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Version: Published Version

Belief, Certainty and Vagueness

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Abstract

What is belief and how does it relate to certainty? This paper takes on some of the strongest arguments for views that identify belief with certainty, credence 1 or maximal confidence. It considers an influential version of the position on which the assignment of credences is context-dependent in crucial ways (especially Clarke [2013]), arguing that such a position is not viable. Examining these arguments and approaches in detail is shown to illuminate some key issues about credences and beliefs and the relation between them, as well as elucidating the role of representation in the understanding of beliefs. While rejecting the position that belief is certainty may seem to reopen the threat of arbitrariness and imprecision, I argue that it is essential to our understanding of beliefs to recognise that our belief-talk is vague. In the final section, I explore the nature and role of doxastic states that are borderline beliefs, which I call vague beliefs. Acknowledging the vagueness of the category of beliefs is necessary to reflect the rich and complex pattern of our doxastic states and commitments in the inevitable absence of certainty.

Keywords
belief; certainty; context-dependence; credences; vagueness

1 Beliefs and Credences

If asked whether London is in England and whether Bern is in Switzerland, I will confidently answer 'yes' to both, though I am even more confident of the former than the latter.

According to a widely accepted picture, I believe—have an outright belief—both that London is England, and that Bern is in Switzerland, but have a higher *credence* or degree of belief in the former than the latter. Over the years I have gathered more and more evidence confirming my belief in the former than I have amassed for the latter and, though happy to assert either belief, I might question the latter if, for example, doubt was cast on it by the right kind of authoritative figure. It would be extremely hard to shake my confidence that London is in England, but it isn't clear it would be *impossible* as I can imagine a far-fetched scenario of conspiracy and deception whereby it turned out that London wasn't in England. Perhaps my acknowledgement of the extremely remote possibility of this scenario obtaining is enough to undermine the idea that I am 100% confident or that I have credence 1 in that proposition. It would not typically be thought to undermine the claim that I believe it, though.

On some views of the relation between credence and belief, however, S has a belief that p if and only if S has credence 1 in p, or iff S is certain that p. This is the position I will examine in this paper.[1] To start with, here's a little more scene-setting regarding the distinction between all-or-nothing or outright or categorical beliefs on the one hand and a graded or degreed notion of credences or degrees of belief or subjective probability on the other. With the latter, graded, category of states, ascription of a credence/degree of belief takes a value between 0 and 1, so that a subject may be ascribed a credence of 0.9 in p and 0.7 in q. By contrast, the ascription of a belief is all-or-nothing in the sense that no such quantitative qualification is needed: S simply believes p or doesn't believe q. A central question in this area concerns the relation between beliefs and credences—doxastic states that each seem to play an explanatory role in relation to our actions and our reasoning. A rather natural approach is to take belief to correspond to a high credence or strong/high strength of belief, maybe credence above a specified threshold or above a vague, context-dependent threshold. This amounts to a *constitutive* thesis about beliefs: S has the belief that p iff S has a credence/strength of belief in p above the threshold, or, more strongly, having a belief in p *just is* having a suitably high credence in p. A related thesis about the relation between beliefs and credences above a threshold is what's known as the Lockean thesis, a normative thesis: it is *rational* for S to believe p iff it is rational for S to have a

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[1] Versions of this view are defended by Clarke [2013], Greco [2015], Dodd [2017] and Moss [2019]. Different versions of the view may result from distinguishing credence 1 and/or degree of belief from certainty and I will sometimes speak loosely of the "belief as certainty" view, while intending it to cover these various variants.

credence in p above the threshold.[2] It is (at least primarily) the constitutive thesis which is at issue here in considering descriptive or metaphysical theses about what beliefs are.

To hold that the threshold is the limit case— where belief is identified with the maximum credence of 1—seems, at least *prima facie*, to result in too few beliefs. We are rarely maximally confident in the things we believe, as we will discuss further below. But taking this extreme line does have some substantial advantages as well. In Section 2, I offer further background by summarising some considerations used in its favour. In particular, the view promises to avoid an untenable arbitrariness and to ensure precision, simplicity and clarity. And it can seem to avoid or solve the lottery and preface paradoxes that plague views committed to a lower threshold for a belief. In Section 3 I turn to an explicit argument that has been used to argue that belief requires certainty, show how it fails and how that failure illuminates our subject-matter.

