Kleist's heroes confront this absurdity with demonic defiance. Thus Michael Kohlhaas, in the novella of the same name (1810), becomes inhuman in his pursuit of justice; and the heroines of Kleist's plays *Penthesilea* (1808) and *Das Käthchen von Heilbronn* (1810) become inhuman in their pursuit of love—one by being totally aggressive, the other by being totally submissive. In his last play, *Der Prinz von Homburg* (1810), Kleist attempted to oppose the order provided by the state to the uncertainties of the human situation. The prince disobeys orders, wins a battle, and yet is condemned to death. At first incapable of understanding this judgment and driven only by his fear of death, he regains control of himself when made judge of his own actions, and freely accepts the verdict.

See also Fichte, Johann Gottlieb; Hegel, Georg Wilhelm Friedrich; Kant, Immanuel; Love.

Bibliography

WORKS BY KLEIST

Werke, 5 vols. Edited by E. Schmidt. Leipzig, 1905; 2nd ed., 7 vols., edited by G. Minde-Pouet, Leipzig: Bibliographisches institut, 1936–.

Werke, 2 vols. Edited by H. Sembdner. Munich, 1961.

The Marquise of O, and Other Stories. Translated by Martin Greenberg. New York: Criterion, 1960.

TRANSLATIONS OF PLAYS

"The Feud of the Schroffensteins." Translated by M. J. and L. M. Price. *Poet Lore* (Boston) 27 (5) (1916): 457–576.

The Prince of Homburg. Translated by C. E. Passage. New York: Liberal Arts Press, 1956.

Katie of Heilbronn. Translated by A. H. Hughes. Hartford, CT: Trinity College, 1960.

The Broken Pitcher. Translated by B. Q. Morgan. Chapel Hill: University of North Carolina Press, 1961.

WORKS ON KLEIST

Blankenagel, J. C. *The Dramas of Heinrich von Kleist.* Chapel Hill: University of North Carolina Press, 1931.

Blöcker, Günter. *Heinrich von Kleist oder Das absolute Ich.* Berlin: Argon, 1960.

Cassirer, Ernst. *Idee und Gestalt.* Berlin: Cassirer, 1921.

Fricke, Gerhard. *Gefühl und Schicksal bei Heinrich von Kleist.* Berlin, 1929.

March, Richard. *Heinrich von Kleist.* Cambridge, U.K.: Bowes and Bowes, 1954.

Muth, Ludwig. *Kleist und Kant.* Cologne, 1954.

Silz, W. *Heinrich von Kleist.* Philadelphia: University of Pennsylvania Press, 1962.

Stahl, E. L. *Heinrich von Kleist's Dramas.* Oxford: Blackwell, 1948.

Witkop, Philipp. *Heinrich von Kleist.* Leipzig: Haessel, 1922.

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KNOWLEDGE, A PRIORI

The prominence of the a priori within traditional epistemology is largely due to the influence of Immanuel Kant's *Critique of Pure Reason* (1965), where he introduces a conceptual framework that involves three distinctions: the epistemic distinction between a priori and empirical (or a posteriori) knowledge; the metaphysical distinction between necessary and contingent propositions; and the semantic distinction between analytic and synthetic propositions. Within this framework, Kant poses four questions:

1. What is a priori knowledge?
2. Is there a priori knowledge?
3. What is the relationship between the a priori and the necessary?
4. Is there synthetic a priori knowledge?

These questions remain at the center of the contemporary debate.

Kant maintains that a priori knowledge is "independent of experience," contrasting it with a posteriori knowledge, which has its "sources" in experience (1965, p. 43). He offers two criteria for a priori knowledge, necessity and strict universality, which he claims are inseparable from one another. Invoking the first, he argues that mathematical knowledge is a priori. Kant's claim that necessity is a criterion of the a priori entails:

(K1) All knowledge of necessary propositions is a priori.

He also appears to endorse

(K2) All propositions known a priori are necessary.

Kant maintains that all propositions of the form "All A are B" are either analytic or synthetic: analytic if the predicate is contained in the subject; synthetic if it is not. Utilizing this distinction, he argues that

(K3) All knowledge of analytic propositions is a priori; and

(K4) Some propositions known a priori are synthetic.

