DOI: 10.1111/sjp.12588

ORIGINAL ARTICLE

The Southern Journal of Philosophy

The virtue of ignorance: How epistemic agency needs cognitive limitations

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Abstract

The thesis defended in this article is that epistemology should treat some of our cognitive limitations not as unfortunate defects or external perturbations to be idealized away in theories of epistemic agency, but as necessary underpinnings of good reasoning. We begin with a problem regarding deliberation that calls epistemic agency into question: our reasons in support of belief are never conclusive and never rule out all doubt. Yet we must rule out all doubt to close deliberation; we must close deliberation to form a full belief; and we must form a full belief to have knowledge. The problem with the first step calls the whole into question. The solution (if we seek an alternative to rejecting traditional epistemic agency, including the existence of beliefs) is our limitations: they prevent us from considering all possible doubt, leaving a tractable space of possibilities. When these limitations are virtuous, they contribute to an effective cognitive system. Once we understand the role of our limitations, it will lead us to a deeper understanding of deliberation, belief, epistemic virtue, and epistemic agency. Limitations are as much a part of agency as, for example, logical relations are. Idealizing them away means idealizing away actual agency.

1 | INTRODUCTION

The thesis defended below is that epistemology should treat some of our limitations not as unfortunate defects or external perturbations to be idealized away in theories of epistemic agency, but as necessary underpinnings of good reasoning. Once we understand the role of our limitations in framing epistemic activity, it will lead us to a deeper understanding of deliberation, belief, epistemic virtue, and epistemic agency. Limitations are as much a part of epistemic success as are, for example, logical relations. Idealizing them away means idealizing away actual agency.

Our entry point will be through a problem regarding theoretical deliberation that calls epistemic agency into question. The problem is that our reasons in support of belief are never conclusive: they never rule out all ways we could be wrong.[1] They always leave possible doubts. Yet we must rule out all doubt to close deliberation, and we must close deliberation to form a full belief, and we must form a full belief to have knowledge. The problem with the first step calls the whole into question.

One response would be to reject full belief, concluding that epistemology should deal only with partial beliefs/credences (Jeffrey, 1970; Pettigrew, 2015, 2016) or no kind of belief at all (Churchland, 1981, 1988; Stich, 1996). This response is disappointing for those who accept that beliefs exist, and this article shows that cognitive limitations offer an alternative to rejecting belief. Because of our limitations, only a restricted range of possible doubts are ever in play in deliberation; our limitations prevent us from taking many doubts seriously—often because those doubts never even occur to us or are dismissed without reasoning—and we can then sometimes rule out every remaining doubt we take seriously. Thus, our limitations create a frame within which deliberation occurs, which makes it is possible to close deliberation by ruling out all doubt and all possibilities for error—all those that matter, that is.[2] The limitation of the range of possibilities we can entertain during deliberation is thus necessary for the existence of full beliefs and knowledge. Our limitations solve the problem and lead us to a new understanding of epistemic agency in terms of virtuous limitations.[3]

Epistemic concepts like belief, justification, and knowledge only make sense within frames set by our limitations. A key to understanding epistemic normativity, then, is understanding what cuts off the space of possibilities to make epistemic agency possible. Evaluation of deliberation will depend on an evaluation of the traits—the epistemic virtues and vices—that set the stage within which deliberation occurs. Epistemic success depends on virtues that allow us to ignore the irrelevant.

The rest of the article proceeds as follows. Section 2 provides a detailed description of deliberation and the role doubt plays within it. Section 3 explains a problem faced in deliberation: evidence almost never rules out all doubt, and deliberation cannot close when there is still doubt, yet closing deliberation is often desirable. Section 4 explains how we manage to solve this problem, primarily through nonreasoning means, by not considering many possible doubts and dismissing others. Section 5 asks whether this is rational and what we should demand of ourselves as epistemic agents, concluding that patterns of ignoring and dismissing doubt can be virtuous.

[1]While some have proposed that we sometimes have conclusive reasons, this article rejects those proposals and seeks an alternative. Conclusive reasons in the form of apodictic certainty, incorrigible belief, and the like, proposed by Descartes and later by some sense data theorists, have been almost entirely abandoned. More recent theories of *conclusive reasons* allowing no possibility for error tend to be externalist, such as Dretske (1971), Nozick (1981), and McDowell (1994). While these externally conclusive reasons potentially explain the existence of knowledge, they do not explain how we reason our way past all doubt, which is the focus of this article. See Lando (2016) for a detailed argument along these lines (specifically about Dretske, but the point generalizes). Even a disjuncitvist like McDowell—who argues that in "good cases" of perception a fact becomes present in my reasoning—acknowledges that cases with conclusive reasons can be indistinguishable from cases of error. In such cases, we can raise doubts that we cannot answer but only dismiss, even if those doubts are ruled out by the external conditions. The appeal to externalist conclusive reasons to solve the problem central to this article is questionable enough to justify seeking an alternative.

[2]My solution to the problem of closing deliberation is not entirely new. For example, Lewis (1996) argues that ignoring possibilities is an important part of knowledge. However, I draw consequences from the basic solution that are novel.

[3]Morton (2012, ch. 3) likewise argues that ignoring possibilities can be a virtue. This article shows that we can extend this idea to solve a problem regarding the possibility of full belief and epistemic agency.