In Section 4, I outline and reject an approach to the belief as certainty view that seeks to avoid the consequence that we have almost no beliefs by denying the assumption that there are very few cases of credence 1. The approach appeals to context-dependence to adapt the account and/or the model of credence to accommodate more scenarios involving the maximal value. According to Roger Clarke, in one context, C_1, my credence in p can be 1 even if in another context, C_2, it is lower (without a change in relevant circumstances, such as my evidence for p). Credence, on this view, is relativised to what the subject takes as possible in the context: some not-p possibilities that are relevant to C_2 do not count as possible relative to C_1. In C_2, I acknowledge, but cannot rule out, some not-p possibility, which pulls down my credence in that context, whereas as that possibility is not relevant to C_1, it does not affect the assigned credence in that context. Although, ultimately, I reject all treatments of belief as certainty (or as credence 1), considering these approaches in detail helps illuminate various key issues about credences and beliefs and the relation between them, including the role of context-dependence. I argue that it is essential to recognise that our belief-talk is vague and to pay attention to doxastic states that are borderline beliefs, which I call vague beliefs: Section 5 explains and defends this vagueness and its consequences.

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[2] See, *e.g.*, Foley [1992] and Hawthorne and Bovens [1999] on the Lockean thesis. See *e.g.* Jackson [2020] for an overview of the views on the relation between beliefs and credences.

2   Arbitrariness and paradox

A central motivation for the thesis that belief is credence 1 is that it avoids the arbitrariness that seems inevitable in choosing any other particular point in the continuous scale of credences. There is no non-arbitrary choice of high credence that belief might require, except for credence 1. To avoid explaining why the threshold is at 0.749 instead of 0.75, say, we may appeal to a vague threshold rather than a sharp one; but the opponent of the non-maximal threshold can deny that this avoids the arbitrariness (if we can even make sense of the vague threshold), as there is no non-arbitrary way to identify a *fuzzy* boundary region either. By contrast, as Clarke [2013: 5] argues, there is a "qualitative difference" between credence 1 and anything less than one: "it is the difference between having some doubt that p and having no doubt that p." The view identifying belief with credence 1 boasts precision, simplicity, clarity and non-arbitrariness.[3,4]

The lottery and preface paradoxes are common problems raised for views of belief with a threshold below 1 and are another key motivation for the identification of belief with credence 1 instead. Clarke [2013: 3–4], for example, argues that no matter how large a lottery, you may fail to believe that your ticket will lose. Your credence in "this ticket will lose" can be arbitrarily high (as the number of tickets is increased) while you still do not believe it will lose. This undermines any threshold of belief below 1, since you can have credence above that threshold without belief. Only the maximal threshold allows that you can have an appropriately high credence but not belief no matter the number of tickets. The maximal threshold also avoids the tension arising in the combination of believing of each ticket that it will lose while continuing to believe a conclusion contradicting that, namely that *some* ticket will win: having credence 1 in all those things at once will not be

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[3] There is an informal notion of certainty on which it is broader than maximal confidence and on which I count as certain of all sorts of things such as what I had for breakfast; see Kauss [2021]. Equating belief with certainty in this sense has none of the advantages sketched in this section. Unger [1975] and others would argue that the absolute notion is the ordinary notion of certainty; see also Moon [2025] on different notions of certainty.

[4] Linguistic evidence has been taken as evidence for the view, *e.g.* Moss: "it sounds like an indictment of Smith to say: ... Smith believes that Jones smokes and that Jones might not smoke" ([2019: 268]). Other linguistic evidence may count against it, however, *e.g.* the reasonableness of a report such as "Jones believes p, but he isn't certain of it". I will put aside these sorts of linguistic considerations, as it would take us too far afield to explore the various ways in which these oddities could be explained away by the opposing side, even if such linguistic considerations are to carry weight, which we might also question.

rational.

Take, next, the Preface Paradox.[5] Author Annie has written a carefully researched book and believes every statement she has written in it. Nonetheless, though she is extremely confident of each claim individually, she recognises that she—being fallible like everyone else—is likely to be wrong with at least one of the large number of statements she has made. In the preface she acknowledges this, expressing her belief that there is at least one falsehood in her book. With a threshold below 1, she will count as having these inconsistent beliefs, despite their inconsistency. We will have to say either that, surprisingly, she is irrational here or that it can be rational to believe some premises of a valid argument and also the negation of its conclusion, *i.e.* that logical closure fails for rational belief. This calls into question the vital practice of logical reasoning from what one believes.

If, on the other hand, belief is identified with maximal credence 1, Annie will typically fall short of believing the claims in her book, given the lack of certainty, thus will avoid having the inconsistent beliefs. If, though, she *does* have credence of 1 in some propositions, then she should have credence 1 in any conclusion that logically follows from them: belief in some premises of a valid argument unfailingly warrants belief in its conclusion.