In support of (K4), Kant claims that the predicate terms of "7 + 5 = 12" and "The straight line between two points is the shortest" are not contained in their respective subjects.

THE CONCEPT

Kant provides the core of the traditional conception of the a priori. When he speaks of the source of knowledge, he does not mean the source of the belief in question, but the source of its justification. Hence, according to Kant,

(APK) S knows a priori that p if and only if S's belief that p is justified a priori and the other conditions on knowledge are satisfied; and

(APJ) S's belief that p is justified a priori if and only if S's justification for the belief that p does not depend on experience.

(APJ) has been criticized from two directions. First, some maintain that it is not sufficiently informative; it tells one what a priori justification is not, but not what it is. Hence, Laurence BonJour (1985) rejects (APJ) in favor of

(AP1) S's belief that p is justified a priori just in case S intuitively "sees" or apprehends that p is necessarily true.

Alvin Plantinga (1993) and BonJour (1998) offer variants of (AP1). Second, others maintain that the sense of *dependence* relevant to a priori justification requires articulation and offer two competing accounts. Albert Casullo (2003) endorses

(AP2) S's belief that p is justified a priori if and only if S's belief that p is nonexperientially justified (i.e., justified by some nonexperiential source).

Hilary Putnam (1983) and Philip Kitcher (1983) favor

(AP3) S's belief that p is justified a priori if and only if S's belief that p is nonexperientially justified and cannot be defeated by experience.

(AP1) and (AP3) face serious objections.

The term *see* is used metaphorically in (AP1). Let us assume that it shares with the literal use of *see* one basic feature: "S sees that p" entails "S believes that p." Hence, (AP1) has the consequence that if S's belief that p is justified a priori then S believes that p is necessarily true. This consequence faces two problems. Suppose that Sam is a mathematician who believes some generally accepted theorem T on the basis of a valid proof. Presumably, Sam's belief is justified. But suppose that Sam is also a serious student of philosophy who has come to doubt the cogency of the distinction between necessary and contingent propositions and, as a consequence, refrains from modal beliefs. It is implausible to maintain that Sam's belief that T is not justified a priori merely because of his views about a controversial metaphysical thesis. (AP1) is also threatened with a regress. It entails that if S's belief that p is justified a priori then S believes that necessarily p. Must S's belief that necessarily p be justified? If not, it is hard to see why it is a necessary condition of having an a priori justified belief that p. If so, then presumably it is justified a priori. But for S's belief that necessarily p to be justified a priori, S must believe that necessarily necessarily p, and the same question arises with respect to the latter belief. Must it be justified or not? Hence, (AP1) must either maintain that having an unjustified belief that necessarily p is a necessary condition of having a justified belief that p, or face an infinite regress of justified modal beliefs.

(AP3) is also open to serious objection. Saul Kripke (1980) and Kitcher (1983) maintain that an adequate conception of a priori knowledge should allow for the possibility that a person knows empirically some proposition that he or she can know a priori. (AP3) precludes this possibility. Assume that

(A) S knows empirically that p and S can know a priori that p.

From the left conjunct of (A), it follows that

(1) S's belief that p is justified$_k$ empirically,

where "justified$_k$" abbreviates "justified to the degree minimally sufficient for knowledge." Consider now the empirical sources that have been alleged to justify mathematical propositions empirically: counting objects, reading a textbook, consulting a mathematician, and computer results. (Tyler Burge [1993] discusses the relationship between testimony and a priori knowledge.) Each of these sources is fallible in an important respect. The justification each confers on a belief that p is defeasible by an empirically justified overriding defeater; that is, by an empirically justified belief that not-p. If S's belief that p is justified by counting a collection of objects and arriving at a particular result, then it is possible that S recounts the collection and arrives at a different result. If S's belief that p is justified by a textbook (or mathematician or computer result) that states that p, then it is possible that S encounters a different textbook (or mathematician or computer result) that states that not-p. In each case, the latter result is an empirically justified overriding defeater for S's original justification. Hence, given the fallible character of empirical justification, it follows that

(2) S's empirical justification for the belief that p is defeasible by an empirically justified belief that not-p.

