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Introduction

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1. IDENTIFYING THE A PRIORI

An a priori proposition is one which can be known to be true without any justification from the character of the subject's experience. This is a brief, pre-theoretical characterization that needs some refinement; but it captures the core of what many philosophers have meant by the notion. Under this intuitive characterization, propositions which are plausibly a priori include the following: the axioms, inference rules, and theorems of logic; the axioms and theorems of arithmetic, and likewise the axioms and theorems of other parts of mathematics and other sciences of the abstract; the principles of the probability calculus; principles of colour incompatibility and implication; some definitions; and perhaps some truths of philosophy itself.

To say that something can be known without any justification from the character of the subject's experience is to say that there is a way of coming to know it which does not rely on any such justification. When we are considering issues about the a priori, it can often help to focus on ways of coming to know and their distinctive properties. Suppose you see someone across a restaurant, and you thereby come to believe and know 'That's the cellist Yo-Yo Ma.' The way in which you come to know this may involve the following: you have a memory image of a photograph of Yo-Yo Ma; you believe that the face you see across the restaurant is an older version of that remembered face; and you accept the content of your current perception. The memory, the belief, and your current experience are all causally influential in producing your knowledge; and taken jointly, they entitle you to your belief 'That's the cellist Yo-Yo Ma.' A specification of the way in which something comes to be known will include at least a tree-structure of events and states which are causes of the knowledge, together with some specification of why the thinker makes the transitions it involves.

Now consider someone who comes to know a logical truth, $(p \supset q) \vee (q \supset p)$ say, by reading a proof of it. His seeing the lines of the proof, and his seeing the citations of the rules used at each step, cause his belief that $(p \supset q) \vee (q \supset p)$. We must, however, distinguish sharply between the relation of causation and the relation of

entitlement. The thinker is entitled to his belief that $(p \supset q) \vee (q \supset p)$ because he has an outright proof of it, resting on no assumptions. The proof itself provides an entitlement to belief in its last line. Perception of the written proof gives access to that entitlement, but is not itself part of that entitlement.

By contrast, in the case of seeing Yo-Yo Ma, the occurrence of the visual experience of Yo-Yo Ma across the restaurant is part of the entitlement to the belief 'That's Yo-Yo Ma.' It is not as if the visual experience merely gives access to something else which provides the entitlement. There is no further thing to which the visual experience gives access. Rather, the visual experience itself is, in the circumstances, entitling.

On this approach, an a priori proposition is one such that there is a way of coming to know it under which the thinker's entitlement to accept the proposition does not involve the character of the thinker's experience. An a posteriori proposition is one such that any way of coming to know it will involve an entitlement which does concern the character of the thinker's experience. In the same spirit, we may say that an a priori justification is a justification which does not involve the character of the thinker's experience. Similarly, a person comes to know something a priori if the entitlement which makes his belief knowledge does not involve the character of his experience. Amongst ways of coming to know which sustain a priori status, some rationalists, including Frege, have distinguished certain ways as philosophically more fundamental, or canonical, in an account of justification. Some ways of coming to know may be a priori, but rather indirect, as in certain proofs by *reductio ad absurdum*. The distinction between canonical and non-canonical ways of coming to know is not, however, employed by everyone who has used the notion of the a priori.

In the case of a priori propositions, much experience, perhaps of a specific character, may be required to grasp the concepts implicated in the proposition or to access the entitlement to believe it; but conditions of grasp and of access remain distinct from the nature of the entitlement. This is in accord with the traditional rationalist position from Leibniz onwards. Experience may be a precondition of coming to know a prior truths, but those truths nevertheless have a justification, and can also be justified for the thinker, independently of experience.

There are several variant notions of the a priori, of varying degrees of strength. Each variant notion is generated by a different construal of 'experience' as it occurs in the characterization of the a priori. The strictest construal of 'experience' takes it to mean perceptual experience of the world beyond the thinker's body. An intermediate construal takes it to apply to any perceptual experience, whether of the external world, or of the thinker's own bodily states and events. The most general construal takes it to apply to any conscious state or event, whether perception or conscious thinking, wishing, or imagining. If we use the strictest construal of 'experience' in characterizing the a priori, then 'I am in pain' will be counted as a priori, when the thinker judges it because he is in pain. His

belief that he is in pain is not justified by the character of any experience of the world beyond his own body. On the intermediate construal, 'I am thinking about which city to visit', when the thinker judges it because he is so thinking, will be counted as a priori. On the most general construal of 'experience', none of these self-ascriptions will be a priori.

