corresponding to the two shaded regions of Figure 1:

(1) The temperature is between 74°F and 76°F.

(2) The temperature is between 63°F and 73°F.

For a speaker who observes that the thermometer reads 75°F, the degree of assertability of (1) is greater than the degree of assertability of (2). That is, an assertion of the latter would be less appropriate, given the speaker's evidence, than an assertion of the former.

[39] There is room for disagreement over the sources of uncertainty. One natural picture is that, when a source of evidence is subject to noise, it can provide at most an inexact representation of the way the world is (see, e.g., Hellie (2005), Goodman (2013), Morrison (2016)). An alternative (see, e.g., Williamson (2013b)) is that signals subject to noise provide an exact representation of the state of the world, but that what we can be certain of on the basis of such constraints is subject to a reliability/margin for error constraint proportional to the level of noise.

Take the operationalization of degrees of assertability in §2. Given the error to which the thermometer is susceptible, it is not unreasonable to suppose that an individual whose evidence consists only in the reading on the thermometer ought not to answer the alternative question 'Is the temperature between 74°F and 76°F or between 63°F and 73°F?'. That is, neither proposition is assertable *simpliciter*. However, if she answers the question, she ought to answer that it is between 74°F and 76°F.

However, this judgment conflicts directly with the predictions of Probabilism. (1) has a lower probability than (2), conditional on the proposition that the thermometer reads 75°F. Whereas probability of the latter is $\approx .3$, the probability of the former is only $\approx .2$. Accordingly, the proponent of Probabilism is committed to the claim that (2) has a greater degree of assertability than (1).[40]

The point can be generalised. Wherever a random variable is normally distributed, that it falls in some interval centered on the mean appears more assertable than that it falls in some interval occupying a tail of the distribution which excludes the mean, even when the latter has a greater probability. Yet Probabilism is incapable of accommodating such judgments.

The existence of pairs of propositions over which comparative probability and comparative assertability diverge would constitute a decisive counter-example to Probabilism. However, before Probabilism can be rejected, it is important to set aside another, potentially promising, explanation of our judgments about (1)-(2).

Plausibly, where it is common ground that (i) the speaker's evidence is limited to the reading on the thermometer, and (ii) the thermometer is subject to a normally distributed chance of error, an assertion of (1) or (2) carries an implicature that the reading on the thermometer falls within the interval reported by the speaker. Indeed, we might reasonably commit to something stronger: given these constraints on the common ground, an assertion that the temperature falls within a particular interval implicates that the reading on the thermometer is at the midpoint of that interval.

If this is correct, it might be hoped to offer the basis for a response for the propo-

[40] A natural response for the proponent of Probabilism is to cite sentences such as (‡), which appear highly inappropriate to assert even conditional on the speaker answering a question of the form 'Which of (1) and (2) is true?'.

(‡) The temperature is between 74°F and 76°F, but it's more likely to be between 63°F and 73°F.

Yet more generally, where (the proposition expressed by) ϕ is more assertable than (an incompatible sentence) ψ, asserting $\ulcorner\phi$, but maybe $\psi\urcorner$ appears inappropriate, even conditional on answering the question $\ulcorner$Which of $\ulcorner\phi\urcorner$and $\ulcorner\psi\urcorner$ is true ?$\urcorner$. Thus, (‡) appears to be an instance of the wider phenomenon that Moorean assertions remain infelicitous, even conditional on answering a question to which their bare (i.e., non-modal) conjunct is the most assertable answer. This phenomenon needs independent explanation—luckily, a number of alternatives are available (e.g., Veltman 1985, Yalcin 2007, Mandelkern 2019). I am grateful to Simon Goldstein and David Boylan for pressing this point.

nent of Probabilism. (2), the argument would go, *is* in fact more appropriate than (1) with respect to the requirements of the epistemic norm(s) governing assertion. However, it carries a false implicature, namely that the speaker's assertion is based on the thermometer reading 68°F (or, at least, that the reading on the thermometer falls between 63°F and 73°F). In contrast, (1) carries no false implicature, since the thermometer does, in fact, read 75°F. Accordingly, (1) is more appropriate than (2) all-things-considered, with respect to the totality of norms governing assertion. Our comparative judgments regarding the pair, the proponent of Probabilism can claim, track the latter notion rather than the former.