(2), however, entails that

(3) S's belief that not-p is justifiable$_d$ empirically,

where "justifiable$_d$" abbreviates "justifiable to the degree minimally sufficient to defeat S's justified$_k$ belief that p." Furthermore, the conjunction of (AP3) and the right conjunct of (A) entails

(4) It is not the case that S's nonexperiential justification$_k$ for the belief that p is defeasible by S's empirically justified belief that not-p.

(4), however, entails that

(5) It is not the case that S's belief that not-p is justifiable$_d$ empirically.

The conjunction of (3) and (5) is a contradiction. Hence, (AP3) is incompatible with (A). (AP2), however, is compatible with (A) since the conjunction of (AP2) and the right conjunct of (A) does not entail (4).

SUPPORTING ARGUMENTS

Kant offers the most influential traditional argument for the existence of a priori knowledge. He holds that necessity is a criterion of the a priori: "[I]f we have a proposition which in being thought is thought as *necessary*, it is an a priori judgment" (1965, p. 43). He then argues that "mathematical propositions, strictly so called, are always judgments a priori, not empirical; because they carry with them necessity, which cannot be derived from experience" (p. 52). Kant's argument can be presented as follows:

(K1) All knowledge of necessary propositions is a priori.

(K2) Mathematical propositions are necessary.

(K3) Therefore, knowledge of mathematical propositions is a priori.

Premise (K1) is ambiguous. There are two ways of reading it:

(K1T) All knowledge of the truth value of necessary propositions is a priori; or

(K1G) All knowledge of the general modal status of necessary propositions is a priori.

Kant supports (K1) with the observation that "[e]xperience teaches us that a thing is so and so, but not that it cannot be otherwise" (1965, p. 52). This observation supports (K1G) but not (K1T), since Kant allows that experience can provide evidence that something is the case, but denies that it can provide evidence that something must be the case. The conclusion of the argument, however, is that knowledge of the truth value of mathematical propositions, such as that 7 + 5 = 12, is a priori.

Kant's argument can now be articulated as follows:

(K1G) All knowledge of the general modal status of necessary propositions is a priori.

(K2) Mathematical propositions are necessary.

(K3T) Therefore, knowledge of the truth value of mathematical propositions is a priori.

The argument involves this assumption:

(KA) If the general modal status of p is knowable only a priori, then the truth value of p is knowable only a priori.

(KA), however, is false. If one can know only a priori that a proposition is necessary, then one can know only a priori that a proposition is contingent. The evidence relevant to determining the latter is the same as that relevant to determining the former. For example, if I determine that "2 + 2 = 4" is necessary by trying to conceive of its falsehood and failing, I determine that "Kant is a philosopher" is contingent by trying to conceive of its falsehood and succeeding. However, if my knowledge that "Kant is a philosopher" is contingent is a priori, it does not follow that my knowledge that "Kant is a philosopher" is true is a priori. Clearly, it is a posteriori.

Roderick Chisholm (1977) suggests the following reformulation of Kant's argument:

(K1G) All knowledge of the general modal status of necessary propositions is a priori.

(K2) Mathematical propositions are necessary.

(K3G) Therefore, knowledge of the general modal status of mathematical propositions is a priori.

This argument faces a different problem. Why accept Kant's claim that experience can teach one only what is the case? A good deal of one's ordinary practical knowledge and the bulk of one's scientific knowledge provide clear counterexamples to the claim. My knowledge that my pen will fall if I drop it does not provide information about what is the case for the antecedent is contrary to fact. Scientific laws are not mere descriptions of the actual world. They support counterfactual conditionals and, hence, provide information beyond what is true of the actual world. In the absence of further support, Kant's claim should be rejected.