In contrast with these alleged advantages to the belief as certainty approach, the main *challenge,* as indicated above and widely recognised, is the threat that subjects will all count as having (almost) no beliefs, since we are so rarely 100% confident about things. An advocate can bite the bullet and accept that we have no, or almost no beliefs. They may emphasise that credences are the only doxastic states needed to explain action, reasoning and behaviour, so in the absence of an independent explanatory role for beliefs, their rarity may seem tolerable. But our everyday practice of belief ascription would then be woefully misguided as we are prone to attributing beliefs to ourselves and others in full knowledge that credence 1 is lacking. How could belief-talk be so useful in communication and in describing, understanding and making sense of our own and others' mental lives if most belief-ascription is false? Its central role in our lives seems to require that with our belief concept we are talking about something other than the practically unattainable limit of a scale. Moreover, this rarity/unattainability of beliefs may carry over to other states typically taken to require belief, such as knowledge and sincere assertion. In Section 4 we will ask whether appeal to context-dependence provides a way of the problems here.

First, in the next section, we consider Dylan Dodd's argument that the representational

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[5] On the paradox and/or its treatment via credences, see *e.g.* Makinson [1965], Foley [1992] and Keefe [2021].

nature of belief ensures its incompatibility with credence less than 1 (Dodd [2017]). Examining this argument will help clarify different interpretations and commitments of ascribing credence 1, as well as elucidating the role of representation in the understanding of beliefs.

3   Representations and what they rule out

The essence of Dodd's argument is captured in the abstract of his paper, where he summarises that:

> [B]elieving that p implies having a credence of 1 in p [because] the belief that p involves representing p as being the case, representing p as being the case involves not allowing for the possibility of not-p, while having a credence that's greater than 0 in not-p involves regarding not-p as a possibility. [2017: 4597]

I focus on the striking claim that representing p as being the case does not allow for the possibility of not-p.

Believing p, Dodd maintains, implies willingness to sincerely assert p without qualification (in contrast with a qualified assertion such as "probably p") and additionally the willingness to reason from p ([4598]). It is common to hold that these are commitments of believing, but the argument that they preclude any uncertainty is more radical. Dodd argues that with assertoric representations—those, like beliefs and assertions, that "are put forward as true or with assertoric force"—if p is represented as being the case, then the possibility that not-p is not left open by the representation ([4609]). He illustrates this idea with a map of Europe which leaves some possibilities open (*e.g.* the location of Melbourne) but which does not leave open the possibility that Amsterdam is west of Paris, since the opposite fact *is* explicitly represented. By contrast, if a subject has a credence in p below 1, then not-p is, as Dodd puts it, "doxastically possible" for that subject. S's credence of 0.7 that Antwerp is in Belgium reflects the fact that S thinks there's a possibility (0.3 likelihood) that Antwerp is actually in the Netherlands. Thus, Dodd maintains that this combination of facts about beliefs and credences dictates that belief implies credence 1.

But insofar as it is true that the representation involved in believing that p does not leave open the possibility that not-p, this is a different sense of "leaving open a possibility" from that which is relevant to the characterisation of credence. The representation itself has a determinate content p, which is incompatible with not-p, but believing isn't purely representing. On a representationalist view of beliefs, for example, a belief is a representa-

tion "in the belief box" or one that has the appropriate functional role.[6] I also represent p when I consider *whether* p is true or when I reflect on my desire that it's true, and integral to those states is a recognition that p may be false. Now, of course, these are not *assertoric* representations for Dodd, and Dodd's claim is limited to those representations. But all the work is, then, done by the notion of "putting forward as true" which is the defining feature of such representations. And putting something forward as true does not require putting it forward as necessarily or unquestionably true, so we should resist Dodd's conclusions.

Another way to see the point is to return to the map analogy. I can draw a map in exploring a hypothesis, presenting what I think is the relative locations of places and using my map to see whether there appear to be unexpected consequences. If there are such consequences, I may revise my view and no longer think that my map captures actual relations between the places. I can have deduced things from seeing the representation and ruled out others, but these conclusions only hold *if* my initial representation is accurate: the vehicle of representation on its own does not settle whether it is. A representation itself is not the kind of thing that rules on its own likelihood. Dodd may, again, deny that this is an instance of assertoric representation: my doubt prevents it from being such. Similarly for supposing, conjecturing or guessing that p, which also each allow for the possibility that not-p, while, in some sense, putting p forward as true. But if the maximal level of confidence and certainty is built into the notion of being an assertoric representation, then it is more than putting forward as true and we have been given no reason to assume that beliefs qualify.

