

Knowledge and modality

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Abstract Kripke claims that there are necessary a posteriori truths and contingent a priori truths. These claims challenge the traditional Kantian view that

(K) All knowledge of necessary truths is a priori and all a priori knowledge is of necessary truths.

Kripke's claims continue to be resisted, which indicates that the Kantian view remains attractive. My goal is to identify the most plausible principles linking the epistemic and the modal. My strategy for identifying the principles is to investigate two related questions. Are there compelling general supporting arguments for (K)? Are there decisive counterexamples to (K)? My investigation uncovers two intuitively plausible principles that are not open to decisive counterexamples but which enjoy no compelling independent support.

Keywords A priori knowledge · Modality · Kripke · Necessary truth

The primary focus of Saul Kripke's (1971; 1980) pioneering investigations is not epistemological. Yet he makes two striking epistemological claims that continue to resonate in the contemporary literature:

- (E1) There are necessary a posteriori truths; and
- (E2) There are contingent a priori truths.

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Kripke maintains that (E1) is a consequence of one of his primary metaphysical theses: (MT) Identity statements involving proper names are necessarily true if true, and that (E2) is a consequence of one of his primary semantic theses: (ST) A definite description that is employed to introduce a name fixes the reference of that name rather than providing its sense.

He also acknowledges that it is a widely held view, one that he associates with Kant, that (K) All knowledge of necessary truths is a priori and all a priori knowledge is of necessary truths.

Therefore, he argues against (K) in order to defuse a potential objection to (MT) and (ST).

Kripke's epistemological claims continue to be resisted. Some deny that (E1) is a consequence of (MT) and that (E2) is a consequence of (ST).¹ Others distinguish two notions of necessity and maintain that (K) is defensible with respect to one of those notions.² Others offer alternative versions of (K) that are alleged to be compatible with either (E1) or (E2).³ The resistance indicates that (K) remains an attractive thesis regarding the relationship between the epistemic and the modal.

My goal is to identify the most plausible principles linking the epistemic and the modal. My strategy for identifying the principles is to investigate two related questions. Are there compelling general supporting arguments for (K)? Are there decisive counterexamples to (K)? Section 1 identifies two primary sources of support for (K). In Sect. 2, I argue that (K) provides a very crude account of the relationship between the epistemic and the modal because it masks two crucial distinctions. I utilize these distinctions to introduce a number of more nuanced principles, which I assess by determining whether they are open to traditional counterexamples—i.e., counterexamples that are not based on Kripke's novel metaphysical and semantic theses. Section 3 utilizes the distinctions introduced in Sect. 2 to argue that the two sources of support for (K) are open to serious objection. Section 4 examines Kripke's novel counterexamples to (K)—i.e., those that are based on his novel metaphysical and semantic theses. Here I identify two features that distinguish the novel counterexamples from the traditional counterexamples discussed in Sect. 2 and show that they are incompatible. Section 5 concludes the investigation by identifying two intuitively plausible principles linking the epistemic and the modal that are not open to decisive counterexamples but which enjoy no compelling independent support.

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Why accept (K)? General supporting arguments for (K) are difficult to come by.⁴ (K) is the conjunction of two principles:

¹ See, for example, Salmon (1987/1988, 1991, 1993), and Soames (2002).

² See, for example, Evans (1979); Davies and Humberstone (1980); Chalmers (1996), and Jackson (1998). Evans, and Davies and Humberstone offer partial defenses. Chalmers and Jackson offer fuller defenses.

³ See, for example, Casullo (1977) and Swinburne (1987).

⁴ Some theorists, such as Kripke (1980, pp. 38–39) and Kitcher (1983, pp. 29–30), provide supporting arguments, which they quickly dismiss as notoriously weak. Davies (2004, pp. 100–101) offers two observations

(K1) All knowledge of necessary truths is a priori; and

(K2) All a priori knowledge is of necessary truths.

My primary contention is that each principle derives its support from a different source. (K1) derives its support from a particular *strategy* for arguing in support of the existence of a priori knowledge. (K2) derives its support from a particular *conception* of a priori knowledge.

(K) is usually associated with Kant. Four aspects of Kant's perspective on the a priori are salient for our purposes. First, Kant (1965, p. 43) characterizes a priori knowledge as "absolutely independent of all experience," but never specifies the respect in which a priori knowledge must be independent of experience. Most contemporary theorists agree that the relevant respect is justification and, hence, the Kantian conception can be stated as follows:

(KAP) S knows a priori that p iff S's justification for the belief that p is independent of all experience and the other conditions on knowledge are satisfied.⁵

There is, however, one respect in which Kant's characterization of the a priori is clear: it makes no mention of the concept of necessity. Hence, Kant's conception of the a priori does not underwrite (K). Second, Kant does not argue directly for the existence of a priori knowledge by showing that there are cases of knowledge that satisfy the conditions in (KAP). Instead, he argues indirectly by seeking criteria of a priori knowledge, where a criterion is a sufficient condition that is not constitutive of the concept of a priori knowledge. Kant's contention that necessity is a criterion of the a priori underwrites (K1). Third, since necessity is not constitutive of Kant's conception of the a priori, the contention that necessity is a criterion of the a priori requires independent support. Fourth, (K2) plays no role in either Kant's articulation of the concept of a priori knowledge or his arguments in support of the existence of such knowledge. It plays no role in the framework for discussing the a priori that Kant articulates in his introduction to the *Critique*.

There is, however, a second epistemological tradition that endorses a more intimate connection between a priori knowledge and necessary truth. This tradition, which I will call *rationalism*, contends that such knowledge consists in a rational (intellectual, intuitive) apprehension (grasp of, insight into) the necessary truth of some proposition. BonJour (1985, p. 192) offers the following lucid characterization of the traditional rationalist conception: "a proposition is justified a priori when and only when the believer is able, either directly or via some series of individually evident steps, to

Footnote 4 continued

regarding the claim of Evans (1979) that a statement that is deeply contingent but knowable a priori would be intolerable: "He does not provide very much in the way of an argument for the claim that the combination of deep contingency with a priority is intolerable. ... Second, while a powerful intuition speaks in favour of some hedged version of the claim that a priority entails deep necessity it is not easy to see how to provide the intuition with illuminating argumentative support, ..." Quinton (1972), and Swinburne (1987) offer general arguments that purport to connect a priori knowledge and analytic truth.