That assertions of (1) and (2) carry implicatures of this kind in context appears indisputable. However, it cannot play the exculpatory role required by Probabilism. In order for it to do so, the proponent of Probabilism ought to be capable, at least in principle, of providing an explanation of the implicature. That is, she ought to be able to identify some source of pragmatic pressure which would allow the implicature to be calculated. This would require positing a norm on assertion which generates a preference for asserting the temperature to fall within an interval containing the reported temperature (at least where conditions (a) and (b) obtain). Yet the existence of such a norm is precisely what the proponent of Probabilism must deny. Since it imposes requirements on assertion based on the speaker's epistemic state, any norm of this kind would constitute an *epistemic* norm on assertion. However, it is an epistemic norm which, in certain cases, assigns a higher degree of assertability to a less probable proposition. Thus, there appears to be no way of explaining the alleged implicature compatible with Probabilism.

Before proceeding, it is worth noting a second concern with the response. As an implicature, the suggestion that the reported temperature lies at the midpoint of the asserted interval should be expected to be defeasible. Implicatures are cancellable when incompatible with explicitly asserted material (Grice 1967, 57; cf. Weiner 2006, Borge 2009, and Åkerman 2015 for more recent discussion). For example, while an assertion of 'Tom tried his best to win' strongly implicates that he failed, an assertion of 'Tom tried his best to win and did' clearly does not.

According to the proposed response, (1) is judged to have a greater degree of assertability than (2) only in virtue of the latter carrying a false implicature. As such, cancellation of the implicature ought to generate the reverse judgment. Yet this is not what we find.

(1′) The thermometer reads 75°F, but the temperature is between 74°F and 76°F.

(2′) The thermometer reads 75°F, but the temperature is between 63°F and 73°F.

Given that the thermometer constitutes the entirety of the speaker's evidence about the temperature in the room the intuition that (1′) has a greater degree of assertability than (2′) is, if anything, stronger.

This section has argued that Probabilism is incompatible with two core judgments about degrees of assertability: (i.) that two assertable propositions can differ in how assertable they are; and (ii.) that, given a Gaussian probability distribution over the value of a parameter, asserting that the value falls around the peak of the distribution is preferable asserting it falls along a tail (even if the latter is more likely to be true). One simple explanation for this incompatibility is that Probabilism is false. But if a proposition's probability does not determine how assertable it is, what does? In the final section, I propose an alternative framework which does better with respect to both judgments.

5 Normality and Degrees of Assertability

A proposition's degree of assertability is a matter, not of how *probable* it is, but of how *normal* it is. Asserting p is more appropriate than asserting q, for a speaker in evidential state E, iff amongst the worlds compatible with E, p is more normal than q. Crucially, probability and normality differ; the more probable of two propositions need not also be the more normal (Boutilier 1994, §3.2.2, Thompson 2008, 68, Smith 2010, 15-16), Valaris 2017, 6-10).

For example: imagine a bus scheduled to arrive at 7.30am daily. Assuming that the bus company is moderately competent, the bus will arrive on time unless something abnormal occurs; any situation in which the bus arrives late involves some departure from normality. However, there are many ways for the world to be abnormal. Drivers get sick, engines fail to start, and roads close. Assuming that the possible sources of abnormality are sufficiently numerous, the likelihood that the bus arrives on time may be low (even if it remains higher than the likelihood of each abnormal eventuality, taken individually). That is, it may be more likely that the bus arrives late, despite the fact that it would require a greater departure from normality.

Here is high-altitude view of the final section: §5.1 introduces some simple formal machinery which represents the comparative normality of states in terms of a ranking over states. §5.2 shows how the comparative normality of propositions can be derived from the comparative normality of states. It then goes on to formulate a normality based theory of assertability of the kind advertised above and discusses a number of the consequences of that theory. Finally, §5.3 discusses various ways proponents of the theory can specify a threshold for assertability *simpliciter*, and shows that on each, it avoids the problems of §4.1. Beforehand, however, it may be helpful to consider an informal sketch of how the properties of normality provide a route to avoiding the problems for Probabilism discussed in §4.

First, note an account which equates a proposition's degree of assertability with its normality will correctly predict that asserting (1) is more appropriate than asserting (2). Given that the thermometer reports that it is 75°F, it would be more normal for the temperature to be between 74°F and 76°F than for it to be between 63°F and 73°F. That is, for the temperature to fall in the latter range would require a greater departure from normality than for it to fall in the former range.

Second, note that neither argument for Maximality can be extended to a normality based account. Suppose, minimally, that a proposition is assertable *simpliciter* iff the departure from normality which would be required for it to be false exceeds some specified threshold (this idea will be refined—and clarified—below). For any ticket in a fair lottery, nothing abnormal need occur for that ticket to win (Smith 2010, 2016, 2017, Valaris 2017). Accordingly, any choice of threshold will vindicate the judgment that it is not appropriate to assert that one's ticket will not win. *A fortiori*, a non-maximal threshold will vindicate the judgment. Thus, accommodating judgments about the assertability of lottery-style propositions need not require commitment to Maximality on a normality-based account.