Dodd, following Clarke [2013: 6] and Fantl and McGrath's [2009: 141], also appeals to the thesis that "If one believes p and p is true, the belief is thereby correct, and if p is false, the belief thereby is incorrect" (Dodd [2017: 4610]). They point out that a judgement of (even a really high) probability that p is not shown to be wrong if p turns out to be false (I can resist the charge that I was wrong as I left open the possibility that p) in contrast with my belief that p which is shown false on the discovery that not-p. This can seem to undermine the identification of belief with a threshold below 1, since a belief can be shown to be false when the credence at that high level is not and Dodd and Clarke conclude that my belief can only be identified with maximal probability, or credence 1. But this argument misrepresents alternative (non-maximal) threshold views; it is also problematic for the credence 1 view to identify credence of c in p with the judgement that p has probability

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[6] See, *e.g.*, Fodor [1981], Dretske [1988] and Quilty-Dunn and Mandelbaum [2018].

c. The claim that "if one believes p and p is true, the belief is thereby correct" can be similarly challenged. A credence 1 in p is not vindicated by the discovery that p, if taken as judgement that p has likelihood 1: I may have been unwarranted in having such a high credence. Suppose, for example, I discover that p but also get evidence that it might have failed to be that p (*e.g.* for relevantly similar q, it turns out that not-q), then we may conclude that I was lucky to believe that p and wrong to be so confident about it.[7]

The *content* of the belief that p is incompatible with not-p, and in putting forward p as true you are thereby putting forward something that is incompatible with not-p: this seems to be the sense in which the possibility that not-p is not left open by (the content of) that belief. But this is not the sense of "leaving a possibility open" that Dodd needs to argue that belief is credence 1. If I contemplate p and form a credence of 0.8 in it, I am equally contemplating a scenario that is incompatible with not-p, while still explicitly "leaving open" the possibility that p in the sense relevant to the lack of certainty in it. That latter, natural sense in which a high non-maximal credence in p does leave open the possibility that not-p is not a matter of compatible contents but merely the fact that non-maximal credence in p entails non-zero credence in its negation. In that sense, if you did not leave open the possibility that not-p (*i.e.* did not have not-p among your doxastic possibilities) then you should be completely confident that p, thus having a credence of 1 in it. But this is very different from the former sense, which is the one that Dodd's arguments involve. So, the sense in which having a credence in p less than 1 is leaving open the possibility that not-p is not the sense in which Dodd maintains that a belief that p rules out such a possibility.[8] In the next section we consider how context changes may impact on this idea of leaving possibilities open—or conversely ruling out possibilities—as it relates to credences and credence 1 in particular.

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[7] Note that Fantl and McGrath advocate a different, pragmatic view of beliefs rather than endorsing the maximal threshold as Clarke and Dodd do. A fuller response to Fantl and McGrath's argument would benefit from further discussion: here I have focused on the error of maintaining that this is a problem which is solved by selecting the maximal threshold (credence 1).

[8] Dodd gives other arguments for identifying belief with certainty through considering certain argument forms involving claims such as "probably p" and "probably p or q". These arguments, I maintain, can be addressed alongside answering the familiar challenge that with a lower threshold for belief there is a failure of logical closure for rational beliefs (we return to this challenge in section 5).

4   The role of context

Can the context of a belief attribution affect the facts about whether a subject counts as having a given belief? Examples resembling those used in arguing for contextualism about knowledge may suggest that belief attribution, including self-attribution, can depend on context. I may unhesitatingly endorse the belief that the bank is open on Saturday in ordinary circumstances but hold back from doing so if the stakes are raised (*e.g.* relying on the bank being open is a life-or-death matter to my friend), even if there is no change to the relevant evidence I have. Arguably, in such a scenario, my credence in "the bank is open on Saturday" remains the same when the stakes are altered: no additional evidence for or against it has come to light and I may recognise a constant strength of belief in that proposition. What has changed is the strength of belief needed for me to self-ascribe the belief; correspondingly, on such a view, whether or not I count as having the belief will depend on context. A threshold view of belief may embrace this context-dependence, maintaining that the threshold of credence required for belief can vary with context, where recognition of higher-stakes is one source of the threshold shifting upwards.[9]

Acknowledging such context-dependence looks incompatible with identifying belief with credence 1, as it involves the adjustment of the non-maximal threshold for belief. This situation changes, though, if credences themselves are taken to vary with context. An agent could then have belief and credence 1 in one context, while this state subsequently fails to count as either belief or credence 1 in another context purely because the stakes are raised. Such a position—"credence sensitivism"—has been defended by Roger Clarke [2013]. The central idea is that in different contexts, a subject can take different possibilities into account and credence is (roughly) a measure of the proportion of such possibilities in which p is true. So, p can be true across all relevant possibilities in one context and not in another because the set of relevant possibilities has expanded. In a relaxed context, I may ignore certain remote possibilities even though those possibilities may become significant when stakes are raised or when context is changed in other ways that draw attention to previously ignored possible scenarios. I believe Bern is in Switzerland in an informal context but can later become conscious of a possibility on which I have misremembered facts about Bern and/or been deceived, (even if that possibility still seems very unlikely). According to Clarke, I am not taking those possibilities seriously in the first scenario, so they are