Different variants of the notion of the a priori may each be important for different theoretical purposes. The paradigm case of the a posteriori is that of perceptual judgement. One should not, however, simply take it for granted that any judgement in whose etiology a conscious state plays a justifying or entitling role will also be a posteriori. That would be to beg the question against any updated version of Kant's view on geometry. In his essay, Tyler Burge emphasizes that for Kant, the conscious states of pure intuition, a species of imagination, are states which entitle a subject to make judgements of geometrical principles, and provide a justification which is independent of perceptual experience. Burge contrasts the role played by particular intuitions in this Kantian conception with the insistence on derivability from purely general laws in Frege's philosophical explication of the a priori in *The Foundations of Arithmetic*.[1] Any modern elaboration of a neo-Kantian view must of course abandon the commitment to specifically Euclidean geometry; and it is likely to be better received when detached from Kant's transcendental idealism. Some room may remain for a neo-Kantian conception meeting these conditions.

Being a priori is to be sharply distinguished from being necessary, from being true purely in virtue of meaning, and from being knowable infallibly. Examples, and reflection on the nature of the properties, both show that there are a priori propositions which are not necessary. Kripke and Kaplan supplied conclusive examples: 'If something is uniquely F, then the actual F is F' is a priori but not necessary; so, more generally, is anything of the form 'If p, then actually p.'[2] Reflection on the nature of the properties should also suggest that their extensions may be distinct. For a proposition to be knowably true a priori in the actual world requires only that there be some non-empirical route to its justifiability; but that is very different from its being necessary. Conversely, in the presence of examples of the necessary a posteriori, it is clear that a proposition's being necessary does not ensure that it is a priori.

These preliminary remarks do not conflict with the classical rationalist view, which has received further elaboration in recent work, that all necessity can be

[1] G. Frege, *The Foundations of Arithmetic*, tr. J. L. Austin (Oxford: Blackwell, 2nd edn., 1953): last paragraph of section 3.

[2] S. Kripke, *Naming and Necessity* (Oxford: Blackwell, 1980); David Kaplan argues the same for 'I am here now', in 'Demonstratives: An Essay on the Semantics, Logic, Metaphysics, and Epistemology of Demonstratives and Other Indexicals', in *Themes From Kaplan*, ed. J. Almog, J. Perry, and H. Wettstein (New York: Oxford University Press, 1989). Further discussion of the issue would have to address the question of whether in the indexical case a priori status is predicated of something linguistic.

traced back ultimately to the a priori.[3] The non-coincidence of the a priori and the necessary serves just to emphasize how much work any contemporary development of that rationalist view has to do in explaining its notion of the source of necessity.

To say that a proposition is a priori is also not to be committed to the view that it is true purely in virtue of meaning. Something can be both knowable in a way which is justificationally independent of experience, whilst also being true in virtue of its truth condition holding, just like any other truth. Our own view is that Quine decisively refuted the idea that anything could be true purely in virtue of meaning.[4] (The arguments Quine used were quite free of his behaviourist inclinations.) But to refute a bad theory of the nature of the a priori is not to show that the phenomenon of the a priori does not exist. A major challenge for a contemporary theorist of the a priori is to do better in explaining the links between meaning and a priori knowledge, without reverting to the discredited idea of truth purely in virtue of meaning.

A priori justification is not infallible justification. Just as one may be justified in believing an ordinary empirical proposition that is subsequently revealed on empirical grounds to be false, so one may be justified (non-conclusively) in believing an a priori proposition that is subsequently revealed on a priori grounds to be false.

For all that, it may still seem that a priori propositions cannot be defeated by wholly empirical information; that is, that they may still be experientially indefeasible. It may be natural to wonder: if something is empirically defeasible, how can it be known justificationally independently of experience?

Certainly, much of the controversy surrounding the a priori has centred on the question of whether there are principles, such as those of logic or Euclidean geometry, which are immune to empirical disconfirmation. There is, however, nothing contrary to reason in the idea of an a priori warrant which is empirically defeasible. There are general reasons for thinking that there must be some such cases; and there are examples of it. One humble illustration is that of inference to a universal quantification from finitely many instances, so-called enumerative induction. The existence of this particular illustration of the non-conclusive a priori is, philosophically speaking, relatively unproblematic. It is so because it is

[3] Some varieties of this general type: G. W. Leibniz, *New Essays on Human Understanding*, tr. and ed. P. Remnant and J. Bennett (Cambridge: Cambridge University Press, 1981); B. van Fraassen, 'The Only Necessity if Verbal Necessity', *Journal of Philosophy* 74 (1977): 71–85, and his *Laws and Symmetry* (Oxford: Oxford University Press, 1989); G. Forbes, *The Metaphysics of Modality* (Oxford: Oxford University Press, 1985); C. Peacocke, *Being Known* (Oxford: Oxford University Press, 1999): ch.4.

