The History of Epistemology

By George Pappas

from E. Craig (Ed.), *Routledge Encyclopedia of Philosophy* [electronic edition]. (London: Routledge).

Epistemology has always been concerned with issues such as the nature, extent, sources and legitimacy of knowledge. Over the course of western philosophy, philosophers have concentrated sometimes on one or two of these issues to the exclusion of the others; rarely has a philosopher addressed all of them. Some central questions are:

(1) What is knowledge – what is the correct analysis or definition of the concept of knowledge?

(2) What is the extent of our knowledge – about what sorts of things is knowledge actually held?

(3) What are the sources of knowledge – how is knowledge acquired?

(4) Is there any genuine knowledge?

Concern with the first question has predominated in philosophy since the mid-twentieth century, but it was also discussed at some length in antiquity. Attention to the second question seems to have begun with Plato, and it has continued with few interruptions to the present day. The third question was also important in antiquity, but has also been a central focus of epistemological discussion through the medieval and early modern periods. The fourth question raises the issue of scepticism, a topic which has generated interest and discussion from antiquity to the present day, though there were some periods in which sceptical worries were largely ignored.

Various attempts to answer these questions throughout the history of philosophy have invariably served to raise additional questions which are more narrow in focus. The principal one which will be treated below can be stated as:

(5) What is a justified belief – under which conditions is a belief justified?

There has been but occasional interest in this last question in the history of philosophy; however, it has been a crucial question for many philosophers in the twentieth century.

1. Ancient philosophy

The extant writings of the Presocratics primarily address issues in metaphysics and cosmology; epistemological concerns appear to arise first in Plato. In the *Meno* Plato tells the story of a slave boy who has had no formal education and in particular has never studied geometry. In a conversation with Socrates, the boy is led to answer questions about a geometrical figure and his answers turn out to be correct. The boy is led to assert that when given a square with side S, so that its area is S^2, then a square of exactly $2S^2$ is formed by taking as its side the diagonal of the original square. The boy could hardly have learned this earlier, since he is uneducated. Plato takes this example to show that the boy knew the geometrical truth all along and, more generally, that the boy's soul existed earlier in a state of knowledge. Indeed, he held that the boy's soul earlier knew all truths but had since forgotten them. What the boy was really doing in his conversation with Socrates was recollecting something he had forgotten. And this Plato takes to hold for everyone: what we think of as coming to know is really recollecting.

The soul or knower may have come into existence and so it would not have always had knowledge; or it may have always been in existence but at some time acquired its stock of knowledge; or it may have always been and always had knowledge. Plato certainly rejects the first option, especially in the *Phaedo* where he argues for the indestructibility and indefinite prior existence of the soul. He also appears to reject the second option (*Meno* 86b) so that his view would be that the soul always exists and earlier had a great deal of knowledge without having acquired this knowledge at some time.

The *Meno* also contains a distinction between true belief and knowledge (97d–98b). Knowledge, Plato says, is 'tied down' or tethered in a way that true opinion is not. This view, which seems to suggest that knowledge is justified true belief, is taken up again in the *Theaetetus*, where Plato suggests that knowledge is true belief plus an account or *logos* (201d). However, several attempts to explicate the notion of an account are rejected, and the dialogue ends inconclusively. It is not clear whether Plato rejects this account of knowledge outright, or whether he is best construed as rejecting this definition given the defective notions of an account (*Theaetetus* 210a–b).

In the *Republic*, especially in Book V, Plato addresses a version of our question pertaining to the extent of knowledge. There he distinguishes between knowledge at one extreme and ignorance at the other, and he roughly identifies an intermediate state of opinion or belief. Each of these states of mind, Plato says, has an object. The object of knowledge is what is or exists; the object of ignorance is what does not exist; and the object of belief is some intermediate entity, often taken as what is becoming or the sensible physical world of objects and their qualities (*Republic* 508d–e; *Cratylus* 440a–d). What truly exists for Plato are unchanging Forms, and it is these which he indicates as the true objects of knowledge (see Forms, Platonic). Moreover, knowledge is infallible, while belief is fallible (*Republic* 477e). In thus identifying knowledge with infallibility or certainty, Plato is departing widely from the view of knowledge given in *Meno* and *Theaetetus*. And, his account of the extent of our knowledge is also severely restricted: genuine knowledge is had only of the higher realm of immutable, ideal Forms (see Certainty; Fallibilism; Plato §§11, 15).