2 | EPISTEMIC AGENCY AND DELIBERATION

We will be able to see the importance of our limitations by first identifying a problem that epistemic agents must solve and that cannot be solved without limitations. Start with a question: At the agent level, how do we close deliberation and form full beliefs? The very existence of epistemic agency is at issue here. Epistemic agency is what allows us to say that *we*, as persons, can be said to believe and to reason. It is what makes it possible that we, as persons, can be responsible for what goes on in our epistemic lives. It is connected to our sense of ourselves as not just objects that respond differentially to stimuli, but as agents capable of rational thought who form beliefs deliberately for reasons.

Some key features of epistemic agency are that it is:

- Rational/based on reasons.
- Person-level.
- Not simply a series of impersonal processes (though it is likely in some sense constituted by such processes).[4]

The key activity of epistemic agency is theoretical deliberation.[5] Our sense that we are responsible for our epistemic activity centers on deliberation. That is where we most paradigmatically choose what to think and believe. It is where it makes the most sense to hold us responsible. The activity of deliberating consists of considering whether propositions are true by attempting to remove doubt through reasoning. Theoretical deliberation closes in full belief when all doubts about a proposition under consideration are removed. Deliberation can also be suspended without reaching belief, remaining in uncertainty (which may simply be disbelief or may be partial belief).

Several features of full belief are important for the present study. When S fully believes that *p*[6]:

- S takes the world to be such that *p* and takes themselves to know that *p*.
- S reasons with *p*.
- S does not make contingency plans for the possibility that *not*-*p*.
- S does not doubt that *p*.

A full belief functions in some ways *like* a degree of belief/credence of 1.[7] Full beliefs are not mere partial beliefs that leave uncertainty. There can be full beliefs related to partial beliefs: you can fully believe that the probability that a coin landed heads is 0.5, which may in turn be associated with a partial belief that the coin landed heads, but an explicitly partial belief short of 1 is not a full belief.

To fully understand deliberation and full belief, we must also understand doubt. "Doubt" can function as both a verb and a noun, as in the sentence, "I *doubt* this because there are still some *doubts* about it that I haven't cleared up." Taking doubts seriously prevents belief. We can define "doubt" more fully as follows:

> Doubts about *p* are possible ways for a belief that *p* to be wrong.

[4]See Augusto (2024) for more on this point.

[5]The definitions in this section are not intended to be fully reductive definitions; the terms are interdefined. The intent is instead to clarify the relationships.

[6]This is similar to what Wedgwood (2012) refers to as "outright Belief."

[7]See Weatherson (2016) and Jackson (2020) about the relationship between belief and credence, and problems for simply identifying full belief with credence of 1.

> To doubt that *p* is to take at least some doubt about *p* seriously. It is to entertain the proposition that *p* while not fully believing it (thus not closing deliberation about *p*).

On the other hand, *certainty* can be defined as entertaining *p* while not doubting that *p*. When A is certain that *p*, they take the matter to be settled. There is no question for A whether *p* is true, and they will use *p* in further reasoning without reservation.

In these terms, deliberation is a conscious activity intended to rule out doubt. We do not deliberate when we do not doubt, since when we do not doubt, we take the matter to be settled (or the matter has never even occurred to us, which also precludes deliberation). We open deliberation when we are uncertain about something that strikes us as relevant in the moment. Deliberation is driven by doubt. We can deliberate until the matter is settled, at which point we become certain and form a full belief in the proposition, or we can suspend deliberation, leaving some doubt that we take seriously. Taking seriously any doubt regarding a proposition keeps deliberation about that proposition open, while deliberation closes when/if we achieve certainty.

Doubt manifests in diverse ways. Sometimes the origin is logical in nature. For example, we will doubt that *p* if we know that *q* contradicts *p* and we take seriously the possibility that *q*. That is, alternate hypotheses are doubts.

Other doubts have their roots in the possibility that a mistake was made. For example, doubt can arise from the vague sense that you forgot something important, or the sense that you might have made an error in your reasoning. We often have the sense that we know something relevant that could lead to a different conclusion, if only we could remember it. We might also suspect that we have fallen prey to some bias or fallacy without realizing it. Making a relevant mistake or forgetting a relevant fact could mean that our conclusion is wrong. These doubts do not call the proposition into question by proposing a specific alternative (as those described in the previous paragraph do); they do it by questioning the source of the belief.

Finally, there are doubts that do not arise out of considerations of epistemic position (however vague those considerations are) but instead arise as part of a mental routine. The habit of doubting a calculation the first time you make it leads to taking seriously the doubt that your initial result is wrong, at least until double-checking confirms the result. The proper use of a checklist implies doubting whether everything is in order until you run through and confirm every item on the checklist. In addition, some types of situations can trigger habitual doubts, such as the habitual doubt that you might have forgotten something when you leave for the airport. No prior consideration of evidence or epistemic performance drives these examples (as the previous two forms of doubt), but they are still forms of doubt that keep deliberation open.[8]

In deliberation, we engage in processes to engage with our doubt about the propositions under consideration. Sometimes we uncover new doubts to take seriously, but often we defeat existing ones. Sometimes, we are left with no doubt regarding a proposition. At that point, deliberation regarding that proposition is closed, and we fully believe the proposition, taking ourselves to know it. From our point of view at that point, there is no way we could be wrong.

