Analyzing the *A Priori*

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Abstract

The traditional analysis of *a priori* warrant is negative: warrant for a belief is *a priori* just in case it does not depend on experience. To ward off obvious counterexamples, a standard exemption is made for learning experiences. In order to believe that the square root of two is irrational, I first needed to learn the relevant concepts, and this happened through experience. This standard exemption is not enough. I formed my warranted belief about the square root of two by reading the proof in Euclid's *Elements*. This experience isn't covered by the standard exemption, so the traditional analysis counts even basic mathematical beliefs as *a posteriori*. This is a disaster, but it can be fixed. The fix involves an 'imagination test' for determining which experiences are epistemically relevant and which are not. With the imagination test in hand, the negative approach may still provide the core of a satisfying analysis of the generative *a priori*, provided that various objections can be dealt with in a satisfying manner.

1. The traditional characterization

The traditional characterization of *a priori* warrant is negative – your warrant for believing something is *a priori* just in case it is independent of sensory experience.[1] Instead of 'sensory experience' or just 'experience' we sometimes say 'independent of empirical information', but 'empirical information' is, by definition, information gleaned from experience, so we really have one slogan here rather than two.[2] This *traditional characterization* of the *a priori* goes back, at least, to Kant's *Critique of Pure Reason*. I think it's on the right track; if anything unifies the basic category of the generative *a priori* it is experience independence.

[1] Throughout I will use 'warrant' as a neutral term covering both internalist and externalist types of epistemic support. I will also focus on *a priori* warrant for beliefs, though I also think we can have *a priori* warrant for using belief-forming methods.

[2] In order to get the right intuitive result we need to include inward-looking senses in addition to the canonical outward-looking senses. Otherwise your belief that you are hungry would count as *a priori* – see Russell (2020).

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Of course, an 'experience' here is not simply *any* mental event with subjectively accessible qualitative features.[3] When I *imagine* a pink elephant using my visual imagination I do not, in so-doing, have an *experience* of seeing a pink elephant. Merely imagining an F must be sharply distinguished experiencing an F, visually or otherwise, in the sense of 'experience' relevant for epistemology. We might say that 'experience' in this sense is a *natural kind* term.[4] Or we might say that it's a *theoretical* term.[5]

Whatever we say, sensory experiences and non-experiential activities of the senses must be distinguished. This is basically the distinction between 'online' and 'offline' operation of the sensory system. Experiences deliver empirical information about the self and the world in direct ways. Imaginative episodes do not. This isn't to suggest that imagination is epistemologically useless; it is not.[6] But the role of imagination in epistemology is far less direct than the role of online sensory perception.

Warranted beliefs are often caused by experiences. I see the brown table. This experience causes me to believe that there is a brown table. My warrant for this belief is generated by this experience. The proper account of causation is controversial, but almost all accounts agree that many required background conditions are not causes.[7] The oxygen in the air was necessary for the arsonist's match to strike, but it did not cause the house to burn down. That you didn't reach your arm out and catch the cup before it hit the ground was necessary for it to hit the ground and shatter, but it was not a cause. Standard accounts of causation must draw some version of this distinction. Assuming an extensionally standard account of causation, it is natural to understand the 'independence' claim in the traditional characterization as requiring that *a priori* warrant is causally independent of all experience.[8]

[3] Casullo (2003) makes basically the same point.

[4] This is what Casullo (2003) says.

[5] This is what I say in Warren (2022).

[6] See the essays in Kind and Kung (2016) for relevant discussion.

[7] In saying this, I am not claiming that this distinction must be of great *metaphysical* significance. There might be a general, covering sense in which everything in an event's backwards light-cone is a 'cause' of the event. The point here is that our ordinary notion of causation refines this more general notion and is much more discriminating – see Cartwright (1979) and Field (2003) for some relevant discussion.

[8] Nothing much changes if independence is instead understood in a modal sense, or in a mixed causal-modal sense. And if we use a counter-

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I could say much more to clarify the ingredient notions of both experience and causation, but that isn't my task here. Here I want to instead examine the traditional characterization of the generative *a priori* under the assumption that we have suitable notions of experience and causation to input into the characterization. Even with clarity about these notions assumed, problems for the traditional characterization immediately arise.