Aristotle discusses a special form of knowledge, scientific knowledge, in the *Posterior Analytics*. A science, as Aristotle understands it, is to be thought of as a group of theorems each of which is proved in a demonstrative syllogism. In the first instance, a demonstrative syllogism in science *S* is a syllogistic argument whose premises are first principles of *S*. These first principles, in turn, must be true, primary, immediate, better known than and prior to the conclusion, which is further related to them as effect to cause (*Posterior Analytics* 71b 21–22). First principles are primary and immediate when they are not themselves demonstrable. Still, such principles are known; indeed, they are better known than the demonstrated conclusion, a contention which may mean either that they are more familiar than the conclusion, or perhaps more certain than the conclusion. The first principles are also said to be prior to the conclusions in an epistemic way: knowledge of the conclusion requires knowledge of the first principles, but not conversely (*Taylor 1990: 121*). And the first principles must explain why it is that the demonstrated conclusion is true.

The science can be extended by taking theorems proved from first principles as premises in additional demonstrative syllogisms for further conclusions. Here, too, the premises must explain the truth of the conclusion. A science will be the sum of all such theorems, demonstrated either from first principles or from already-demonstrated theorems in appropriate syllogisms. And a person who carries through all these syllogisms with relevant understanding has knowledge of all of the theorems.

The first principles, however, are also known though they are not demonstrated as theorems. On this point Aristotle gives what may be the first statement of a regress argument in favour of a kind of foundationalist position (see Foundationalism). Some might hold that even the first principles must be demonstrated if they are to be known. This would lead to an infinite regress, as these first principles would themselves be conclusions of syllogisms whose premises were other first principles which, to be

known, would have to be demonstrated. To avoid the infinite regress, one would need either to allow for circular demonstration, or to agree that the first principles are not themselves known but are mere suppositions. Aristotle rejects all these options in favour of the foundationalist view in which the first principles are known even though they are not demonstrated. For him, one has an immediate, intuitive grasp of the first principles. However, his foundationalism is to be distinguished from those discussed below, because his foundations are made up of fundamental principles of special sciences.

In *De Anima*, Aristotle discusses perception and perceptual knowledge. Among perceptible objects, he distinguishes between proper and common sensibles. Common sensibles are those objects that are perceivable by more than one sense, for example, the shape of a box which can be both seen and touched. Proper sensibles are those objects that are only perceivable by one sense, for example, colour can only be seen. With respect to these proper objects, Aristotle says that one cannot be in error, or one cannot be deceived (*De Anima* 418a 9–13; 428b 17–21). So, if a person sees a white cat, they can be deceived about whether it is a cat, but not in thinking that there is white present. The same would apply to proper objects of other senses. If we then assume, as Aristotle seems to have done, that the impossibility of being deceived about *X* is sufficient for having knowledge about *X*, then we reach the conclusion that we have certain perceptual knowledge about the proper objects of each sense. What is not clear is whether Aristotle felt that one could not be mistaken about actual qualities of physical objects, such as their colours; or rather about an object's perceived qualities. Clearly the former is much less plausible than the latter (see Aristotle §6).

2 Hellenistic philosophy

The Hellenistic phase of philosophy occupies several centuries after Aristotle's death (322 bc), and is notable for its three schools of philosophy: Epicureanism, Stoicism, and Scepticism (see Scepticism). The sceptical tradition, however, continued well into the second century ad.

The Epicurean school supported an even more thoroughgoing empiricism than we find in Aristotle, and is best known for its doctrine that all perceptions are true. In perception, Epicurus says, thin layers of atoms are emitted from external physical objects (*eídōla*) and reach our senses, which passively receive and register these *eídōla* exactly as they are. But this, *per se*, is not to have knowledge of the external causes of our experiences of *eídōla*. For that, we need to make well-grounded inferences to the existence and nature of the external objects. Epicurus, however, maintains that these inferences, doubtless causal ones, can be legitimately made, and thus that there is genuine perceptual knowledge of physical objects. The fact that these inferences may fare poorly under sceptical scrutiny is not a matter to which Epicurus paid special attention, probably because he did not think that the defeat of sceptical concerns was a necessary project within epistemology (see Epicureanism §§6–7).