Turn next to the argument from Agglommeration/Consistency. Suppose, for a given threshold, that the departure from normality required to make p false is greater than that threshold, and the departure from normality required required to make q false is also greater than that threshold. It follows that, wherever the level of abnormality is no greater than that threshold, both p and q will be true. Hence the departure from normality required to make $p \cap q$ false will be greater than the specified threshold. Accordingly, any choice of threshold will vindicate the judgment that $p \cap q$ is assertable if p and q are. Similarly, suppose for a given threshold, that the departure from normality required to make p false is greater than that threshold. It follows that the departure from normality required to make p true, and, *a fortiori*, the departure from normality required to make $\neg p$ false, is *not* greater than that threshold. Accordingly, any choice of threshold will vindicate the judgement that if p is assertable, anything inconsistent with p is not. In particular, there is no requirement that the threshold be maximal—two propositions may exceed it despite differing in the departure from normality required to make them false.

5.1 Preliminaries

To implement this informal sketch in a rigorous manner, we need to start with a representation of the comparative normality of states of affairs. Let n be a *ranking function* (Spohn 1988, 1990, 2012). n is a mapping from states in Ω to ranks: non-negative integers along with ∞. That is, for any $i \in \Omega : n(i) \in \mathbb{N}_0 \cup \{\infty\}$. We require that $\{i|\ n(i) = 0\} \neq \emptyset$: some states are assigned rank 0.

Intuitively, n is a measure of comparative normality over Ω. We can think of a state's rank as representing how abnormal it is—how substantial its departure from normality is. i is no more abnormal than i' iff $n(i) \leq n(i')$. Thus states which are maximally normal receive rank 0; the more abnormal a state, the higher the rank it receives. Note that, strictly, we will want to each state $i \in \Omega$ to be associated with its own ranking function to reflect the contingency of comparative normality (Smith 2006, Carter 2019). Since nested normality claims will play no role in the present discussion however, we can simplify matters considerably by considering a single ranking function, implicitly associated with a designated state in each model, $i_@$.

We will want to be able to take a measure of comparative normality, and obtain a new measure which priveleges a certain set of worlds. Where n is a ranking function, $n_{|p}$ is the conditionalization of n on p. We define a conditional rank as follows:

$$n_{|p}(i) = \begin{cases} n(i) - Min\{n(i')|\ i' \in p\} & \text{if } i \in p; \\ n(i) + Max\{n(i') + 1|\ i' \in p\} & \text{otherwise.} \end{cases}$$

$n_{|p}$ is the ranking function which preserves the relative difference in rank across p-states and $\neg p$-states, while ranking every p-state as more normal than the most normal $\neg p$-state. Informally, we can think of $n_{|p}$ as shifting the p-states up and moving the $\neg p$-states down, while holding everything else fixed. While the details of conditionalization are not crucial, as we will see later, this will allow us to relativize degrees of assertability to evidence.

What is normality? One attractively simple hypothesis is that the comparative normality of states of affairs is constrained by their probability.

Prob-to-Norm: $n(i) < n(i')$ only if $P(\{i\}) > P(\{i'\})$.

Probability-to-Normality says that i is strictly more normal than i' only if the unconditional probability of i obtaining is strictly greater than that of i' obtaining. That is, having a higher probability is a necessary condition for a state of affairs being more normal. In the case of the the thermometer in §4.2, for example, this suffices to ensure that no state is more normal than one in which the temperature is 75°F. It leaves open, however, that there may be states in which the temperature is greater or less than 75°F which are at least as normal as those in which it is 75°F. Two states which differ in probability may agree in their degree of normality; as a result, the principle merely requires that the maximally normal states be those in which the temperature falls within some interval centered on 75°F.

Where probability is understood as evidential, Probability-to-Normality fits comfortably with a picture on which normality confers some form of epistemic entitlement (Smith 2009, 2013, 2016, 2020, Goodman 2013 and Goodman and Salow 2018). On such views, we have a form of defeasible justification to believe of what is normally the case that it is the case. The present principle states that the more normal a state of affairs is, the greater its prior evidential probability will be.

It also fits comfortably with some informal ways of thinking about normality. Boutilier (1994), in particular, suggests that comparative normality is a matter of expectation violation. On this kind of picture, i is more normal than i' iff fewer expectations (held by some idealized agent) are violated at i than at i'.[41] For example, for the bus to arrive on time is more normal than for it to break down just in case its arriving on time would violate fewer expectations. In a slogan, abnormality is proportional to surprisingness. On the assumption that i violates fewer expectations than i' for an individual only if that individual assigns i a greater likelihood of obtaining than i', Boutilier's account will imply some form of Probability-to-Normality.