⁵ There is controversy over the correct articulation of (KAP). Some, such as Kitcher (1983), maintain that "S's justification for the belief that p is independent of all experience" entails "S's justification for the belief that p is not defeasible by experience." Others, such as BonJour (1998); Casullo (2003), and Goldman (1999) deny this. None of the arguments in this paper requires taking a stance on the issue.

intuitively ‘see’ or apprehend that its truth is an invariant feature of all possible worlds.” Hence, according to the traditional rationalist conception:

(RAP) S knows a priori that p iff S’s justification for the belief that p consists in intuitively “seeing” (directly or indirectly) that p is necessarily true and the other conditions on knowledge are satisfied.⁶

There are three important differences between the rationalist conception of a priori knowledge and the Kantian conception. First, according to (RAP), necessity is constitutive of the concept of a priori knowledge. Second, (RAP) supports (K2). Since “‘seeing’ that p is necessarily true” entails “p is necessarily true,” it follows from (RAP) that a priori knowledge is restricted to necessary truths. Third, (RAP) does not support (K1).⁷ Although (RAP) entails that a priori justification consists in a rational apprehension of necessary truth, it does not entail that necessary truths cannot be justified a posteriori.⁸

We can now draw three conclusions regarding (K). First, (K) is the conjunction of two principles, each of which draws its support from a different source. Second, the type of support that each draws from its respective source is different. (K1) is a consequence of Kant’s contention that necessity is a criterion of the a priori. (K2) is a consequence of the rationalist conception of a priori knowledge. Third, the support

⁶ Contemporary proponents of rationalism include [BonJour \(1985, 1998\)](#); [Chisholm \(1989\)](#), and [Plantinga \(1993\)](#).

⁷ An anonymous reviewer suggests that (RAP) may support a weaker version of (K1), such as: All (or, perhaps, all justifiable) necessary truths are justifiable a priori. I have two concerns with this suggestion. First, the weaker versions of (K1) introduce the modal notion ‘justifiable’. Hence, evaluating these proposals requires articulating the sense of ‘possible’ embedded in this notion. If the relevant sense is suitably narrow, then the example of a rationally blind cognizer, which is introduced in Sect. 2, shows that the weaker variants are false. Second, the weaker variants also run up against Kripke’s example of a physical object (say, a lectern) having some property essentially (say, being made out of wood), where it appears that one can know only a posteriori that the object has the property in question.

⁸ An anonymous reviewer points out that I do not consider the following classic argument for (K2). The only explanation for a priori knowledge involves the concept of analyticity. The concept of analyticity explains S’s a priori knowledge that p only if p is necessarily true. The reviewer offers Ayer as an example of a proponent of such an argument. I don’t find such arguments plausible because I don’t think that the concept of analyticity explains a priori knowledge. Consider the following passage from [Ayer \(1952, p. 73\)](#):

the proposition “Either some ants are parasitic or none are” is an analytic proposition. For one need not resort to observation to discover that there either are or are not ants which are parasitic. If one knows what is the function of the words “either,” “or,” and “not,” then one can see that any proposition of the form “Either p is true or p is not true” is valid, independently of experience. Accordingly, all such propositions are analytic.

Here Ayer appeals to the fact that one can know a priori (without “resort to observation”) that there either are or are not ants which are parasitic to establish that the proposition in question is analytic. Since Ayer establishes that propositions, such as “Either some ants are parasitic or none are,” are analytic by appeal to the fact that they are knowable a priori, it is difficult to see how analyticity can explain apriority. Moreover, in support of the claim that “Either some ants are parasitic or none are” is knowable a priori, Ayer appeals to the fact that “one can see that any proposition of the form ‘Either p is true or p is not true’ is valid, independently of experience.” Hence, a priori knowledge of logical truths is explained in terms of an ability to “see” their truth independently of experience. Patently, this is not the literal sense of ‘see,’ but the extended sense of ‘see’ employed by rationalists, which brings Ayer’s position perilously close to the rationalist position. I offer a more general consideration of various conceptions of analyticity, arguing that none explains a priori knowledge in [Casullo \(2003, Chap. 8\)](#).

that Kant's contention provides for (K1) is only as strong as the supporting arguments for that contention, and the support that (RAP) provides for (K2) is only as strong as the supporting arguments for (RAP). We will examine the supporting arguments for both Kant's contention and (RAP) in Sect. 3.

2

(K1) and (K2) provide a very crude account of the relationship between the epistemic and the modal because they mask two important distinctions. On the epistemic side, there is the distinction between knowledge and justified belief. On the modal side, there is the distinction between truth and modal status. Utilizing these distinctions, I introduce a number of more nuanced principles and assess their plausibility by determining whether they are open to traditional counterexamples—i.e., counterexamples that are not based on Kripke's novel metaphysical and semantic theses. This sets the stage for (a) an evaluation, in Sect. 3, of the sources of support for (K1) and (K2); and (b) an assessment, in Sect. 4, of whether Kripke's counterexamples to (K1) and (K2) are distinctive.

(K1) conceals an ambiguity, which we can reveal by distinguishing between

(KA) S knows the *truth value* of p just in case S knows that p is true or S knows that p is false; and

(KB) S knows the *general modal status* of p just in case S knows that p is a necessary proposition (i.e., necessarily true or necessarily false) or S knows that p is a contingent proposition (i.e., contingently true or contingently false).

Armed with this distinction, we can articulate two versions of (K1):

(K1A) If p is necessarily true and S knows that p then S knows a priori that p; and

(K1B) If p is necessarily true and S knows that p is a necessary proposition then S knows a priori that p is a necessary proposition.

In the case of (K2), we have

(K2A) If S knows a priori that p then p is necessarily true; and

(K2B) If S knows a priori that p is a necessary proposition then p is a necessary proposition is necessarily true.

There is a second source of complexity. Although knowledge entails justified belief, the relationship between justified belief and the modalities is different from that between knowledge and the modalities because knowledge entails truth but justified belief does not. Recasting our four principles in terms of justified belief yields four new principles:

(J1A) If p is necessarily true and S's belief that p is justified then S's belief that p is justified a priori.

(J1B) If p is necessarily true and S's belief that p is a necessary proposition is justified then S's belief that p is a necessary proposition is justified a priori.