2. The standard exemption

Elementary mathematics is a paradigm domain of *a priori* warrant. I am warranted, *a priori*, in believing that $\sqrt{2}$ is irrational. This warrant is even epistemically sufficient for *a priori* knowledge that $\sqrt{2}$ is irrational. Intuitively though, my warrant for this mathematical belief depends on learning experiences. To have a warranted belief that $\sqrt{2}$ is irrational, I first had to gain the relevant mathematical concepts or, perhaps equivalently, learn the meanings of the relevant mathematical words – 'two', 'square root', 'irrational'. With apologies to nativists, mathematical concepts like these are not innate.[9] And with apologies to nineteenth-century colonialists, knowledge of English is not innate either.

My warrant for believing that $\sqrt{2}$ is irrational apparently depends on experience. It both causally and modally depends on my having had learning experiences through which I gained the ingredient concepts and meanings. To side-step this while retaining the traditional characterization of the *a priori*, from Kant onward a *standard exemption* has usually been granted.[10] Warrant is *a priori* when it does not depend on experience – save perhaps for the learning experiences required for forming the target beliefs. Learning experiences should be treated as part of the background against which epistemic evaluations take place. With this much said, the matter is usually set aside.

Unfortunately, the standard exemption does not go nearly far enough even to salvage the *a priority* of basic mathematics.

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factual account of causation, like those deriving from Lewis (1973), the line between these is blurred. Below I'll mainly focus on a straightforward causal reading in order to streamline my discussion.

[9] For extreme nativism, see Fodor (1975).

[10] See Russell (2020). For general overviews of the *a priori* covering related matters, see also Casullo (2003) and Mares (2011).

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I know that $\sqrt{2}$ is irrational because I worked through the famous Pythagorean proof preserved in Euclid's *Elements*. This was an experience. My warranted belief that $\sqrt{2}$ is irrational was caused by this experience and also modally depends on it. Yet this experience's epistemic role is not excluded by the standard exemption. This because I already had to understand the standard meanings of the words 'two' and 'square root' and 'irrational' *before* working through the Pythagorean proof could do me any epistemic good. I didn't gain these or any other mathematical concepts through the experience of working through the proof. Instead, having those concepts was a prerequisite for understanding the proof.[11]

We might try to count the experience of reasoning through a proof as yet further parts of the non-causal background. Yet without some explanation of why this should be done, such a move would be *ad hoc* to an unacceptable degree. We often reason from experience in subtle and indirect ways in cases of the *a posteriori*. We can't treat mathematical reasoning experiences as different from other cases without some vindicating explanation. So we seem to have a serious problem. The traditional characterization of the *a priori*, even with the standard exemption added, apparently fails to count most of elementary mathematics as *a priori*. And the very same thing goes for many basic logical and conceptual truths as well. This is a disaster.[12]

3. Simple fixes?

It is tempting to try to avert disaster by rejecting the traditional *negative* conception of the *a priori* in favour of a *positive* conception. The most popular positive approach is a form of *rationalism*. According to rationalists there are accessible mental states of a special kind – intellectual intuitions, rational seemings, deliverances of pure reason – that are not experiences. Yet they provide warrant for beliefs and

[11] Wittgenstein (1956) seemingly denied this in adopting a radical view where mathematical proofs involve an essential element of concept-determining *choice* at each step. For an influential discussion, see Dummett (1959).

[12] Not everyone will see this as a disaster. There is an influential recent argument from Williamson (2013) that the distinction between the *a priori* and *a posteriori* is not theoretically deep. His argument appeals to the role of imagination in supporting generalizations. I respond in Warren (2023) and in Section 8 of Warren (2022) by, among other things, taking issue with the use of universal generalization in Williamson's central example.

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the warrant so-provided is *a priori*. Unlike some traditional forms of rationalism, this approach does not exactly require a mysterious faculty of rational insight or pure reason. This, more modest, form of rationalism has gained popularity over the last twenty-five years.[13]

But I'm uncomfortable with even this modest form of rationalism. If these posited mental states are supposed to go beyond mere inclinations to believe certain claims, then I deny their existence. And if they don't go beyond mere inclinations, they aren't, by themselves, an appropriate basis for *a priori* warrant. At the very least, more must be said. Obviously, these brief remarks don't even amount to an argument against modest rationalism, let alone a conclusive one.[14] They merely explain why I am inclined to try and patch the traditional negative conception of the *a priori* rather than adopting a rationalist-adjacent positive conception. But whatever we think about rationalism, it is worth seeing whether the traditional negative characterization can be retained despite the problems we've already found with it.

Perhaps there is an easy patch? A particular experience is very rarely essential in epistemology. I learned the proof from Euclid, but I could have instead learned it from a modern textbook while having different experiences from those that I actually had. My specific experience was epistemically fungible. Does this show that my belief that $\sqrt{2}$ is irrational is epistemically independent of experience? No, because this would end up proving too much. The very same reasoning applies to paradigm cases of *a posteriori* warrant as well. I had a specific experience of seeing the brown table, but I could have easily had a very different experience of the same table, thus generating the same belief, the same warrant, and the same knowledge.