Ultimately, Probability-to-Normality may be too strong. However, it suffices for present purposes that it holds of a restricted range of circumstances: those of the kind discussed in §4.2, involving a random variable in gaussian distribution. And, in these circumstances, the principle is indeed highly plausible. It merely requires, for example, that given the thermometer reads 75°F, it would be more normal for the temperature to be n°F than n'°F only if $|75-n| < |75-n'|$.

5.2 Normalism

A ranking function models the comparative normality of states of affairs. However, what is required for the present view is a relation of comparative normality over propositions—it is propositions, not states of affairs, which are more or less assertable. While the former notion has received a significant amount of attention,[42] the latter has been less widely discussed.[43]

We can identify at least two conditions which an adequate account of the comparative normality of propositions ought to vindicate:

(i.) If the degree of abnormality required to make p false is greater than the degree of abnormality required to make q false, then p is more normal than q.

(ii.) If the degree of abnormality required to make p true is greater than the degree of abnormality required to make q true, then p is less normal than q.

[41] Here's Boutilier:

> "Worlds that violate fewer of our expectations are considered to be more normal than worlds that violate more."(112)

[42] See, e.g., Asher and Morreau 1995, Boutilier 1994, Smith 2006, 2018, Strößner 2015.

[43] An exception is Smith (2018), who identifies a proposition's degree of normality with the "the number of explanations that its truth would require"(3871). In the present setting, this amounts to associating the rank of a proposition with the rank of it's lowest ranked member (i.e., it's negative rank in the terminology of Spohn (2012)). This approach does not offer everything needed, since it is a consequence of Smith's view that if the normality of p is non-minimal, the normality of $\neg p$ is minimal. Yet, intuitively, both p and $\neg p$ could have non-extreme degrees of normality. For example, (1) is strictly less normal than the proposition that it is between 73°F and 77°F, and its negation is strictly more normal than the proposition that it is below 73°F or above 77°F.

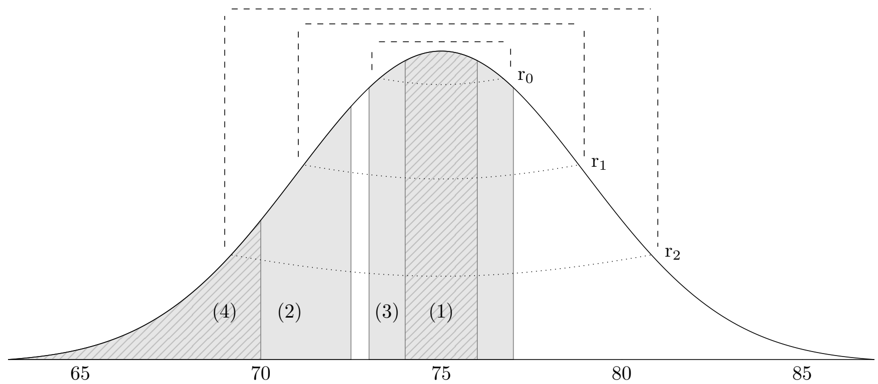

Figure 2: A ranking of states.

(i.)-(ii.) relate the normality of states of affairs to propositional normality. Taken together, they can guide us in developing a minimally adequate measure of the latter.

To see why, consider Figures 2 and 3, which represent a normality ranking over states of temperature in terms of a system of spheres (Lewis 1973). States which receive rank 0 are included in r_0, (the innermost sphere); states which receive rank 1 or lower in r_1; and so on. As can be seen, the relevant ranking function conforms to Probability-to-Normality: if it is more likely that it is n°F than n'°F, then the n°F-state is ranked at least as normal as the n'°F-state.

Now, compare the relative normality of (1)-(2) (repeated below) with (3)-(4), respectively.

(1) The temperature is between 74°F and 76°F.
(2) The temperature is between 63°F and 73°F.
(3) The temperature is between 73.5°F and 76.5°F.
(4) The temperature is between 63°F and 70°F.

Condition (i.) requires that (1) is less normal than (3). The most normal state of affairs at which the temperature is not between 73.5°F-76.5°F are strictly less normal than the most normal state of affairs at which it is not between 74°F-76°F. Condition (ii.) requires that (2) is more normal than (4). The most normal states of affairs at which the temperature is between 63°F-73°F are more normal than the most normal states of affairs at which the temperature is between 63°F-70°F.