3 | IS EPISTEMIC AGENCY POSSIBLE? CONCLUSIVE DELIBERATION WITHOUT CONCLUSIVE EVIDENCE[9]

The problem with the role of doubt in epistemic agency is that we never have sufficient reason to close deliberation and form full beliefs by ruling out all doubts.

[8]For a discussion of the process of forming mental habits, see Verplanken (2006).

[9]For a more detailed description of the problem I am describing, see Owens (2000), especially Chapter 2. Though I do not accept the answers offered in that book, I have in mind a very similar setup.

How can we reason our way out of all doubt? Conscious, explicit deliberation over what to believe appears to be evidential: within deliberation, we only treat evidence (or at least what we take to be evidence) that the proposition is true as reason to believe it (Reynolds, 2011).[10] The only considerations that defeat live doubt about a proposition are evidence that the doubt is false. The problem starts from the fact that there are infinitely many ways to be wrong about most propositions, and we can never have evidence to conclusively rule them all out from a strictly logical point of view. Any skeptical problem can demonstrate this.[11]

The evidential nature of deliberation raises a disturbing possibility regarding full belief: since our evidence for our beliefs is almost never conclusive, it seems that deliberation can almost never close, and we can fully believe almost nothing.[12]

This problem goes beyond the skeptical problem: while skepticism questions whether beliefs can be justified or constitute knowledge, this problem questions how we reach conclusions at all, how we manage to even have beliefs. Ending deliberation in full belief that *p* requires convincing ourselves that we have eliminated all doubt regarding *p*, yet we never do eliminate all doubt. This suggests that full belief is not possible through reason. Given the limited information we possess, even if we were ideal reasoners with the ability to comprehend all possibilities and instantly draw all logical conclusions, we could not reach full belief.

There are four potential responses to this problem that this article will reject:

- *Give up on rationality of full belief*: claim that full beliefs are always irrational, while only something else, such as degrees of belief, are rational.
- *Give up on epistemic agency*: treat ourselves as mere stimulus–response systems or something else other than agents acting for reasons.
- *Propose conclusive evidence/reasons*: identify reasons or evidence that somehow count as conclusive despite the possibility for error.
- *Give up on the existence of full beliefs*: reject full beliefs as part of agency, either claiming the concept of full belief is a mere approximation for real parts of agency (such as high degree of belief) or should be eliminated entirely.

The first two responses give up on important aspects of being epistemic agents. If it is possible to explain what is going on without giving up these aspects, it would be preferable. The third response is pursued by Dretske (1971) and Hemp (2010) and epistemic disjunctivists like McDowell (1994). The present article offers an alternative to such views, without offering an argument against them. (For an argument against this kind of approach, see Graham & Pedersen, 2020.) The last response would be disappointing for multiple reasons. To start, there is the apparent fact that beliefs are common, so a theory that recognizes this should be preferred.

[10]Nonevidential considerations can play a role in producing a belief, as we will explore in later sections, but these influences tend not to be conscious and generally will not be part of how an agent reasons or justifies their belief.

[11]This is probably why so many papers and books about the nature of belief, deliberation, and knowledge do not stick with the straightforward view that belief means reasoning away all doubt, despite its simplicity and attractiveness: it appears that it cannot work. The other views are attempts to find a workaround. Part of my goal in this article is to show that we do not need a work around. Lewis (1996) is one exception who stayed with the simple infallibilist view.

[12]I say "almost never" because arguably making a decision can give us conclusive evidence about our own intentions. Our choice fills in the gap in the evidence about what we will do. For arguments along these lines, see Velleman (1989, 2000), Ismael (2011), and Fernandes (2016). There are some theories, notably John McDowell's disjunctivism (McDowell, 1994, 2010, 2013a), according to which in "good cases" with no illusions or the like, we do have conclusive evidence for our beliefs (at least perceptual beliefs). However, part of the justification for such views is that they are necessary to explain how we close deliberation and gain knowledge, a point most clearly argued in McDowell (2013b). The present article demonstrates that we can explain successful deliberation without appeal to disjunctivism or other theories of conclusive reasons.

More importantly, there are numerous benefits to full beliefs, which suggest that a rational person ought to have them after all. They are much easier to deal with than partial beliefs and doubt. With full belief, the matter is settled (at least from the believer's point of view); there is no need to account for alternate scenarios. Full beliefs are stable. They provide a solid base of information to reason from, a basis that is not second-guessed, hedged, or uncertain. Finally, they are efficient. While there is always some risk of error, often possibilities for error are so unlikely that any hedging of bets would be irrational. For example, any effort spent seriously working out zombie survival plans is too much effort and grants the hypothesis too much credence. Ignoring the possibility would be better. Simply ignoring the small chance that a belief is false is often reasonable, pragmatically speaking. (See Morton, 2010 for more detailed study of cost/benefit of reasoning.)

While we could achieve a similar effect by reasoning, "It's so unlikely I'm wrong that any attempt to hedge against being wrong is not worth it," the problem is that this takes time and effort. Full belief saves this effort by building the rejection of sufficiently unlikely possibilities into our doxastic attitude itself. Without full belief, we would need to reason our way out of hedging our bets for each belief every time we used it in any reasoning.

In sum, rejecting full belief would slow us down, consume attention, make processes more complicated with more steps, produce more chances for error, and create more chances to overlook something important while wasting time telling ourselves to ignore minor doubts. Thus, ending deliberation with an inconclusively supported full belief would be better in these cases.