A second strategy for defending the existence of a priori knowledge is offered by proponents of logical empiricism, such as Alfred Jules Ayer (1952) and Carl Hempel (1972), who reject John Stuart Mill's contention that knowledge of basic mathematical propositions, such as that $2 \times 5 = 10$, is based on induction from observed cases. Both draw attention to the fact that if one is justified in believing that some general proposition is true on the basis of experience, then contrary experiences should justify one in believing that the proposition is false. But no experiences would justify one in believing that a mathematical proposition, such as that $2 \times 5 = 10$, is false. Suppose, for example, that I count what appear to be five pairs of shoes and arrive at the result that there are only nine shoes. Ayer contends that

> [o]ne would say that I was wrong in supposing that there were five pairs of objects to start with, or that one of the objects had been taken away while I was counting, or that two of them had coalesced, or that I had counted wrongly. One would adopt as an explanation whatever empirical hypothesis fitted in best with the accredited facts. The one explanation which would in no circumstances be adopted is that ten is not always the product of two and five. (1952, pp. 75–76)

Since Ayer maintains that one would not regard any experiences as evidence that a mathematical proposition is false, he concludes that no experiences provide evidence that they are true.

Ayer's argument can be stated as follows:

(A1) No experiences provide evidence that mathematical propositions are false.

(A2) If no experiences provide evidence that mathematical propositions are false, then no experiences provide evidence that they are true.

(A3) Therefore, no experiences provide evidence that mathematical propositions are true.

Ayer's defense of (A1) is weak in several respects. First, it does not take into account the number of apparent confirming instances of the proposition in question. Second, it involves only a single disconfirming instance of the proposition. Third, the hypotheses that are invoked to explain away the apparent disconfirming instance are not subjected to an independent empirical test. In a situation where there is a strong background of supporting evidence for an inductive generalization and an isolated disconfirming instance, it is reasonable to discount the disconfirming instance as apparent and to explain it away on whatever empirical grounds are most plausible.

The case against premise (A1) can be considerably strengthened by revising Ayer's scenario as follows: Increase the number of disconfirming instances of the proposition so that it is large relative to the number of confirming instances; and subject the hypotheses invoked to explain away the apparent disconfirming instances to independent tests that fail to support them. Let us now suppose that one has experienced a large number of apparent disconfirming instances of the proposition that $2 \times 5 = 10$ and, furthermore, that empirical investigations of the hypotheses invoked to explain away these disconfirming instances produce little, if any, support for the hypotheses. Given these revisions, Ayer can continue to endorse premise (A1) only at the expense of holding empirical beliefs that are at odds with the available evidence.

OPPOSING ARGUMENTS

Radical empiricism is the view that denies the existence of a priori knowledge. Its most famous proponents are John Stuart Mill and Willard Van Orman Quine. One common strategy that radical empiricists employ in arguing against the existence of a priori knowledge is to consider the most prominent examples of propositions alleged to be knowable only a priori and to maintain that such propositions are known empirically. Since mathematical knowledge has received the most attention, this entry will focus on it.

Mill's (1973) account of mathematical knowledge is a version of inductive empiricism. Inductive empiricism with respect to a domain of knowledge involves two theses. First, some propositions within that domain are epistemically more basic than the others, in the sense that the nonbasic propositions derive their justification from the basic propositions via inference. Second, the basic propositions are known by a process of inductive inference from observed cases. Mill's focus is on the basic propositions of arithmetic and geometry, the axioms and definitions of each domain. His primary thesis is that they are known by induction from observed cases.

Mill's position faces formidable objections, such as those offered by Gottlob Frege (1974). Let us assume, however, that these objections can be deflected and that Mill offers a plausible inductive empiricist account of mathematical knowledge to assess how this concession bears on the existence of a priori knowledge. If Mill is right, then all epistemically basic propositions of arithmetic and geometry are justified on the basis of observation and inductive generalization. It follows that Kant's claim that mathematical knowledge cannot be derived from experience is wrong. It does not follow, however, that the claim that such knowledge is a priori is wrong. From the fact that mathematical knowledge is or can be derived from experience, it does not immediately follow that such knowledge is not or cannot be derived from some nonexperiential source. Mill is aware of the gap in his argument and attempts to close it with the following observations:

> They cannot, however, but allow that the truth of the axiom, Two straight lines cannot inclose a space, even if evident independently of experience, is also evident from experience. … Where then is the necessity for assuming that our recognition of these truths has a different origin from the rest of our knowledge, when its existence is perfectly accounted for by supposing its origin to be the same? … The burden of proof lies on the advocates of the contrary opinion: it is for them to point out some fact, inconsistent with the supposition that this part of our knowledge of nature is derived from the same sources as every other part. (1973, pp. 231–232)

Mill moves from the premise that inductive empiricism provides an account of knowledge of mathematical axioms to the stronger conclusion that knowledge of such axioms is not a priori by appealing to a version of the explanatory simplicity principle: If a putative source of knowledge is not necessary to explain knowledge of the propositions within some domain, then it is not a source of knowledge of the propositions within that domain. Mill's argument can be articulated as follows:

(M1) Inductive empiricism provides an account of mathematical knowledge based on inductive generalization from observed cases.

(M2) φ is a source of knowledge for some domain D only if φ is necessary to explain knowledge of some propositions within D.

(M3) Therefore, mathematical knowledge is not a priori.

The burden of the argument is carried by (M2), the explanatory simplicity principle.

Casullo (forthcoming) maintains that the explanatory simplicity principle conflicts with a familiar fact of one's epistemic life. The justification of some of one's beliefs is overdetermined by different sources. There are some beliefs for which one has more than one justification, each of those justifications derives from a different source, and each, in the absence of the others, is sufficient to justify the belief in question. For example, I have misplaced my wallet again and wonder where I might have left it. I suddenly recall having left it on the kitchen table when I came in from the garage last night. My recollection justifies my belief that my wallet is on the kitchen table. However, just to be sure, I walk out to the kitchen to check. To my relief, I see my wallet on the table. My seeing my wallet on the table also justifies my belief that my wallet is on the table. So here my justification is overdetermined by different sources. If the justification of my belief is overdetermined by two different sources, it follows that my belief is justified by two different sources. Hence, in the absence of an argument against the possibility of epistemic overdetermination, Mill's appeal to the explanatory simplicity principle simply begs the question.

Quine rejects inductive empiricism. He rejects the idea that there are basic mathematical propositions that, taken in isolation, are directly justified by observation and inductive generalization. Quine's account of mathematical knowledge is a version of holistic empiricism. Mathematical propositions are components of scientific theories. They are not tested directly against observation, but only indirectly via their observational consequences. Moreover, they do not have observational consequences in isolation, but only in conjunction with the other propositions of the theory. Hence, according to holistic empiricism, entire scientific theories, including their mathematical components, are indirectly confirmed or disconfirmed by experience via their observational consequences.

The main concern in this entry is not to assess the cogency of Quine's account of mathematical knowledge, but to determine whether it provides an argument against the existence of a priori knowledge. The argument of Quine's classic paper "Two Dogmas of Empiricism" (1963) remains controversial (for further discussion, see Boghossian 1996). The stated target of his attack is a conception of analyticity inspired by Frege: A statement is analytic if it can be turned into a logical truth by replacing synonyms with synonyms. Quine's contentions can be summarized as follows:

(1) Definition presupposes synonymy rather than explaining it.

(2) Interchangeability *salva veritate* is not a sufficient condition of cognitive synonymy in an extensional language.

(3) Semantic rules do not explain "Statement S is analytic for language L," with variable "S" and "L."

(4) The verification theory of meaning provides an account of statement synonymy that presupposes reductionism, but reductionism fails.

(5) Any statement can be held to be true come what may. No statement is immune to revision.

Quine's contentions appear to be directed at the concept of synonymy and the doctrine of reductionism. They are not explicitly directed at a priori knowledge. Hence, if "Two Dogmas" does indeed present a challenge to the existence of a priori knowledge, then some additional premise is necessary that connects those contentions to the a priori.

According to the traditional reading of his argument, Quine's contentions constitute an extended attack on the cogency of the analytic-synthetic distinction. Quine's ultimate goal is to undermine the central claim of the logical empiricist tradition:

(LE) All a priori knowledge is of analytic truths.

