Notes

1 To be sure, images can be possessed memorially, as is my image of the Statue of Liberty when I do not have it in mind; and 'imaging' can designate a process, as when I call up the series of images corresponding to looking at the statue from the Brooklyn Heights Promenade and glancing northward to Lower Manhattan, thence to the Brooklyn Bridge, and up the East River beyond the bridge.

2 Both kinds of properties are experiential, in that they represent features of experience. Both, then, might be considered *phenomenal*, but sometimes the term 'phenomenal prop-erty' is restricted to the sensory kind that characterizes either the five senses or "inner sense," by which we feel sensations pain and pleasure.

3 Such contentual objects are often called *intentional objects*, largely on the ground that, like lofty deeds we intend to perform but do not do, they need not exist.

4 See David Hume, *A Treatise of Human Nature* (first published in 1739–40), Part IV, Section II), ed. by L. A. Selby-Bigge (Oxford: Oxford University Press, 1888).

5 One might still distinguish between genuine and hallucinatory images by insisting that to be a genuine image *of* (say) a loved one is to be an image caused by the corresponding sense, say, seeing that very person. This view has an odd consequence, however. Through hearing a detailed description I could have an accurate image of Maj that is in a sense *of* her, since it matches her sufficiently well, even if I have never seen her; but this would be a hallucinatory image, on the causal conception just stated. There are certainly different kinds of images and various ways in which they can mislead, but the analogy between perception and introspective consciousness does not extend in any simple way to the possibility of inner illusions and hallucinations, and there is no need to pursue the matter in more detail here. For a detailed non-technical discussion of mental imagery see Alastair Hannay, *Mental Images: A Defence* (London: George Allen & Unwin, 1971) and my critical examination of this book in 'The Ontological Status of Mental Images,' *Inquiry* 21 (1978), 348–61.

6 Some of these cases seem to occur in *self-deception*, a phenomenon that raises profound questions for both epistemology and the philosophy of mind. For a comprehensive collec-tion of papers on it (including one offering my own account), see Brian P. McLaughlin and Amelie O. Rorty (eds), *Perspectives on Self-Deception* (Berkeley and Los Angeles: University of California Press, 1988).

7 The thesis of omniscience might be restricted to *introspectable* truths, as opposed to such truths as that there are 1,001 berries visible on the blackberry bush I am imaging, which I could know only on the basis of memory (and arithmetic) as well as introspection. The infallibility thesis might also be plausibly restricted in a similar way. This point bears on the connection between the two theses but should not affect the argumentation in the text.

8 Repression need not be exactly the kind of thing Sigmund Freud described, requiring psychoanalysis or very special techniques to come to consciousness. There are various kinds and degrees of repression; the point here is simply that *having* a belief (or other dispositional state) is possible even if it is repressed. One might, for example, still act in the way expected of a believer of the relevant proposition.

9 For reasons to be considered in Chapter 10, skeptics tend to deny this.

10 There is less disanalogy in the negative cases: we cannot always cease at will to concentrate introspectively on our mental life, as illustrated by preoccupying pains; and we cannot cease perceiving at will without, for example, closing our eyes or turning off a radio. This blocks the path of observation, just as an aspirin might block the path of pain.

4   Reason

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4   Reason

I see the green field and I believe that it is there before me. I look away, and I believe that I am now imaging it. I remember its shape, and I believe that it is rectangular. These are beliefs grounded in my experience: perceptual, self-conscious, and memorial. But I also believe something quite different about what I see: that *if* the spruce to my left is taller than the maple to my right, then the maple is shorter than the spruce.

On what basis does one believe this obvious truth? Do we even need to see the trees to know it? Certainly it is on the basis of perception that I believe *each* of the two comparative propositions; it is easy to see, for instance, that the spruce is taller than the maple. But I do not believe on the basis of perception that *if* the spruce is taller than the maple then the maple is shorter than the spruce. As a rational being, I apparently just grasp this truth and thereby believe it.

The kind of apparently elementary use of reason this case illustrates seems basic for both knowledge and justification. But there are other kinds of examples to be considered, and there is continuing debate about the nature and grounds of our knowledge and justification regarding the simple, obvious truths that we seem to know just in virtue of the kind of understanding of them any rational being might be expected to have. A good way to seek an understanding of the epistemological role of reason is to begin with a notion that seems central for the most basic kind of knowledge and justification reason gives us – *self-evidence*.

Self-evident truths of reason

Such truths as the luminous one that if the spruce is taller than the maple, then the maple is shorter than the spruce, have been said to be evident to reason, conceived roughly as a mental capacity of understanding. They are presumably called *self-evident* because they are thought to be evidently true taken by themselves, with no need for supporting evidence. Indeed, they are often thought to be *obvious* in themselves, roughly in the sense that simply upon attentively coming to understand them, one normally sees their truth and thereby knows it.

In the light of such points, we might more specifically characterize self-evident propositions as those truths such that (1) if one (adequately) understands them, then by virtue of that understanding one is justified *in* believing them, and (2) if one believes them on the basis of (adequately) understanding them, then one thereby knows them.[1] (1) says roughly that

understanding them suffices for being situationally justified in believing them; it provides a justification *for* belief. (2) says in effect that this understanding can ground knowledge: the understanding is sufficient to render a belief based on it knowledge. (2) implies, then, that self-evident propositions are true. This implication is appropriate, since the self-evident is standardly regarded as true (and in the interest of clarity I have put truth explicitly into the characterization above).

What I have said does not imply, however, that the kind of justification one gains from understanding the self-evident is indefeasible (i.e., so secure that it cannot be defeated) rather than prima facie. But at least some cases of this kind of justification are plausibly taken to exhibit justification as strong as any we can have. It can be difficult to appreciate how defeasibility can occur here because it is commonly thought that all self-evident truths are *also* obvious. But not all of them are – at least to finite minds. Apart from logical training, certain self-evident logical truths are not obvious; and it may not be obvious to most of us, on first considering it, that first cousins have a pair of grandparents in common. But this satisfies both (1) and (2) and is self-evident.[2]

There is an important analogy to perception. Just as one can see a visible property of something, such as its rectangularity, without believing that it has that property, one can comprehendingly (understandingly) consider a self-evident proposition without coming to believe that proposition; and just as one's seeing a bird fly past gives one justification for believing it did whether or not one forms this belief, understanding the proposition that if the spruce is taller than the maple, the maple is shorter than the spruce, gives one (situational) justification for believing this whether one does or not.

When it comes to concepts, there seems to be a further analogy to perception: a hierarchy analogous to the perceptual one. There is understanding a concept, such as *being taller than*. Second, there is objectually believing it to apply to something, say to a pair of things, such as the spruce and the maple. Third, there is propositionally believing something that "applies it," as where one conceives the trees as, say, the spruce and the maple and believes that the spruce is taller.[3]

With self-evident propositions like the straightforward proposition that if the spruce is taller than the maple, then the maple is shorter than the spruce, one need not consult one's experience of the kind of thing described, or even ponder the propositions in question, in order to grasp – roughly, to understand – those propositions. And when one does come to understand them and focuses on them in the light of that understanding, one thereby normally comes to believe and know that they are true.[4]

There are many truths which, in the way just illustrated, we readily grasp and thereby immediately believe. That is, we believe them immediately in the sense that we see their truth without having to infer them from anything else. The point is not the temporal one that we grasp them

instantly, though we may. What is crucial is that our belief exhibits *epistemic immediacy*: the belief is not based on inference or on a further, evidential belief. If it were, it would be epistemically mediate: mediated by (and thereby at least partly grounded in) the set of premises from which we infer (or on the basis of which we believe) the proposition, as my belief that Socrates is mortal is mediated by the two propositions which are part of the basis of my believing this: that he is a human being, and that all human beings are mortal.[5]

The proposition that Socrates is mortal is in another way unlike the proposition that if the spruce is taller than the maple, then the maple is shorter than the spruce. It is not self-evident. There are at least two ways to explain why. First, Socrates and mortality are not intrinsically connected, as are one thing's being taller than a second and the second's being shorter than the first. An omnipotent God could have kept him in existence. Second (and speaking more generally), to know that Socrates is mortal one needs more than reflection (a use of reason) on this proposition. One apparently needs information not contained in the proposition. Even thinking of him as a human being does not absolutely preclude every route to his immortality. But reflection (a use of reason) indicates that the spruce's being taller than the maple precludes the maple's not being shorter than the spruce.

This kind of point concerning propositions like the one about the two trees has led philosophers to consider them to be *truths of reason* – roughly, truths knowable through the use of reason as opposed to reliance on sense experience. The same kind of point has led philosophers to regard them as also *necessarily true–necessary*, for short: as such that their falsehood is absolutely precluded; there are simply no circumstances in which they are false. If a proposition is not necessary (necessarily true) *and* its negation is also not necessary, it is called *contingent*, since whether it is true – i.e., its truth *or* falsity, in another terminology – is contingent on (dependent on) circumstances. That there are more than two trees in my yard is contingent. There are more, but there need not be: the number is contingent on how many I want.

The classical view of the truths of reason

How might we understand the justification of our beliefs of self-evident and apparently necessary propositions and other truths of reason? And how do we know them? The best-known answers to these questions, and probably the only ones we should call the *classical* answers, derive largely from Immanuel Kant, though there are similar ideas in earlier philosophers who influenced Kant. He discussed both the truth of the kinds of propositions in question and how we know them.[6]

What Kant said is complex and difficult to interpret precisely, and I am simply going to lay out a version of the classical account which may correspond only roughly to Kant's views. Moreover, although I am interested

mainly in our justification and knowledge regarding the truths of reason, I will also talk about the basis of these truths themselves where that is useful in discussing how we can know or justifiedly believe them.

Analytic propositions

Take the proposition that all vixens are female. I easily grasp its truth, and I immediately believe it: I depend on no premises or evidence. There was a time when 'vixen' was not in my vocabulary. I might then have looked at the sentence 'All vixens are female' and not known what proposition it expressed, much less seen the particular truth (true proposition) it does express. But this point does not show that I do not immediately believe that truth once I *do* (comprehendingly) consider it. It shows only that encountering a sentence which expresses a truth does not enable one to consider that truth unless one *understands* the sentence.

We can see, moreover, that when we do consider the truth that all vixens are female, we do not (or at least need not) know it on the basis of beliefs about the *sentence* 'All vixens are female'. For we can consider that same truth by using some other sentence to express it (say in Spanish), and perhaps without using a sentence at all.[7] If, however, we think about what grounds the truth of the proposition, we may discover something which in turn helps to explain why we so readily understand and believe it.

To get a sense of the ground of this truth, consider what a vixen is. It is a female fox. Indeed, the concept of a vixen may be analyzed in terms of being female and being a fox. So, in saying that a vixen is a female fox, one could be giving an elementary analysis of the concept of a vixen. Now suppose that (like Kant) we think of an analysis of a concept as indicating what the concept *contains* (or, in a certain way, includes). We can now say that the concept of being female is part of the concept of a vixen, and that being female is thus an element in being a vixen.[8]

In the light of all this, we might call the truth that all vixens are female an *analytic proposition*. To cite one major conception Kant presented, this is a proposition such that what it predicates of its subject can be "analyzed out of" the concept of that subject. Here the subject is vixens (or any arbitrarily given vixen), and the predicate is *being female*, which is part of, and so analyzable out of, the concept of a vixen. The same sort of thing holds for the propositions that all bachelors are unmarried, that all triangles have three angles, that all sound arguments have true premises and true conclusions, and so on. Analytic propositions are usually considered clear cases of the self-evident.[9]

Necessary propositions

This way of looking at our example helps to explain something else that is true of the proposition that all vixens are female: it *cannot* be false and, in

that sense, is necessary (a necessary truth). To see this point, try to conceive of a non-female vixen. Since the concept of a vixen is analyzable as (and hence equivalent to) that of a female fox, one is in effect trying to conceive of a *non*-female female fox. This would be something that both is and is not female. We would have a contradiction. Hence, there cannot be such a thing, on pain of contradiction. It is thus absolutely impossible — in a sense implying impossibility by the laws of logic — that there be a non-female vixen. By contrast, it is possible that there is, and also that there is not, a 200-pound vixen. The proposition that all vixens weigh less (or more) than this is *contingent*: neither necessarily true nor necessarily false.