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[9] See, *e.g.*, Weatherson [2005], Ganson [2008]. Ross and Schroeder [2014] call this position "pragmatic credal reductivism".

not relevant to the calculation of my credence then and—since I am also ignoring other possibilities in which I am wrong—I can count as having credence 1 in the proposition. But when attending to the possibilities of error, my credence decreases, and I no longer count as believing the proposition.

Clarke sketches a formal framework for credences that allows this variation with context while preserving a version of conditionalisation, which is often seen as a key feature of credences. According to principles of conditionalisation, if I am uncertain about p and get new evidence, q, for p, my credence in proposition p increases or decreases to my previous credence of 'p given q' (how likely I now think p is, given I know that q, is dictated by how likely I thought p would be if it were that q). This creates a problem for accommodating a subject who has credence 1 in p at some time and not at a later time—a scenario that must be very widespread on the view in question. For in the standard non-contextualist Bayesian framework, an agent cannot have credence 1 in p (*i.e.* ruling out all possibilities that not-p), a non-zero credence in q (leaving open the possibility that q) while also having a credence of less than 1 in 'p given q'. For, if p is certain, then p is the case whatever other possibilities obtain and so 'p given q' must be 1 if there is any perceived chance that q obtains. To accommodate conditionalisation while permitting that someone can have credence 1 and still (rationally) subsequently change that credence, the model needs to ascribe conditional credences to S in context C that take into account possibilities that are ruled out by S in C. Clarke does this by having, in addition to local credences determined by the possibilities relevant to the context, a *global* credence function, which is a function over the whole space of possibilities. Both global and local credences are integral to the model, but local credences are taken to be primitive ([12]).

Contexts, for Clarke, are represented by a set of points corresponding to the possibilities the agent takes seriously in the context. This allows him to model the key idea that credence in the context depends on what possibilities are taken seriously in that context. The credence in a context is then determined by the points in that context, but conditional global credences dictate how local credence functions will behave through changes of context. Credence 1 is thus compatible with changing one's mind. For I can have credence 1 in a context—nothing compatible with that context will change my mind—yet can move to a lower credence, and thereby give up the belief, through a change in the context and the relevant possibilities countenanced.

To illustrate problems with this contextualised view, it will be helpful to see, first, how it is in tension with one motivation Clarke gives for rejecting views that have a non-maximal threshold. He considers a principle about beliefs that he claims is compelling:

"Resolution. If you believe that p, then your mind is made up that p" ([6], based on Fantl and McGrath [2009]). This is a challenge to views allowing subjects to believe p with a credence less than 1 because, Clarke says that, with a credence in p less than 1, someone "may well do things like seek further evidence that p and refuse to act on the assumption that p without further evidence". By contrast, he explains, "if an agent gives p credence 1, she will not engage in any such activities, since there are no live not-p possibilities for her" ([7]). But this is in conflict with the crucial element of the model in which our agent can change her mind through conditionalisation, as modelled by global credence and the change in what possibilities are considered live. When I believe p and the question arises whether to seek further evidence, that is likely to change and expand the space of relevant alternative possibilities. Clarke might say that this constitutes a change of context, so it does not undermine the fact that *in the original context*, those possibilities were not live. But Resolution appeared to be a forward-looking principle dictating future behaviour (change of mind, whether you seek further evidence etc). If context-change is so easy and ubiquitous, Resolution is undermined.

This is not just an ad hominem argument against Clarke. Rather, it puts pressure on an approach that gives a central role to possibilities taken seriously (or live possibilities) within a context and the need to illuminate which possibilities count as live in the context. We surely cannot characterise the live possibilities non-dispositionally, *e.g.* in terms of what possibilities are vivid or occurrent, or what possibilities the subject is consciously attending to at the time. For that would be too limiting: our subject will be attending to very few possibilities at any one moment and suitable discriminations among credences would be unavailable. We need, at least, to allow for possibilities that the subject is *implicitly* considering in the context. The implicitly considered possibilities are naturally illuminated dispositionally, in terms, for example, of what the subject *would* say about some possibility. But how, then, do we distinguish between those relevant to the current context and those for which the question would change the context?[10] In the current context, some possibilities