[4] 'Truth by Convention' and 'Carnap and Logical Truth', both repr. in W. Quine, *The Ways of Paradox and Other Essays* (Cambridge, Mass.: Harvard University Press, 1976, 2nd edn.). For further discussion, see Paul Boghossian, 'Analyticity', in Bob Hale and Crispin Wright (eds.), *A Companion to the Philosophy of Language* (Oxford: Blackwell, 1998).

an example in which the premises of the transition ensures, a priori, the holding of some but not all of what is required for the truth of its conclusion.

Other apparent instances of non-conclusive a priori justification or entitlement are philosophically much more challenging. Many philosophers have held that a person is a priori, but non-conclusively, entitled to take the representational content of her perceptual experiences, and her memories, and the utterances of other persons, at face value.[5] It seems that no such entitlement could ever emerge solely from experience itself. Experience can lead to new entitlements only if the subject is already entitled to take at least some experiences at face value. The same seems to apply to memory and to testimony. If it is sound, this type of reasoning shows that such instances of non-conclusive and empirically defeasible entitlement must be a priori.

It is, though, one thing to know that these non-conclusive transitions must be a priori, and quite another to know how and why they are so. Though there are various approaches to this issue in the philosophical literature, it remains a major task to give a full explanation of these non-conclusive entitlements, and to unify them with other instances of the a priori.

A further task is that of elucidating the relations of the epistemic notion of the a prior to a closely related concept which emerges in modal semantics. In two-dimensional modal semantics, we consider a range of models in which different worlds are labelled as the actual world. This framework allows characterization of the property of some propositions of being true in the actual world, whichever world is labelled as the actual world. Instances of the form 'If p, then actually p' have this property. The property is a special case of being a logical truth in the framework of Kaplan's logic of demonstratives; or of having, in Robert Stalnaker's framework a 'diagonal proposition' which is always true; or of holding 'Fixedly' in the apparatus of Martin Davies and Lloyd Humberstone.[6] The property seems to be sufficient for being a priori, and it merits further investigation why this is so. The issue is of particular interest, because in these models it is clear that accepting that a proposition has the property is in no way restricting the range of possibilities, and hence does not correspond to any kind of epistemic

[5] C. A. J. Coady, *Testimony: A Philosophical Study* (Oxford: Oxford University Press, 1992); T. Burge, 'Content Preservation', *Philosophical Review* 102 (1993): 457–88; L. BonJour, *In Defense of Pure Reason* (Cambridge: Cambridge University Press, 1998); B. Brewer, *Perception and Reason* (Oxford: Oxford University Press, 1999). For a historic statement claiming a parallelism between perception and testimony, see T. Reid, *An Inquiry*, repr. in T. Reid, *Inquiry and Essays*, ed. R. Beanblossom and K. Lehrer (Indianapolis: Hackett, 1983): esp. 87–103.

[6] See D. Kaplan, 'Demonstratives', *Themes from Kaplan*; R. Stalnaker, 'Assertion', repr. in his *Context and Content* (Oxford: Oxford University Press, 1999), esp. his discussion of 'propositional concepts' and the diagonal proposition they determine at 12-16 of his Introduction; and M. Davies and L. Humberston, 'Two Notions of Necessity', *Philosophical Studies* 38 (1980): 1–30. As Stalnaker notes, the earliest investigations of two-dimensional operators seem to have been those of Frank Vlach and Hans Kamp at UCLA.

arrogance. Rather, the possibilities are given in advance; it is just that whichever world turns out to be actual, a proposition with this property will be true with respect to it. Some theorists will find this a tempting model for certain kinds of a priori proposition.

Finally, whilst we are still on the topic of identifying the a priori, we emphasize that, for all the rationalists' insistence on the existence of a priori truths, one should not automatically classify anyone who believes in a priori truth as a rationalist. In his contribution to this collection, Quassim Cassam notes that many self-declared empiricists, including A. J. Ayer, have certainly believed in the existence of a priori truths. Cassam suggests that we obtain a much better understanding of the distinction between rationalist and empiricist positions if we look not to the question of whether there exist a priori truths, but rather to the different explanations which those respective positions offer for the existence of such truths. It is to that issue of explanation which we now turn.