Because the falsity of analytic propositions entails a contradiction in this way, they are often thought to be — and are sometimes even *defined* as — those that are true *on pain of contradiction*. That is, their falsity entails a contradiction, and hence they can be false only if a contradiction is true. That is absolutely impossible. Analytic propositions are therefore regarded as truths that hold in *any* possible situation and hence are necessary (though other kinds of truths may also be considered necessary).

Now if analytic propositions are true by virtue of the sort of conceptual containment relation we have been exploring, might we not know each one we do know in virtue of grasping the containment relation basic to it, in the sense that we have an adequate understanding of that relation? In considering the proposition that all vixens are female, one in some way grasps the containment relation between the concept of a vixen and that of being female. Intellectually — *intuitively*, in one widely used terminology — one sees the relation and thereby sees and (non-inferentially) knows the truth it underlies.

It might be objected that the correct account is instead this. One quickly or subconsciously reasons: The concept of a vixen is analyzable as that of a female fox; *being female* is contained in that analysis; hence all vixens are female. So, it may be claimed, one knows that all vixens are female only inferentially. A defender of the classical view would reply that this second-order reasoning indicates how one might *show* that one knows that all vixens are female, but it does not indicate *how* one *knows* it, at least not if one just grasps its truth in the normal way.

The classical account can grant that one perhaps *could* come to know the proposition in that indirect way, by conceptual analysis. But one need not come to know it in that way; and normally, if one did not *already* know that vixens are female foxes, one would not even be in a *position* to know (on one's own) the sophisticated truth that the *concept* of a vixen is analyzable as that of a female fox. Believing that all vixens are female, in virtue of grasping the crucial containment relation between the concept of a vixen and that of a female, does not require coming to know it in that sophisticated way.

The analytic, the a priori, and the synthetic

We can now see how the classical account of the truths of reason might apply to apparently *non*-analytic truths that are directly and intuitively grasped. Think about the proposition that nothing is both red and green all over at one time. This is apparently self-evident and hence a truth of reason. But is it analytic? Can we analyze *being non-red* out of the concept of being green, or *being non-green* out of the concept of being red, so that anyone who said that something is red and green all over at once could be shown to be implying that it is (wholly) red and non-red, or green and non-green? This is doubtful. For one thing, it is not clear that we can analyze the concept of being red (or the concept of being green) at *all* in the relevant sense of 'analyze'. Still, on the classical view, we can know through the use of reason the necessary truth that nothing is red and green all over at once.

Let us consider two kinds of objections to the idea that the proposition that nothing is red and green all over at once is self-evident and necessary, yet not analytic. The first is based on treating the proposition as contingent and so not necessary or self-evident; the second objection says it is analytic after all.

Take the contingency objection first. One might think that there could be a scientific explanation of why nothing is red and green all over at once; and if there is, then (on a plausible and standard view of such matters) the proposition is not self-evident or even necessary. How might such an explanation go? We can, after all, scientifically clarify what being red (or any other color) is by appeal to facts about light. This might seem to enable us to know all there is to know about basic relations among colors, even though the relevant facts about light are contingent. On the classical view, however, although scientific investigation helps us to understand certain facts about red *things* (and perhaps about the property of being red), it does not indicate what is essential to the *concept* of a red thing, such as being non-green at the time it is red. Similarly, it is essential to the concept of a vixen that it is equivalent to that of a female fox.

To be sure, one could discover scientifically that vixens have a unique tracking system. But normally one would be identifying them for study as *female* foxes and hence would not set out to discover whether they are female. On the classical view, we cannot identify anything as a vixen — say, for experimental purposes — except under the assumption that it is female. Thus, the possibility of discovering anything inconsistent with its being female is ruled out from the start. If our experimental subject is *selected* by its having a specified property, we cannot find out experimentally that *it* (as opposed to something else it may turn into) lacks that property.

Similarly, one would not normally set out to discover scientifically whether what is red all over is ever also green all over at the same time — since it would be at best difficult to wonder whether this is true without immediately *seeing* that it is. This does not make analytic or any self-evident

truths more important than scientific truths. The former are simply different: they are not of the right kind to be open to scientific verification or falsification, and in part for this reason they also do not compete with scientific truths.

It appears, then, that the suggested "scientific" objection to the classical view fails. If, however, the proposition that nothing is red and green all over at once is not a "scientific truth," that might be because it is analytic after all. Let us explore further whether the classical view is correct in claiming that the two self-evident truths in question still differ in this: being non-green is not analyzable out of the concept of being red, whereas being female is analyzable out of the concept of being a vixen.[10]

This brings us to the second objection. The objection proceeds by arguing (against the classical view) that the proposition that nothing is red and green all over at once is analytic. Could one not indirectly analyze the concept of being red as equivalent to the concept of having a color *other than* green and blue and yellow, and so on, where we list all the remaining colors? This claim may seem right, because it *seems* self-evidently true that red is the only color filling that bill. But the claim is doubtful. For one thing, it is questionable whether a determinate list of all the other colors is even possible. More important, even if it is possible, the concept of being red is not *negative* in this way. There is, in addition, an important disanalogy: whereas one could not have the concept of a vixen without having the concepts of a fox and a female, one could have the concept of being red (and so have an understanding of that concept) without even having all of these other color concepts (even if one must have *some* other color concept).

Moreover, proponents of the classical view would stress here (what is independently plausible) that an analysis does not merely provide a *conceptual equivalent*, that is, one which (necessarily) applies to the same things to which the concept being analyzed does, as the concept of being not-not-red applies to everything the concept of being red does. An analysis of a concept (as we shall see in Chapter 8 in exploring analyses of the concept of knowledge) must meet at least two further conditions. First, it must exhibit a suitable subset of the elements that constitute the concept; second, it must do so in such a way that one's seeing that they constitute it can yield some significant degree of *understanding* of the concept. The concept of being red is surely not constituted by the complex and mainly negative property of being a color that is not green, not blue, and so on; and one could not understand what it is for something to be red simply in terms of understanding that long and perhaps indefinite list.

Indeed, one could presumably understand the list of other colors quite well even if one had never seen or imagined redness, and one had *no* perceptual, imaginational, or other concept of redness. It is arguable, in fact, that the concept is *simple* in the sense that, unlike that of a vixen, it is not analyzable into elements of any kind.

On balance, then, it appears that the proposition that nothing is red and green all over at once is not analytic. This does not, however, prevent our

rationally grasping the truth of that proposition. Truths that meet this rational graspability condition – roughly a knowability through conceptual understanding condition – have been called *a priori propositions* (propositions knowable 'from the first'), because they have been thought to be such that they can be known a priori, in a very strict sense of this phrase: known simply through reason as directed toward them and toward the concepts occurring in them, at least if reason is used extensively enough and with sufficient care. Propositions that are a priori in this strict, knowability sense – as is the proposition that nothing is red and green all over at once – are also plausibly considered self-evident.[11] Moreover, the kind of justification for believing a self-evident proposition when we believe it in the indicated way is a basic kind of justification and is often called a priori.

By contrast with analytic propositions, however, the kind of a priori proposition exemplified by that one seems to assert something beyond what analysis of the relevant concepts can show. For this reason, propositions of this kind are also called *synthetic propositions*, though these are typically defined negatively, simply as *non-analytic*. Positively conceived, they typically bring together or "synthesize" concepts and properties, even if in a negative way (as by linking redness with colors other than green – by including it among these other colors). Synthetic propositions do not or need not, even in part, analyze concepts.

It is noteworthy that although analytic propositions are characterized roughly in terms of how they are *true* – by virtue of conceptual containment (or, on a related account, on pain of contradiction) – a priori propositions are characterized in terms of *how they are* known, or can be known: through the operation of reason.[12] (This allows that they can *also* be known through experience, say through receiving testimony, at least if the attester's knowledge is, directly or indirectly, grounded in the operation of reason.)

On this basis, a priori propositions are also negatively characterized as knowable "independently of experience," where this phrase above all designates no need for evidential dependence on experiential grounds, such as those of perception. But even if this negative characterization of a priori propositions is correct so far as it goes, understanding them through it will require understanding the kinds of positive characteristics I am stressing. Let us pursue these further.

Three types of a priori propositions

If we take knowability through the use of reason as a rough indication of what constitutes the a priori in general, then it includes not only self-evident proposition but certain others that are not self-evident: most clearly those propositions *not* themselves knowable simply through reason as directed toward them and toward the concepts occurring in them, but self-evidently *following from* (entailed by) such (self-evident) propositions. This is the simplest case of what is *a priori in the broad sense*. Consider the proposition

that either nothing is red and green all over at once or I am flying to the moon. This self-evidently follows from the proposition about red and green, which (apparently) is self-evident. It self-evidently *follows* because it is self-evident that *if* nothing is red and green all over at once, then *either* that is true *or* I am flying to the moon.

One might think that this disjunctive (either-or) proposition is self-evident because it is so obviously both true and necessary. But even though this is true, one knows it, not in virtue of understanding it itself, but in virtue of its self-evidently following from something that *is* self-evident. One knows it inferentially, on the basis of knowing the simpler proposition that nothing is red and green all over at once. One cannot know it *just* from understanding it, as with a self-evident proposition, but only through seeing the quite different truth that if nothing is both red and green at once, then either that proposition is true or I am flying to the moon. This conditional (if–then) proposition *is* self-evident; hence, it is an utterly secure ladder on which to climb from knowledge that nothing is red and green all over at once to knowledge that either this is so or I am flying to the moon. That disjunctive proposition is *a priori in the broad sense.*

Suppose, however, that a proposition is neither self-evident nor self-evidently entailed by a self-evident proposition, but *is* provable by self-evident steps (perhaps many) from a self-evident proposition. Since there is more than one step and there can be many steps, such a provable proposition might or might not be knowable without reliance on memory, depending on the mental capacity of the rational being in question. Nonetheless, since it can be known through such a *rigorous proof* – one that begins with a self-evident proposition and proceeds only by self-evident steps (entailments) to its conclusion – a rigorously provable proposition may be called *ultimately a priori* (or ultimately self-evident, though the former term seems preferable). It is not a priori in the broad sense because it is not linked to the self-evident by a *single* step – and not necessarily self-evidently linked to it. But since it is ultimately traceable to a self-evident proposition, it may be considered a priori in the indicated ultimate provability sense.

Thus, in speaking of propositions that are a priori in the most comprehensive terminology, I include not only the intuitively central cases that are self-evident or just one step from it – propositions self-evidently entailed by a self-evident proposition – but also those not thus entailed but nonetheless provable by self-evident steps from a self-evident proposition.

We could say, then, that for the kind of classical view in question, the self-evident is the *base* of the a priori: a priori propositions are those that are either self-evident (i.e., a priori in the narrow sense) or, though not themselves self-evident, self-evidently follow from at least one proposition that is (hence are a priori in the broad sense). The general notion of an a priori proposition, applicable to both cases, is roughly the notion of a truth that either is a self-evident proposition or is self-evidently entailed by one.[13]

Knowledge of propositions a priori in the broad or ultimate provability sense, unlike knowledge of those a priori in the narrow sense, depends on knowledge of some self-evident proposition as a ground. But neither kind of knowledge depends on knowledge of any empirical proposition, and in that sense both kinds are "independent of experience."[14]

It is because a priori propositions (of any sort) are understood in relation to how they can be *known* that the notion of the a priori is commonly considered epistemological. The notion of the analytic is more often taken to be of a different kind, say conceptual, since analytic truths are conceived as grounded in a simple containment relation of concepts.[15] It should perhaps not be surprising, then, that the categories of the analytic and the a priori are not identical. In both cases, however, proponents of the classical view have taken the relevant propositions to be necessary: this is commonly thought to be obvious for the analytic ones, which are true "on pain of contradiction," but it has seemed reasonable to classical theorists to hold that even synthetic a priori propositions must be necessary. The thought is apparently that if their truth were contingent and so depended on what holds in (is contingent on) some possible situations but not others, one could not know it just on the basis of understanding the proposition itself. This is plausible, and I shall tentatively assume it.