On this reading, (LE) provides the connection between his contentions and the rejection of the a priori. Let us grant that Quine's goal is to undermine (LE) and that he successfully challenges the cogency of the analytic-synthetic distinction. Does it follow that there is no a priori knowledge? No. (LE) is a thesis about the nature of the propositions alleged to be known a priori. If Quine is right, then (LE) itself is incoherent. But from the fact that a thesis about the nature of propositions known a priori is incoherent, it does not follow that there is no a priori knowledge.

An alternative response is to take (LE) as a conceptual claim; that is, to take it as claiming that the concept of a priori knowledge involves the concept of analytic truth. On this reading, the incoherence of the concept of analytic truth entails the incoherence of the concept of a priori knowledge. This response, however, rests on a false conceptual claim. The concept of a priori knowledge does not explicitly involve the concept of analytic truth. One might argue that it implicitly involves the concept of analytic truth by maintaining that all a priori knowledge is of necessary truths; and endorsing some version of the so-called linguistic theory of necessary truth. There are, however, two problems with this argument. First, the concept of a priori knowledge does not involve, either explicitly or implicitly, the concept of necessary truth. Second, there is no plausible analysis of the concept of necessary truth in terms of the concept of analytic truth.

Some champions of "Two Dogmas" propose an alternative connection between Quine's contentions and the rejection of the a priori. Putnam (1983) maintains that Quine's contentions are directed toward two different targets. The initial contentions are directed toward the semantic concept of analyticity. Contention (5), however, is directed toward the concept of a statement that is confirmed no matter what, which is not a semantic concept. The concept of a statement that is confirmed no matter what is an epistemic concept. It is a concept of apriority. Kitcher endorses Putnam's reading of Quine's argument, "If we can know a priori that *p* then no experience could deprive us of our warrant to believe that *p*" (1983, p. 80). But, according to Quine, no statement is immune from revision. Hence, the Putnam-Kitcher version of Quine's argument can be stated as follows:

(Q1) No statement is immune to revision in light of recalcitrant experience.

(Q2) If S's belief that p is justified a priori, then S's belief that p is not rationally revisable in light of any experiential evidence.

(Q3) Therefore, no knowledge is a priori.

The argument fails. Premise (Q2) is open to the objection presented against (AP3) in the first section.

THE EXPLANATORY CHALLENGE

A more recent challenge to the a priori derives from Quine's influential "Epistemology Naturalized" (1969). Epistemic naturalism comes in many different forms. The most radical form advocates the replacement of philosophical investigations into the nature of human knowledge with scientific investigations. More moderate forms advocate that philosophical theories concerning human knowledge cohere with scientific theories. Paul Benacerraf (1973), for example, argues that the truth conditions for mathematical statements make reference to abstract entities and that knowing a statement requires that one be causally related to the entities referred to by its truth conditions. Since abstract entities cannot stand in causal relations, one cannot know mathematical statements. The argument raises a more general challenge to the possibility of a priori knowledge since proponents of the a priori (apriorists) generally hold that most, if not all, a priori knowledge, is of necessary truths; and that the truth conditions of necessary truths make reference to abstract entities. Although some reject the argument on the grounds that its epistemic premise appears to presuppose the generally rejected causal theory of knowledge, others, such as Hartry Field (1989), maintain that it points to a deeper problem. In the absence of an explanation of how it is possible to have knowledge of abstract entities, a priori knowledge remains mysterious.

The explanatory challenge goes beyond a commitment to epistemic naturalism. It derives support from broader epistemological considerations. To appreciate the full import of the challenge, two issues regarding the existence of a priori knowledge must be distinguished. Apriorists typically maintain that one knows certain logical, mathematical, and conceptual truths and that such knowledge is a priori. Radical skeptics deny that one has knowledge of the truths in question. Radical empiricists, however, are not radical skeptics. They do not deny that one knows the truths in question. Radical empiricists only deny that one's knowledge of these truths is a priori. Therefore, the primary dispute between apriorists and radical empiricists is over the source of the knowledge in question. They offer two competing theories of the source of the knowledge in question, and each maintains that its theory offers the better explanation of the knowledge in question. Therefore, to support their primary contention, apriorists must provide supporting evidence for the claim that there exist nonexperiential sources of justification and that such sources explain how one knows the truths in question.