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[10] Consider, for example, a tension involving the role in the ascription of S's credence in p for the betting odds for p that S considers fair. On the one hand, this will be, almost entirely, a dispositional matter—what S *would* regard as fair if the question arose—requiring a very rich set of dispositions if they are to generate suitably fine discriminations among credences. On the other hand, Clarke emphasises that offering a bet will change the context ([2013: 9]). The latter claim is used to respond to the objection—"the betting worry"—that belief cannot be credence 1 because the latter implies willingness to accept *any* bet on p, however high the cost. For Clarke, I can have credence 1 in "Strasbourg is in France" at noon but then

might be ones I'm not paying attention to but still, loosely speaking "on my radar" and it might be tempting to think of those as ones I'm implicitly considering, in contrast with remote possibilities that, perhaps would not cross my mind unprompted. But there will clearly be a sliding scale of such cases and no clear-cut difference suitable for capturing Clarke's "qualitative difference" between having some doubt and no doubt. Once you move to possibilities that are merely implicitly considered, any distinction between the possibilities that are or are not relevant to the context will be, at best, vague and/or arbitrary and not the firm footing on which to build the precise model Clarke seeks.

If we *were* to draw on Clarke's model, then credences—the relevant degreed doxastic notion—would be better identified with global credences, rather than local credences. Betsy currently believes that Bern is in Switzerland, and, at present, no possibilities to the contrary have any significant bearing on her. But nonetheless, her very high level of confidence is less than total confidence because she knows—without paying any attention to the possibility—that she could be made to doubt it. She is disposed to acknowledge that there *could* be a conspiracy theory she cannot conclusively rule out which would render false her belief that Bern is in Switzerland (even if being pushed to say this would be a change of context in Clarke's terms). And she would regard the parallel scenario in relation to her belief that London is in England as considerably less likely, corresponding to her higher degree of confidence in the latter. The identification of credences with global credences would allow us to acknowledge that the way Betsy's responses would change in what Clarke has to regard as "context-change" scenarios are, in fact, significant to Betsy's current level of confidence in the current context. Even when ignoring the conspiracy possibilities in saying that Bern is in Switzerland, Betsy can be aware, in some sense, that those possibilities

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refuse to bet all my money and possessions on it because the bet will change the context and lower my credence (destroying the belief). So credences cannot, on this account, be ascribed based on what bets I would accept: those dispositions, like others that would change the context, are not the right kind for determining credences at a time. But we cannot, I argue, reconcile my supposed disposition to regard the extreme bet as fair/advantageous at noon (corresponding to my credence 1) and the attitude I am disposed to have to the bet itself. Clarke may try to distinguish between what bet you would accept and what you would regard as fair, taking the latter, but not the former, as relevant for current credence ascription. But surely, even if no actual bets are in the offing, I *do not* regard (and am not currently disposed to regard) as fair/advantageous a bet that cost all my money and possessions for a £1 pay-out if true that Strasbourg is in France (reflecting the fact that I would not contemplate a bet in anything like that ballpark). The betting worry is not just about what would actually happen in betting circumstances, but an objection about the account's commitments on what betting odds are fair by my lights.

would become relevant in some other context, such as if she were really pushed to confront questions about them. Global credences could accommodate this, but such a move to global credence as the key notion would mean abandoning the key role of credence 1 in a context, the phenomenon which had been identified with belief.

Other sorts of cases cast doubt on the idea that the described context-dependent notion of "alternative possibilities" can capture the way in which our level of confidence changes with change in context. This challenges the appeal to such possibilities in modelling levels of confidence and their variation with context. You can believe something but then be made to doubt it even if nothing new has come to light and no new possibilities are live. In the new context you may, in some ways, be *focusing on* a possibility you hadn't paid much attention to, but it is nonetheless the case that you always knew it was a possibility. A pessimist may hope that p (which, though likely, is not certain), but may dwell on an unlikely possibility in which not-p that the optimist would refuse to be bothered by because they are so unlikely. The pessimist and the optimist here have the same possibilities in mind, recognise the same possibilities as live, but take different attitudes to them. An individual can switch between these loosely described temperaments at different times: this is another kind of context-dependence we are familiar with, and the raising of stakes can often prompt a move to the pessimistic take on the situation with no change to which possibilities are considered live.