2. EXPLAINING THE A PRIORI

Within the USA, philosophical thought in the second half of the twentieth century has been marked by a profound scepticism about the existence of a priori truths, a scepticism that has been fuelled not so much by the intuitive appearances but by argument. (The British and the Europeans have not exhibited the same scepticism.) While no philosopher denies that there appear to be propositions that are justificationally independent of experience, many have been persuaded by considerations of a theoretical nature that there could not in fact be any.

These considerations may be seen as falling into one of three general types: those which view apriority as being equivalent to, or entailing, a property—such as non-defeasibility—that no proposition could have; those that purport to show that there can be no satisfactory explanation of how any proposition could be known independently of experience; and those that argue that the correct account of the growth of scientific knowledge refutes the suggestion that there are a priori truths. In the present collection, Philip Kitcher's contribution is an instance of the first sort of consideration, and Penelope Maddy's an instance of the third. Quine, whose own scepticism about the a priori has dominated discussion of the subject, deployed a version of each.

Quine may, in rough outline, be represented as having reasoned as follows. Unless we are to resort to postulating occult faculties of knowledge, a priori knowledge will be explicable only if grasp of meaning—understanding—is somehow sufficient for knowledge of truth. Understanding will only suffice for knowledge of truth, however, if there are sentences that are true purely by virtue of their meaning. But there can be no such sentences, and so a priori knowledge is not explicable. In any event, the correct account of the growth of scientific

knowledge—as articulated in the famous web-of-belief model—refutes the suggestion that there are sentences whose justification is a priori.

Subsequent discussions have involved the development of a variety of approaches to the a priori which are very different from Quine's, each with their own responses to his arguments. First, and as the contributions of Hartry Field, Paul Horwich, Peter Railton, and Stephen Yablo illustrate, there are several non-meaning-based approaches to explaining the possibility of a priori knowledge. Field's idea is that we can demystify the apriority of certain propositions and rules if we adopt a 'non-factualist' view of justification itself. Peter Railton explores a position in the same spirit as Field's. Railton suggests that we regard apparently a priori principles as rules, regulative of certain practices. He compares the use of rules with a workman's use of a ruler or a carpenter's square—something which serves as a norm, needed for practical purposes, but which is also defeasible. Railton notes the links between his views and those of Wittgenstein in the first part of his *Philosophical Investigations*. Horwich, after mounting a critique of meaning-based approaches to a priori justification, entertains the suggestion that apriority might be explicable in terms of innateness and psychological indispensability. Yablo, for his part, explores the suggestion that the apriority of existence claims within the abstract sciences might be attributable to their metaphorical nature. While it is, of course, an open question whether these theories succeed in reconstructing the full-blooded phenomenon of experience-independent knowledge, they show that the theory of understanding is by no means the only epistemological resource open to a proponent of the a priori.

As for Quine's second claim, that any meaning-based approach to the a priori would be committed to the existence of sentences that are true by virtue of meaning alone, this too is now faced with developing alternatives. There are a number of different models for the way in which grasp of meaning might contribute to the explanation of a thinker's entitlement to a particular type of transition or belief that make no play whatsoever with the bizarre idea of a metaphysically analytic truth. Paul Boghossian's essay explores one such model for the case of logic, a model that is based on the idea that the logical constants are implicitly defined by certain of the axioms and inference rules in which they are involved. Christopher Peacocke considers more generally how we should conceive of the relations between understanding and the a priori, and suggests a programme for moderate rationalists. Bob Hale and Crispin Wright defend and develop the model of implicit definition, in particular, as one capable of explaining some cases of a priori knowledge. Frank Jackson argues quite generally that anyone who agrees that sentences have representational content and who is not a sceptic should accept that there are a priori truths which outrun the logical truths.

Finally, Quine's claim that the history of science cannot be told correctly in the presence of a commitment to the a priori seems to get matters exactly the wrong way round. In the first place, there is the implausibility of the claim that our acceptance of (say) a truth of arithmetic, whether obvious or unobvious, is

justified only by its role in wider empirical theories, let alone total science. It certainly seems that someone can know a truth of arithmetic even if that truth has not played, either for her or for anyone else, any role in empirical science. Moreover, when arithmetic does play a role in some empirical science and empirical reasoning, and is used in predicting the outcome of some experiment, we do not regard the experiment as a test of arithmetic. The scientist who finds an experimental result not in accordance with her theory and auxiliary hypotheses is not entitled to revise current arithmetic in attempting to explain the discrepancy. No particle accelerator, however powerful, can refute the proposition that $7 + 5 = 12$. Any good theory of the a priori, even the most sceptically inclined, must either explain or explain away this phenomenon.