BonJour (1998) and Ernest Sosa (2000) offer philosophical supporting evidence, a mix of phenomenological and a priori considerations. Casullo (2003) argues that a more promising approach is to supplement the philosophical evidence with evidence based on empirical investigations. Before empirical evidence can be enlisted to support the case for the a priori, however, additional philosophical work is necessary. The first step is to provide (1) a generally accepted phenomenological description of the cognitive states that noninferentially justify beliefs a priori, (2) the type of beliefs they justify, and (3) the conditions under which they justify the beliefs in question. Apriorists typically defend the claim that there are nonexperiential sources of justification by reflecting on their own cognitive situations and identifying phenomenologically distinct states, which they claim justify certain beliefs a priori. A cursory survey of the descriptions of these states offered by different theorists reveals wide variation. George Bealer (1996) and Sosa (1996) both maintain that the cognitive states that justify a priori are aptly described as *seemings*, but they offer different phenomenological descriptions of seemings. Plantinga (1993) and BonJour (1998) maintain that the states in question are more aptly described as *seeings*, but they offer different phenomenological descriptions of seeings. Bealer agrees with BonJour that the cognitive states that justify a priori are irreducible, but disagrees with him over the character of the states. On the contrary, Sosa agrees with Plantinga that the states are reducible to more familiar cognitive states, but disagrees with him over the character of the reducing states.

There is also wide variation among apriorists over the scope of beliefs justified a priori. Within the context of arguing against radical empiricism, the focus is on stock examples such as elementary logical or mathematical propositions and some familiar examples of alleged synthetic a priori truths. Few apriorists, however, believe that a priori justification is limited to those cases. Consequently, they must provide a more complete specification of the range of beliefs alleged to be justified by such cognitive states. One issue requires particular attention. The examples of a priori knowledge typically cited by apriorists are necessary truths. But here it is important to distinguish between knowledge of the truth value and knowledge of the general modal status of necessary propositions. A critical question now emerges: What is the target of a priori justification? Is it the general modal status of a proposition, its truth value, or both? If it is both, two further questions arise. Are beliefs about the truth value of a necessary proposition and beliefs about its general modal status justified by the same cognitive state or different cognitive states? Are some beliefs about the truth value of contingent propositions justified a priori?

Once the philosophical work is complete, the project of providing empirical supporting evidence for the a priori can be pursued. This involves providing (1) evidence that the cognitive states identified at the phenomenological level are associated with processes of a single type or relevantly similar types; (2) evidence that the associated processes play a role in producing or sustaining the beliefs they are alleged to justify; (3) evidence that the associated processes are truth-conducive; and (4) an explanation of how the associated processes produce the beliefs they are alleged to justify. The third area of empirical investigation offers the prospect of supporting the claim that there are nonexperiential sources of justification. Many prominent apriorists, including Bealer, BonJour, Plantinga, and Sosa, maintain that truth conduciveness is a necessary condition for epistemic justification. Moreover, even those who deny this concede that evidence that a source of beliefs is error conducive defeats whatever justification that the source confers on the beliefs that it justifies. The claim that a source of beliefs is truth conducive or, more minimally, that it is not error conducive is a contingent empirical claim that can be supported only by empirical investigation.

The fourth area of empirical investigation offers the prospect of addressing the explanatory challenge. First, causal-perceptual models appear to be of limited utility in explaining how nonexperiential sources of justification provide cognitive access to necessary truths. Empirical investigation into human cognition offers the prospect of uncovering alternative models of cognitive access that can be utilized in the case of nonexperiential sources. Second, investigation of the specific cognitive processes associated with the cognitive states alleged to justify a priori may provide a better understanding of how the processes in question produce true beliefs about their subject matter. This understanding, in turn, is the key to providing a noncausal explanation of how the states in question provide cognitive access to the subject matter of the beliefs they produce. Third, although apriorists deny that epistemology is a chapter of science, they acknowledge that both epistemology and science contribute to the overall understanding of human knowledge. Establishing that the cognitive processes invoked by their epistemological theory are underwritten by their scientific commitments strengthens the apriorist's overall theory by demonstrating the coherence of its components.