The empirical

A huge variety of truths are not a priori. That the spruce is taller than the maple is one of them. Truths that are not a priori are called *empirical* (or *a posteriori*) *truths.* This means, roughly, that the propositions in question can be known only *empirically*, that is, are knowable (assuming they are knowable) only on the basis of experience, as opposed to reason – above all on the basis of perceptual or self-conscious experience (in the ways described in Chapters 1 and 3).

Saying simply that a proposition is empirical (or a posteriori) leaves open whether it is true: there are empirical falsehoods, such as that it is not the case that the spruce is taller than the maple, as well as empirical truths. (In this the term 'empirical proposition' is unlike 'a priori proposition' and 'necessary proposition,' which are not commonly used to refer to falsehoods, but my main examples of empirical propositions will be truths.)

For the classical view, empirical propositions as well as a priori propositions are crucial for our lives. Indeed, the former include every truth known perceptually, such as those known through observing the colors and shapes of things around us, and all truths known scientifically, such as generalizations linking the temperatures and the volumes of gases, or ingestions of drugs with change in behavior. A certain range of a priori propositions, such as those of logic and pure mathematics, are presupposed by common sense and science. Empirical propositions are also required to guide us in dealing with the world, but the classical view sees them as open to disconfirmation

Analytic truth, concept acquisition, and necessity

Analytic truths, as well as certain synthetic ones, are called a priori because analytic truths are knowable through the use of reason. But analytic truths appear to be knowable – or at least are showable – through a different use of reason than is appropriate to the synthetic a priori truths. It may be that I know that nothing is red and green all over at once by virtue of simply grasping, as a rational creature, a kind of incompatibility between the concept of being red (at a time and place) and the concept of being green. But, as pointed out earlier, I apparently do not know it by virtue of grasping a *containment* relation between being red (or green) and anything else. If this does not illustrate two different uses of reason, it at least indicates a different kind of application of reason to different kinds of relations of concepts.

Since my knowledge of the proposition that nothing is red and green all over at once is not based on grasping a containment relation, it differs from my knowledge of the analytic truth that all vixens are female. Yet in both cases the relation between the concepts involved in the truth seems to be the basis of that truth. In both, moreover, I apparently know the truth through rationally *understanding* that relation: a relation of analytic containment in one case, and of mutual exclusion in the other.

These points do not imply that experience is irrelevant to knowledge of the a priori. On the classical view, I do need experience to *acquire* the concepts in question, for instance to acquire color concepts or the concept of a fox. But once I have the needed concepts, it is my grasp of their relations, and not whatever experience I needed to acquire the concepts, which is the *basis* of my knowledge of analytic and other a priori truths.

In part because of these similarities, as well as because the falsity of a priori propositions seems absolutely inconceivable, the classical view takes synthetic a priori truths as well as analytic truths to be necessary. They cannot be false, even though in the synthetic a priori cases it seems not to be strictly contradictory to deny one. For instance, claiming that something *is* red and green all over is not contradictory in the sense that it entails that some proposition – say, that the object in question has a definite color – is and is not true. Still, on the classical view it is absolutely impossible that something *be* red and green all over at once. We need only reflect on the relevant concepts (above all, the color concepts) to realize that nothing is red and green all over at once; we readily grasp (apprehend) an exclusion relation between being red and being green.

It is also commonly held by philosophers in the classical tradition that all necessary propositions are a priori. One rationale for this might be that necessity is grounded in relations of concepts and these (or at least the relevant ones) are the same in all possible situations. A mind that could adequately survey all possible situations (like the divine mind as often conceived) could thus know the truth of all necessarily true propositions. Since this survey method would be possible without analyzing one concept

explain how there can be synthetic necessary truths. And for the classical view, these, being necessary, are also a priori.

Summarizing, then, the classical view says that all necessary propositions are a priori and vice versa, but it maintains that analytic propositions constitute a subclass of a priori ones, since some a priori propositions are synthetic rather than analytic. The view tends to conceive the truth of all a priori propositions as grounded in relations of concepts (or of similar abstract entities, such as "universals," in Bertrand Russell's terminology).[16] But the position conceptually accounts for these propositions differently: for necessary propositions in terms of the unrestricted *circumstances* of their truth (the absolute impossibility of their falsehood in any circumstances), for analytic ones in terms of *how* they are true (typically, by virtue of containment relations), and for a priori propositions in terms of how their truth is *known* (through understanding).

The empiricist view of the truths of reason

The classical view of the nature of what I am calling *a priori truths* – also called *truths of reason* – and of our knowledge of them has been vigorously challenged. To appreciate the epistemological significance of reason as a source of justification and knowledge, and of truths of reason themselves, we must consider some alternative accounts of these truths.

John Stuart Mill held that ultimately there are only empirical truths and that our knowledge of them is based on experience, for instance on perception.[17] We might call this sort of view *empiricism about the (apparent) truths of reason.* The name suits the view, since the position construes apparently a priori truths as empirical, though it need not deny that reason as a capacity distinct from perception has *some* role in giving us justification and knowledge. Reason may, for example, be crucial in extending our knowledge by enabling us to prove geometrical theorems from axioms. But the sort of view I want to explore (without following Mill in particular) denies that reason grounds justification or knowledge in the non-empirical, a priori way described by the classical theory.

Rationalism and empiricism

Before we consider Mill's thesis in detail, we should contrast it, from the most general epistemological point of view, with that of Kant and other rationalists to get a better sense of what is at stake in the controversy between rationalism and empiricism. Kant's position on the truths of reason might be called rationalist, Mill's empiricist. These terms are used too variously to make precise definition wise. Very roughly, however, *rationalism* in epistemology takes reason to be far more important in grounding our knowledge than empiricism allows, and rationalists virtually always assert or imply that, in addition to knowledge of analytic truths, there is knowledge

of synthetic a priori truths. Very roughly, *empiricism* in epistemology takes experience, most notably sensory experience, to be the basis of all of our knowledge except possibly that of analytic propositions, understood as including purely logical truths, such as the truth that if all whales are mammals and no fish are mammals, then no whales are fish. (For both empiricists and rationalists, analytic propositions are typically taken to include logical truths.)[18]

One might wonder why some empiricists grant that analytic truths may be a priori. The central point (though an empiricist might not put it this way) may be seen if we use the terminology of the classical theory: even if such logical propositions are not true by virtue of containment relations between concepts, their negations formally entail contradictions, for instance that some vixens are and are not female foxes. They are therefore paradigms of truths of reason; for the use of logic alone, which is perhaps the purest use of reason, can show that they can be false only if a contradiction is true – which is absolutely impossible. This is another reason why, as noted above, analytic propositions are sometimes given a broader characterization than I have proposed and are taken to be those whose negations entail a contradiction.[19]

Some empiricists do not allow that any knowledge, even of so-called analytic propositions, is genuinely a priori. A *radical empiricist*, like Mill, takes *all* knowledge to be grounded in experience. A *radical rationalist* (which Kant was not) would take all knowledge to be grounded in reason, for instance to be intuitively grounded in a grasp of self-evident propositions or deductively based on inference from a priori truths that are intuited.[20]

Empiricism and the genesis and confirmation of arithmetic beliefs

Empiricism about what are called the truths of reason is most plausible for the apparently synthetic a priori ones, so let us sketch it with reference to an apparently synthetic kind of a priori proposition that has been much in dispute. Mathematical truths, particularly truths of simple arithmetic, are often regarded as synthetic a priori. Consider the proposition that $7 + 5 = 12$ (Kant's example, also found in Plato's *Theaetetus*). It is easy to say that one just knows this, as one knows that nothing is red and green all over at once. But how does one know it?

Here we cannot readily find a good analogy for the simple exclusion relation we apparently grasp in the case of red and green. Could it be that from experience with objects, say with counting apples, then combining two sets of them, and recounting, we learn our first arithmetic truths and then use reason to formulate general rules, such as those for calculating larger sums?

Viewed in this way, arithmetic develops rather as a scientific theory is often thought to, with observations crucial at the base, generalizations formulated to account for them, and broader generalizations postulated to link all the observations and the narrower generalizations together. And do we not first learn to add by counting physical things, or by counting on our fingers?

To be sure, we perhaps cannot imagine how the number 7 added to the number 5 could fail to equal the number 12. But the world *could* go haywire so that when (for instance) five apples and seven oranges are physically combined, the result of counting the new set is *always* eleven. If that happened, would we not begin to think that arithmetic must be revised, just as Einstein's work showed that the physics of "the incomparable Sir Isaac Newton" needed revision? Perhaps the crucial epistemological consideration is what overall account of our experience is most reasonable; and if the best overall account should require rejecting a proposition now considered a priori and necessary, so be it.

From the standpoint of the classical view, several critical responses can be made. One concerns the distinction between two related but quite different things: the *genesis* of one's beliefs – what produces them – and their *justification*, in the sense of what justifies them. A second point concerns the question whether arithmetical propositions can be tested observationally. A third focuses on the possibility of taking account of what looks like evidence against arithmetical truths, so that even if one's final epistemological standard for judging a proposition *is* its serving the demands of the best overall account of experience, these truths can be preserved in *any* adequate account. Consider these ideas in turn.

First, granting for the sake of argument that our arithmetic beliefs arise from counting physical objects, is the experience that produces them what *justifies* them? The genesis of a belief – what produces it – is often different from what justifies it. The testimony of someone I realize is unreliable might, when I am off guard, produce my belief that different brands of aspirin do not, apart from additives, differ chemically. My belief would at that point be unjustified; but it might become justified later when I learn that aspirin is simply acetylsalicylic acid. Moreover, regardless of what produces our arithmetic beliefs initially, when they are justified in the *way* my belief that $7 + 5 = 12$ now is, experience does not appear to be what justifies them. For my part, I do not see precisely how the truth of the proposition might be grounded in the behavior of objects when they are combined; and I would not try to justify it, as opposed to *illustrating* it, by citing such behavior.

This brings us to the second point: it is far from clear that the proposition that $7 + 5 = 12$ is (empirically) *testable*, say by examining how objects combine, though it is *exemplifiable* in that way. The empiricist might reply that this by no means shows that the proposition is, as the classical view insists, necessarily true rather than contingent and empirical. Indeed, it does not. But let us look closely at the idea that it could be tested, and could thereby be disconfirmed by, for instance, our discovering that when sets of five objects are combined with sets of seven, we then find just eleven.

This brings us to a third response. How might one deal with repeated and systematic counter-evidence? Classical theorists will argue that it is

possible for the world to alter in such a way that this combination procedure results in one item's disappearing, or in our failing to see it, or in our misremembering how many items entered the mix before our re-counting. They will also argue that the unexpected realization of such possibilities would be a better interpretation of the strange cases described – hence of our overall experience – than saying that it has turned out to be false that 7 + 5 = 12. Thus, instead of saying that an arithmetical principle has been falsified, we would say that the world no longer uniformly exemplifies it.

One consideration favoring the classical view is that it is at best difficult even to understand how the purely arithmetical principle could be false. The number 7 plus the number 5 apparently equals the number 12, regardless of how apples and oranges behave. The arithmetic statement is apparently not *about* apples and oranges, though (so far as we know) their behavior exemplifies it. For the classical view, at least, it is about *numbers*, which, unlike the arabic or roman or other *numerals* we use to represent them linguistically, are abstract and non-physical.