(J2A) If S's belief that p is justified a priori then p is necessarily true.

(J2B) If S's belief that p is a necessary proposition is justified a priori then p is a necessary proposition is necessarily true.

(J2A) and (J2B) are open to immediate objection. Consider first (J2A). Since a priori justification is fallible then it is possible that S's belief that p is justified a priori and p is false.⁹ Moreover, there are compelling examples of a priori justified false beliefs. Frege's endorsement of the naive comprehension axiom is a familiar example. Traditional metaphysical debates provide a host of arguments with incompatible conclusions whose premises, if justified, are justified on a priori grounds. Mathematically and logically competent individuals make routine errors in performing calculations or constructing proofs even when they are careful and attentive.¹⁰ Although these examples establish that (J2A) is false, they do not impugn (K2A).

Now consider (J2B). Examples of a priori justified false beliefs regarding the general modal status of propositions are not as common as cases of a priori justified false beliefs regarding the truth value of propositions because beliefs regarding the general modal status of propositions are far less common than beliefs regarding their truth value. Explicit beliefs regarding the general modal status of propositions are rare outside of philosophy. So we must turn to philosophy for examples. First, some theorists maintain that the principle of the identity of indiscernibles is in fact true, but disagree over whether it is necessarily true.¹¹ Second, there is disagreement over the status of iterated modal statements.¹² If a statement is necessarily true, for example, is it necessarily necessarily true? Third, Kant (1965, p. 54) maintained that the proposition "In all changes of the material world, the quantity of matter remains unchanged" is necessary, but most contemporary philosophers maintain that it is contingent. If both parties to each of these philosophical disagreements have justified beliefs, then some have false a priori justified beliefs regarding the general modal status of a proposition.¹³ Although these examples establish that (J2B) is false, they do not impugn (K2B).

(J1A) and (J1B) are not open to counterexamples that are a consequence of the fallibility of a priori justification, but they are open to counterexamples that are a consequence of a particular form of epistemic overdetermination. Some beliefs can be justified by more than one source. For example, my belief that I left my keys on the kitchen table can be justified by my wife's telling me that they are on the kitchen table, or by my remembering that I left them there, or by my walking out to the kitchen and seeing them on the table. Moreover, some beliefs can be justified by both a posteriori and a priori sources. For example, my belief that $3 \times 4 = 12$ can be justified by my

⁹ There is general agreement among contemporary theorists that a priori justification is fallible. See, for example, BonJour (1998); Casullo (2003); Goldman (1999), and Plantinga (1993). Kitcher (1983) is the exception.

¹⁰ See BonJour (1998, Chap. 4) for a discussion of such cases.

¹¹ See, for example, Armstrong (1978, Chap. 9) and Brody (1980, Chap. 1).

¹² See, for example, Chandler (1976) and Salmon (1989).

¹³ A note of caution: It is only cases of justified false belief that a proposition is necessary (as opposed to a justified false belief that a proposition is contingent) that constitute counterexamples to (J2B). Since the first two examples cited in this paragraph involve issues that remain controversial, we cannot be sure that they will generate such counterexamples until those issues are resolved. However, irrespective of the ultimate resolution of these issues, the first two examples do indirectly show that (J2B) is false since they show that there are justified false beliefs regarding the general modal status of a proposition and there is no reason to believe that such mistakes occur only when someone believes that a proposition is contingent.

wife telling me that $3 \times 4 = 12$, or by my remembering that $3 \times 4 = 12$, or by my segregating 3 collections of 4 objects each and counting them, or by my intuitively “seeing” that $3 \times 4 = 12$. Cases of epistemic overdetermination in which one’s belief that p , where p is a necessary truth, can be justified both a posteriori and a priori generate counterexamples to (J1A). For example, if my belief that $3 \times 4 = 12$, although *justifiable* a priori, is *justified* exclusively by an a posteriori source, then it constitutes such a counterexample. Cases of epistemic overdetermination in which one’s belief that p is a necessary proposition, where p is a necessary truth, can be justified both a posteriori and a priori generate counterexamples to (J1B). For example, my belief that “ $3 \times 4 = 12$ ” is a necessary proposition can be justified by a colleague telling me that “ $3 \times 4 = 12$ ” is a necessary proposition, or by my remembering that “ $3 \times 4 = 12$ ” is a necessary proposition, or by my trying to conceive of its falsehood and failing. If my belief that “ $3 \times 4 = 12$ ” is a necessary proposition, although *justifiable* a priori, is *justified* exclusively by an a posteriori source, then it constitutes such a counterexample. The counterexamples to (J1A) and (J1B) are also counterexamples, respectively, to (K1A) and (K1B).

Since the fallibility of a priori justification is the source of the counterexamples to (J2A) and (J2B), one might suggest that they be revised to eliminate the reference to *truth* in their respective consequents:

(J2A*) If S’s belief that p is justified a priori then p is necessarily true or necessarily false.

(J2B*) If S’s belief that p is a necessary proposition is justified a priori then p is a necessary proposition is necessarily true or necessarily false.

Are there examples of contingent propositions whose truth value is justified a priori? In order to address this question, let us distinguish between two types of fallible justification:

(FJA) Fallible justification regarding the truth value of p ; and

(FJB) Fallible justification regarding the general modal status of p .

If a priori justification is fallible with respect to both the truth value and general modal status of a proposition, then one can be a priori justified in believing that p is true, where p is some contingent proposition. Consider, again, the case of Kant. Presumably, the proposition “In all changes of the material world, the quantity of matter remains unchanged” appeared to him to be necessarily true and it was its apparent necessary truth that justified his belief that it is true. Kant, however, was wrong on both counts: the proposition is neither necessary nor true.

The case of (J2B*) is more complex since the status of iterated modal propositions is controversial. Clearly, if the general modal status of a proposition (i.e., its necessity or contingency) is a contingent feature of that proposition, then counterexamples to (J2B*) are readily available. On the other hand, if it is not, then there are no counterexamples to (J2B*): “ p is a necessary proposition” is either necessarily true or necessarily false. The same reasoning applies to (K2B).