These practical reasons in support of full belief look like the missing piece that closes the gap between inconclusive evidence and conclusive deliberation. Unfortunately, as practical reasons, they do not give us epistemic reasons to fully believe anything, so we cannot use the above argument to reason our way to full beliefs. Pragmatic considerations about what it would be beneficial to believe do not seem to play any role within theoretical deliberation (unless in some way they support the truth of the belief, such as when the belief is about what is beneficial to believe).[13] We cannot reason, "It would be better in every practical way, with no downside, for me to believe that my last words to my father were, 'I love you' and not, as I remember it, 'Shut up. I'm tired of your bullshit.' Therefore, my last words to my father were, 'I love you.'"[14] The evidence matters, not the pragmatic considerations.

Compounding the problem, any practical argument in support of full belief that *p* will have the conclusion "I should believe that *p*." Unlike deliberations about action, where the conclusion that we should do something can bring about or constitute a decision to do it, the conclusion that we should believe that *p* does not bring about the belief that *p*.[15] None of the practical arguments given in this section can be used within deliberation to bring it to a close.

We now find ourselves with clear reasons to want full beliefs, yet from an epistemic perspective, full beliefs seem incoherent, irrational, and impossible. How do we get out of this problem?

4 | HOW WE SOLVE IT (DESCRIPTIVE): COGNITIVE LIMITATIONS

We solve the problem by being limited. Our cognitive limitations shape our epistemic agency. We are finite beings faced with infinite possibilities. Our sensory and mental capacities only

[13]This debate is a component of the debates over pragmatic encroachment, the idea that pragmatic considerations can play a role in deliberation, maybe even closing the gap left between the evidence and concluding deliberation (Fantl & McGrath, 2009, 2012; Owens, 2000).

[14]This is not autobiographical.

[15]This issue is discussed in the literature on epistemic agency, including Owens (2000), Moran (2001), Velleman (1989, 2000), and others.

respond to and process limited kinds of information, and only in limited amounts. This is not simply a detail about our cognition that we can disregard. It is a necessary feature of finite beings like us that imposes unavoidable constraints (Cherniak, 1986). One example of the inescapable limitations: computability theory demonstrates that many questions are provably undecidable, so if the processes of our mind in any way count as computations, then there are hard limits on what computations can be carried out. If we accept the Church-Turing thesis, our reasoning must count as a computation in the relevant sense. In addition to these passive limitations, processes outside reasoning actively limit the space of reason.

Trying to idealize this away would be like trying to discuss cubes while idealizing away the faces. What exactly remains? I do not know, but not a cube and not a cognitive system. Our ansatz now will be that these limitations make deliberation possible. It only ever looked like there was a problem with deliberation because we idealized away epistemic agency itself.

There are two kinds of filters that remove doubts before we reach reasoning: our *passive limitations*, preventing doubts from being considered by being unable to think of them or simply not thinking of them, and *active limitations*, dismissing doubts from consideration without reasoning, primarily in the form of metacognitive affect (see the discussion of metacognitive affect in Section 5.2). Many doubts are never thought of at all or are dismissed through nonreasoning methods.[16] We lack imagination to conceive of all possibilities for error. Among those doubts we are capable of conceiving, we do not have the capacity to think of all of them at any given time. Some possibilities simply come to mind and the rest simply do not. Among those that come to mind, some are dismissed out of hand without reasoning. These all impose limits on the range of possibilities under consideration before reasoning even enters the picture.

For example, the possibility that you are in the Matrix usually does not occur to you during deliberation (passive limit). When it does, you most likely dismiss it as not worth taking seriously based on the sense that it does not matter (active limit). Your deliberation will be able to terminate without proving you are not in the Matrix, because that part of logical space is cut off from deliberation by your psychology. If enough possibilities for error are never considered or are simply dismissed, it becomes possible coherently to form a full belief with inconclusive evidence.

Thus, when deliberating, the agent does not encounter all logical space. The stage of reasoning is set by the restricted range of possibilities that come to mind and are taken seriously. Within this restricted space of reasons, we can sometimes rule out all doubt using reason and thereby close deliberation in full belief. In other words, our limitations both create the problem for deliberation and solve it. On the one hand, our limited evidence means we can never rule out all possible doubts, but on the other hand, our active and passive limitations restrict the doubts at play in reasoning so that we do not need to rule out all possible doubts.[17]

There are four questions to ask that will reveal how doubts affect reasoning:

1. Which error possibilities do we consider in the first place?
2. Among the error possibilities we consider, which generate any doubt?
3. Which doubts arise from sources other than consideration of error possibilities?
4. How do we eliminate doubts once they arise?

[16]Compare to the relevant alternatives approach proposed by Lewis (1996). Lewis's rules for relevance ensure that at least some unconsidered alternatives do not matter precisely because they are not considered. Morton (2012) explores this further, arguing that virtue is necessary to ignore the right things.

[17]Cherniak (1986) gives a thorough account of why these are not just contingent limitations that could be overcome with the right improvements to our cognitive abilities, but necessary limitations that nothing finite can even approximately overcome due to reasons of logic, computability, etc. In addition, Todd and Gigerenzer (2012) discusses cognition under conditions of limitation in detail.