Notice something else. In order to gather purportedly significant counter-evidence to the arithmetic proposition in question, one would have to rely, as already noted, not only on memory and perception (both highly fallible sources) but also on simple arithmetic: one would have to *count* disconfirming cases. A single apparent instance, say, of seven and five things not adding up to twelve, would not be significant, and one must keep track of how many anomalies there are, relative to confirmatory instances where the expected sum is counted out. It is not normally reasonable to give up a good theory on discovering a single apparent counter-instance. It appears, then, that we must trust arithmetic in our counting in order to take seriously empirical evidence that would undermine arithmetic.

One might think it is enough simply to *have* a significant number of such disconfirming cases. But this is not so. One must be justified in believing that the number *is* significant. And how could one achieve this if one either made no count or – in any case – could not rely on one's count of single cases to sum to a significantly large number? If it need not be true that 7 + 5 = 12, why should 1 + 1 + 1 disconfirming instances necessarily sum to 3? And would anything less than a huge number of apparently disconfirming cases be evidentially decisive against such a proposition of simple arithmetic? A single disconfirming instance would surely seem just an anomaly; there must be a significant number. One would, then, have to rely on some arithmetic propositions, such as that 1 + 1 + 1 disconfirmations = 3 (a minimally significant number, perhaps) in order to mount an effective challenge to the (necessary) truth that 7 + 5 = 12. Given the interconnections among arithmetic propositions, it is not clear that one could consistently (or at least with any plausibility) maintain the needed disconfirmatory propositions while denying that 7 + 5 = 12.

There may be a way around this difficulty, but even finding it would leave one far from a strong case for the contingent or empirical status of

arithmetic truths.[21] Even if one appealed, not to apparent counter-instances to the proposition that 7 + 5 = 12, but to a well-confirmed *theory* to argue that it could be false, one would need to do at least some counting of one's confirmatory data regarding that theory (not to mention other ways in which theory confirmation relies on arithmetic).

None of these points requires us to deny that there *is* a similar arithmetic proposition about apples and oranges, namely, that when we *count* five of the first and *place* them next to the result of counting seven of the second, we *can count* twelve all told. This proposition may easily be confused with its pure mathematical counterpart. The former is clearly contingent and empirical, but its being so does not show that the purely arithmetic proposition is also. The distinction between pure and applied mathematics can also be brought to bear on geometry.[22]

There is a related metaphysical dimension of the question of the status of arithmetic truths. By contrast with the classical view, radical empiricism denies that there *are* abstract entities and so, believing that mathematical propositions are about something concrete, radical empiricists naturally view them as generalizations about the behavior of physical objects. We need not accept the empiricist view to grant that if physical things did not exemplify the proposition that 7 + 5 = 12, the proposition would be of far less *value* to us even if necessarily true. If the physical world went haywire, it could turn out to be false that when seven apples are placed together with five more and the total collection is counted, the count yields twelve. This chaotic situation would falsify the *physical* principle already contrasted with the arithmetic one in question. But the physical principle is not, and does not even follow from, the purely mathematical proposition we are discussing.

Empiricism and logical and analytic truths

The empiricist view of the a priori can also be applied to analytic propositions and even to self-evident logical truths, and it may indeed appear more plausible in that case. Suppose that through scientific investigation we discover that vixens have certain characteristics we think of as male, such as certain hormones. Imagine that gradually (perhaps because of chemicals in the environment) these discoveries mount up so that the female foxes in our laboratory begin to seem more aptly classified as male than as female. Could not a time come when we begin to doubt that vixens are female after all?

And what about the logical principle of the excluded middle, which says that every proposition is either true or false? Consider the proposition that Tom is bald. Must this proposition be either true or false no matter what the quantity or distribution of hair on his head? Surely the proposition is an appropriate counter-example to the principle of the excluded middle.[23]

The classical view can offer its own account of these examples. For one thing, particularly over a long time, we can begin to use a term in a sense

different from the one it now has. Thus, the discoveries about vixens could result in our someday using 'vixen' to mean not 'female fox,' but 'fox with female external sexual characteristics and of the anatomical kind *K*' (where *K* is the kind of animal we have in our laboratory). Then, when we utter such words as 'Vixens are not really female,' we are not denying the analytic proposition *now* expressed by 'All vixens are female'. We have confirmed something else, rather than disconfirming this.

In this way, then, our experience might result in our someday no longer assertively uttering 'Vixens are female' to say anything that we believe. This certainly does not show that experience might falsify the proposition we *now* affirm when we assertively utter that. Given what we now mean by 'vixen,' in saying that all vixens are female we do not rule out that *those* "vixens" in the lab could have internal biological and chemical characteristics in the light of which *they* ultimately need not be considered female.

Regarding the principle of the excluded middle, I would stress that Aristotle plausibly argued against it, and some contemporary philosophers of logic do, too. The main reasons for doubting it, moreover, do not depend on empiricism. Let us explore some of them.

Consider again the vague statement that Tom (who has lost much of his hair) is bald. It may certainly be argued that this need not be either true or false. It is not as if 'bald' meant, say, 'having fewer than 500 hairs on the top of one's head'. It does not. And if it did, the term 'top' would still be vague and would cause the same trouble: it would be unclear in what *area* we must find 500 hairs. If the middle possibility – neither truth nor falsity – is to be ruled out here, it must be by a better argument. The principle of the excluded middle, though often used to suggest that even logical truths are not necessarily true, is controversial among rationalists and empiricists alike. The principle is a poor example to support the empiricist case against the necessity of logical truths.

When, by contrast, standard examples of simple logical truths are used, the effect seems very different. Consider the proposition that if Ann is coming by bus or she is coming by plane, and she is not coming by bus, then she is coming by plane (which exemplifies the general logical truth that if at least one of two propositions is the case and the first is not, then the second is). Is there any plausibility in the view that this might be false? I find none; and while nothing said here proves that the empiricist account of the a priori is mistaken, it appears less plausible than the classical account.

The conventionalist view of the truths of reason

There is another important approach to understanding the truths of reason and our justification and knowledge regarding them. It builds on the undeniable connections between how we use our language – specifically, on our linguistic conventions – and our knowledge of truths expressible in that language.

Truth by definition and truth by virtue of meaning

To see how this approach goes, suppose that analytic propositions may be said to be *true by definition*. On the assumption that the truth or falsity of definitions turns on linguistic conventions, one can now make moves parallel to the classical ones that are expressed in terms of concepts. Thus, 'vixen' is definable as meaning (the same thing as) 'female fox'; 'female' is part of the phrase; hence, by grasping a definition (even if we do not call it to mind) we can *see* how the proposition that all vixens are female is true. The predicate, 'is female,' expresses part of the meaning of the subject, 'vixen,' just as the concept of being female is part of the content of the concept of a vixen. Thus, according to conventionalism, by *appeal* to the definition of 'vixen' as having the same meaning as 'female fox,' we can also *show* that the proposition that all vixens are female expresses an analytic truth.

The conventionalist may grant that in the case of synthetic truths of reason, for instance that nothing is red and green all over at once, we cannot make the same moves. For the relevant color terms are indefinable, or in any case not definable in the needed way. But we can still speak of truth by virtue of *meaning*, in the limited sense that it seems to be a matter of the meanings of, say, the terms 'red' and 'green,' that if one of the terms applies to a surface at a time and place, the other does not. Why else would someone who sincerely denies that nothing is red and green all over at once seem to exhibit an inadequate understanding of at least one crucial term used in expressing that proposition?

What terms mean is a matter of convention. It depends entirely on agreement, usually tacit agreement, among the users of the relevant language, concerning the proper application of the term. We could have used 'vixen' differently; we in fact would have done so if the history of our language happened to differ in a certain way. Moreover, even now we could decide to use 'vixen' differently and proceed to do so.

The suggested account of the truths of reason – *conventionalism* – grounds them in conventions, especially definitional conventions, regarding meaning; and it conceives our knowledge of them as based on our knowing those conventions. Since knowledge of conventions is reasonably taken to be empirical knowledge based on suitable observations of linguistic behavior, conventionalism (on this interpretation) turns out to be a kind of empiricism regarding the truths of reason, and it has been held by some philosophers in the empiricist tradition. The claim is not that they are *about* words, but that knowledge of them is *based* on empirical knowledge of linguistic usage.

Knowledge through definitions versus truth by definition

Some of the points made by conventionalism are quite plausible. In grasping the definition of 'vixen' as meaning the same thing as 'female fox,' perhaps

we (knowing English) can see that all vixens are female; and by appeal to the definition perhaps under certain conditions we can show that this truth holds. But do these points undercut the classical view? If the points hold, that may well be because of something *non*-linguistic: perhaps, *in* grasping the definition we understand the *concepts* involved and thereby see a containment relation between the concept of a vixen and that of being female.

Furthermore, as a proponent of the classical account might also note, it seems possible to grasp the relevant conceptual relations, and thereby already know the analytic truth, even if one does not know any such definition. Indeed, it might be only on the basis of the analytic truths one knows – such as that all vixens are female, and that all female foxes are vixens – that one is able to *construct* a definition of 'vixen' in the first place. The definition would reflect what is already true in virtue of how the concepts in question are related; the concepts are not themselves created by or grounded in linguistic conventions.

Contrary to conventionalism, then, the knowledge of analytic truths would then be one's route to the definitional knowledge, not the other way around. Understanding the relations between the concepts expressed by the words in question would be the basis for judging the relevant definitions of those words; it would not be through a knowledge of the truth of those definitions that one understands the conceptual relations or knows the analytic truth. Hence, knowledge of analytic truths apparently does not depend on knowledge of definitions or conventions.

Conventionalism also fails to give a good account of what grounds the *truth*, as distinct from our knowledge, of analytic propositions. It is not *because* 'vixen' means the same thing as 'female fox' that all vixens are female. For, as we saw in assessing the empiricist view, this analytic truth does not depend on what 'vixen' means. This truth holds whether there is such a word or not. It could be expressed in some other language or by other English terms. It could be so expressed even if the word 'vixen' never existed.

There is another way to see limitations on what we can learn merely from definitions. Suppose that, although 'vixen' had always meant the same thing as 'female fox,' *both* terms had meant something else, for example 'wily creature'. In that case, 'All vixens are female' would still have expressed an analytic truth, but not the one it now does. It would have meant what we now mean by 'All wily creatures are wily creatures'.

Moreover, although one can come to know that all vixens are female *through* understanding definitions of terms that now express this truth, one cannot know it wholly on the *basis* of the truth of those definitions. A route to a foundation is not itself a foundation.[24] To know that all vixens are female by virtue of knowing that, say, 'vixen' has the same meaning as 'female fox,' I need a bridge between knowledge of linguistic convention and knowledge of vixens. Consider one thing such a bridge requires. I must be justified in believing a general principle something like this: that a proposi-

tion expressed by a subject–predicate sentence such as 'All vixens are female' is true if its predicate term – here 'female' – expresses something contained in the concept designated by its subject term, here 'vixen'. But this bridge principle is a good candidate for an analytic truth. If it is analytic, then, on pain of an infinite regress, one can know an analytic truth by knowing conventions only if one *assumes* some other analytic truth.

Moreover, to know, in the light of this bridge principle, that all vixens are female, I must take the relevant sentence, 'All vixens are female,' to be the kind of thing the principle applies to, that is, to be a sentence with a predicate that expresses something contained in the concept designated by its subject. I am in effect using logic to discern something about a particular sentence by bringing that sentence under a generalization about sentences. But how can conventionalism account for my knowledge (or justified belief) of the logical truths I thereby depend on, such as that if all sentences of a certain kind express truths, and this sentence is of that kind, then it expresses a truth?

I cannot respond by doing the same thing all over again with this logical truth; for that would presuppose logic in the same way, and the procedure would have to be repeated. The problem would arise yet again. No finite number of steps would explain my justification, and an infinite number would not be possible for me, even if it would help. We could thus never account for knowledge of a given logical truth without presupposing knowledge of one. Since conventionalism presupposes (at least) logical truths of reason, in order even to begin to account for analytic ones, it cannot show – and provides no good reason to believe – that either every truth of reason, or all knowledge of such truths, is grounded in convention.