The second salient point is an elaboration of the general consideration we noted earlier, in support of the existence of empirically defeasible a priori warrants. When a thinker reasons to an empirical conclusion from certain premisses, it seems that some of the principles of reasoning or belief-formation which he employs must be a priori if the process of reasoning is to be knowledgeable. In their respective contributions to this volume, Stewart Shapiro, Hartry Field, and Michael Friedman investigate the way in which various principles must have an a priori status if the process of empirical confirmation is to make sense. Shapiro focuses on the basic principles of logic, Field on logic and the fundamental epistemic norms, and Friedman on the principles that are constitutive of the spatio-temporal framework within which a particular scientific theory is formulated.

3. THE SCOPE OF THE A PRIORI

Explaining the possibility of a priori knowledge, then, is one of the major challenges faced by a theorist of the a priori; a second challenge, only slightly less important, is to demarcate its proper boundaries. How much, exactly, can we know a priori?

If we adopt the most permissive available reading of 'independent from experience', according to which a priori knowledge just is non-empirical knowledge, then, as noted above, we seem to have intuitively clear instances of a priori knowledge of the principles of logic, arithmetic, geometry, probability, of the principles of colour incompatibility and implication, of some definitions, perhaps of some truths of philosophy itself—and also, given the permissive reading, of the contents of some of our own mental states.

Now, one difficulty that has exercised a number of recent writers is that, when putative instances of a priori knowledge are combined, they seem to lead to an even greater capacity for a priori knowledge than anyone can sensibly claim. For example, it appears to be a truth established by philosophy that many of our concepts have anti-individualist possession conditions: for a thinker to possess

one of these concepts it is necessary for him to have been in a certain sort of environment. A much discussed case concerns the concept *water*: to possess this concept, it is said, a chemically indifferent thinker must at some point either have interacted with water, or come into contact with others who have interacted with water.[7]

However, if we combine this putative item of a priori philosophical knowledge with a priori access to the contents of our own propositional attitudes, we seem forced to say that we can know a priori that we have interacted with water. For under the appropriate conditions, instances of the following argument template now seem available a priori:

1. I believe that water is wet.
2. If I believe that water is wet, then someone has interacted with water. Therefore,
3. Someone has interacted with water.

Yet the suggestion that anyone could know the conclusion in question a priori seems absurd. What is to be done?

One obvious strategy is to reject the apriority of one or another of the premises involved. But it is not very appealing: if we can be *that* wrong about what is knowable a priori, how could we be confident about the other claimed instances?

In their respective contributions to this volume, Martin Davies and Bill Brewer explore an alternative way out of this puzzle, one that turns on denying that instances of the argument template are capable of yielding items of genuine a priori knowledge. Brewer argues that empirical knowledge of water is required for a thinker to possess the concept *water* in the first place, so this knowledge cannot be said to be derived a priori by means of the argument. Davies explores the suggestion that there are certain limitations on the transmission of warrant across known a priori entailments, limitations that instances of the argument template necessarily flout.

In a different way, Thomas Nagel, too, is concerned with resisting what he regards as potentially inflated claims to a prior knowledge. The problem that interests Nagel is the role of a priori reasoning in the context of the mind-body problem. A priori reflection on the concepts of mental and physical properties seems to show that mental state and event types could not be identical with physical state and event types. Nagel wishes to block the conclusion that it really does show this because he finds the resultant property dualism profoundly unsatisfactory.

Of course, as Kripke argued in *Naming and Necessity*, the mere inconceivability of a particular property identity need not preclude its truth. Sounds have

[7] It is controversial exactly how specific this necessary condition on possession of concepts like water must be, on externalist views. What does seem clear is that, in a significant range of cases, it will be specific enough to raise the problem addressed in the text.

been empirically discovered to be vibrations in the air even though mere reflection on the ingredient concepts might have made that identity appear absurd. So why is it not enough simply to point to this observation?

The answer, as Kripke himself argued, is that a refusal to take an appearance of impossibility (inconceivability) as grounds for a judgement of genuine impossibility must be susceptible of explanation: it must be possible to explain why in this particular case the appearance is held to be misleading. Kripke went on to maintain, however, that in the case of identities involving mental and physical properties, such an explanation would not be available. In his essay, Nagel takes up Kripke's challenge and attempts to reconcile the conceptual appearance of impossibility with the possible identity of mental and physical properties.[8]

[8] We thank the referee for Oxford University Press for comments on an earlier draft of this Introduction.