In its simplest form, this 'alternative experience' patch doesn't work, but perhaps a more complicated approach – such as one that leaned heavily on similarity of experiences – might salvage things. Perhaps, but there are significant difficulties that would need to be overcome. One is that the notion of similarity involved is likely going to have to build in substantive epistemic assumptions. So substantive, in fact, that they threaten to beg many important questions. However, if we push the 'alternative experiences' patch to – and even

[13] For examples see Bonjour (1998), Bealer (2000), Chudnoff (2013), Bengson (2015), and Boghossian (2020).

[14] See Sosa (1996), Cappelen (2012), and Williamson (2020) for related worries about modest rationalism. See also Section 4 of Warren (2022).

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beyond – its limits, we end up with an approach that is similar in spirit but different in letter.

4. The imagination test

I think there might be an appealing way to salvage the traditional conception. Let me state the basic idea directly before unpacking it. When warrant for believing something *causally* or *modally* depends on an experience, it does not also *epistemically* depend on that experience just in case swapping out the experience for an imaginative recreation there-of, and using the recreation in reasoning just as the original experience was used, leads to the exact same warrant for the exact same belief.

This is a bit of a mouthful, but the central idea is straightforward. Experiences and imaginative episodes can share qualitative content. I see the brown table. My seeing has qualitative content. I now imagine the brown table. My imagining has qualitative content. The qualitative content of the two events could, in principle at least, *be exactly the same*. In reality, most acts of imagination are typically fainter and less vivid than actual, honest-to-goodness experiences. Hence Hume's distinction between impressions and ideas, and other similar distinctions in the history of philosophy. Yet we can easily conceive of imaginative episodes having the exact same relevant qualitative features as any given experience. When conceiving of this we can also ask ourselves epistemological questions about the status of the beliefs so-generated. When beliefs are warranted *a priori*, it does not matter at all if they were based on acts of imagination rather than experiences. This condition does not hold for beliefs warranted only *a posteriori*.

This is easy to misunderstand. In fact, my own experiences of trying to explain the imagination test to philosophers have taught me (*a posteriori*) that it is even easier to misunderstand than I would have thought. Let us go over it more carefully and without shying away from helpful repetition. Suppose that my warranted belief that $\sqrt{2}$ is irrational causally depends on some sensory experience E. Sensory experiences like E have qualitative content.[15] It is in principle possible for an imaginative act, I, to have the same qualitative content

[15] This is compatible with the qualitative content of E being somewhat indeterminate.

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as E. Our imaginative powers generally fall short of this, but this is an empirical point that isn't strictly relevant.[16]

It is also possible for the same structure of judgements and conclusions that were actually based on E to have instead been based on I. The qualitative features in E caused a certain judgement, which then itself caused later judgements. These very same judgements could have instead been caused by the qualitatively identical features in I. This is a reasoning event. In standard mathematical reasoning, demonstratives don't play any essential role, so any referring terms used in the reasoning event based on E will plausibly even have the same reference as the terms in the analogous reasoning event based on I. When I use the symbol '2', I am referring to a number, not a numeral, not even a token of a type numeral. And when I refer to the third-step in the proof, I am not referring to the particular token scribblings in front of me, but instead to the third step in the abstract proof structure shared by all tokens of the proof. In this situation, the E-reasoning leads to a warranted belief just in case the I-reasoning would lead to the same warrant for the same belief.

In actual fact, I experienced working through the proof that $\sqrt{2}$ is irrational by reading *The Elements*. This might be important as a piece of my personal history, but it is epistemically irrelevant. If I had simply imagined it all and then reasoned in a structurally identical way, my epistemic status with respect to the belief that $\sqrt{2}$ is irrational would be *exactly the same*. A proof token in the world is no better than a proof token in the head. Obviously, in saying this I am not denying that it is easier for finite creatures like us, with limited and fallible memories, to work with semi-permanent worldly tokens. It's easier for us to do mathematics in writing rather than verbally. My point is about epistemic status, not about psychological powers.[17]

Laying out most of the ugly details in an explicit way we can now say:

[16] My discussion could be recast in terms of 'relevant similarity' of qualitative content, but doing so would add a spate of unilluminating complexities that are better side-stepped.

[17] Accordingly, I'll be idealizing away from limitations of memory and attention. Chisholm (1977) argued that the role of memory in long mathematical proofs made beliefs based on such proofs *a posteriori*, but Burge (1993) compelling responded that the role of memory in such proofs was merely preservative.