Indeed, considering, to reject but not rule out, certain possibilities in which not-p is the case can sometimes give a subject *more* confidence that p. One tactic for handling the possibility that undesirable not-p will obtain can be to think in detail about all the specific ways in which not-p could possibly obtain—taking seriously a larger number of possibilities—rather than a generalised concern that not-p might happen. Recognition of how unlikely and/or extreme those specific not-p possibilities are, can result in an increase in one's confidence in p. Take our Preface author. The claims in the body of her text are well-researched. To come to have the confidence to include each such claim in the text, she needs to have considered the possibility that it is false and the ways in which those possibilities might have been realised. She may have carefully considered—taken seriously— such scenarios in order to satisfy herself that they do not obtain (while acknowledging that they aren't impossible). A friendly critic may ask her if she has considered such a counter-possibility—problematic q that might have happened—and she may respond with additional argument for why it did not happen. It would be irresponsible to just ignore those possibilities of error: her confidence in asserting p in the book is *increased* because she has (non-conclusive) arguments against those various possibilities. She makes the assertions

in the body of the book and holds the corresponding beliefs despite recognition of those counter-possibilities, and the Preface assertion (that at least one is wrong) reflects that recognition at an abstract level, rather than generating—and taking seriously in this new context—new such counter-possibilities. These kinds of considerations all suggest that Clarke's appeal to "alternative possibilities" does not line up with levels of confidence in the ways he needs, which further calls into question the model on which subjects count as having credence 1 in their ordinary beliefs.

To summarise this section. Clarke's account turns on the idea of ignoring possibilities, or of not taking them seriously or them not being "live not-p possibilities". At an informal level, these ideas may be fairly intuitive, but they are not suitable for explaining many relevant cases of context-dependence. For the account in question, an informal level of characterising these notions is not enough and the vagueness implicit in them is problematic for an account that champions the precision apparently provided by an account employing the limit-case. We cannot pin down a suitable notion of credence one on Clarke's account, which, at best, undermines the main motivations for advocating the view that belief is certainty.

5   Vague beliefs

I have argued against the view that belief in p is certainty, credence 1 and/or maximal confidence in p. The identification implies that subjects have (almost) no beliefs and thus fails to correspond to the belief ascriptions we make; and the maximal limit of confidence may itself be problematic. There is no significant belief-like role for the kind of strong states the view wrongly identifies with belief, I would argue. Beliefs are assumed, for example, to have a key role in guiding action, be used as premises in reasoning, be characterised by a phenomenological commitment, and be states which frequently have a perceptual source. None of these features involve certainty: we do not require certainty to act on a belief, we reason from premises of which we are not certain, we feel a commitment to a proposition while recognising it is not completely certain and we believe what we see even though there is room for slight uncertainty.

The precision of the view is, as we've seen, commonly presented as a major motivation to maintain that belief is certainty: it appears to ensure precision and clarity without arbitrariness. But the resulting nihilism about beliefs is too high a price. We should embrace the lack of precision in belief-talk and recognise *vague beliefs*: there is a vague boundary to the doxastic states that count as beliefs. This vagueness can manifest itself in multiple ways,

including, but also going beyond, the vagueness that we would fail to accommodate in insisting that beliefs require certainty. This section offers a brief presentation and defence of the existence and significance of vague beliefs.

Belief ascription, I maintain, is a vague matter. As with other vague classifications ('tall', 'red', 'hungry', 'bald' etc), there are borderline cases of beliefs and a lack of sharp boundaries to states that count as beliefs. The characteristic lack of sharp boundaries to a vague predicate is typically illustrated with sliding scales spanning from cases where the concept definitely applies to ones where it definitely doesn't, as exploited in the *sorites* paradox. Degrees of belief/degrees of confidence offer candidate such scales in relation to belief, and the vague belief view will endorse a vague threshold to the degree required for belief. Such degreed states are often also described in terms of "strengths of belief" and it is natural to regard the outright ascription of a belief as amounting to a sufficiently high such strength, where what counts as *sufficiently* high is a vague matter.

One version of the vague belief view could regard degree of confidence as the single dimension determining whether a state is a belief: S believes that p iff S has a degree of confidence in p above the vague boundary. Then, just as the ascription of 'tall' to Greg might be said to be grounded in the facts about his height, so we might think that his degree of confidence of 0.95 in p grounds the ascription of the belief that p to Greg. Someone else can equally count as believing that p due to their degree of confidence in p of 0.97, and someone with a degree of confidence in p in the borderline region will be in a state which is a borderline case of a belief. As we saw in Section 3, we must reject the flawed argument that believing is representing and since representing is all-or-nothing so is believing. Whether or not representing *is* all-or-nothing, you *can* represent p with a non-maximal degree of confidence and, on the view advocated here, it may be a vague matter whether that state is a belief.