As it turns out, there is a simple way to define a ranking over propositions which fulfills these conditions. We can immediately satisfy (i.)-(ii.) by adopting the following measure over propositions:

$$N(p) = Min\{n(i)|\ i \notin p\} - Min\{n(i)|\ i \in p\}.$$[44]

The normality of a proposition p is equal to the rank of least abnormal world at which it is false, minus the rank of the least abnormal world at which it is true.[45] We can think of $N(p)$ as a measure of how much more abnormal things must be for p to be false than for p to be true. Where p is true throughout all the maximally normal states, $N(p)$ will be positive. Where p is false throughout all the maximally normal worlds, $N(p)$ will be negative. Where there are both p-states and $\neg p$-states amongst the maximally normal worlds, $N(p) = 0$. More generally the greater the abnormality of the most normal $\neg p$-state, the greater the normality of p. The greater the abnormality of the most normal p-state, the lower the normality of p. It is only where the abnormality of the two are equal (i.e., where there are both p and $\neg p$-states of rank 0) that the normality of p will be 0. [46]

For example, take distribution in Figures 2-3. (1) is less normal than (3). Although both are true at some maximally normal states, the most normal state in which the former is false is more normal than the most normal state in which the latter is false. In contrast, (4) is less normal than (2). Although both are false throughout all the maximally normal states, the most normal state in which the latter is true is more normal than the most normal state in which the former is true. Finally, note that (1) is more normal than (2), since the former, unlike the latter is compatible with maximally normality. As the latter example shows, comparative normality and comparative probability may order propositions differently. To find the probability of a proposition, we take the sum of the probabilities of each of the states at which it is true.[47] To find its normality, in contrast, all that matters is rank of the most normal states at which it is true and at which it is false. Accordingly, even assuming Probability-to-Normality, a proposition may be more normal than its negation, despite having arbitrarily low probability.

We are now in a position to state the advertised alternative to Probabilism:

[44] Note that where $p = \emptyset$, $Min\{N(i)|\ i \in p\}$ is undefined. In this case, we stipulate that $N(p) = -\infty$.

[45] Thus N is a two-sided ranking function, in the sense of Spohn (2012).

[46] A natural thought is that either (MinFalse) or (MinTrue) will provide a simple means of deriving an ordering over propositions from a system of spheres:
(MinFalse) $\quad \mathrm{N}(p) = Min\{N(i)|\ i \notin p\}$.
(MinTrue) $\quad \mathrm{N}(p) = -Min\{N(i)|\ i \in p\}$.
MinFalse says that a proposition's normality is proportional to the level of abnormality required to make it false. MinTrue says that a proposition's normality is inversely proportional to the level of abnormality required to make it true. However, each systematically yields incorrect predictions. (MinTrue) violates (i.). It predicts that, e.g., (3) is no more normal than (1), since both are true at some maximally normal states. (MinFalse) violates (ii.). It predicts that, e.g., (2) is no more normal than (4) since both are false at some maximally normal states.

[47] Assuming there are at most countably many such states, at least.

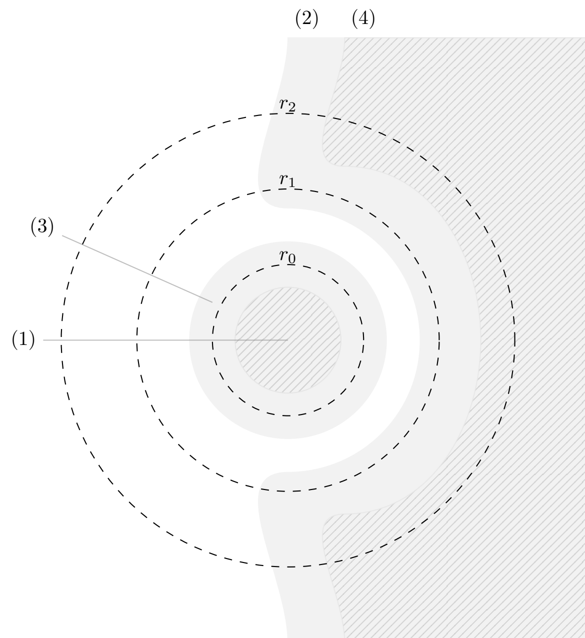

Figure 3: The same ranking as a system of spheres.

Normalism: $\mathrm{D}^{\mathrm{E}}(p) \geqslant \mathrm{D}^{\mathrm{E}}(q)$ iff $N_{|\mathrm{E}}(p) \geq N_{|\mathrm{E}}(q)$.