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S's warrant for believing that *p* is *a priori* if only if:

(a) *S* has a warranted belief that *p*
(b) if *S*'s warranted belief that *p* was caused by experience *E* in a relevant way, then if *S*'s belief that *p* had instead been caused in a structurally identical way by imaginative act *I*, where *I* has the same qualitative content as *E*, then *S*'s belief that *p* would have had, in those circumstances, the exact same content and exact same overall epistemic status that it has in actuality

I think that the 'only if' direction is quite secure, but challenges to the other direction will loom large below.

What we ultimately want is for the right-hand side, at least in standard cases, to secure the left-hand side, and for this connection to be *explanatory*. What explains the *a priori* status of a belief is that it is epistemically independent of experience in the sense spelled-out by condition (*b*) in this clause. The epistemic status in question in clause (*b*) concerns the existence and strength of *S*'s warrant for believing that *p*, not whether said warrant is *a priori* or *a posteriori*.[18]

Call the activity of swapping out *E* for *I* and then re-assessing the epistemic status of our starting belief within this counterfactual situation *the imagination test*. Say that *E fails the imagination test* (relative to the belief that *p*) just in case the experience-based belief has either a different status or different content or both than the imagination-based belief. It *passes the imagination test* otherwise. Using this idea we can also characterize *a priori* knowledge quite simply:

S's knowledge that *p* is *a priori* if only if:

(i) *S* knows that *p*
(ii) any experience *E* on which *S*'s belief that *p* depends passes the imagination test

Where, as before, the 'only if' direction is secure but the full 'if and only if' holds only *modulo* certain complications that will be discussed below.

[18] Though, as will be discussed in the next section, this doesn't automatically turn clause (*b*) into a neutral arbiter for deciding whether borderline cases are *a priori* or not. Thanks to a referee for this journal for pushing me to discuss whether the judgements made in assessing clause (*b*) were meant to be independent of judgements of *a priori* status.

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The learning experiences screened out by the standard exemption are also screened out by the imagination test. If you disagree with this, then feel free to add an additional clause to my formulations explicitly screening out learning experiences.

The imagination test is meant to capture the crucial role of experience in the traditional generative conception of the a posteriori/a priori distinction. If it works, it helps us explain why *a priori* knowledge, but not *a posteriori* knowledge, is accessible in a sensory deprivation chamber, or for a brain-in-a-vat. This is the *prima facie* motivation for the test, but the baldly stated test is quite easy to misunderstand, so even before dealing with objections, some further clarifications need to be added.

5. Clarifications and extensions

Take care not to misunderstand the imagination test. When applying it, we are not talking about imagining *that* there is a proof, or imagining *that* someone told you there was, or anything like that. There is a crucial difference between (a) *imagining a proof* that $\sqrt{2}$ is irrational and (b) *imagining that there is a proof* that $\sqrt{2}$ is irrational. An anxious Pythagorean in 500 B.C. may well have undertaken (b) in dark moments, but (b) is compatible with $\sqrt{2}$ being a rational number, (a) is not. To further illustrate this crucial difference I invite readers to imagine a proof of Goldbach's conjecture. If you can manage this in sense (a), stop reading this paper immediately, write down your imagined proof, mail it to the *Annals of Mathematics* and await your fortune and glory. But if, like me, you can only manage (b), instead please join me in ignominious poverty and obscurity.

For the same reasons, the imagination test nicely handles testimony.[19] I have the experience of an expert telling me that p is true, and I form a warranted belief that p on this basis. Had I simply imagined the expert telling me that p is true, then my belief would not have the same epistemic status. As most of us expect and require, the imagination test allows us to count testimonial knowledge as *a posteriori*.[20]

[19] See Section 6 of Warren (2022) for some discussion.

[20] See Burge (1993) for some push back against the common position. For replies, see Christensen and Kornblith (1997) and Malmgren (2006; 2013), and also Section 6 of Warren (2022).

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The imagination test also doesn't have any untoward ramifications for teaching mathematics. When teaching a mathematics class you need students to show their work so that you can assess it. Yet if little Terry does all of the calculations in his head before giving his answer, you don't claim that he is unwarranted in his belief when you reprimand him. You claim only that you can't check his work. Epistemic status differs from academic performance, as many students over the years have discovered to their sorrow (but enough about bitter third-grade memories).