The answer to (1) has a positive side—which error possibilities *are* considered?—and a negative side—which possibilities are not? Regarding the positive side, there will be psychological processes bringing some possibilities to mind. Sometimes, this will be triggered by some association, sometimes by the environment, sometimes by habits. The specifics are not necessary for present purposes. As for what is not considered, there cannot be a cognitive process that determines this. Such a process would involve considering a proposition and then deciding not to consider it, which is incoherent.[18] Thus, one important component of the solution to the puzzle about deliberation cannot be governed by a process at all. It is a result of the system's organization. Still, we can say more about why we fail to think about some possibilities. Affect and other signals prevent some possibilities from coming to mind by regulating how long we try to think of more doubts. Our thinking is governed by metacognitive senses that signal that there might be something relevant that we are not thinking of, or, on the other hand, that we have spent enough time searching (Huntsinger & Clore, 2012; Proust, 2016).

As for (2), the answer will again have a positive side—which doubts do we take seriously?—and a negative side—which doubts are summarily dismissed? The positive side will be the process of taking an uneliminated possibility for error seriously, preventing us from closing deliberation. For present purposes, we only need to know that we do this.[19] On the negative side, most of the possibilities that we dismiss are not logically impossible, so we cannot dismiss them based on sound arguments. These dismissals can be driven by active limitations such as affect, emotion, or something akin to aesthetic judgment.[20] The example of the Matrix given earlier shows this: it is usually dismissed not based on evidence but based on a sense that it is ridiculous. Doubts like this can seem repulsive even to consider, such that one might say, “The Matrix? Are you kidding me? This is the real world, not a sci-fi movie.” We do not treat these possibilities as real, even though if pressed we would admit that they are technically possible and are not ruled out. Our psychology prevents us from taking them seriously through active limitation. Often, such dismissal is pragmatically justified, but we do not dismiss using pragmatic reasoning. We just dismiss these possibilities out of hand. This process is not traditional reasoning and has more to do with the character of the system, which is responsible for the attitudes that produce dismissal.

In response to (3), other sources of doubt are a matter of habit or temperament. People develop senses of doubt that trigger in some situations. Someone who is skeptical in general will tend to be more uncertain by nature, whether or not they have specific error possibilities in mind. Someone can have a habit of always doubting a conclusion until they get a specific kind of evidence, and until that kind of evidence arrives, they will face doubt that is not tied to consideration of any specific possibility for error. These doubts will not result from considerations of evidence; they will arise passively due to personal traits.

Finally, part of the answer to (4) is that we eliminate doubt that remains after all these stages using the familiar process of inference. Yet our cognitive limitations even play a role in how our reasoning works at this stage. One kind of doubt is the possibility that an inference will not work. We use many nondeductive inferences that are not guaranteed to work. There is always a possibility that this time is one of the times where a generally useful inference will lead us astray. But we can often successfully reason with such inferences because the inference is valid within the restricted space of possibilities we take seriously; the

[18]This is not to say that we cannot evaluate a cognitive system in terms of which possibilities it systematically fails to consider (see the next section for more about this kind of evaluation). It is just that there will not be a process that decides which ones to not even consider.

[19]Owens (2017, p. 263) also highlights the importance of triggers leading to doubt, but also does not go into details about how this works.

[20]For some information about the role of emotion in reasoning, see Damasio (1994) and Szczepanik et al. (2020). Emotion plays a role even in scientific reasoning, see Thagard (2002).

possibilities where it goes wrong are ignored or dismissed. Crucially, though, reasoning is not the only answer to (4). Some doubts that arise out of habit or the sense that you might have missed something will simply fade over time if nothing is found to sustain them.[21] Deliberation can also take the form of thinking of a current belief and finding yourself gripped by the question, "Wait, is that actually true?" These doubts can be removed by reasoning or by simply letting your mind wander for some time until the sense that you might be wrong goes away (perhaps by concluding that more specific doubts would have come to mind if there were any that mattered). This rise and fall of doubts not via reasoning will be due to features of character, temperament, and habit.

It is only within a restricted logical space, narrowed by many factors outside of reasoning, that we even begin to engage in the kind of reasoning studied in the various branches of logic, and that reasoning itself is shaped by limitations. Within the restricted range of doubts, sometimes we end with a full belief by rendering all chances of error impossible or irrelevant. Thus, deliberation can end with full belief because doubt is restricted.

Thus, we have an explanation for how we can close deliberation, but now we have a different problem. From the standpoint of logic, this way of forming full belief is a mistake. Many of the doubts that we fail to consider or that we dismiss are not logically impossible, so failing to consider these doubts at all is irrational, from the point of view of ideal rationality. Some dismissals are driven by affect or emotion, not reason. It may turn out that dismissal is pragmatically justified in many cases, but the reasoning we go through is not pragmatic. Is there a viable sense of epistemic evaluation that accounts for our limitations and does not automatically declare us failures?