$N_{|\mathrm{E}}$ is the measure over propositions derived from the ranking function $n_{|E}$. Intuitively, the latter reflects the comparative normality of states, where those compatible with the evidence, E, are privileged. Normalism is the thesis that p is at least as assertable as q for a speaker in the evidential state E just in case conditional on E, p is at least as normal as q.

Normalism does well when it comes to accommodating our intuitive judgements about comparative assertability. For example, take the case of the art historian. Given the uncharacteristic brushwork and the manner of composition, any state of affairs in which A painted the painting would involve a significant departure from normality. Finding states of affairs in which B or C painted the painting, in contrast, would require a less substantial departure from normality (or no departure at all). Thus, asserting that A is the painter is predicted to be less appropriate than asserting, of either B or C, that she is the artist.

Or take the case of the doctor: amongst the states of affairs at which the doctor's initial evidence holds (i.e., in which the patient has the symptoms they do) states in which the patient has syndrome X would involve a significant departure from normality. However, amongst the states at which the doctor's later evidence holds (i.e., in which the patient has the symptoms they do, *and* the test results come back negative) the departure from normality required to find states in which the patient has syndrome X would be even greater. That is, the presentation of the syndrome would need to be atypical *and* the test would need to yield a false negative. Thus, asserting that the patient has syndrome X is predicted to be less appropriate after receiving the results than before.

Finally, return to the case from §4.2. Amongst states in which the thermometer reads 75°F, finding a state at which the temperature is between 63°F and 73°F will intuitively require at least some departure from normality. In contrast, finding a state at which the temperature is between 74°F and 76°F will require no departure from normality. Afterall, one such state is that in which the temperature is 75°F, and no state is more normal than that state. Accordingly asserting (1) is predicted to be more appropriate than asserting (2).

Normalism also has a range of desirable structural features. It implies that a disjunction is at least as assertable as its most assertable disjunct. That is $\mathrm{D^E}(\bigcup\Gamma) \geqslant Max\{\mathrm{D^E}(p) \mid p \in \Gamma\}$. It also implies that a conjunction is at most as assertable as its least assertable conjunct. That is: $\mathrm{D^E}(\bigcap\Gamma) \leqslant Min\{\mathrm{D^E}(p) \mid p \in \Gamma\}$. To see why, in each case, it suffices to note that if p is a subset of q, then any p-state is a q-state. Accordingly, the least abnormal q-state will be at least as normal as the least abnormal p-state, and the least abnormal $\neg q$-state will be no more normal than the least abnormal $\neg p$-state. Hence, $N_{|\mathrm{E}}(q) \geq N_{|\mathrm{E}}(p)$.

Normalism also implies some basic diachronic constraints on comparative assertability. In particular, if $\mathrm{D^E}(p \cap q) > \mathrm{D^E}(p \cap \neg q)$, then $\mathrm{D^{E\cap p}}(q) > \mathrm{D^{E\cap p}}(\neg q)$. That is, if given E, $p \cap q$ is more assertable than $p \cap \neg q$, then, upon learning p, q will be more assertable than $\neg q$. To see why, it suffices to note that if a pair of propositions are incompatible, then one is more normal than the other only if there is some state in the former that is more normal than any state in the latter. Hence, if $p \cap q$ is more normal than $p \cap \neg q$ (according to $N_{|\mathrm{E}}$), then $n_{|\mathrm{E}}$ ranks some state in $p \cap q$ more normal than any state in $p \cap \neg q$. But observe that for any two states $i, i' \in p$, if $n_{|\mathrm{E}}(i) > n^{|\mathrm{E}}(i')$, then $n^{|\mathrm{E}\cap p}(i) > n^{|\mathrm{E}\cap p}(i')$. Conditionalisation on p leaves the relative rank of p-states unchanged. Accordingly, it follows that there is some q state which is more normal than any $\neg q$ state (according to $n_{|\mathrm{E}\cap p}$). Hence, $N^{|\mathrm{E}\cap p}(q) > N^{|\mathrm{E}\cap p}(\neg q)$.

5.3 Normality & Assertability *Simpliciter*

Under what conditions should a proponent of Normalism take a proposition to be assertable *simpliciter*? One option is to say that a proposition is assertable *simpliciter* just in case it is true throughout all sufficiently normal states of affairs (conditional on the speaker's evidence). Or, alternatively stated, a speaker can assert p appropriately just in case finding a state at which p is false would require a sufficiently great departure from normality. Where $t \geq 0$, we can formulate the proposal as:

NormThreshold$_1$: $p \in \mathrm{A^E}$ iff $N_{|\mathrm{E}}(p) > t$.