Let me offer a few more particular clarifications that are needed to secure the full biconditional readings of the clauses above. The requirement that p has the same content if generated by imagination as it does when generated by experience is important. If we didn't have this clause, then imagination as used in the 'reality-oriented mode' could improperly generate *a priori* beliefs.[21] Suppose that an auto mechanic has an incredible visual memory and imagination. So incredible that he is skilled at coming up with diagnostic suggestions from his armchair, if given the right inputs. So, using his imagination, he could have formed the belief that car c, with problem X, requires procedure Y. Does the imagination test count this sort of thing as *a priori*? No, it would not, for several reasons.

If the gifted auto-mechanic had just imagined a car like c, with problem X, they would not be *imagining car c*. This is a commonly made point about the content of imaginative episodes, going back, at least, to Wittgenstein.[22] I can imagine the cab I took to the airport, and I can imagine a qualitatively identical cab that is distinct. The content of these imaginings is determined by things other than the qualitative content of the imagining. Though our theories of how this works may differ, the point itself is uncontroversial.[23] Merely imagining some car is not enough, it must be *that car*. And that need not be preserved by qualitative identity. And in some cases, it cannot be preserved (like if there is no real car). For imaginative acts to share content, to be about car c, experience with car c is usually required. This alone makes the auto-mechanic's belief about c *a posteriori*.

What is more, even if the auto-mechanic was able to secure the conditional claim *a priori*, that if car c has problem X then car c needs procedure Y, his belief that car c needs a particular procedure would

[21] See Williamson's (2016) approach to the role of imagination in epistemology. See also Mallozzi (2021).

[22] See the King's College on fire example from Wittgenstein (1958: 39).

[23] For some relevant discussions see Peacocke (1985), Kung (2010), and Waxman (2017).

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still not be *a priori*. But note that the conditional is also not *a priori*. This is because the auto-mechanic's general belief, that cars with problem X require procedure Y, was also based on experiences. Not experiences with the particular car c, but experiences with many different cars with problem X. Since he reasons from this general belief to the particular belief about car c, his warrant for the final belief also partially depends upon these other experiences. Since these fail the imagination test, the belief about c is *a posteriori*.

The imagination test is compatible with treating all analytic truths – truths that are true in virtue of meaning or as a byproduct of our concepts – as *a priori*.[24] Suppose that the English sentence 'bachelors are unmarried' is an analytic truth.[25] Those who think this usually argue that the truth of this sentence is a byproduct of what we mean by the ingredient words and that what we mean by these words is determined by the rules according to which they are used.[26] Accounts of this kind allow that we can come to know that bachelors are unmarried using our linguistic rules (or by exercising our concepts), thus securing (i).

According to these views, if our account of (i) depends on any experiences at all, it will be experiences that involve the exercise of our linguistic rules – for example, proving the sentence 'all bachelors are unmarried' from no premises, using linguistic transformation rules.[27] These experiences will clearly pass the imagination test, because whether our rules are manifested on paper, on a chalkboard, or merely in imagination makes no epistemic difference.[28] In either case, we are reasoning *using* our rules, not reasoning from explicit beliefs about those rules. And even if we originally learned the relevant concepts or meanings through testimony, these experiences are already handled with the standard

[24] Thanks to a referee for this journal for asking me to explicitly discuss such examples.

[25] For a small sample of the large debate over analyticity and related notions, see Quine (1951) and Williamson (2007) for criticisms and Grice and Strawson (1956) and Warren (2021) for defences.

[26] For some influential examples Carnap (1937; 1955), Wright (1983), Hale and Wright (2000), and Warren (2020).

[27] For example, see Peacocke (1992), Boghossian (1996), and Warren (2022).

[28] This will hold even for conventionalist theories according to which all mathematical truths are analytic, see Carnap (1937) and Warren (2020). This is to say, the complexity of a mathematical proof is no obstacle to applying the imagination test.

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learning exemption. And, in standard cases, testimony plays no epistemic role. Instead, it is the rules that we follow for deploying words that matter – there is a difference between believing that bachelors are unmarried because a trusted source told you that it was true (*a posteriori*) and believing it on the basis of the linguistic rules that you follow (*a priori*).

Of course, the imagination test itself is neutral on the existence of analytic truths. My point here is only that, *if* such truths are accepted, *then* the canonical philosophical theories of the nature of such truths and the paths by which we gain non-derivative, non-testimonial knowledge of them, will count this knowledge as *a priori* by the imagination test. The philosophical neutrality of the test is a feature, not a bug.

Because of this neutrality, the imagination test is not a judge that will impartially decide all difficult cases for us. However, given our other commitments, we can typically make our judgements about counterfactual epistemic status without concern for or influence from the *a priori*/*a posteriori* distinction. Thus, against the backdrop of our other commitments, the imagination test allows us to determine the *a priori* status of some given warrant.