5 | HOW WE SHOULD DO IT (NORMATIVE): EPISTEMIC VIRTUES AND DELIBERATION

From the above, we see that epistemic agency unfolds within a frame set by active and passive limits on doubt, restricting the space of reasoning. However, so long as the limits are epistemically good ones, this does not force us to conclude that we are irrational to form full beliefs. Reasoning in the restricted space left to us can be rational: we can still determine, within that restricted space, which doubts are ruled out by the available evidence. This is not just ecological rationality, which refers to behaviors (in this case, belief-forming processes) that are adaptive in the environment, regardless of what processes underlie them (see Todd & Gigerenzer, 2012, esp. pp. 14–16). This is rationality in a more traditional sense of using evidence to rule out doubts contradicted by the evidence, the only change being that the logical space is restricted. To illustrate with a simplified example, suppose Alya wants to know what is happening at the nearby park, and she has already checked the website that says that a jazz festival is happening. From here, she considers the following possibilities: the festival is happening; the date on the website is wrong and the festival is not today; or the information *was* correct but the festival has been canceled. She does not consider that the site has been hacked, that she is in the Matrix, or any other possibilities. To answer the question, she looks at Instagram and searches for the park. She finds photos posted today that appear to be at the park and include what looks like a jazz festival. She does not consider the possibility that this is deception or otherwise misleading and concludes that the festival is happening. She did not consider all possibilities for error, but she still used evidence to reason her way to full belief by ruling out all doubts that she took

[21]This is not to say that reasoning cannot be responsible. The premise, "If there was a reason to worry about this, I would have found it by now," can figure in a sound argument closing doubt. The point I am making is that it is not always sound, and it is not always responsible for the fading of doubt.

seriously. This is reasoning in a restricted logical space. Due to our limited nature, if we are rational at all, our actual rationality must take this form. Limited reasoning can still be rational epistemic agency that is truth-conducive and epistemically virtuous, so long as the space is limited in the right way. We just need to figure out what the right way is.

The first thing we must come to terms with is that traits of the whole system or the person, not choices, acts, or processes, shape the space of reasoning. Many of the ways in which we achieve full belief involve simply not thinking of some possibilities. Success in not thinking of something relies on being the kind of person who does not think of it in those circumstances. Additionally, many of the processes that allow us to close deliberation are automatic. Others are processes we undergo that are not actions or choices, such as feelings, affect, mood, and other such responses. They are not processes of reasoning over propositions or other content.

The fact that much of the work of ignoring doubt is not due to any conscious or unconscious process suggests that any evaluation will be an evaluation of overall traits, habits, and tendencies of the mind. The point of evaluating these features is to understand the proper base that must exist to allow for better epistemic agency. We will thus be investigating *epistemic virtues*, epistemically positive traits of a cognitive system. They are virtues because they are positive traits of character, and they are epistemic because they create the conditions that make epistemic agency possible. Some epistemic virtues will lead us to think of the right things automatically—such as the virtues of creativity—and others will lead us to ignore the right things automatically—what Morton (2012) refers to as "paradoxical virtues" in reference to the fact that we normally think of ignoring possibilities as a kind of failure.[22]

A virtuously functioning cognitive system should take seriously all and only doubts that are worth taking seriously.[23] What is the optimal design of a cognitive system in this respect? To answer this, we must consider the possible consequences of ignoring/dismissing a doubt, the probabilities of those consequences, the consequences of taking the doubt seriously, and the probabilities of those consequences. We are trying to determine the frame within which epistemic agency should operate, which will require an all-things-considered judgment of what limits are required for epistemic agency to be possible and successful. This in turn requires us to study cognition from a perspective that attempts to take as much doubt into account as possible, and from there we need to work out when it would be good, all things considered, for agents to ignore or dismiss doubts.[24]

Ignoring a doubt: the negative consequences of ignoring or dismissing a possibility for error include ignoring a risk that is realized (to take an extreme example, ignoring the possibility that there is a bomb in the car can mean that you get blown up). There are also subtler, longer-term consequences. For example, if you ignore a possibility for error now, even if it turns out to be fine this time, that can establish a thought pattern that becomes entrenched. You can get into the habit of ignoring that kind of error possibility, which might eventually lead to disaster.[25]

The positive consequences of ignoring a possibility are an increased speed in thinking, reduced effort, and maybe reduced stress. An additional possible benefit is greater accuracy when reasoning about possibilities so unlikely that simply considering them is giving them too much credence. If something has a one in a quadrillion chance of happening, and we think to ourselves, "It might be true," we are likely giving it much more weight than it deserves. Unless

[22]Morton does not introduce this concept in the context of epistemic agency and the problem of closing deliberation, but his paradoxical virtues are the same kinds of virtues that I have in mind here.

[23]This article is only concerned with virtues specific to ignoring and dismissing possible doubts. A complete picture of epistemic virtue will include many other virtues that relate to other aspects of epistemic life.

[24]This statement is in terms of "taking as much doubt into account as possible," rather than all possible doubt, because we cannot make any evaluation without dismissing some possibilities, like being deceived by an evil demon. Such possibilities are ridiculous, so we can ignore them.

[25]See Verplanken (2006) about how mental habits form.

we are in a situation where we can calculate expected values using exact, accurate numbers, ignoring remote possibilities is likely to be more accurate in addition to being faster. A virtuous agent will therefore tend not to think of such possibilities.

Taking a possibility seriously: negative consequences of taking a possibility seriously can include taking attention away from other areas that need it, focusing on the irrelevant, taking too long to sort through unlikely scenarios, paralyzing decision and missing out on opportunities, maybe even falling victim to a known risk because you had not made it past the irrelevant ones in the long slog through all the possible ways of being wrong. Positive consequences include producing more accurate answers, achieving a higher level of understanding, building mental pathways and habits that eventually allow you to be able to think of related possibilities faster and to take them into account without expending so much effort.