Conventions as grounds for interpretation

These criticisms should not be allowed to obscure a correct point that emerges from reflecting on conventionalism. The meaning of 'vixen' *is* crucial for what proposition is expressed by the sentence 'All vixens are female,' that is, for what one is asserting when (in the normal way) one uses this sentence to make an assertion. Thus, if 'vixen' came to mean the same as 'wily creature,' that sentence would express a falsehood, since there are plenty of wily males. But from the fact that change in what our terms mean can result in our saying different things in uttering the same words, nothing at all follows regarding whether *what* we say in using these words is necessarily true, or true at all. Those matters depend on what it *is* that we say.

There are, however, insights underlying conventionalism: truths of reason are associated with meanings; they can be known when meanings are adequately understood; and they can be shown through pointing out relations of meanings. Moreover, without conventions, our "words" could not be said to have meanings: strictly speaking, we would have no words and could not plausibly call anything true by virtue of (verbal) meaning.

Important as these points about conventions are, they do not support the conventionalist view that the truths of reason themselves, or even our justification or knowledge regarding those a priori propositions, are *based* on what words mean or on our conventions for using them. For all that these points establish, our understanding of word meanings (including sentence meanings) is simply a route to our grasping of concepts and shows what it does about the truths of reason only because of that fact.

Some difficulties and strengths of the classical view

Of the accounts just considered, then, the classical view of the truths of reason and our knowledge of them apparently stands up best. But there are other accounts and many variants on the ones discussed here. Moreover, I have sketched only the main lines of the classical view and only some of the challenges to it. There are still other difficulties for it.

Vagueness

Recall the problem of vagueness. Perhaps the concept of being red, as well as the term 'red,' is vague. Is it, then, an a priori truth that nothing is red and (any shade of) orange all over? And how can we tell?

One answer is that although words are by and large vague, concepts are not, and what *is* red (i.e., what instantiates the concept of redness) is never orange even though we have no non-arbitrary way of precisely specifying the limits of colors. Thus, we might confront a sentence, say 'That painting has a patch that is at once red and orange,' which we cannot assess until we see whether it implies the necessary falsehood that the patch is two different colors all over at once or, because of the vagueness of its terms, expresses (say) the possible truth that the patch has a single color that can be considered red just as appropriately as orange.

This answer is only the beginning of a solution to the problem of how to deal with vagueness and is less plausible for highly complex concepts such as that of a work of art. The more vague our terms, the harder it is to discern what propositions are expressed by sentences using those terms, and thus the harder it is to decide whether these sentences express truths of reason. None of this implies, however, that there are not some clear cases of synthetic a priori truths. Perhaps the proposition that nothing is round and square, taken to belong to pure geometry, is an example. (There may also be examples in the moral domain, a possibility considered in Chapter 9.)

Meaning change and falsification

A related problem for the classical view emerges when we consider the close connection (which some regard as an equivalence) between what a term means and the concept it expresses. With this connection in mind, notice

too that meaning can change gradually, as where we discover things about vixens a little at a time and thereby almost imperceptibly come to mean something different by 'vixen'. A point may then come at which it is unclear whether the term 'vixen' expresses the concept it now does or not and, correspondingly, whether what is then expressed by 'All vixens are female' is analytic or not.

This unclarity about what concept 'vixen' expresses does *not* give us reason to doubt, regarding the proposition which that sentence now expresses, that it is analytic; but it does show that it may be difficult to decide whether or not an utterance or sentence we have before us expresses an analytic proposition. That difficulty may drastically limit the usefulness of the notion of the analytic in understanding philosophical and other problems.

It might be argued, moreover, that on reflection the distinction between meaning change (semantic change) of the kind illustrated and falsification of the proposition we started with simply does not hold. This point is especially likely to be pressed by those who think that the basic epistemological standard, the fundamental standard for judging whether a belief is justified or constitutes knowledge, is what is required for an overall account of our experience. This broad standard is compatible both with many versions of empiricism and with some versions of rationalism.

To understand the difference between meaning change in a sentence and falsification of what the sentence is used to assert, it is helpful to contrast two kinds of case. Compare the following states of affairs: (1) scientists' discovering that despite appearances vixens have such significant male characteristics that they are *not* really female – an outcome the classical theory says is impossible – and (2) scientists' making discoveries about vixens so startling that we come to use 'vixen' in a new sense, one such that, while scientists deny that "vixens" in this new sense are always female, what they are thereby saying provides no reason to doubt that what we *now* mean by 'All vixens are female' is true. Is there really a clear difference between (1) and (2) – roughly, between falsification of the belief about vixens we now hold and a change in the meaning of the terms we use to express it?[25]

Classical theorists take (2) to be possible and tend to hold that it is only because possibilities like (2) are not clearly distinguished from (1) that (1) *seems* possible. They regard the difference between (1) and (2) as clear enough to sustain their view and tend to conclude that what may seem to be a falsification of an analytic proposition is really only a change in meaning that leads us to substitute, for an analytic truth, what looks like a proposition inconsistent with it, yet is actually compatible with it. Other philosophers think that the difference is not clear at all and that future discoveries really can weigh against what the classical view calls analytic propositions.[26]

It is difficult to doubt, however, that there are *some* truths of reason, such as elementary logical principles, and such simple analytic propositions as that all vixens are female, which are both a priori and necessarily true.

Whether some truths of reason are also synthetic is more controversial, but it looks as if some of them are. Whether, if some of them are, those synthetic truths are also necessary is also very controversial. I see no good reason to deny that they are necessary, but there may be no clearly decisive argument to show this.

If synthetic truths of reason are necessary, perhaps one must simply see that this is so by reflecting on the examples. In any case, our capacity of reason, our rational *intuition*, as it is sometimes (perhaps misleadingly) called, is a source of beliefs of simple truths of reason, such as the self-evident truth that if the spruce is taller than the maple, then the latter is shorter than the former. We can know the *truth* of these intuitively, even if more is required to know their *status* as, say, necessary or contingent, a priori or empirical. Moreover, reason, applied in our contemplating or reflecting on certain a priori truths, can yield both situational justification – hence justification for holding beliefs of them – and actual justified beliefs of them. Clearly, reason can also yield knowledge of them.

The possibility of empirical necessary truth

It is one thing to say, with the classical view, that every a priori truth is necessary; the thesis that every necessary truth is a priori is less plausible. Consider the truth that sugar is soluble in water. Ordinarily this is thought to be a law of nature and as such something that must (of necessity) hold. Yet it is apparently not a priori: one could adequately understand it without thereby being justified in believing it, nor does it seem to follow self-evidently from anything self-evident. Indeed, it seems to be the kind of truth that can represent an empirical discovery. Proponents of the classical view would maintain that the necessity in question is not "logical" in the sense of absolutely precluding falsehood, but *nomic* (from the Greek *nomos*, for law), in roughly the sense characterizing laws of the natural world as opposed to every possible world or situation.

It does appear that one can clearly conceive of a lump of sugar's failing to dissolve in water, whereas one cannot clearly conceive of something that is (in overall shape) both round and square (if this is conceivable at all). But perhaps once the idea of solubility in water is properly qualified (in ways sketched in Chapter 9), there may no longer seem to be any more than a difference of degree between the two cases. I am inclined to doubt that the difference is only one of degree, but let us leave the matter open and proceed to cases that pose a greater challenge to the classical view.

The truth that gold is malleable is arguably more basic to what gold is than solubility in water is to what sugar is. Is it even possible for something to be gold without being malleable? Compare the question whether a vixen could turn out to be male. This also seems impossible, but one difference is that whereas there are good ways of identifying specimens of gold without selecting them in part on the basis of malleability, there are no comparably

good ways of identifying vixens without selecting them in part on the basis of being female. Still, even classical theorists will grant that taking the proposition that gold is malleable to be necessary does not commit one to considering it analytic, as is the proposition that all vixens are female. Critics of the classical view will maintain that it is surely not obvious that a specimen of gold could turn out to lack malleability, yet it is equally far from obvious that adequately understanding the proposition that gold is malleable is sufficient to justify it.

If we move to a theoretical identification statement, such as that water is H_2O, it seems even less likely that we have a proposition that is contingent rather than absolutely necessary, yet it also appears that the proposition is not a priori. The basis of our knowledge of it is scientific theorizing, not understanding. To be sure, there is "heavy water," but its existence bears on the kind of hydrogen atom, not on whether water is necessarily H_2O. In any case, a different kind of example may more strongly support this conclusion that some necessary truths are empirical. This time we turn to the domain of biology.

Essential and necessary truths

As the identity of human beings is normally understood, who they are is essentially tied to their parents. It is simply not possible that *I* might have had (biologically) different parents. Anyone otherwise like me but born of different parents is only a fortuitously identical "twin." Here, then, is an empirical proposition (that I am the son of R and E) which is apparently necessary.

Notice, however, that the proposition that I have the parents I do is singular and existential, implying the existence of the particular thing it concerns (me), whereas all the clear cases of necessary truth we have considered are general and non-existential. To say that nothing is both round and square, for instance, does not entail that there is anything round or square: it says roughly that anything which is round is non-square, and it would be true even if all the round and square things in the universe had been destroyed (and presumably even if there never had been any except perhaps in the mind of someone contemplating creating them).

What a proponent of the classical view might say of the parentage case is that the proposition that I have the parents I do is an *essential truth* – one attributing to a thing a property absolutely essential to it, roughly in the sense that it could not exist without it – but not a necessary truth. The idea is roughly this: a necessary truth holds in any possible world or situation; an essential truth holds in, but only in, those possible worlds or situations in which what it is about exists.[27]

One trouble with this view is that even in a world without them, we could talk of water and H_2O, as we can of what is round or square. Perhaps the best the classical view can do here is, first, to distinguish

between two kinds of necessary truth, those applicable to entities that must exist, such as (arguably) numbers, and those applicable to entities that need not exist, and second, to argue that the former truths are a priori. The idea might be that necessary truths are grounded in the nature of things, and that the nature of the kinds of things that must exist is knowable through the use of reason. The nature of water must be discovered by scientific inquiry; that of the abstract property of roundness is apparent to adequate reflection.

The idea that necessary truths are grounded in the nature of (the relevant) things has some plausibility. At best, however, it does not in any obvious way apply to purely formal necessary truths, such as that if some As are Bs, then some Bs are As, where 'A' and 'B' are variables and do not stand for anything in particular.
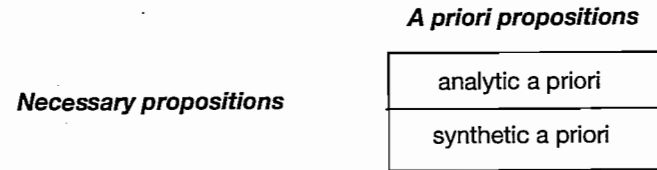
There is, moreover, a further objection to extending the idea to imply the apriority of all necessary truths. A theorem might follow from a necessarily true proposition and thereby be a necessary truth – since what follows from a necessary truth is itself necessarily true – yet not be a priori because there is no way to know it simply through adequately understanding it or through adequately understanding its entailment by self-evident steps from something that is self-evident. We must not simply assume that every such theorem is self-evidently entailed by a *self-evident* proposition, or that some proof of it must proceed by *self-evident* steps from a self-evident proposition. This assumption is not self-evident, and the classical view must establish it by argument. It is not clear that a cogent one can be found.

Moreover, even apart from those points, the only possible proof by self-evident steps from a self-evident axiom might be long and complicated; this would put the theorem a long inferential distance from the self-evident axiom(s). Granted, a theorem like this would still be *provable* from what is self-evident. But simply being thus provable entails only being what I called ultimately a priori. That status is consistent with the possibility that, for finite minds, knowledge of the proposition depends on memory. The status is thus not sufficient for an uncontroversial kind of apriority.

It appears, then, that there can be necessary truths knowable only through the work of empirical investigation or of arduous mathematical proof of a kind that cannot ground what we might call strictly a priori knowledge. Those truths, to be sure, might be both provable and knowable just on the basis of *a* use of reason – though knowledge based on a long proof also seems to depend on memory. Not just any use of reason, however, qualifies knowledge reached through it as a priori.