However, before victory can be declared, more pointed objections must be discussed. Even when the imagination test is properly understood, the imagination test-based characterization of the *a priori* faces some apparently serious objections. I believe, however, that these objections can be overcome in fairly natural ways.

6. Objections and replies

Suppose that we try to use the imagination test as the central portion of necessary and sufficient conditions on both *a priori* warrant and *a priori* knowledge, thus accepting the full biconditional clauses from Section 4.

The most obvious worry about this strengthening is that all beliefs that aren't based on any experiences would then count as *a priori*, by default. This might be fine for innate beliefs, but there are worries about beliefs that are based on dreams and hallucinations.[29] These are not *experiences*, in the relevant sense. Yet unlike most imaginative episodes, they are involuntary and extremely vivid. In this way,

[29] See Section 3 of Warren (2022) for application of the imagination test to innate beliefs.

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they are often extremely similar to experiences. We might call them *pseudo-experiences*.

Suppose that I have a hallucination *H* of a brown table, and I form the belief that there is a brown table in front of me. This belief is false, but most epistemic internalists still think that it is warranted. Even still, it would be a bit strange to count the belief as *a priori*, for it is warranted because the hallucination is taken for an experience. And in the reasoning, the pseudo-experience plays a role analogous to experience in generating ordinary empirical beliefs. To account for this, we can simply apply the imagination test to both experiences *and* pseudo-experiences. This is not our only option, but it quite natural in most cases.

Unfortunately, the imagination test also initially seems questionable in some other situations. Consider the following case. I experience seeing the colour blue, so I form the belief that I am seeing blue. Had I simply imagined seeing the colour blue and formed the exact same belief, it would have had the same content and epistemic status. Yet it initially seems somewhat odd to say that this and related beliefs are warranted *a priori*. This is a belief whose content is directly about qualitative matters. The same applies for beliefs that are indirectly about qualitative matters – say I see blue and then form the belief that I am capable of seeing blue. This belief about my capacities would have the same content and epistemic status had I simply imagined the colour blue, so it would be counted as *a priori*.

Notice that some of the oddity of counting the belief that I am capable of seeing blue as *a priori* comes from understanding 'seeing' as an experience in the sense singled out above. But in this context, that is not what 'seeing' means. It instead means something like having a conscious state with qualitative content that involves the colour blue, provided that this content is consciously accessible to me. If this is an experience, it is an 'experience' in a broader sense than is relevant in discussions of the *a priori*.

We might express this broader sense disjunctively: I am having either a blue-involving experience or a blue-involving hallucination or a blue-involving dream or a blue-involving imaginative episode. So understood, it is not so very counterintuitive to count this belief as *a priori*. Some counter-intuitiveness remains, but we can eliminate most of it by counting such beliefs about our own qualitative capacities and experiences as *a priori* in a special subject-centred way just in case they can be formed and warranted based on a mental state other than an experience (or pseudo-experience?). This involves treating them similarly to innate beliefs.

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Related points also go for general beliefs about the existence of qualitative properties ('blue exists'). And even non-qualitative general beliefs like my belief that I exist. Normally, this belief is based on experiences. Yet we might think it would be just as warranted if I merely imagined these experiences, since an imaginer must exist for there to be imaginative episodes. These beliefs thus pass the imagination test, but we might disagree over whether they are *a priori*.[30]

To some extent though, I see these cases as spoils to be taken by the victorious army. Almost all of them are smoothly handled by distinguishing subject-centred and non-subject-centred senses of the generative *a priori*. The difficulty with this approach is that a subject-centred sense of the *a priori* cannot be used to generate a reasonable, objective notion of an *a priori* truth by saying that a truth is *a priori* just in case it can be known in an *a priori* way. However, this is not a significant problem. All that we need to do is take care not to use the subject-centred notion, one that is already in play for innate beliefs, when explaining the objective notion of *a priori* truth.[31] An alternative approach is to simply exclude qualitative beliefs from the imagination test entirely. This is basically needed on either approach, to characterize the non-subject-centered sense of the *a priori*.

As a final objection, consider beliefs based on imagination whose content is itself about imagination. I imagine a red barn, and on the basis of this, I form the belief that I am imagining a red barn. This is very similar to the objection from pseudo-experiences, but the response made to that case above is inapplicable here, since it would completely trivialize the imagination test.