A virtuous agent's cognitive system will operate in a way that balances the costs and benefits of ignoring versus taking doubts seriously. Epistemic virtues will balance speed and ease of reasoning versus the possibility of being wrong. A virtuous epistemic agent will consider doubts that have a significant chance of impactfully affecting the answer to the questions they are investigating. For example, it makes sense to habitually question whether you remembered everything when you are about to leave for the airport, because it is common to forget something and difficult to correct mistakes later. Likewise, it makes sense to habitually doubt the results of a calculation carried out by hand, because it is common to make a mistake at one of the many steps to the conclusion. Virtues will lead one to doubt in these circumstances, even in the absence of specific evidence of error.

Sometimes, taking precautions for an unlikely possibility is worth it, such as wearing a seat belt in a car. Ignoring or dismissing the possibility of a crash would be foolish. Other times, there is no reason to think of a possibility, and it would purely be a burden to think of it. If we are being deceived by an evil demon, there really is not anything to be done about it, and thinking about it will not help us. Virtuous traits will lead an agent to consider all and only the possibilities that are worth considering (for more detail on how this works, see Morton, 2010, 2012).

Virtuous active limitation via dismissal will avoid doubts based on possibilities that should not have been considered in the first place. Ideally, no one should propose that maybe the world outside this room stopped existing ten minutes ago, but if someone does propose it, an epistemically virtuous agent will simply dismiss it. Ideally, no one should wonder whether an evil demon is deceiving them when they are deciding what to eat, but if the thought does cross their mind, they will dismiss it if they are virtuous.

Removing doubt that was not dismissed is where more traditional epistemic evaluation finally enters the picture. Many doubts are removed by reasoning based on evidence. This reasoning should be sound and properly based on evidence sought properly, and a virtuous agent should be prepared to do this. The traits the agent should have to carry out proper reasoning are explored thoroughly in the virtue epistemology literature (Battaly, 2008, 2014; Greco & Reibsamen, 2018; Olin & Doris, 2014; Roberts & West, 2015; Sosa, 1993, 2003; Zagzebski, 1996). See Turri et al. (2017) for an overview of virtue theories.

As discussed in the previous section, sometimes reasoning is not involved in consciously removing doubt. When deliberation starts from vague suspicion of a mistake that then fades, the process is generally not one of reasoning. This can be virtuous because the appearance of doubt can serve as a check, forcing deliberation to stay open for one last burst of attention. If something concrete comes to mind and triggers more specific doubts, deliberation can continue and will often be better for it. If nothing comes up, the doubt just fades, and deliberation can conclude. A virtuous agent will experience these rising doubts in consistently beneficial ways.

A fuller understanding of norms of epistemic functioning will require deeper study of these forms of virtue.

5.1 | Environment: Physical and social

The optimal balance will depend on the environment, including the natural, artificial, and social aspects of it. The optimal cognitive system will ignore many possibilities for error that the environment has already removed, so to speak. To take an analogy from Herbert Simon, cognition is like a pair of scissors, where one blade is the environment and the other is the mind. When both sides fit together, it produces the desired result. This aspect of cognition is studied under the names *bounded rationality* and *ecological rationality*. These research programs study how features of the environment we live in allow us to simplify the reasoning we use, including by ignoring many kinds of errors that are ecologically rare or nonexistent (Hertwig et al., 2022). We do not require logical perfection because the environment has removed a large part of logical space from relevance. Our deliberation thus only needs to account for the limited range remaining. While not every aspect of ecological rationality is relevant to this article, the fact that ignoring doubts that the environment rules out is necessary for epistemic agency is relevant.

Beyond the natural environment, the cognitive system must be prepared to interact with other agents, creating a social element to epistemic virtue. We do not simply robotically report information to each other for no reason. We share information as part of shared projects, for the purpose of giving and soliciting advice, for the purpose of debate, and more. An ideal cognitive system should be able to adjust to these social contexts automatically. A virtuous agent will be sensitive to interpersonal relations and the impact that doubt has on them.

We should be sensitive to the needs of those around us, the requirements of our interlocutors and those we care about. We should ignore possibilities that hinder interpersonal necessities and take seriously possibilities that are sufficiently likely to affect our social aims. If someone is not involved in debates about mereology, then doubts about the existence of composite objects probably should not be taken seriously when discussing whether there are AAA batteries at the corner store.

In general, we should be able to coordinate doubts with others. In a nonadversarial conversation, we need to cooperate. We need to track a shared conversational context, which requires at least to some extent taking the same doubts seriously. We can see this illustrated in classic examples from the literature on the context-sensitivity of knowledge, like the bank case from DeRose (1992) or the airport itinerary example from Cohen (1999). In both cases, the central dynamic requires accounting for the epistemic needs of another person, something we should be able to do. The importance of social coordination in epistemology is further explored in Kawall (2002), DeRose (2002), and Hinchman (2013, 2014), among others.

When it comes to one's own doubt for one's own sake, a virtuous agent will reliably and efficiently reach the correct conclusion if a conclusion would be good and keep deliberation open with appropriate doubt if a conclusion would not be good. Judgments about what counts as efficient, reliable, good, and appropriate will all depend on what is at stake for the agent in the deliberation.