Since epistemic overdetermination is the source of the counterexamples to (J1A) and (J1B), one might suggest that they be revised by replacing ‘justified’ by ‘justifiable’ in their respective consequents:

(J1A*) If p is necessarily true and S 's belief that p is justified then S 's belief that p is justifiable a priori.

(J1B*) If p is necessarily true and S 's belief that p is a necessary proposition is justified then S 's belief that p is a necessary proposition is justifiable a priori.

Are there examples of necessary propositions whose truth value is justifiable a posteriori but not a priori? Some cognizers are born blind. Such cognizers cannot have justified visual beliefs. Presumably, it is also possible for a cognizer to be born "rationally blind" as the result of some neurophysiological impairment. Consider now a necessary proposition, such as " $3 \times 4 = 12$," that can be justified both a priori and a posteriori for unimpaired cognizers. If our rationally blind cognizer's perceptual faculties are intact, then his or her belief that $3 \times 4 = 12$ can be justified a posteriori but not a priori. Similar considerations apply to (J1B): our rationally blind cognizer's belief that " $3 \times 4 = 12$ " is a necessary proposition can be justified a posteriori but not a priori.

This counterexample, although plausible, is not decisive. It introduces a further level of complexity that a comprehensive account of the relationship between the epistemic and the modal must address. (J1A*) and (J1B*) introduce the modal notion 'justifiable'. The sense of 'possible' embedded in this notion can be read either narrowly or broadly. A proponent of (J1A*) or (J1B*) might argue that the counterexample is not genuine since (a) the sense of 'possible' involved in those principle is suitably broad; and (b) given this suitably broad sense, it *is* possible that our rationally blind cognizer's belief that $3 \times 4 = 12$, as well as the belief that " $3 \times 4 = 12$ " is a necessary proposition, are justifiable a priori. Settling this issue requires an investigation into the sense of 'possible' embedded in (J1A*) and (J1B*). Such an investigation goes beyond the scope of this paper.¹⁴

In a similar fashion, one might propose revising (K1A) and (K1B) by replacing 'knows' with 'can know' in their respective consequents in order to circumvent the counterexamples generated by epistemic overdetermination:

(K1A*) If p is necessarily true and S knows that p then S can know a priori that p .

(K1B*) If p is necessarily true and S knows that p is a necessary proposition then S can know a priori that p is a necessary proposition.

The proposed counterexample to (J1A*) and (J1B*), along with its limitations, apply equally to (K1A*) and (K1B*).

Let us briefly take stock. We broadened our discussion of the relationship between the epistemic and the modal by distinguishing between knowledge of the truth value and knowledge of the general modal status of a proposition, and by distinguishing between having knowledge of those features and having justified beliefs regarding

¹⁴ Recall Kripke's (1980, pp. 34–35) remarks about the characterization of a priori truths as those that can be known independently of any experience:

That means that in some sense it's *possible* (whether we do or do not in fact know it independently of any experience) to know this independently of any experience. And possible for whom? For God? For the Martians? Or just for people with minds like ours? To make this all clear might [involve] a host of problems all of its own about what sort of possibility is in question here.

I address some of these issues in Casullo (2003, Chap. 3).

them. These distinctions provided the conceptual resources to articulate more nuanced versions of (K1) and (K2) and to assess their plausibility. Counterexamples were offered to (J2A), (J2B), and (J2A*) based on the fallibility of a priori justification. Counterexamples were offered to (K1A), (K1B), (J1A), and (J1B) based on a form of epistemic overdetermination. A more controversial counterexample was offered to (K1A*), (K1B*), (J1A*), and (J1B*) based on rational blindness. Our discussion of (K2B) and (J2B*) was less conclusive since the possibility of counterexamples turns on the controversial issue of whether the general modal status of a proposition is a necessary feature of the proposition. (K2A) introduces some further complications that will be discussed in Sect. 5.

3

In this section we examine the putative support for (K1) and (K2). The support (RAP) provides for (K2) is only as strong as the support it enjoys. The primary support for (RAP) is the contention that the Kantian conception of the a priori is not sufficiently informative: rather than telling us what the source of a priori knowledge *is*, it tells us what it is *not*. By identifying the putative primary source of a priori justification, (RAP) provides a more informative characterization of the a priori.¹⁵

(RAP), however, faces an immediate objection. In order to bring out the objection clearly, let us focus on the conception of a priori justification entailed by (RAP):

(RJ) S's belief that p is justified a priori iff S intuitively "sees" (directly or indirectly) that p is necessarily true.

(RJ) introduces an extended sense of 'see' to characterize the primary source of a priori justification. The point of introducing this extended sense of 'see' is to underscore that the primary source of a priori justification has basic features in common with the primary source of a posteriori justification, which is characterized by the literal sense of 'see'. There are two basic features of the literal sense of 'see'. "S sees that p" entails both "p is true" and "S believes that p." Presumably, the extended sense of 'see' preserves these basic logical features of the literal sense. Plantinga (1993, p. 105), who provides the only explicit rationalist analysis of the extended sense of 'see', corroborates this presumption: he maintains that in order for S to "see" that p, S must "form the belief that p is true and indeed necessarily true (when it *is* necessarily true, of course)." Hence, "S intuitively 'sees' that p is necessarily true" entails both "p is necessarily true" and "S believes that p is necessarily true."

Since one can intuitively "see" that p is necessarily true only if p is necessarily true, (RJ) is incompatible with fallibilism. This places an implausible restriction on a priori justification. If two metaphysicians offer philosophical arguments on different sides of a controversial metaphysical issue, it is a consequence of (RJ) that the

¹⁵ I add the qualifier 'primary' to remain neutral on the question of whether memory and testimony, respectively, preserve and transmit justification. If they do, then memory and testimony can be derivative sources of a priori justification since they can, respectively, preserve and transmit such justification. They cannot be primary sources of a priori justification since they cannot generate such justification. For a discussion of this issue, see Burge (1993) and Casullo (2007).

metaphysician supporting the incorrect view is either justified a posteriori or not justified at all. Similarly, a competent mathematician who makes a subtle error in a proof and, as a consequence, draws an incorrect conclusion is either justified a posteriori or not justified at all in accepting that conclusion.