Smith (2016) suggests an account of justification (the 'threshold'-variant of his view) on which p is justified (given E) iff the most normal p-state in E is sufficiently more normal than the most normal $\neg p$-state. As should be clear, the more normal the most normal p-state is than the most normal $\neg p$-state, the greater the value of $N_{|\mathrm{E}}(p)$. Accordingly, Smith's account amounts to the claim that p is justified iff its normality exceeds some threshold.[48]

Under Smith (2016)'s account, NormThreshold$_1$ amounts to a justification norm on assertion of the form: asserting p is (epistemically) appropriate iff p is justified. NormThreshold$_1$ has the feature that, by imposing constraints on the threshold, we can obtain additional, potentially desirable conditions on assertability. For example, one might think that no proposition should be assertable *simpliciter* if its negation is at least as probable. We can easily obtain this result on the present proposal by requiring that t is fixed in such a way that for all p, q: $N_{|q}(p) \geq t$ only if $P(p|q) > .5$. This allows us to impose a probabilistic requirement on assertability *simpliciter* alongside our normality-based account of comparative assertability. For example, returning to the case at the start of §5, while Normalism is commited to the proposition that the bus will be on time being more assertable than the proposition that it will be late, this proposal would ensure that neither meets the threshold for assertability. Similarly it would also explain why conjunctions of the form $\ulcorner\phi$ but likely not $\phi\urcorner$ are uniformly judged unassertable *simpliciter*.

However, NormThreshold$_1$ also has some potentially undesirable features (features which it shares with the justification norm). In particular, it implies that assertability *simplicter* is non-factive. Where $n_{|\mathrm{E}}(i_@) > t$, p may be sufficiently normal to assert by the lights of $i_@$ (the designated state of the model) without being true at $i_@$. Given the plausibility that asserting p is inappropriate if p is false, it is worth considering alternatives.

A second option is to say that a proposition is assertable just in case it is true throughout all states which are at least as normal as the speaker's state (conditional on her evidence). Or, alternatively stated, a speaker can assert p appropriately just in case finding the most normal state at which p is false, given her evidence, would require going to a state less normal than that the state she occupies. We can formulate the proposal as:

NormThreshold$_2$: $p \in \mathrm{A}^{\mathrm{E}}$ iff $N_{|E}(p) > n_{|E}(i_@)$.

Beddor and Pavese (2018) propose an account of knowledge on which an individual knows that p at $i_@$ iff there is no $\neg p$-state which is at least as normal as $i_@$. Beddor and Pavese's account is motivated by the idea that a belief that p constitutes knowledge iff it is reliably true.[49] Reliable truth is to be understood

[48] Smith (2010, 2016, 2018)'s 'non-threshold'-variant of the account is simply the instance of the 'threshold'-variant according to which p is justified iff some p-state in E is strictly more normal the most normal $\neg p$-state. This amounts to the limiting case of NormThreshold$_1$ where $t = 0$.

[49] More specifically, Beddor and Pavese prefer the terminology of being 'skillfully produced'.

in terms of modal robustness with respect to normality. A belief is reliably true (at $i_@$) iff it's content is true at all states at least as normal as $i_@$. This is guaranteed to hold iff the normality of p is greater than the rank of $i_@$, since this is the weakest condition which guarantees that the most normal $\neg p$-state is more abnormal than $i_@$. Accordingly, their notion of reliable truth is equivalent to right-hand condition of NormThreshold$_2$.

A third option is to combine the requirements imposed by the preceding two principles. That is, a proposition is assertable just in case it is true throughout all states compatible with the speaker's evidence which are either (i) sufficiently normal or (ii) at least as normal as her own.

NormThreshold$_3$: $p \in \mathrm{A}^{\mathrm{E}}$ iff $N_{|E}(p) > max\{t, n_{|E}(i_@)\}$.

Goodman and Salow (2018) have recently defended an account of knowledge on which these conditions are individually necessary and jointly sufficient. Goodman and Salow's proposal incorporates each of the ideas above. First, they agree with Smith that we have a default jusitification to believe that we occupy a somewhat normal state, given our evidence. That is our evidence justifies us to believe all and only those propositions whose normality exceeds some threshold, t. Second, they agree with Beddor and Pavese that reliable truth is to be understood in terms of modal robustness. That is, a belief that p is reliably true at $i_@$ iff p is true throughout all the states which are at least as normal as it is.

Goodman and Salow take knowledge to require both reliability and justification. They also take these conditions to be jointly exhaustive of the requiments on knowledge. That is, we know p iff p is justified by our evidence, and, given that evidence, it is reliably true.[50] Assuming the picture they endorse, this is equivalent to the right-hand condition of NormThreshold$_3$.