From the falsity of the classical thesis that every necessary truth is a priori, it does not follow, of course, that the classical view is mistaken in positing synthetic a priori knowledge or in claiming that every a priori proposition is necessary. (See Figure 4.1 for a brief representation of the classical and revised views of the a priori.)

The classical view:

A priori propositions

Necessary propositions

| analytic a priori |
| synthetic a priori |

The revised view:

Necessary propositions

A priori propositions

Synthetic propositions

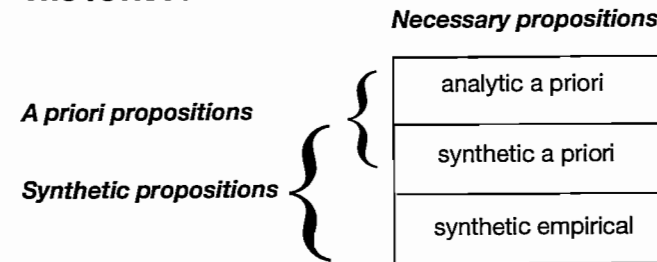| analytic a priori |
| synthetic a priori |
| synthetic empirical |

Figure 4.1   The a priori, the analytic, and the necessary

Reason, experience, and a priori justification

Reason – conceived roughly as our mental capacity of understanding, especially in conceptual reflection or in inference – is a basic source of belief, justification, and knowledge. Like introspective consciousness and unlike perception and memory, it is an *active* capacity, in that we can, within limits, employ it successfully at will. I can, simply because I want to, reflect on logical and mathematical propositions. But although I can look around me just because I want to, whether I perceive anything depends on there being something there: trees and roses and books are not available to the eye in the same unfailing way that concepts are numbers are available to thought. Through reflection on the huge range of objects of thought, we can acquire a vast amount of justified belief and significant knowledge.

To maintain that there is a priori knowledge and justification does not commit one to denying that reason has a genetic dependence on experience. Reason yields no knowledge or justified belief until experience, whether perceptual, reflective, or introspective, acquaints us with (or develops in us) concepts sufficient for grasping a priori propositions. But despite this genetic dependence of reason on experience, in one way reason may be an even firmer basis of justification and knowledge than experience. If experience is the ground from which reason grows, it is not the sole determinant of the range or power of reason. The view from the top of the tree may be more comprehensive than the view on the ground.

A priori beliefs

The following plausible *principle of justification for a priori belief* is a partial indication of the justificatory power of reason: normally, if one believes a proposition solely on the basis of (adequately) understanding it – believes it in an *a strictly a priori way*, as we might describe it – this belief is justified.[28] (I have in mind rational persons, of course, not just any possible believer.)

There is a counterpart plausible epistemic principle – call it *a principle of knowledge for correct a priori beliefs* – to the effect that normally, if one believes a *true* proposition in the a priori way just described, one knows that it is true. The first principle says roughly that a belief held (by a rational person) in an a priori way is normally (prima facie) justified; the second says roughly that true beliefs thus held normally constitute knowledge. Believing in this a priori way is appropriate to (and typical for) beliefs of a priori propositions (though they may often be believed on the basis of testimony), but it does not entail that the object of belief *is* a priori (or a necessary truth or necessary falsehood).

It may also be true that normally, if one believes a proposition solely on the basis of one or more premises that self-evidently entail it and are themselves believed in the a priori way just described, this belief is justified. Again, such a proposition need not be a priori, but this principle is highly appropriate to what is a priori in the broad or the ultimate sense – not self-evident but either self-evidently entailed by something that is, or provable by self-evident steps from a self-evident proposition. What the principle expresses is the idea that normally self-evident entailment transmits the kind of justification that is based solely on understanding: specifically it carries that justification across a self-evident entailment. Hence, normally, if you believe a proposition on the basis of believing, with this kind of justification, a second one which self-evidently entails the first, then your belief of the first is also justified.

If these principles seem too permissive, note that we do not normally believe propositions in the strictly a priori way in question unless they are a priori and thus *can* be known on the basis of understanding them. We normally have no tendency whatever to believe, solely on the basis of understanding them, propositions about the state of the weather or of the objects in our environment or of the well-being or plans of others. Philosophers commonly say of such propositions that we cannot "determine a priori" (or tell or know a priori) whether they are true, and here 'a priori' designates an a priori way of believing rather than the status of the propositions in question. Compare how much we believe on the basis of perception, memory, and introspection; not only is this far more than is normally believed on the basis of conceptual understanding, it is also quite different in the kind of grounding of the resulting beliefs.[29]

Loose and strict senses of 'a priori justification' and 'a priori knowledge'

So far, I have been speaking of knowledge and justification arising from believing in a strictly a priori *way*. This is not necessarily a priori knowledge or a priori justification, just as not everything perceptually believed is perceptual knowledge or perceptually justified. When such knowledge or justification is not strictly speaking a priori, one might still call it a priori knowledge or a priori justification in the loose sense. Let us consider justification first.

Consider the proposition that people tend to feel offended when they are insulted. This is vague, but not too vague to enable us to see that it is not an a priori truth (it seems empirically true or false, since it concerns what psychological reaction a kind of conduct in fact tends to elicit). Still, imagine someone who thinks that insulting someone self-evidently entails being offensive to the person and that feeling offended is necessarily appropriate to what is offensive and tends to occur when one takes a person to be insulting one. Such a person might argue that, on the basis of understanding it, we can believe the proposition that people tend to feel offended when insulted, and that we may, on this basis, be justified in believing that. If one might be so justified, then we might speak of a priori justification in the loose sense. We may also say that the belief itself is a priori in the loose sense, since it is grounded in an a priori way: if it is not grounded in the strictly a priori way (based solely on an adequate understanding of the proposition), it is at least believed in *an* a priori way – it is based solely on an understanding of the proposition. Just as a perceptual belief can be justified and false (as where one first sees a straight stick half submerged in water and thinks it is bent), this belief can be also.

Another case of a priori justification in the loose sense can occur when, although one believes a proposition that *is* a priori, one believes it on the basis of an inadequate understanding of it, hence in an a priori way, though not a strictly a priori way. One might, for instance, overlook a subtlety or confuse one notion with a similar one, such as believing a proposition and being disposed to believe it. Suppose that, on the basis of my understanding of it, I believe a mathematical theorem that is a priori in the broad sense. Suppose further that this understanding, although inadequate, is reasonable (say because it represents a reasonable though subtly misguided interpretation of the theorem). Then my belief may be justified. This is a second case of a belief held in an a priori *way* and exhibiting a priori justification in the loose sense. Here the proposition is a priori, but the justification, though based on a reasonable understanding, is defectively grounded. In the other case of a priori justification in the loose sense, the belief is also held in an a priori way, but the proposition is not a priori.

If a belief that is a priori justified in the loose sense constitutes knowledge and is based on understanding the relevant proposition(s), we might

speak of a priori knowledge in the loose sense. But since both our examples of such justification exhibit a *defective* (though reasonable) understanding in the basis of the justification, they are not plausibly considered instances of knowledge. If one believes something (wholly) on a basis embodying conceptual error, this belief is not plausibly taken to constitute knowledge. (This seems so even if the conceptual error is justified.)

Suppose, however, that I believe a mathematical theorem on the twofold basis of a self-evident axiom (which I adequately understand) and the justified true belief that the theorem is entailed by the axiom (we may assume the second belief to be grounded wholly in my mathematical knowledge and understanding). Suppose further that the theorem is entailed, but not *self-evidently* entailed nor self-evident. It is not self-evidently entailed because adequately understanding the conditional proposition that if the axiom holds, then the theorem does is not sufficient to justify believing this conditional. To see the truth of this conditional proposition, I must note several intermediate steps from the axiom to the theorem, so that I do not see its truth (or the entailment it expresses) on the basis of adequately understanding the proposition. Still, the entailment is provable, and by proving it I may know the theorem. This is surely a broadly a priori way of knowing it, and the proposition itself is, in my terminology, ultimately a priori. Correspondingly, we may speak of a priori knowledge in the loose sense here. But my knowledge of the proposition is not a priori, in the strict sense; for the theorem is not a priori, even in the indirect sense. By valid deduction, I can prove it using the a priori procedures illustrated, but such provability of a proposition is not sufficient for its being self-evident or even knowable a priori in the strict sense of that phrase.

By contrast, a priori knowledge in the strict sense is not only more than true belief held in a strictly a priori way, it is also more than knowledge of an a priori proposition. I could know a simple logical truth on the basis of testimony, even if it *can* be known on the basis of understanding alone. This would be knowledge of an a priori proposition that is not even a priori knowledge in the loose sense. Its grounding in testimony does not prevent its being knowledge, but testimonial grounding of a belief does preclude its constituting a priori knowledge of any sort. Again, the analogy to perception is helpful. Just as perceptual knowledge is knowledge based on perception and thus more than knowledge about a perceptible, a priori knowledge is knowledge based on understanding and thus more than knowledge of an a priori proposition.

To achieve a more specific characterization of a priori knowledge we do well to begin with a crucial constituent of it – *a priori justification*. In the strict sense (the sense that mainly concerns us), this is justification based directly or indirectly on understanding a self-evident proposition (the justification will be only situational if the person in question does not believe the proposition). A priori justification (in the strict sense) thus divides into two kinds, depending on whether it is directly or indirectly based on understanding some self-evident proposition. (1) A priori justification for

believing a proposition is based *directly* on such understanding where the justification depends only on understanding that proposition itself. This is a priori justification in the strict and narrow sense. (2) A priori justification for believing a proposition is based *indirectly* on such understanding where the justification depends on understanding a self-evident entailment of that proposition by some self-evident proposition. This is a priori justification in the strict but broad sense.[30]

If this outline is correct, then *a priori knowledge*, in the strict sense, might be plausibly taken to be knowledge that is based, directly or indirectly, in the way just indicated, on understanding one or more self-evident propositions. There is, then, in addition to a division between a priori justification and a priori knowledge in the strict and loose senses, a division between direct and indirect (non-inferential and inferential) a priori justification, and direct and indirect a priori knowledge, in both senses.[31] (See Figure 4.2 for a brief representation of the dimensions of the a priori I have been describing.)

The power of reason and the possibility of indefeasible justification

We have seen that, and perhaps to some extent how, the justificatory and epistemic power of reason enables it to ground a priori knowledge and a priori justified beliefs of a priori propositions. We have also seen its power to provide such knowledge and justification, in loose senses of 'a priori knowledge' and 'a priori justification,' for propositions that are not a priori but invite belief on the basis of their conceptual content. These senses are especially appropriate for propositions that are provable from what is a priori. Is the power of reason such that it provides for something that even introspective experience apparently does not – indefeasible justification? It will help to focus on a concrete example.

There may be truths of reason that are so simple and luminously self-evident that they *cannot* be unjustifiably believed, at least at a time when one comprehendingly considers them. Could one comprehendingly consider, yet unjustifiably believe, that if Shakespeare is identical with the author of *Hamlet*, then the author of *Hamlet* is identical with Shakespeare? This is doubtful. One could perhaps believe it partly on the basis of a bad argument; if one did, there would be something unjustified in the *way* one believes it. But if one believes it, one has some understanding of it, and if one understands something this simple to the extent required for believing it, it is at best difficult to see how one could fail to have an understanding of it adequate to yield justified belief of it, at least at a time when one comprehendingly considers it. Perhaps, then, a belief held under these conditions would be – or at least could be – indefeasibly justified.

If there are propositions like this, then there can apparently be indefeasible justification: justification so secure that those possessing it cannot be unjustified in believing the proposition in question.[32] But not all a priori

justification (even in the strict sense) should be considered indefeasible. Justification for believing even certain logical truths can be defeated by plausible skeptical arguments.

PROPOSITIONS:

A priori in the narrow sense: self-evident; roughly, adequate understanding is a sufficient ground for justification; belief based on such understanding constitutes knowledge. (This basic case is *direct self-evidence*.)