In order to accommodate a priori error, (RJ) must be revised as follows:

(RJ*) S's belief that *p* is justified a priori iff S seems to intuitively "see" (directly or indirectly) that *p* is necessarily true.¹⁶

In the case of the literal sense of 'see', the only difference between "S sees that *p*" and "S seems to see that *p*" is that the former, but not the latter, entails "*p* is true." Since the extended sense of 'see' presumably preserves this feature of the literal sense, it follows that "S seems to intuitively 'see' that *p* is necessarily true" entails "S believes that *p* is necessarily true" but not "*p* is necessarily true."¹⁷ Therefore, (RJ*) is compatible with fallibilism.

Since one can seem to intuitively "see" that *p* is necessarily true only if one believes that *p* is necessarily true, (RJ*) faces two problems. The first is the problem of the modal sceptic. Consider a metaphysician who is convinced by philosophical considerations that the distinction between necessary and contingent truths is not coherent. Given this perspective on modal discourse, our modal sceptic refrains from forming modal beliefs—i.e., beliefs that would standardly be expressed by modal sentences such as '*p* is necessarily true' or '*p* is contingently true'. Let us also assume that our modal sceptic is a professional mathematician, whose proofs of interesting theorems have appeared in the leading mathematical journals. It follows, according to (RJ*), that either our modal sceptic is not justified in believing his mathematical results or his justification is a posteriori merely in virtue of the fact that he does not believe that mathematical truths are necessarily true. It is implausible to maintain that one's views about an esoteric metaphysical issue determines the epistemic status of one's beliefs about mathematical theorems that have no modal content.

There is a second, related problem. Among the propositions that we are justified in believing a priori, according to proponents of (RJ*), are modal propositions, such as (P1): Necessarily nothing is both red and green all over at the same time. According to (RJ*), in order to be justified a priori in believing (P1), one must believe (P2): Necessarily, necessarily nothing is both red and green all over at the same time. This give rise to our second problem: the problem of modal agnosticism. There are alternative modal logics available. According to some, "Necessarily *p*" entails "Necessarily, necessarily *p*;" according to others, it does not. There is controversy among modal

¹⁶ [BonJour \(1998\)](#) offers such a revision by distinguishing between genuine and apparent rational insight, and maintaining that the latter suffices for a priori justification.

¹⁷ Once again, [Plantinga](#) corroborates this presumption. In order to accommodate fallibilism, [Plantinga \(1993, p. 106\)](#) introduces the expression 'believes a priori' in place of 'seems to "see"' and maintains that "to believe *p* a priori is to meet the set of those conditions [severally necessary and jointly sufficient for seeing that *p* is true] minus the *truth* conditions—that is, the condition that *p* be true (in the case of seeing directly that *p* is true) and the condition that *p* follows from *q* (in the case of seeing indirectly that *p* is true)."

metaphysicians over which captures the logic of metaphysical necessity.¹⁸ Consider a modal metaphysician who is familiar with the issue and the relevant literature but is undecided about the entailment. As a consequence, she refrains from forming iterated modal beliefs. Suppose that our modal metaphysician believes that (P1) on the basis of finding its falsehood inconceivable. (RJ*) entails that her belief is either justified a posteriori or not justified at all. But, once again, it is implausible to maintain that her attitude toward (P2) determines the epistemic status of her belief that (P1), since her belief that (P1) is not based on her belief that (P2). Since (RAP) is open to serious objections, it cannot support (K2).¹⁹

The support that Kant's claim that necessity is a criterion of the a priori offers for (K1) is only as strong as the supporting argument for that claim. Kant (1965, p. 43) supports his contention with the terse remark: "Experience teaches us that a thing is so and so, but not that it cannot be otherwise." Kant's remark has exerted considerable influence on the tradition. For example, Whewell (1840, pp. 59–61) maintains that

Experience cannot offer the smallest ground for the necessity of a proposition. She can observe and record what has happened; but she cannot find, in any case, or in any accumulation of cases, any reason for what *must* happen. ... To learn a proposition by experience, and to see it to be necessarily true, are two altogether different processes of thought.

Over one hundred years later, Chisholm (1966, pp. 74–75) quotes the passage above from Whewell and maintains that

Thus, Kant said that *necessity* is a mark, or criterion, of the a priori. If what we know is a necessary truth – if we may formulate it in a sentence prefixed by the modal [*sic*] operator "necessarily," or "it is necessary that" – then our knowledge is not a posteriori.

The question we must address is: How strongly does Kant's observation, which is echoed by Whewell and Chisholm, support his criterion?

In assessing Kant's remark, it is critical to recall our earlier distinction between knowledge of the truth value of a proposition and knowledge of its general modal status. Kant allows that experience can teach us that "a thing is so and so." Whewell grants that experience "can observe and record what has happened." Both appear to concede that experience can teach us what is the case or the truth value of propositions. What they deny is that experience can teach us, in Kant's words, that "it cannot be otherwise," or, in Whewell's words, that experience "can find any reason for what *must* happen." Both deny that experience can teach us what must be the case or the general modal status of a proposition.²⁰

¹⁸ See, for example, Chandler (1976) and Salmon (1989).

¹⁹ As an anonymous reviewer astutely notes, (RJ*) is open to another objection: it leads to an infinite regress. I articulate this objection in Casullo (2003, Chap. 1).

²⁰ An anonymous reviewer suggests that the quoted passages from Kant and Whewell in the previous sentence support the conclusion that both deny that experience can teach us what must be the case but not the stronger conclusion that both deny that experience can teach us the general modal status of a proposition. It seems to me, however, that the arguments that Kant and Whewell offer in support of those quoted passages

Keeping this distinction in mind, we can now see that Chisholm's claim

(RC) If what we know is a necessary truth, then our knowledge is not a posteriori is ambiguous. It does not differentiate between

(RCA) If what we know is a necessary truth, then our knowledge of its truth is not a posteriori; and

(RCB) If what we know is a necessary truth, then our knowledge of its necessity is not a posteriori.

Moreover, the remark of Whewell, which echoes Kant's remark and to which Chisholm appeals in defense of (RC), supports (RCB) but not (RCA).

Our results can be generalized. (K1), like (RC), is ambiguous. It does not differentiate between

(K1A) If p is necessarily true and S knows that p then S knows a priori that p ; and

(K1B) If p is necessarily true and S knows that p is a necessary proposition then S knows a priori that p is a necessary proposition.