The Stoic position is much less optimistic. Their central concept is that of a cognitive impression. In normal conditions a red object appears red, and one has the thought (cognitive impression) 'This is red'. Such a cognitive impression, Stoics held, cannot fail to be true. It is not, by itself, knowledge of the red object however, because the person might not assent to this impression. One has knowledge only if one assents to a cognitive impression and this assent is firm, the sort of assent that one cannot be persuaded to withhold. Ordinary people fall short of assent of this firm sort, and so really have mere opinions about objects. Only the wise man typically engages in firm assent to only cognitive impressions; so only the wise man truly has knowledge of such objects (see Stoicism §12).

In thus restricting knowledge, the Stoic position is actually close to a sceptical doctrine. The two schools of ancient scepticism, the Academic and the Pyrrhonian, had notable differences and each had points of development over nearly five centuries, ending with Sextus Empiricus in the late second century ad. A common feature of each school, though, is an attack on claims to knowledge. For any

argument towards a conclusion which goes beyond sensory appearances, sceptics maintained that an equally strong counter-argument could be given. Other sceptical arguments point to the relativity of all perception, depending on changes in the percipient or in the observation conditions or perspectives, and conclude that we do not gain knowledge of external physical objects via perception. Also, if a criterion for knowledge-acquisition is relied upon – such as perception or causal inductive inference as in Epicurus – then this criterion could be questioned as itself far from evidently reliable. These sceptical arguments were properly taken to lead to the suspension of belief (*epochē*), rather than to the assertion that there is no knowledge. Moreover, the Pyrrhonian sceptics noted that the ultimate goal of their arguments was a non-epistemic one, that of *ataraxia* or being undisturbed. This calm state is presumed achievable once beliefs have been suspended and one is content to carry on one's life dealing only with appearances (see Pyrrhonism; Sextus Empiricus).

Scepticism was challenged in the early medieval period by Augustine in his *Contra Acadcemicos*, in which he dealt critically with the arguments of Cicero, the last of the great academic sceptics (see Augustine §2; Cicero). However, scepticism was not a major concern in the Middle Ages, and did not receive special philosophical attention again until the Renaissance.

[. . .]

4 Modern philosophy: Descartes

It is customary to begin the story of modern philosophy with Descartes, but we need to start a little farther back with a discussion of scepticism. We have noted that ancient scepticism was hardly known during the Middle Ages. In the sixteenth century, however, the old sceptical texts of Cicero were re-published and works by Sextus Empiricus were translated into Latin and thus made available to scholars. These texts and their arguments became very important to those on both sides of disputes over the legitimacy and extent of religious knowledge, an issue given great currency by the Reformation and the Counter-Reformation. Under the direct influence of Sextus Empiricus, Montaigne published his *Apology for Raimond Sebond* (1576) in which he set forth sceptical arguments and recommended suspension of belief on practically all topics. His disciple, Pierre Charron, popularized sceptical doctrines even further. This sceptical climate was well known to Descartes in the first half of the seventeenth century. Still later, Pierre Bayle's *Dictionary*, which contained a number of sceptical entries, was to have a great deal of influence on Berkeley and Hume (see Bayle, P.).

Descartes was thoroughly aware of the sceptical writings and debates of his time, and of the development of sceptical literature since Montaigne. But Descartes himself was no sceptic; on the contrary, he set out to defeat scepticism on its own terms, that is, by finding some knowledge which is completely certain and thus immune to sceptical criticism.

To accomplish this, Descartes used the method of doubt, a method wherein a proposition is considered false provided there is even the slightest possible ground for doubting it. Whole classes of propositions would then be excluded as not known: everything which one believes on the basis of the senses is dubitable by this criterion, and so is not knowledge. The many propositions of science also qualify as dubitable, and so are not items of knowledge. Indeed, it is possible, Descartes reasons, that an evil demon systematically deceives us all, even with respect to the necessary truths of mathematics. If such a demon is even possible, then there is at least the possibility of grounds for doubt, and so virtually nothing would qualify as knowledge.