A priori in the broad sense: not directly self-evident but either (a) *indirectly self-evident*, i.e., not self-evident but self-evidently entailed by a self-evident proposition, or (b) *ultimately a priori*, i.e., not self-evident in either sense but provable by self-evident steps from a self-evident proposition.

JUSTIFICATION:

A priori in the strict sense: (a) based on an adequate understanding of a directly self-evident proposition, or (b) indirectly based on such an understanding via a self-evident entailment of the proposition in question by a self-evident proposition.

A priori in the loose sense: not a priori in the strict sense but based on *an* understanding of the proposition in question (the proposition itself need not be a priori or true).

KNOWLEDGE:

A priori in the strict sense: knowledge (a) of an a priori proposition that is directly or indirectly self-evident, and (b) constituted by a belief that is a priori justified in the strict sense.

A priori in the loose sense: knowledge (a) of a proposition that is not directly or indirectly self-evident but is provable by self-evident steps from some self-evident proposition, and (b) constituted by belief based on understanding such a proof.

BELIEF:

A priori in the narrow sense: (a) held in an a priori way; roughly, based on an understanding (possibly an inadequate understanding) of the proposition in question, and (b) of a proposition that is a priori (in the narrow *or* broad sense).

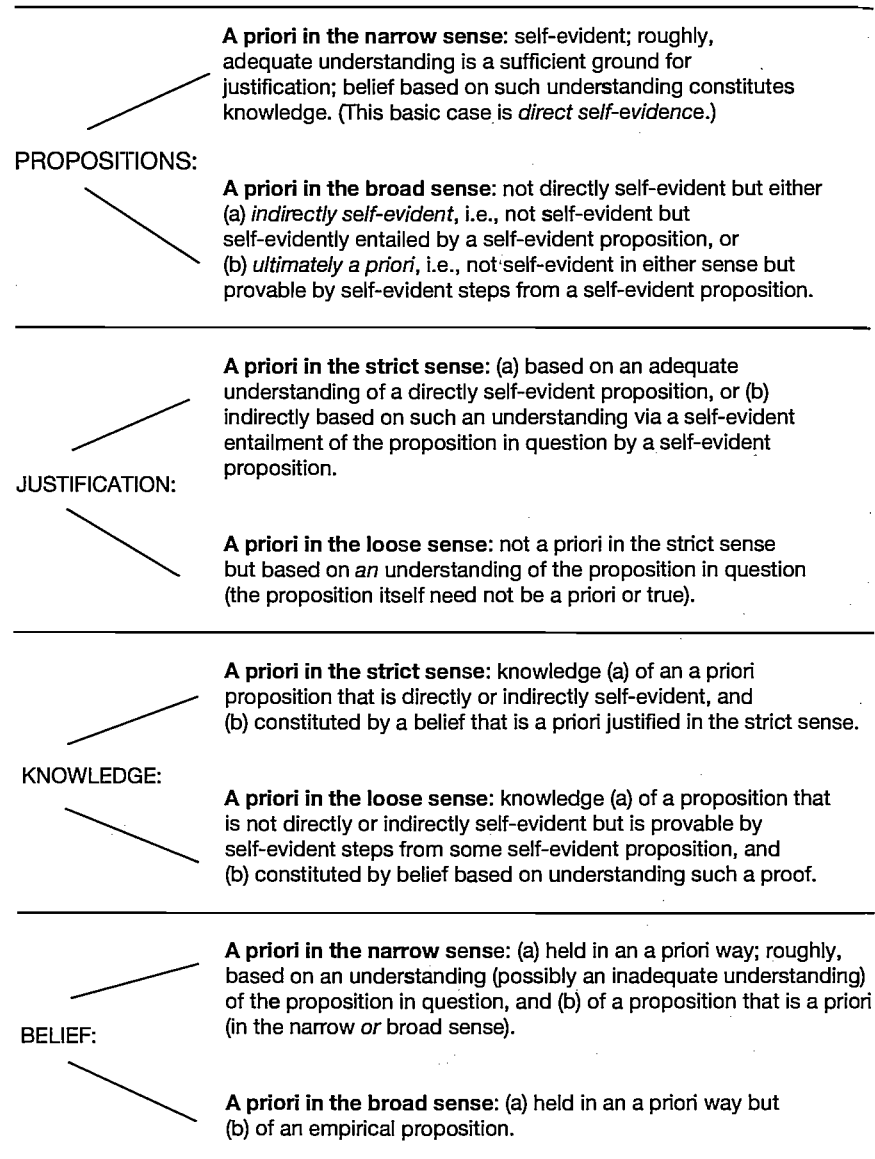**A priori in the broad sense:** (a) held in an a priori way but (b) of an empirical proposition.

Figure 4.2 Outline of a four-dimensional conception of the a priori

Perhaps, moreover, not all presumptively indefeasible justification need be a priori. Consider my justification for believing that I exist, a proposition that is neither a priori nor necessary but is arguably such that I cannot unjustifiably believe it. If there is indefeasible justification, this is important in dealing with skepticism (as Chapter 10 will), but plainly such justification is not a characteristic mark of either a priori or empirical justification. If, on the other hand, there is no indefeasible justification (something I leave open here), at least our understanding of simple self-evident truths of reason gives us both very secure justification for believing those truths and, when we do believe them on the basis of adequately understanding them, knowledge of them.

In summarizing some apparently warranted conclusions regarding the truths of reason, we might focus on how much seems plausible in the classical view that the a priori is coextensive with the necessary but includes the analytic as a subcategory: that any proposition that is a priori is necessary and conversely, but not every a priori proposition is analytic. Apparently, it is true that not all propositions knowable on the basis of adequately understanding them are analytic: we have seen good reason to think that not everything a priori is analytic. The classical view seems correct in this. It seems mistaken, however, in the idea that every necessary proposition is a priori, though probably not in the plausible idea that every a priori proposition is necessary.

More positively, in addition to our having a priori knowledge of self-evident propositions, on the basis of such knowledge we may know many truths that are at least ultimately a priori: not themselves self-evident but self-evidently entailed by, or provable by self-evident steps from, some proposition that is. Many of our beliefs, most clearly certain logical and mathematical ones, are grounded in understanding in the indicated way, i.e., on the basis of understanding their content. Reason, then, as manifested in our capacity for understanding, is one of the basic sources of belief, justification, and knowledge; and, in a way that the other three sources we have explored do not, it enables us to know truths that hold not only in the world of our experience but in any circumstances whatever.

Notes

1 *Adequacy* of understanding of a proposition cannot be merely partial understanding, and it is more than simply getting the general sense of a sentence expressing it, as where one can analyze the grammar of the sentence, indicate something of what it means through examples, and perhaps translate it into another language one knows well. Adequacy here implies not only seeing what the proposition says but also being able to apply it to (and withhold its application from) an appropriately wide range of cases. This matter is treated in some detail in my 'Self-Evidence,' *Philosophical Perspectives* (1999). Note also that there is no appeal here to understanding the *necessity* of the propositions (though the characterization lends itself to taking them to be necessary). In this respect my notion of the self-evident is simpler and more moderate than the traditional one common in much

of the literature. See, for example Laurence BonJour, 'Toward a Moderate Rationalism,' *Philosophical Topics* 23, 1 (1995), 47–78, esp. section 3.

2 For a helpful discussion of obviousness related to (but quite different from) the one in my 'Self-Evidence' and connected with the theory of the a priori in general, see Robin Jeshion, 'On the Obvious,' *Philosophy and Phenomenological Research* 60, 2 (2000).

3 Two points are appropriate here. (1) A fourth case is one in which a concept is not only *exercised* in a belief but explicitly figures in it, as where one believes that the concept *being taller than* is instantiated by the spruce and the maple. (2) The analogy between perception and conception I am developing is meant to leave open what concepts are and what it is to understand one. As will later be apparent, philosophers differ in their understanding of the truths of reason in part because of their different understandings of the nature of concepts.

4 One reason for the normality qualification is to make room for the possibility that one can consider and adequately understand a self-evident proposition yet fail to believe it. Brain manipulation might cause such failure. We should also make room for the possibility that, especially with more complex self-evident propositions – say that if p entails q and q entails r and r entails s, and s is not true, then p is false – it may take a person time to form the belief.

5 *Temporal immediacy*, unlike epistemic immediacy, is a property not primarily of beliefs as such but of their formation. A belief is temporally immediate when its formation occurs "without delay" upon the person's considering the proposition in question. One could also say that propositions are temporally immediate in a derivative sense when they are so obvious that one normally believes them immediately on (comprehendingly) considering them. Many self-evident propositions are like this. But when I consider some self-evident propositions, such as that if there never have been siblings, then there never have been first cousins, it may or may not take me a moment to see their truth. Still, when one does see such a truth, the belief one forms will (at least normally) be epistemically immediate, not inferential. So, this proposition and my coming to believe it may or may not be temporally immediate. By contrast, the proposition that I am now seeing print *is* temporally immediate (for me) but is not self-evident. It is evident not in itself, but *through* what I see.

6 Kant's most detailed presentation of his views on these matters is in his *Critique of Pure Reason* (first published in 1781), but a short presentation is provided in the Preamble to his *Prolegomena to Any Future Metaphysics* (1783).

7 There has long been controversy about whether such thought is possible without using language, or at least having a language. Donald Davidson is among those to argue for a strong dependence of thought on language. See, for example his *Inquiries into Truth and Interpretation* (Oxford: Oxford University Press, 1984). Relevant critical discussion of Davidson is provided by Ruth Barcan Marcus in 'Some Revisionary Puzzles About Belief and Believing,' *Philosophy and Phenomenological Research*, supplement to vol. 50 (1990), 133–53, which brings out serious problems for the view that beliefs must have sentence-like objects. There is no need to take a stand on this issue for my main purposes in this book.

8 *One* way to conceive this is as follows: if the concept of F is part of the concept of G, then having the property (of) F is entailed by having the property (of) G.

9 This is plausible if (1) the correct analysis of a key concept in an analytic proposition, say that of a vixen, is discoverable, without reliance on anything beyond understanding that concept, by anyone with an (adequate) understanding of the proposition, and (2) given a correct analysis of that concept, the truth of the analytic proposition is appropriately evident. However, some analytic propositions are not understandable in this way; some might be *provable* only by a lengthy process from one that is (a notion discussed on page 122). Further, it is by no means clear that every analytic proposition is self-evident in the very common sense that implies a fairly high degree of obviousness. If, as seems plausible, the self-evidence of a proposition simply implies that *some* kind of adequate

understanding is sufficient for justification for believing it, then we might plausibly distinguish between the immediately and the mediately self-evident and allow that the latter propositions may be understandable (to normal persons) only on the basis of considerable reflection. Cf. Thomas Aquinas's view (which Kant might have known) that

> Any proposition is said to be self-evident in itself, if its predicate is contained in the notion of its subject … *Man is a rational being*, is, in its very nature, self-evident, since he who says *man* says *a rational being*; and yet to one who does not know what a man is, this proposition is not self-evident … some propositions are self-evident only to the wise, who understand the meaning of the terms of the propositions.
>
> (*Summa Theologiae* Question 94, Article 2)

This seems to anticipate Kant's containment notion of the analytic and largely accords with the conception of the self-evident I have introduced.

10 There are philosophers who regard colors as subjective in a way that might seem to undermine the example here. I do not see that taking the proposition that nothing is red and green all over at once to be necessary, synthetic, and a priori entails any particular analysis of color properties, and I doubt that the example fails. If the example should depend on a mistaken realist account of color and for that reason fail, anti-realism about shape properties is less plausible, and the proposition that nothing is round and square might serve as well. For accounts of the status of color see C. L. Hardin, *Color for Philosophers, Unweaving the Rainbow* (Indianapolis: Hackett, 1988), and Edward Wilson Averill, 'The Relational Nature of Color,' *Philosophical Review* 101 (1992), 551–88. For a detailed discussion of color properties, with application to the apparently synthetic a priori proposition that nothing is red and green all over at once and with a defense of the view that color properties supervene on (and so are determined by) dispositional properties of physical objects, see Colin McGinn, 'Another Look at Color,' *Journal of Philosophy* XCIII, 2 (1996), 537–53.