Instead, I want to argue that this sort of problem case is underdescribed. If my belief that I am imagining a red barn were based only on the imaginative act, in the sense of being based on its content, then it would be unwarranted. My belief that I am imagining *c*, must be based on the fact that I am imagining *c*. But what is this 'fact'? It concerns not just the content of an act of imagination, but the act of willing that went into generating the act of imagination itself.

It is a mouthful, but we might even call this 'the experience of imagining *c*'. This is meant to recognize the real difference between imagining *c* and imagining imagining *c*. The former is the

[30] For an important exchange on the epistemic status of certain kinds of self-knowledge, see Burge (1996) and Peacocke (1996).

[31] For some discussion, see Warren (2022).

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experience of imagining *c*. My belief that I am imagining a red barn is based on the experience of imagining a red barn. Treating this as an experience allows us to apply the imagination test. When we do, we see that, if I merely imagined imagining a red barn, I would not be warranted in my belief that I am imagining a red barn.

More simply, we might try to exclude almost all beliefs about our own mental states, treating them as special cases. This would also cover the case from above, about our own cognitive capacities. This is simpler and more aesthetically appealing than the cumbersome treatment that involves distinguishing between the experience of imagining imagining *c* and imagining *c*, but it is also more coarse-grained.

Here's a related challenge case that helps to illustrate the distinction, based on an attempt to gain self-knowledge by way of imagination. Suppose that my best friend betrays me and I feel forlorn. On the basis of this unfortunate experience I form a warranted belief that when betrayed I feel forlorn. Let's try to apply the imagination test to this case. Suppose that I had only imagined my friend betraying me. Even when imagining this sorry situation, I feel forlorn. Perhaps not quite so strongly, but I feel it all the same. So the original experience passes the imagination test, or so it seems at first-glance.

At second-glance, there is a subtle confusion in this reasoning. I can't simply imagine being betrayed and see what feelings result after my imagining is finished. In order to correctly apply the imagination test, the *entire experience* that generated my original belief must be recreated in imagination. So I must imagine *both* the betrayal *and* the consequent feeling. Yet obviously this imaginative episode does not provide the same warrant as the original experience. I could have instead imagined feeling overjoyed at being betrayed without thereby generating any warrant for thinking that when betrayed I feel overjoyed. These cases are analogous. No warrant is generated by the imaginative episode either way. When properly applied we can see why the test doesn't over generate in cases of introspective non-qualitative self-knowledge. We either have yet another subject-centered case of the *a priori* or a way out.

Bringing all of these different threads together, we might refine the basic clause from section 4 into a tighter necessary and sufficient condition for *a priori* warrant, as follows:

S's warrant for believing that *p* is *a priori* if and only if:

(a) *S* has a warranted belief that *p*

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(b) if S's warranted belief that p was caused by experience or pseudo-experience E in a relevant way, then if S's belief that p had instead been caused in a structurally identical way by imaginative act I, where has the same qualitative content as E, then S's belief that p would have had, in those circumstances, the exact same content and exact same overall epistemic status that it has in actuality

(c) The content of p is not about S's capacities for qualitative experiences in any relevant way (including being about the underlying basis for S having such capacities)

When we include clause (c) we ensure that we are not treating subject-centred qualititive capacity claims as *a priori* in the characterized sense. This is compatible with treating them as *a priori* in a subject-centred sense, by not excluding them. We could add also add further clauses distinguishing the status of our beliefs about our capacities for qualitative experiences, depending on whether they depend on experiences or pseudo-experiences, as opposed to pure imagination. Other ways of treating these cases are also possible, depending on how we want the line between the *a priori* and the *a posteriori* to be drawn for the subject-centred notion.

I believe that these or related refinements and distinctions shield the imagination test analysis of the *a priori* from obvious objections. I realize that not all readers will be convinced, and that I have not attempted an exhaustive treatment of problem cases here. An exhaustive treatment would cover the basic idea in a mass of unilluminating points of detail. It would also require me to make various choices that are, at least in this context, fairly arbitrary. My more modest goal in this section has merely been to convince you that the imagination test is not *obviously* hopeless in the face of objections and putative counterexamples.

A final point is worth noting. While it might have seemed to some that these are various *ad hoc* moves – another puncture, another patch – I think that the resulting treatment is actually unified. All of the problem are based on handling either pseudo-experiences or self-cognition-involving beliefs. These are exactly the kinds of edge cases we should have expected, and handling them as I have does nothing to undermine the original motivation or general spirit of the imagination test.