See also Analyticity; A Priori and A Posteriori; Ayer, Alfred Jules; Chisholm, Roderick; Field, Hartry; Frege, Gottlob; Hempel, Carl Gustav; Kant, Immanuel; Knowledge and Modality; Kripke, Saul; Mathematics, Foundations of; Mill, John Stuart; Plantinga, Alvin; Putnam, Hilary; Quine, Willard Van Orman; Sosa, Ernest.

Bibliography

Ayer, A. J. *Language, Truth and Logic*. New York: Dover, 1952.

Bealer, George. "A Priori Knowledge and the Scope of Philosophy." *Philosophical Studies* 81 (1996): 121–142.

Benacerraf, Paul. "Mathematical Truth." *Journal of Philosophy* 70 (1973): 661–679.

Boghossian, Paul A. "Analyticity Reconsidered." *Noûs* 30 (1996): 360–391.

BonJour, Laurence. *In Defense of Pure Reason*. New York: Cambridge University Press, 1998.

BonJour, Laurence. *The Structure of Empirical Knowledge*. Cambridge, MA: Harvard University Press, 1985.

Burge, Tyler. "Content Preservation." *Philosophical Review* 102 (1993): 457–488.

Casullo, Albert. *A Priori Justification*. New York: Oxford University Press, 2003.

Casullo, Albert. "Epistemic Overdetermination and A Priori Justification." *Philosophical Perspectives* 19 (2005): 41–58.

Chisholm, Roderick M. *Theory of Knowledge*. 2nd ed. Englewood Cliffs, NJ: Prentice-Hall, 1977.

Field, Hartry. *Realism, Mathematics, and Modality*. Oxford, U.K.: Blackwell, 1989.

Frege, Gottlob. *The Foundations of Arithmetic*. 2nd ed. Translated by J. L. Austin. Evanston, IL: Northwestern University Press, 1974.

Hempel, Carl. "On the Nature of Mathematical Truth." In *Necessary Truth*, edited by R. C. Sleigh. Englewood Cliffs, NJ: Prentice-Hall, 1972.

Kant, Immanuel. *Critique of Pure Reason*. Translated by Norman Kemp Smith. New York: St Martin's Press, 1965.

Kitcher, Philip. *The Nature of Mathematical Knowledge*. New York: Oxford University Press, 1983.

Kripke, Saul. *Naming and Necessity*. Cambridge, MA: Harvard University Press, 1980.

Mill, John Stuart. *A System of Logic*, edited by J. M. Robson. Toronto, Canada: University of Toronto Press, 1973.

Plantinga, Alvin. *Warrant and Proper Function*. New York: Oxford University Press, 1993.

Putnam, Hilary. "'Two Dogmas' Revisited." In *Realism and Reason: Philosophical Papers*. Vol. 3. New York: Cambridge University Press, 1983.

Quine, W. V. O. "Epistemology Naturalized." In *Ontological Relativity and Other Essays*. New York: Columbia University Press, 1969.

Quine, W. V. O. "Two Dogmas of Empiricism." In *From a Logical Point of View*. 2nd ed. New York: Harper and Row, 1963.

Sosa, Ernest. "Modal and Other A Priori Epistemology: How Can We Know What Is Possible and What Impossible?" *Southern Journal of Philosophy* 38 (Supplement) (2000): 1–16.

Sosa, Ernest. "Rational Intuition: Bealer on its Nature and Epistemic Status." *Philosophical Studies* 81 (1996): 151–162.

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KNOWLEDGE, THE PRIORITY OF

One fairly specific understanding of the priority of knowledge is the idea that instead of trying to explain knowledge in terms of belief plus truth, justification, and something, we should explain belief in terms of knowledge. This is to reverse the usual explanatory priority of knowledge and belief. This fairly specific idea generalizes in two directions. (1) Perhaps we should explain other notions in terms of knowledge as well. Some possibilities include assertion, justification or evidence, mental content, and intentional action. (2) Perhaps we could explain other relatively internal states like intentions, attempts, and appearances in terms of their more obviously external counterparts: intentional action and perception.