11 This allows that such propositions can *also* be known empirically, say through testimony, though there are restrictions (discussed in Chapter 5) on how this may occur. The characterization suggests that an a priori proposition is knowable non-inferentially even if only on the basis of considerable reflection, but the exact mode of the appropriate reflection is not something that need be settled here. A full account of this conception of the a priori would explicate the kind of possibility of knowledge in question; it is presumably not mere logical possibility in the sense that no contradiction is formally entailed by the occurrence of the relevant knowledge, but a conceptual possibility, roughly in the sense that such knowledge is provided for by the concept of the relevant kind of knowledge: the kind grounded in understanding propositions of the sort in question. My preference is to characterize the a priori in terms of self-evident propositions and leave open what kind of possibility there has to be of the sort of understanding that grounds justification for believing those propositions. For a valuable treatment of possibility and necessity arguing that such modal notions are irreducible, see Scott A. Shalkowski, 'Conventions, Cognitivism and Necessity,' *American Philosophical Quarterly* 33 (1996), 375–92.

12 Kant's Section 2b of his Preamble to the *Prolegomena to any Future Metaphysics* (trans. by Lewis White Beck, New York: Liberal Arts Press, 1950) opens with 'The Common Principle of All Analytical Judgments is the Law of [non]Contradiction' and almost immediately continues: "For the predicate of an affirmative analytical judgment is already contained in the concept of the subject, of which it cannot be denied without contradiction."

13 In a broader usage, a falsehood can be called an a priori proposition provided it is an a priori *truth* that it is false. This less common usage raises no special problems but presents a terminological complication I ignore in the text.

14 There is a subtlety here that needs comment: imagine that a self-evident axiom, A, self-evidently entails a theorem, t, which in turn self-evidently entails a second theorem, t'. Self-evident entailment (as opposed to entailment in general) is not *transitive*: A can self-evidently entail t and t can self-evidently entail t' without A's self-evidently entailing t'. Here one could understand the conditional proposition that if A, then t', quite adequately without thereby having justification for believing it. One might need the intermediate step, t, to achieve that justification, and it need not be discerned simply in adequately understanding the conditional itself. This possible limitation does not preclude there being *some* kind of understanding of that conditional and related concepts, such as a perfectly omniscient being might have, in virtue of which the proposition that if A, then t', can be seen to be true. This shows that – as Aquinas saw in the quotation from him above – there is a related notion – self-evidence *for a particular person* (or mind) – which must be distinguished from self-evidence in its basic, non-relativized form, making reference only to anyone's understanding. Still, even if what is self-evident for God might not be self-evident for us, some propositions are unqualifiedly self-evident. The case also shows that not every proposition *provable* by individually self-evident steps from a self-evident premise may be assumed to be a priori in the (moderately) broad sense of being self-evidently entailed by a self-evident proposition; for (as just explained) such a proposition might not be self-evidently entailed by a self-evident proposition.

15 There is much difference in judgment about how to classify the analytic. It might be considered a semantic concept by those who think of it as truth by virtue of the *meanings* of the relevant terms. It might be regarded as ontological by those who think such truths are basic to the structure of reality. For epistemology the notion of the a priori is the more important of the two. For an immensely influential paper arguing that neither notion is clear see W.V. Quine, 'Two Dogmas of Empiricism,' in his *From a Logical Point of View* (Cambridge, Mass.: Harvard University Press, 1953). Among the widely noted replies is H.P. Grice and P.F. Strawson, 'In Defense of a Dogma,' *Philosophical Review* 55 (1956), 114–58.

16 See Bertrand Russell, *The Problems of Philosophy* (1912), Chapters 8–10 (these chapters are reprinted in Huemer, op. cit.).

17 See especially J.S. Mill, *A System of Logic* (first published in 1843), particularly Book II, Chapters 5–7. For a much more sophisticated critique of a priorism in mathematics and an empiricist account of mathematical truths, see Philip Kitcher, *Mathematical Knowledge* (Oxford and New York: Oxford University Press, 1984).

18 Granting it is at best not obvious how logical truths are knowable by any analysis that reveals containment relations, their negations can be clearly seen to entail contradictions.

19 How broad this is depends on the notion of entailment used. I have in mind a notion for which the negation of a proposition entails a contradiction provided the use of formal logic, supplemented only by (correct) definitions, renders a contradiction deducible.

20 Someone might think all truth is a priori on the ground that it is true a priori that (1) God exists; (2) a certain universe specifiable in every detail is the best of all possible universes; and (3) God creates the best of these universes. Then, with sufficient intellectual power, one could (arguably) reason one's way to any truth. Gottfried Wilhelm Leibniz (1646–1716) has been read as holding a view close to this (but there are reasons to doubt that he did, including considerations about divine freedom).

21 The proposition that 1+1+ 1= 3 might be held to be more intuitive than the proposition that 7 + 5 = 12. But, first, in practice we might need to rely on less intuitive or much more complicated arithmetic to get a good case for the possible falsehood of the original proposition; second and more important, the simpler proposition that 1 + 1+ 1 = 3 will also do as a case of a necessary mathematical truth.

22 For discussion of the status of the a priori in connection with geometry, see the Appendix to Laurence BonJour, *In Defense of Pure Reason* (Cambridge: Cambridge University Press, 1998). That book is also of interest for its criticism of Kant, who in BonJour's view is less a rationalist about – and less plausible concerning – the a priori than is often thought.

23 For discussion of vagueness and its bearing on epistemological matters (as well as references to his own and others' earlier work on vagueness) see Timothy Williamson, *Knowledge and Evidence* (Oxford: Oxford University Press, 2000).

24 At least in his classic 'Two Dogmas of Empiricism,' in his *From a Logical Point of View* (Cambridge, Mass.: Harvard University Press, 1961), W.V. Quine sometimes talks as if he thinks that a knowledge of synonymy (sameness of meaning) of words is necessary for any possible knowledge of analytic propositions. See, for example, section 4, on semantical rules. One important comment is that "definition turned out to be a will-o-the-wisp, and synonymy turned out to be best understood only by dint of a prior appeal to analyticity". In the overall context, the suggestion may be that only an independent conception of synonymy would clarify analyticity.

25 Cf. W.V. Quine's remark that "truth in general depends on both language and extra-linguistic fact. The statement 'Brutus killed Caesar' would be false if the world had been different in certain ways, but it would also be false if the word 'killed' happened rather to have had the sense of 'begat'" (*Two Dogmas*, section 4). Compare saying that the *sentence* 'Brutus killed Caesar' would have expressed a different, and false, proposition (which is what defenders of the classical view would likely say). Has Quine provided any reason to think that the *statement* in question – understood as the historical truth we express using the sentence – would have been false if the English word 'killed' had meant 'begat'?

26 For a valuable discussion of the notion of the analytic in relation to the conceptual, see M. Giaquinto, 'Non-Analytic Conceptual Knowledge,' *Mind* 105, 418 (1996), 249–68. One of his major conclusions bears on the status of such cases as the proposition that all vixens are female:

> What the liberated position [Quine's, freed of behaviorism] maintains is that any belief may be rationally rejected in the light of future findings; what it has to accommodate is that some beliefs may be rationally retained even when their customary linguistic expressions become unacceptable. These [positions] are not inconsistent.
>
> (p. 266)

27 The terminology of possible worlds traces especially to Gottfried Wilhelm Leibniz and has been influentially discussed in relation to a number of the issues concerning necessity and the a priori by Saul Kripke in *Naming and Necessity* (Cambridge, Mass.: Harvard University Press, 1980). Kripke offers a different kind of example of empirical necessities: true identity statements formed using proper names, as in 'Hesperus is identical with Phosphorous' (both being names of Venus). He also argues, using the example of the standard meter stick in Paris, that an a priori truth, say that the length of the standard meter stick in Paris at time t is 1 meter, may not be necessary. This is a highly controversial example (more often attacked than defended), which I cannot take time to discuss here. For detailed criticism, see Albert Casullo, 'Kripke on the A Priori and the Necessary,' *Analysis* 37 (1977), 152–9. Casullo also usefully distinguishes knowledge of the *truth value* (truth or falsity) of a proposition from knowledge of its *modal status* (its being necessarily true or false, or contingently true or false), and argues that the classical view could be mistaken in holding that the truth value of necessary propositions is always knowable a priori yet correct in holding that their modal status is knowable a priori.

28 Two comments are needed here. First, it might be desirable to widen the characterization to allow beliefs based *at least predominantly* on understanding the proposition in question (which requires understanding the concepts figuring in the proposition); but I want to avoid here the complications that arise from considering multiple bases; thus I shall not generally qualify 'based on' and similar terms. The main points in question will hold if it is taken as equivalent to 'essentially based on'. Second, although the relevant beliefs might be thought to be *always* prima facie justified, there is at least one difficulty with

this: perhaps there could be an abnormal case of a kind that prevents *any* justification from arising. This is not obviously possible, since if understanding is a sufficient basis for the belief, that might arguably carry some degree of justification. In any case, the normality formulation is significantly strong.

29 The quantitative comparison may be challenged by those who think we have infinite sets of mathematical beliefs (e.g. that 2 is even, 4 is even, and so on) and of beliefs based on others by trivial operations, such as forming new beliefs by adding an 'or,' as where, given my belief that I am seated I form, as I just did, the belief that either I am seated or I am flying to the moon. That this conception of belief is mistaken will be argued in Chapter 7, which also notes relevant literature. In any case, the contrast I am drawing here would be adequately strong even without its quantitative dimension.

30 This implies that even if one justifiedly believed, and knew, an a priori proposition on the basis of a self-evident axiom, but *not* on the basis of a self-evident entailment of the former by the latter (say, by a chain of non-self-evident inferences instead), the justification and knowledge would still not be a priori in the strict sense – though they might be very close to it.

31 Four comments are needed here. First, for one's justification to be a priori, at least in the strict sense, it must not depend (epistemically) on memory. Thus, suppose there are too many self-evident premises for me to hold in mind at the same time as I understand some conclusion's following from them. Or, suppose there are so many self-evident steps linking a single self-evident premise to a conclusion that I cannot hold them all in mind in a way that assures understanding the utimate entailment of that conclusion by the premise. Then *my* justification for believing this conclusion is not a priori (though I may be able to prove the conclusion). Second, and related to this, so long as there can be a mind sufficiently capacious to understand the entire set without dependence on memory, a priori justification for *someone's* believing it is possible. Third, although there is both direct and indirect a priori knowledge in the strict sense, there *may* be only indirect a priori knowledge (as opposed to justification) in the loose sense; this is because defective understanding may be required for the *non*-inferential cases of a priori justification, in a way that prevents the relevant belief from being knowledge at all. Fourth, as in this book generally, I regard the justification referred to as defeasible (a notion considered in this chapter and again in Chapter 8) unless otherwise specified.

32 It might be argued, however, that if one believed such a simple self-evident proposition *essentially* on the basis of a bad argument, one would not *justifiedly* believe it, though, by virtue of adequately understanding it, one would still *have* a justification for believing it which simply fails to serve as a sufficient ground of one's belief. I leave open whether one could believe such a proposition both fully comprehendingly and essentially on the basis of a bad argument (as opposed to one's being only influenced by such an argument).

5   Testimony

- ## The nature of testimony: formal and informal

- ## The psychology of testimony

  The inferentialist view of testimony
  Inferential grounds vs. constraints on belief-formation
  The direct source view of testimony

- ## The epistemology of testimony

  Knowledge and justification as products of testimony
  The twofold epistemic dependence of testimony

- ## The indispensability of testimonial grounds

  Conceptual versus propositional learning
  Testimony as a primeval source of knowledge and justification
  Non-testimonial support for testimony-based beliefs