If we take Kant's remark at face value, it supports (K1B) but not (K1A). Moreover, it provides no *independent* support for (K1B); it makes the equivalent claim:

(K1B*) Knowledge of the necessity of a proposition is not a posteriori.

Nevertheless, many subsequent philosophers have found the remark to be compelling.

4

We now turn to Kripke's examples in support of

(E1) There are necessary a posteriori truths; and

(E2) There are contingent a priori truths.

His examples continue to be resisted in the literature. Yet we have offered traditional examples of necessary propositions justified a posteriori and contingent propositions justified a priori. But, unless Kripke's examples are distinctive in some way, they should evoke no more resistance than the traditional examples. So I propose to take his examples at face value—i.e., I propose to grant that they are genuine examples of necessary a posteriori truths and contingent a priori truths—and ask whether there are any features that distinguish them from the traditional examples that were introduced in Sect. 2.

Kripke initially provides two different examples in support of (E1): (a) statements in which an essential property is attributed to a physical object; and (b) identity statements involving different co-referential proper names. Kripke later extends his discussion of identity statements to include theoretical identity statements. We will focus on (a)

Footnote 20 continued

also support the stronger conclusion. Since Kant maintains that "Experience teaches us that a thing *is* so and so," he would also deny that it can teach us that something *can* be otherwise. Similarly, since Whewell maintains that experience "can record and observe what *has* happened," he would deny that it can find any reason for what *can* happen. No arguments in the paper turn on this claim.

and (b). Let ‘a’ be the name of a particular lectern and ‘F’ be the property of being made of wood. Suppose that someone knows that Fa —i.e., that this lectern is made of wood. Such knowledge is a posteriori since one knows that something is made from wood as opposed to, say, water frozen from the Thames on the basis of how it looks and feels. Yet, if Fa is true, it is necessarily true since F is an essential property of a . In any possible world in which a exists, a is F . Hence, one who knows that Fa has a posteriori knowledge of a necessary truth.

To assess the implications of Kripke’s example, we must keep in mind that the expression ‘a posteriori knowledge of a necessary truth’ is ambiguous since it does not distinguish between (A) a posteriori knowledge of the truth value of a necessary proposition and (B) a posteriori knowledge of the general modal status of a necessary proposition. Kripke’s case is an example of a posteriori knowledge of the truth value of Fa since one discovers via experience that the lectern is made of wood. What about knowledge of its general modal status? Here Kripke (1971, p. 153) is quite explicit in maintaining that we know by “a priori philosophical analysis” that if Fa is true, then it is necessarily true. Hence, Kripke’s case is not an example of a posteriori knowledge of the general modal status of a necessary proposition.

The same observations apply to Kripke’s example of identity statements involving proper names. Since, according to Kripke, ordinary proper names, such as ‘Hesperus’ and ‘Phosphorus’, are rigid designators, each picks out the same object in all possible worlds in which it picks out any object. Therefore, if both pick out the same object in the actual world, both pick out the same object in all possible worlds in which they pick out any object. Hence, if “Hesperus is Phosphorus” is true, it is necessarily true. On the other hand, it was an astronomical discovery that Hesperus is Phosphorus. So, once again, Kripke has provided an example of a posteriori knowledge of the truth value of a necessary proposition. Moreover, he (1980, p. 109) maintains that we know “by a priori philosophical analysis” that such identity statements are necessarily true if true. Hence, Kripke’s examples, taken at face value, are at odds with (K1A) but not (K1B). Moreover, Kripke endorses (K1B).

In Sect. 2, we argued that familiar cases of epistemic overdetermination—i.e., cases of necessary propositions that are knowable (justifiable) both a priori and a posteriori—generate counterexamples to both (K1A) and (J1A). Are Kripke’s examples of a posteriori knowledge of the truth value of necessary propositions distinctive in any way? Do they have features that distinguish them from our traditional counterexamples? There appears to be one distinctive feature of his examples. Recall that we revised (K1A) and (J1A), respectively, to

(K1A*) If p is necessarily true and S knows that p then S can know a priori that p ;
and

(J1A*) If p is necessarily true and S ’s belief that p is justified then S ’s belief that p is justifiable a priori

in order to accommodate the counterexamples based on epistemic overdetermination. We went on to offer a counterexample to (K1A*) and (J1A*) based on the phenomenon of rational blindness. We suggested that a rationally blind cognizer whose perceptual faculties are intact can know (justifiably believe) that $3 \times 4 = 12$ a posteriori but not a priori. The example, however, is not decisive because of the vagueness of the

modality embedded in ‘can know’ and ‘can justifiably believe’. Kripke’s examples, however, appear to be decisive against both (K1A*) and (J1A*) as well as (K1A) and (J1A). There does not appear to be any plausible reading of ‘knowable’ or ‘justifiable’ on which “Hesperus is Phosphorus” or “This lectern is made of wood” is knowable or justifiable a priori. Hence, Kripke’s counterexamples are distinctive because they are *not cases of necessary propositions knowable (justifiable) both a posteriori and a priori*. They are cases of necessary propositions that are knowable (justifiable) *only* a posteriori.

Kripke offers a single example in support of (E2). He maintains that when a name is introduced via a definite description, the description does not provide the sense (or meaning) of the name, but fixes its reference. Suppose that someone fixes the reference of ‘one meter’ using the definite description ‘the length of stick S at t_0 ’. Kripke maintains that such a person knows without further investigation that stick S (if it exists) is one meter long at t_0 . ‘One meter’, according to Kripke, picks out the same length in all possible worlds. Consequently, the sentence ‘Stick S (if it exists) is one meter long at t_0 ’ expresses a contingent truth since there are possible worlds in which stick S has a length at t_0 that is different from its length at t_0 in the reference-fixer’s world. So, taken at face value, we have an example of a contingent truth that is knowable a priori.

In Sect. 2, we argued that familiar examples of fallible a priori justification—i.e., cases of mathematical, logical, or metaphysical propositions that are justified a priori but false—provide counterexamples to (J2A). Is Kripke’s example of the contingent a priori distinctive in any way? Does it have features that distinguish it from our traditional counterexamples? Recall that we revised (J2A) to

(J2A*) If S’s belief that p is justified a priori then p is necessarily true or necessarily false

to accommodate the counterexamples based on fallible a priori justification. We offered Kant’s proposition, “In all changes of the material world, the quantity of matter remains unchanged,” as an example of a contingent proposition that Kant was justified in believing on a priori grounds. Although this example is a counterexample to (J2A*), neither it nor the traditional examples of fallible a priori justification are counterexamples to (K2A) since they all involve false beliefs. Kripke’s example, however, appears to be decisive against (K2A) as well as (J2A) and (J2A*). Hence, Kripke’s counterexample is distinctive because it is *not a case of a contingent falsehood that is justified a priori*. It is an example of a contingent *truth* that is justified a priori.