The full story is messier, however, than one on which belief turns on a clear-cut dimension of degree of confidence, (even allowing a vague boundary within that scale). For one, there may be differences between degrees of confidence, credences and other loose characterisations of such a sliding scale, without one being uniquely relevant to belief ascription.[11] Other dimensions may differ even more. This complexity may indicate a multi-dimensionality to belief (like 'heap', which depends on both number of grains and

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[11] One author who draws a distinction in this area is Zardini who, in his [2012], argues that we should distinguish between degrees of expectation (credences) and degrees of belief.

their arrangement). To use an example from Schwitzgebel [2001], suppose Eric slowly forgets the surname of his college neighbour over many years, having believed at one time that he had a neighbour called K, but forgotten—so no long believe—that 30 years later, with borderline stages in between where he can sometimes access the fact in the right circumstances but typically cannot recall it. Such a case may not be well captured in terms of gradually decreasing degrees of confidence. Other Schwitzgebel cases are candidate borderline cases of belief that fail to neatly fit this scale in other ways, (*e.g.* where a subject displays evidence of believing p but also of believing not-p, perhaps, for example, when implicitly believing a biased proposition p despite explicit commitment to not-p).[12] Belief ascription is vague in a myriad of complex ways. And, like most other vague predicates, it may also exhibit context-dependence, whereby, for example, the credence required for belief is higher in certain, high-stakes, contexts than in others.

Of course, in acknowledging the vagueness of the category of beliefs, we face a *sorites* paradox. A *sorites* series could be run from a clear case of a belief to a clear non-belief by gradual decrease in level of confidence, supporting a compelling inductive premise (if one case in the series is a belief, so is the next, minutely different, one), which apparently leads to an absurd classification of the last—clear non-belief—as a belief. This is a *sorites* paradox on a par with the paradox of the heap or equivalents for 'red', 'tall' etc. Pointing out that there is such a *sorites* is not an argument against the vagueness of the key notion, though. Vagueness is utterly pervasive and unavoidable and we should entrust its treatment—and the solution to the *sorites* paradox—to theories of vagueness (*e.g.* supervaluationism), rather than settle for the nihilist conclusion that there are no tall people, heaps or beliefs.[13]

If we are to endorse a non-maximal and vague threshold to belief, where does that leave us in responding to the preface and lottery paradoxes? Even if the account of belief as certainty or credence 1 does not provide a satisfactory response to the paradoxes, the

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[12] Schwitzgebel [2001] (and elsewhere) defends the idea of "in-between beliefs", with a range of interesting illustrative examples, some of which are more controversial than others, (where, for our purposes, the rejection of certain cases of in-between belief does not undermine the overall commitment to vague beliefs).

[13] For one among the many discussions of vagueness, see Keefe 2000, which defends a supervaluationist theory of vagueness. Unger [1979] is the classic presentation of a general approach to vagueness that embraces nihilism, *e.g.* maintaining that a *sorites* arguments with an (undeniable, by his lights) premise 'if X is one hundredth of an inch taller than Y and Y is not tall, then X is not tall either' can be used to show that no-one is tall. Most approaches to vagueness deny this, however, and, for example, provide a theoretical framework on which such a premise is not true, despite its plausibility. For example, a supervaluationist gives grounds to deny the inductive principle without committing to a sharp boundary to beliefs.

challenge for a vague threshold view still remains. I would argue, following Foley [1992] and others, that we need to give up logical closure for beliefs. The preface paradox illustrates that we sometimes believe a large range of things (the claims in the book), while believing the negation of their conjunction (because we recognise that, being fallible, one of the former claims will be wrong). Moreover, we can have good, rational reasons to have this combination of beliefs. This is incompatible with the logical closure of rational beliefs, which would guarantee that it is always rational to believe the consequences of our beliefs. We should be cautious in drawing consequences from lots of our beliefs taken together. As with a *sorites* series where a few steps down the series is fine, but many are not, so you should distinguish between endorsing the conjunction of a small number of things you believe and insisting that all of a large set of such beliefs are true. This is only the beginning of a story about reasoning with vague beliefs. But, I would argue, acknowledging the vagueness of the category of beliefs is a step towards an account of beliefs that reflects the rich and complex pattern of our doxastic states and commitments, in the inevitable absence of certainty.

6   Conclusion

In this paper I have argued that we must reject accounts of our familiar and important category of beliefs that restrict beliefs to limit cases (credence 1, absolute certainty etc) and we should acknowledge the vagueness of the notion of belief. I believe Bern is in Switzerland, even though I believe other things more strongly, just as Bruno is tall (at 6 foot 9), even though some people are taller. And an individual's attitude to p can be a borderline case of a belief if their degree of confidence is high but not clearly sufficiently high, or it can be a borderline case due to other features around the fuzzy boundary of the relevant graded scales.

The rejection of the view that belief is certainty has shed some light on our notions of credence/degrees of belief/levels of confidence etc, as well as the relation between those graded states and belief *simpliciter*. Embracing the vagueness of beliefs will better reflect our understanding of the doxastic states of ourselves and others.[14]

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