Descartes contends, however, that such an evil demon cannot deceive him in one case, namely when he thinks in any way. Even when the thinking in which he engages is a case of doubting, whenever Descartes thinks he must exist, and thus he affirms as certain '*Cogito, ergo sum*' – I think, therefore I

exist. This is an item about which he cannot be deceived, and it is thus for Descartes indubitable or certain, and assuredly a case of knowledge.

Descartes' epistemological project then becomes one of seeing whether any other genuine certain knowledge can be derived from this very slender base. He finds first a criterion for certainty: those thoughts or ideas which are clear and distinct are also true. In fact, he says that clarity and distinctness of a thought or idea suffices to assure him of its truth. Using this criterion together with his certain knowledge that he exists, Descartes constructs a complex causal argument for the existence of God. The clarity and distinctness of the thoughts that God is not a deceiver and that God would not allow wholesale deception is then put to work to try to derive propositions formerly excluded as dubitable by the method. Especially important here are propositions concerning the existence of external physical objects.

Descartes' project is thus a foundationalist one of an austere sort. For him, the foundations are restricted to the propositions that he himself exists, that he has certain ideas, and that God exists. From these, utilizing the criterion of clarity and distinctness, the foundations can be augmented to include propositions about immediately experienced sensations. However, derivations of other propositions from these foundational ones have to be restricted to deductions that themselves can be seen to be clear and distinct. If the derivations were inductive, then grounds for doubting the conclusions would be possible. And even if the derivations were deductive, if one did not see that they were validly made from individually indubitable premises, once again the possibility of grounds for doubting the conclusions would arise. Only if the possibility of such grounds are eliminated can these derived conclusions count as items of knowledge.

Descartes, thus, perpetuates and even emphasizes the close conceptual connection between knowledge and the strictest sort of certainty (see Certainty). He also gives currency to the problem of the external world, that is, the problem of deriving propositions concerning external physical objects from foundational propositions made up mostly of propositions concerning sensations. Of course, Descartes has propositions about a non-deceiving God in his foundations, unlike later writers who grappled with this problem. So armed, Descartes claims in the sixth Meditation that he can derive the general claims that there are external physical objects and that they have at most the so-called primary qualities. But even if these claims count as items of knowledge, so that to some extent scepticism is vanquished, it does not seem that Descartes secures knowledge of individual propositions about physical objects and their qualities. For he concedes that, with respect to these, error is possible in the best of circumstances, even with God's help (Williams 1978: 234, 249ff) (see Descartes, R. §§3–5).

5 Modern philosophy: Spinoza and Leibniz

It is customary to classify Spinoza and Leibniz along with Descartes as rationalists. In epistemology, rationalism is the view which stresses the role of reason in the acquisition of knowledge, and correspondingly downplays the role of experience or observation. A limiting case of rationalism, then, would be a position which held that only reason is operative in knowledge acquisition. It is perhaps Spinoza who comes closest to a rationalist position of this sort (see Rationalism).

For Spinoza, a true idea is one which must agree with its object (*Ethics* I: Ax.6). An adequate idea is one which, considered by itself, has an internal sign or intrinsic mark of a true idea (*Ethics* II: Def.4). Having an adequate idea, then, suffices to recognize it as true. There is no need of a clarity-and-distinctness criterion for determining which ideas are true. In this respect, Spinoza differs sharply from Descartes.

Spinoza distinguishes three levels of knowledge. The first is that which we receive in sense perception or from what he calls 'signs', as when the sight of some printed words causes one to remember something. First-level knowledge is not strictly knowledge, however, but rather opinion or imagination. Second-level knowledge or reason (*ratio*) is knowledge of the properties of objects and of relations between properties. Third-level knowledge is intuitive science, which Spinoza says 'advances from an adequate idea of the formal essence of certain attributes of God to the adequate knowledge of the essence of things' (*Ethics* II: pr.XL, schol. 2). Third-level knowledge proceeds from one thing to another in the sense that a person who has an adequate idea of the formal essence of one of God's attributes may logically infer to adequate knowledge of the essence of things.