We have identified two features that appear to distinguish Kripke’s counterexamples to (K1) and (K2) from the traditional examples that we offered in Sect. 2: (1) the counterexamples to (K1) are necessary propositions that are knowable *only* a posteriori; and (2) the counterexample to (K2) is a contingent *truth* that is justifiable and knowable a priori. These two features, however, are incompatible.

Consider the lectern example. It appears that the only way in which one can know that the lectern is made of wood is by experience: by looking at it, or by touching it, or by performing some physical operation on it, say subjecting it to heat, and observing the results. Yet, analogously, it appears that the only way in which one can know that some stick is one meter long is by experience: by looking at it carefully, or by

measuring it, or by comparing its length with the length of some other object whose length one knows. Kripke, however, maintains that one can know this fact a priori on the basis of a reference-fixing description. But if one can know facts about the lengths of sticks on the basis of a reference-fixing description, why can't one know facts about the substance of which a lectern is made on the basis of a reference-fixing description? Suppose that someone introduces 'wood' using the reference-fixing definite description 'the substance from which lectern a is made'. Doesn't that person know a priori, without further investigation that Fa—i.e., that a is made of wood? The cases appear to be on a par; there are no obvious differences between them.²¹

Similar considerations apply to the astronomical example. Suppose that someone introduces 'Hesperus' using the reference-fixing description 'the planet identical to Phosphorus'. Doesn't that person know a priori, without further investigation, that Hesperus is identical to Phosphorus?²² Once again, this case seems to be on a par with the meter stick case. But if all three cases are on a par, Kripke faces a dilemma. Either reference-fixing descriptions are a source of a priori knowledge or they are not. If they are, the alleged unique feature of his counterexamples to (K1) vanishes. If they are not, his counterexample to (K2) vanishes.²³

²¹ See [Jeshion \(2000\)](#) for further discussion of this issue.

²² An anonymous reviewer contends that since 'Hesperus' did not have its reference fixed in the actual world by the description 'the planet identical to Phosphorus', my argument establishes at most (A) but not (B):

- (A) "Hesperus is Phosphorus" would be knowable a priori if the reference of 'Hesperus' were fixed using the description 'the planet identical to Phosphorus'.
- (B) "Hesperus is Phosphorus" is knowable a priori in the actual world.

This contention is questionable. Let us assume that long ago (in the actual world) some astronomer originally fixed the reference of 'Hesperus' using the description 'the celestial body appearing at such-and-such location in the evening sky'. Let us also assume, following Kripke, that subsequent speakers (in the actual world) typically refer to Hesperus when they use 'Hesperus' by virtue of some chain of communication that is appropriately related to its original introduction via the description 'the celestial body appearing at such-and-such location in the evening sky'. Nevertheless, any speaker (in the actual world) can stipulate that he/she will use 'Hesperus' to refer to the planet identical to Phosphorus and can thereby come to know a priori, if Kripke is correct, that Hesperus is Phosphorus. One might worry here that the sentence 'Hesperus is Phosphorus', in the mouth of such a stipulator, expresses a content different from that expressed by the same sentence in the mouth of a speaker for whom the reference of 'Hesperus' is fixed (either directly or indirectly) by the description 'the celestial body appearing at such-and-such location in the evening sky'. This worry, however, is misplaced. Since the only semantic contribution of a reference fixing description is to pick out the object to which one means to refer, it is hard to see how fixing the reference of 'Hesperus' using the description 'the planet identical to Phosphorus' changes the content expressed by 'Hesperus is Phosphorus'. The description 'the planet identical to Phosphorus' picks out the same object as the description 'the celestial body appearing at such-and-such location in the evening sky'. Therefore, both make the same semantic contribution to the content expressed by the sentence 'Hesperus is Phosphorus'.

²³ There is an alternative strategy for challenging the uniqueness of Kripke's examples by invoking cases involving 'actually'. Let 'p' stand for some contingent truth that is knowable only a posteriori and 'A' stand for the actuality operator. Since the sentence 'Ap' is true in any possible world iff 'p' is true in the actual world, 'Ap' expresses a necessary truth. Therefore, 'Ap' expresses a necessary truth that is knowable only a posteriori. On the other hand, one can know that 'Ap' is true iff 'p' is true solely on the basis of understanding the meaning of the 'actually'. But 'Ap iff p' is contingent, since it is false in worlds where 'p' is false. Therefore, 'Ap iff p' expresses a contingent truth that is knowable a priori.

5

What conclusions can we draw about the relationship between the epistemic and the modal? First, despite the attractiveness of (K1) and (K2), we are unable to find any compelling general argument in support of them. Hence, the debate surrounding (K) proceeds largely by considering cases, both supporting cases and putative counterexamples.

Second, the most resilient general principles linking the epistemic and the modal are:

- (K1A*) If *p* is necessarily true and *S* knows that *p* then *S* can know a priori that *p*.
- (K1B*) If *p* is necessarily true and *S* knows that *p* is a necessary proposition then *S* can know a priori that *p* is a necessary proposition.
- (J1A*) If *p* is necessarily true and *S*'s belief that *p* is justified then *S*'s belief that *p* is justifiable a priori;
- (J1B*) If *p* is necessarily true and *S*'s belief that *p* is a necessary proposition is justified then *S*'s belief that *p* is a necessary proposition is justifiable a priori; and
- (K2A) If *S* knows a priori that *p* then *p* is necessarily true.

Moreover, (K1A*) and (J1A*) stand or fall together, and (K1B*) and (J1B*) stand or fall together.