7. Putting things into perspective

The refined imagination test analysis is somewhat convoluted, but the fundamental idea behind it is quite simple. The point of the

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imagination test is to offer an analysis of generative *a priori* warrant by refining the traditional negative account. It is not meant to be a full theory of the *a priori*. You can take any given approach to warrant, and then use this definition to determine when a belief is warranted *a priori*, according to your particular theory. The approach to *a priority* serves as common ground.

When you have *a priori* warrant for a non-qualitative belief any experience on which your warrant intuitively depends passes the imagination test. Experiences that play a role in generating warranted beliefs that fail the imagination test are the experiences on which our warrant *epistemically depends*. Those generating experiences that pass the imagination test are merely *enabling*.

Does the imagination test mistakenly count intuitively *a posteriori* knowledge as *a priori*? I don't think so. Paradigm cases are handled correctly. I see the brown table in front of me. The experience of seeing the brown table is, at least in part, what generates my warranted belief that there is a brown table in front of me. If I hadn't had the experience, I wouldn't have the warrant or even the belief. If I had instead imagined this experience, the epistemic status of my belief would be quite different. Even if there is, in fact, a table in front of me, my belief would not be warranted without seeing the table. The experience of seeing the table is essential to my warrant. And when I use imagination in a reality-oriented mode, to gain knowledge about the world, this is because the content of the imagining is connected to the world in a way that mere imagining need not be.

You might worry that the imagination test assumes a very strong form of epistemic internalism that requires unlimited cognitive access. This isn't necessarily the case. Even so-understood *a priori* warrant can still involve inaccessible elements. It is compatible with passing the imagination test that what is involved in our reasoning goes beyond what is consciously accessible to the subject. As a simple example of this consider following an inference rule like *modus ponens* in your reasoning. Following and then applying this rule is plausibly a matter of having certain inferential dispositions. And it is also plausible that having said dispositions is not something that is cognitively accessible to the subject. No objectionable internalism is built into the imagination test.

The imagination test analysis is compatible with different theories of the *a priori*. Rationalists will think that certain non-experiential states warrant some of our beliefs. The imagination test is applied to experiences on which our beliefs depend, so we do not apply it to

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intellectual intuitions or rational seemings. These warranted beliefs will then pass the imagination test vacuously, but any experiences that play a role in generating said beliefs will be deemed merely enabling by the imagination test.

For me, what is especially appealing is that the imagination test analysis coheres nicely with a meaning-based theory of the *a priori*. When the imagination test is passed by the experience, qualitative features merely serve to enable the exercise of our conceptual or linguistic understanding. It is a short step from this to thinking that the source of standard *a priori* warrant must be wholly in our concepts or meanings. This was the approach of the logical positivists and many empiricists through the years.[32] It fell out of favour for a time, but it is now coming back with a vengeance.[33]

My focus throughout has been on warrant for beliefs in a sense closely connected to the *basis* or *reason* for the beliefs. This generative sense is essential, but with this sense clarified, there is also an additional sense in which warrant for beliefs might also be independent of experience – the warrant can be immune from defeat by future experiences. There is disagreement about whether or not this stronger sense of *a priority* is the crucial notion at issue.[34] Nothing I've said here requires taking a side on this issue.

I think that the best approach is probably to distinguish between *a priori* warrant according to the amended traditional conception, and the robust, immunity-requiring type of warrant. In many canonical *a priori* domains – logic, mathematics – we seem to have both types of *a priority*. No matter your stance on this point, you'll need to make sense of warrant that doesn't epistemically depend on experience for its existence. That is what the imagination test analysis hopes to offer. And even if the analysis ultimately fails, the failure itself will provide us further insight into the traditional characterization of the *a priori* and its prospects.

The imagination test seems to explain how someone totally deprived of sensory input from the world, even a brain-in-a-vat, could still have logical and mathematical warrant, maybe even knowledge. The same does not go for *a posteriori* knowledge. I think

[32] For popular examples, see Ayer (1936) and Reichenbach (1951).

[33] Influential early contributions to this resurgence include Peacocke (1992) and Boghossian (1996). For my account see Warren (2020; 2022).

[34] See Field (1996, 2000) and Kitcher (1984) for a case that it is and Casullo (2003) for a case that it is not. I argue in favour of the existence of this 'robust' *a priority* in Section 7 of Warren (2022).

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that the traditional, negative conception of the *a priori* can and should be retained. Suitably elaborated, it provides us with a successful analysis of the generative *a priori*. This isn't the end of the story of the *a priori*, but it is a nice beginning.[35,36]

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[35] For more on the *a priori* see my (2022); see also Chapter 6 of my (2020).

[36] Thanks to Albert Casullo, Yu Guo, Eli Hirsch, Edwin Mares, and Bruce Russell.

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