Knowledge is adequate when one may logically infer, merely from having an adequate idea of *x*, to some general truth about *x* (second level), or to some truth about *x*'s effects (third level). Thus, on the second level, from an adequate idea of body one may infer that all bodies are capable of motion, and thus knowledge of this proposition is adequate. And from the adequate idea of the essence of a divine attribute, one may infer to the essence or nature of objects, and thus the proposition concerning the essence of the objects is adequately known.

Spinoza certainly thinks we have adequate ideas, and so have adequate knowledge (*Ethics* II: pr.XXXIV). And he holds that the propositions known at the second and third levels are necessarily true (*Ethics* II: pr.XLI). So, it looks very much as if Spinoza is committed to the view that second- and third-level knowledge is a priori, that is, knowledge that need not rely on experience, and to this degree he would qualify as a rationalist (see Spinoza, B. de §§7–8).

Leibniz, the other great philosopher usually classified as a rationalist, did not develop a systematic view in epistemology. His classification as a rationalist is no doubt tied to two important strands of his thought. For simple subject-predicate propositions, fundamental for Leibniz, he proposed the predicate-in-notion principle. This is the thesis that the concept of the predicate in such a proposition is contained in the concept of the subject. It seems as though this principle implies that all subject-predicate propositions are necessarily true. For the conceptual-containment doctrine amounts to the claim that such propositions are true in virtue of their meanings or are conceptually true, and this would make them necessarily true. This has the twofold result that all truth is necessary truth, given that subject-predicate propositions are fundamental; and, that all knowledge is or can be a priori, the latter on the assumption that if a proposition is a necessary truth, then it is a priori knowable. If Leibniz held these views, his status as a rationalist is secure.

Leibniz strove to ward off these consequences, however, by an account of analysis. He held that in a necessary proposition, the concept-containment feature allows for the proposition to be analysed or reduced to an identity proposition in a finite number of steps. Contingent truths, however, cannot be so analysed, despite the concept-containment thesis. Instead, in an infinite number of steps of analysis, such propositions would converge on an identity proposition. (Sometimes Leibniz suggests that such propositions can be analysed into identity propositions by God.) So, not all truths are necessary, and thus neither is all knowledge a priori.

There is a strong rationalist side to Leibniz, however, which emerges in the second strand of his thought, namely, his defence of innate truths. In a dispute with Locke, Leibniz contended that there are numerous innate concepts and principles in pure mathematics, logic, metaphysics and ethics. These innate truths are all necessary truths, and they are all knowable a priori. The senses, Leibniz says, merely function as the occasions by and on which these truths are brought to attention (see Leibniz, G.W. §§8–9).

6 Modern philosophy: Locke and Berkeley

Locke provides a strong empiricist contrast to both Spinoza and Leibniz. For Locke, the fundamental items of all cognitions are ideas, which divide into those of sensation and those of reflection. The former are acquired in perception, the latter in introspective attention to the contents and workings of one's own mind. Perception and reflection, for Locke, make up experience, and the fundamental empiricist thesis is that all ideas and all knowledge derive from experience. It follows from empiricism so construed that no ideas are innate. For Locke, the mind is a 'blank tablet' at birth, and it is only by experience that it acquires its stock of ideas.

Locke defines knowledge as the perception of the agreement or disagreement of two ideas (1689: IV, I, 1 and 5). This definition has the immediate effect of restricting all knowledge to ideas, something Locke recognizes and appears to accept (1689: IV, II, 1). It also seems to have the effect of restricting knowledge to relations between ideas. The definition and the restriction accord well with most of what Locke says about knowledge.

Intuitive knowledge is the perception of the agreement or disagreement between two ideas 'immediately by themselves, without the intervention of any other' (Locke (1689): IV, II, 1). Perception that white is not the same as black, for example, is immediate and requires no intermediate idea between those of white and black. Intuitive knowledge, for Locke, is the most certain: it is both irresistible and infallible.