Third, Kripke's examples of necessary a posteriori truths provide counterexamples to (K1A*) and (J1A*), and his example of a contingent a priori truth provides a counterexample to (K2A). But, as we argued in Sect. 4, Kripke cannot have it both ways. My inclination is to maintain, following [Donnellan \(1979\)](#), that reference-fixing stipulation yields only knowledge that a sentence expresses a truth and not knowledge of the truth expressed. Hence, (K2A) survives Kripke's counterexample. On the other hand, strong cases have been made that identity statements involving different co-referential terms are knowable a priori.²⁴ Consequently, the counterexample involving essential properties poses the strongest threat to (K1A*) and (J1A*).

Fourth, the essential properties counterexample is traditional since it is not based on Kripke's novel semantic and metaphysical theses. Kripke introduces it to forestall an objection to his account of identity statements involving proper names: namely, that if the account is correct, then such statements are necessary but not knowable a priori. He maintains that proponents of the objection confuse necessity and a priori knowability, and introduces the discussion of essential properties to show that there are considerations other than his treatment of identity statements involving proper names that require that we distinguish between necessity and a priori knowability. Considerations about *de re* modality require such a distinction, according to [Kripke \(1980, p. 110\)](#), since we "might very well discover essence empirically." He defends this contention by drawing on [Sprigge's \(1962\)](#) discussion of essential properties.

Fifth, (K2A) may be open to a traditional counterexample. Recall, again, our counterexample to (J2A*). The contingently false proposition "In all changes of the material world, the quantity of matter remains unchanged" appeared to Kant to be necessarily true and, on that basis, he was justified a priori in believing that it is true. But if a contingent falsehood can appear to be necessarily true, then surely a contingent truth

²⁴ Most notably, [Salmon \(1991\)](#) and [Soames \(2002\)](#).

can appear to be necessarily true. In fact, Kant provides what is arguably such an example. He maintains that the proposition “In all communication of motion, action and reaction must always be equal” is necessary and, hence, justified a priori. This proposition, although contingent, is arguably true.²⁵ Hence, we have a contingently true proposition that appeared to Kant to be necessarily true and, on that basis he was justified a priori in believing that it is true. The vexing question here is whether such a case of a priori justified true belief is a case of a priori knowledge. One might argue that this is a Gettier case since it is a coincidence that Kant’s belief is true given his evidence. But this contention is not entirely convincing in light of the fact that, in general, Kant’s a priori pronouncements are taken seriously by philosophers even if some are ultimately rejected.

Finally, (KIB*) and (JIB*) emerge as the least controversial principles linking the epistemic and the modal. (KIB*) is endorsed by Kant, Whewell, Chisholm, and Kripke. It faces no decisive counterexamples since the example of the rationally blind cognizer introduced in Sect. 2 raises unresolved issues about the sense of ‘possibility’ embedded in the expression ‘knowable a priori’. Yet there is no general argument in support of it beyond the (question-begging) contentions that experience teaches us only what *is* the case and that experience cannot find any reason for what *must* be the case.²⁶ Nevertheless, these contentions are intuitively plausible and continue to enjoy widespread acceptance. Hence, (KIB*) is an intuitively plausible, widely accepted

²⁵ Here I go out on a limb. According to Symon (1971, p. 568): “Newton’s third law, applied to cases where action and reaction occur at the same point, does satisfy the postulate of relativity.” Hence, it appears that, if we give Kant the benefit of doubt and take his version of the third law to be suitably restricted to such cases, his belief is true. Thanks to Joe Mendola for drawing my attention to this reference.

²⁶ An anonymous reviewer drew my attention to Barnes (2007), who offers a challenging defense of (KIB*). I don’t find the defense compelling for several reasons. First, the overall structure of Barnes’s argument takes the form of a disjunctive syllogism: (1) Assume that S knows that p is absolutely necessary. (2) There is no good empirical explanation of S’s knowledge that p is absolutely necessary. Therefore, (3) knowledge of absolute necessity is a priori. The bulk of the paper consists of a defense of (2). Radical empiricists, such as Devitt (2005), offer parallel arguments to the denial of (3): (1) Assume that S knows that p is absolutely necessary. (2*) There is no good a priori explanation of S’s knowledge that p is absolutely necessary (or anything else). Therefore, (3*) knowledge of absolute necessity (or anything else) is not a priori. Both arguments share a common logical structure and first premise. Hence, the choice between the two competing conclusions turns on the relative merits of (2) and (2*). Since we can safely assume that both a priori and empirical explanations will be open to *some* problems, the choice between (2) and (2*) will turn on which explanation faces *more* or *more serious* problems. Barnes, however, focuses exclusively on the problems facing empirical explanations. Therefore, he is not in a position to argue that those problems are greater in number or more serious than the problems facing a priori explanations. Second, as Barnes himself notes, his defense of (2) appears to prove too much: it appears to prove (2+) There is no good empirical explanation of S’s knowledge that p is nomologically necessary. Barnes (2007, p. 520) resists this charge by arguing “We can observe a sample of F’s in the actual world, and we can see that they are all G. Then if we limit ourselves to relevantly similar F’s in other relevantly similar possible worlds, we can justify an inductive inference to the claim that all of these F’s are also G.” I find the argument opaque. Consider a true accidental generalization, (AG) All A’s are G, and a true law of nature, (LN) All L’s are N. Presumably, we can justify an inductive inference from observed A’s and L’s, to, respectively, (AG) and (LN). The crucial question, however, is how do we justify the inference from (LN) to (LN*) It is nomologically necessary that (LN). It is not sufficient to maintain that we limit ourselves to the relevantly similar L’s in other relevantly similar possible worlds; for, if that response were sufficient, we could also utilize it to argue from (AG) to (AG*) It is nomologically necessary that (AG). But, clearly, we cannot do so in the case of (AG). So what is the inductive method that allows us to move from (LN) to (LN*), but prohibits us from moving from (AG) to (AG*)?

principle that enjoys no independent support but faces no clear counterexamples. (J1B*) is rarely discussed in the literature since (K) focuses attention exclusively on the relationship between a priori *knowledge* and the modalities. (J1B*)'s status, however, is analogous to that of (K1B*). It faces no decisive counterexamples, but there is no general argument in support of it beyond the (question-begging) contentions that also support (K1B*). The intuitive plausibility and widespread acceptance of these contentions also support (J1B*). Hence, (J1B*), like (K1B*), is an intuitively plausible, but not as widely accepted, principle that enjoys no independent support but faces no decisive counterexamples.

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