Under Beddor and Pavese (2018) and Goodman and Salow (2018)'s accounts, NormThreshold$_2$ and NormThreshold$_3$, respectively, amount to a knowledge norm on assertion of the form: asserting p is (epistemically) appropriate iff p is known. Knowledge norms (of various forms) enjoy widespread popularity (see, e.g., Unger (1975) Williamson (1996, 2000), DeRose (1996, 2002), Adler (2002), Hawthorne (2003), Stanley (2005), Engel (2008), Schaffer (2008), Turri (2011, 2015)). NormThreshold$_{2-3}$ provide two examples of how such a norm could be integrated with the framework of Normalism.

For present purposes, we need not decide between NormThreshold$_{1-3}$. Each candidate norm has the consequence that, at any state, there is some non-negative integer, k, such that p is assertable given E iff $N_{|E}(p) > k$. As long as this condition is satisfied, Agglomeration and Consistency will be satisfied.

Fact 2. NormThreshold$_{1-3}$ entail Agglomeration and Consistency.

[50] For this to be plausible, we must presumably adopt the idealization that we know what we are in a position to know.

First, consider AGGLOMERATION. Suppose that $\Gamma \subseteq \mathrm{A}^{\mathrm{E}}$. As we just noted, there will be some k such that $p \in \mathrm{A}^{\mathrm{E}}$ iff $N_{|E}(p) > k$. So, for each $p \in \Gamma$, it follows that $N_{|E}(p) > k$. Accordingly, $N_{|E}(\bigcap \Gamma) > k$. And hence, $\bigcap \Gamma \in \mathrm{A}^{\mathrm{E}}$.

Next, consider CONSISTENCY. Suppose that $\Gamma \subseteq \mathrm{A}^{\mathrm{E}}$. Then, as above, $\bigcap \Gamma \in \mathrm{A}^{\mathrm{E}}$. So, there must be some $k \geq 0$ such that $N_{|E}(\bigcap \Gamma) \geq k$. But $N_{|E}(\emptyset) = -\infty$. And hence, $\bigcap \Gamma \neq \emptyset$.

Since each variant of NORMTHRESHOLD$_{1-3}$ permits failures of MAXIMALITY while validating EXCLUSION, they all avoid the problems in §4.1 which troubled PROBABILISM. In both cases, the underlying reason is the same. If each member of a set of propositions has a level of normality above a given threshold, then the intersection of the propositions will do too. Hence, if exceeding a particular threshold is necessary and sufficient for assertability *simpliciter*, it will be be preserved under conjunction and require consistency. However, it will do so in a manner which permits two assertable propositions to differ in how assertable they are.

6 Conclusion

Not all assertions are alike in their appropriateness. In fact, not even all appropriate assertions are. PROBABILISM systematically fails to make the right predictions about this and other structural features of our judgments about comparative assertability. It also fails to make correct predictions about how we should compare assertions under conditions of systematic random error.

By characterizing assertability as a matter of comparative normality instead of probability, we can avoid these issues (or, at least, so I have argued). Absent competitors, I take the structural features of normality to be the primary argument in favor of such a view (as well as being a sufficient one). Nevertheless, someone could still be tempted to ask: why would our assessment of an assertion's appropriateness be a matter of normality?

Here is a speculative picture. A range of recent work on inexact knowledge models what we know in terms of a metric over worlds and a margin for error (Williamson 2013a, 2014, Goodman 2013, Goldstein 2019, Carter 2019). These models can be fruitfully characterized in terms of comparative normality (Carter and Goldstein 2020b). Understood this way, an interesting property emerges: the more normal a proposition, the more your knowledge of it iterates. If you know^n that p, but merely know^{n-k} that q, then p must be strictly more normal than q.

This is suggestive. Plausibly, you do better with respect to the requirements of a norm if you know^n that you satisfy them than if you satisfy them in the absence of such iterated knowledge. Equally, you do worse with respect to the requirements of a norm if you know^n that you fail to satisfy them than if you fail to satisfy them without knowing^n that you fail. All else equal, epistemically secure success is to be preferred, while epistemically secure failure is to be avoided.

Holding fixed the connection between iterated knowledge and comparative normality, the proposal in §5 arises from just two assumptions: first, that you satisfy the epistemic requirements on assertion iff you know^n the proposition you assert (for some $n \geq 1$); second, that when it comes to the epistemic requirements on assertion, the epistemic security of your success is the only factor relevant in determining how well you do with respect to them. The former assumption has been defended at length (e.g., Unger 1975 Williamson 1996, 2000, DeRose 1996, 2002, and further citations above). The latter will need to be left for future investigation.

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