When it comes to which doubts to consider or dismiss for the sake of others, however, you want to make sure that your deliberation is sensitive to the concerns they are facing (Hinchman, 2013, 2014). Judgments of efficiency, reliability and appropriateness should depend on what is at stake for those others. A virtuous agent will automatically consider doubts, dismiss them, defeat them, or take them seriously in ways that allow coordination with other agents.

The goal of the virtuous agent is to build a set of habits and tendencies that conclude deliberation when it is good to do so and keep deliberation open when it is good to do so. The above is of course general, but it points in the direction of where this research will need to look and what kinds of arguments will be necessary to support proposed virtues.

5.2 | Some examples virtuous limitations

Let us consider some empirical evidence that is relevant to the topic of epistemic virtue as explained here. Metacognitive experience can take on virtuous patterns of restricting and dismissing doubts. As shown in Briñol et al. (2012) and in Huntsinger and Clore (2012), metacognitive affect (roughly, a sense of the cognitive value of what you are thinking) can determine whether we will use an idea that comes to mind. It can determine whether we pursue a line of thinking further or drop it. In other research, it has been shown that difficulty and disfluency in calling or recalling something to mind can lead to the conclusion that there is nothing there to find, whereas feelings of fluency have the opposite effect (Proust, 2016; Sanna & Lundberg, 2012). Applied to doubts, metacognitive affect can determine whether we suspect that there are ways to be wrong that we should continue to search for, or whether we should stop trying to think of more ways to be wrong because we have exhausted the ones that matter. Importantly, these patterns of metacognition can be trained through education, practice, and testing (Kubik et al., 2022).

Intuition is another example of epistemic virtue. Trained intuition arises from essentially reorganizing your pattern of attention and thought so that the right answers to certain kinds of questions simply come to mind when presented with the right information. When the proper trust of intuition develops, alternative doubts might not even come to mind. Anything other than the intuited answer is never thought of or is dismissed when thought of. This can be virtuous; there is evidence that intuition can outperform deliberate, careful analysis when properly trained (Julmi, 2019).

Also, the use of heuristics can be part of virtuous functioning. Heuristics are reasoning shortcuts that use very little information and processing to draw conclusions. There is evidence that in many cases, heuristics like take-the-best, take-the-first, satisficing, and the availability heuristic are effective and perform better than more methodical reasoning (Hertwig et al., 2022). These heuristics are all based on less-than-exhaustive search, ignoring large numbers of possibilities. When well-tuned, they get good answers fast, and can be virtuous specifically in virtue of ignoring things. Research shows that many other heuristics are ecologically efficient at drawing the right conclusion at the right time (Todd & Gigerenzer, 2012).

Mental habits can also constitute virtues, and there is evidence that we can build mental habits (Verplanken, 2006). Heuristics can be considered mental habits, but other habits of thinking can develop. The acquisition of a habit requires more than simple repetition, it requires the right kind of focus. By working with beneficial thought patterns intentionally, we can make those patterns automatic and thus gain cognitive virtues.

Priming is another way of building up patterns of thinking over time. Priming is the phenomenon where activation of something in the mind makes activation of connected concepts and thoughts in the mind more likely. This can affect what we pay attention to and what we think of (Kristjánsson & Ásgeirsson, 2019). These connections can change over time, and if properly tuned can establish virtuous pathways of useful associations that bring some possibilities to mind and not others.

These are just a few suggestions about what the relevant virtues might look like. Additional examples of virtues related to limiting what you think of can be found in Morton (2012). While we are not in a position to completely redesign our own cognitive systems, we can train to acquire virtues. We can build habits. We can build associations. We can change how we think, and we can become more epistemically virtuous in what we ignore and dismiss.

6 | CONCLUSION

Theoretical deliberation is a climb toward a conclusion. Doubt is gravity holding us down, preventing us from flying away into fantasy. The steps of reasoning take us closer to the top where we can achieve certainty (we hope), though there might not be a path all the way there. But the whole process needs a base to prevent everything from collapsing, letting doubt pull us down into skepticism. Doubt is potentially unlimited, and it is impossible to build a firm path of evidence on an infinite abyss. So long as unrestricted doubt remains, deliberation cannot close, and we will not reach full beliefs. Our cognitive limitations hold off many doubts and allow a path to a conclusion.

Epistemology is about evidence, reasoning, beliefs, and their foundations. This article argues that all this happens upon a base determined in large part by our cognitive limitations. Without those limitations restricting the range of doubt under consideration, everything would just fall.

Making this clear also clarifies that epistemic activity can be evaluated on (at least) two levels: the base level outside deliberation, responsible for structuring the space of deliberation itself, and the superstructural level within deliberation, which includes the familiar evaluations of how we form beliefs based on reasons. The base level is dominated by virtue, being difficult to evaluate in any other way. The superstructure, on the other hand, includes many conscious processes that can be evaluated as logical inferences.

Our minds and perspectives are limited, but that is not a hindrance to deliberation or to knowledge. It is the only reason that deliberation and knowledge are possible.

ACKNOWLEDGMENTS

I would like to acknowledge and thank the participants at the 4th International Conference on Philosophy of Mind: 4E's Approach to the Mind/Brain in Braga, Portugal, who commented on my presentation of an earlier version of this article. I would also like to thank two anonymous referees for the *Southern Journal of Philosophy*, whose comments helped make the final version of the article significantly better. Finally, I would like to acknowledge the contribution of conversations over the years with Hilary Kornblith, Eric Carter, Bill Bauer, and Scott Hill.

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