Locke seems to desert his definition of knowledge in three important cases, however, and in two of these cases intuitive knowledge is at issue. One has, for instance, intuitive knowledge of individual ideas, as when one knows that some pain is very sharp (Locke 1689: IV, II, 1). Locke also maintains that one has intuitive knowledge of oneself. In such a case, even if an idea of reflection is had, self-knowledge is not a perception of an agreement or disagreement of two ideas. Moreover, it is knowledge about the self, which is not an idea or group of ideas. In this case, Locke departs not merely from his definition, but also from his explicit claim about the extent of our knowledge.

Demonstrative knowledge, for Locke, requires that each step in the demonstration be intuitively known, and that the relation between the premises and the conclusion also be intuitively known. Meeting these constraints on demonstrative knowledge assures that it is virtually as certain as intuitive knowledge. But meeting these constraints is not easy, especially in long demonstrations where one must keep in mind inferences made earlier. In such cases, Locke indicates, one's degree of certainty with respect to the conclusion will drop and one will not have demonstrative knowledge properly speaking.

Locke's account of sensitive knowledge marks a third point at which he seems to depart from his official definition of knowledge and the restriction of knowledge to our ideas. Sensitive knowledge is knowledge of the existence of external physical objects. It is not as certain as intuitive or demonstrative knowledge, yet it is still knowledge. And Locke clearly thinks that we have such knowledge, at least in those cases when an external physical object is actually present to one's senses (1689: IV, III, 5). Locke conceives of sensitive knowledge of presently perceived physical objects as inferential knowledge. From knowledge of presently experienced ideas one infers that there is an external physical object present as the cause of those ideas. Locke is untroubled by sceptical worries over whether such inferences can be legitimately made.

The distinction between intuitive and certain knowledge of ideas, and sensitive knowledge of physical objects, with the latter knowledge inductively based on the former, is indicative of Locke's foundationalist position. It differs from that proposed by Descartes, however, in two important ways. First, the propositions making up the foundations are different. For Locke, these are confined to propositions about individually experienced ideas, or to propositions describing a perceived agreement

or disagreement between ideas. Thus, Locke's commitment to empiricism dictates what the foundations shall be. Another difference comes in the inferences from the foundational propositions which Locke finds acceptable. He allows for both deductive and inductive inferences, whereas for Descartes permissible inferences may only be deductive. Locke thus marks a liberalization of the foundationalist strictures imposed by Descartes (see Locke, J. §§2–3).

Berkeley was critical of Locke's account of knowledge of physical objects, as was Hume (though, unlike Berkeley, Hume did not mention Locke by name). Locke notes that inductive inferences from currently experienced ideas to physical objects will succeed only when there is a conformity between the ideas and the physical object (1689: IV, IV, 3). Ideas, that is, have to represent the physical objects in some way. Berkeley denies that ideas can serve this role. An idea, he says, can only be like or similar to another idea, not a physical object. Moreover, even allowing for this similarity, the needed inductive inferences depend on and so require that one establish that some ideas do adequately represent objects. To accomplish this, Berkeley argues, one must be in a position to compare the ideas and the physical object. However, as Berkeley notes, this is a position one cannot occupy given Locke's account of perception, which restricts immediate perception to ideas, and so never allows for immediate perception of physical objects. Locke's overall theory, according to Berkeley, really leads to scepticism about physical objects.

To avoid this, Locke could drop the demand that currently experienced ideas conform to or represent objects. Berkeley suggests that this manoeuvre is no help because Locke's theory still requires inductive inferences from the ideas to the physical objects. He notes that the inferences at issue would be explanatory – the supposition that there are physical objects present causally explains the ideas one experiences – but denies their cogency (Berkeley 1710: 19–20, 53). A simpler and thus better explanation of our ideas, Berkeley argues, would be the supposition that they are caused by a single powerful being such as God.

Locke's empiricist version of foundationalism is often attributed to Berkeley. However, Berkeley seems to reject such a theory in favour of a foundationalism both more expansive and more modest. It is more expansive because Berkeley allows that we have immediate and certain knowledge of physical object propositions as well as propositions about currently experienced ideas. Hence, while Berkeley accepts an empiricist version of foundationalism, the propositions he is willing to count as foundational include many more than are countenanced on Locke's theory. Berkeley's theory is more modest in regard to the concept of certainty. For him, a proposition is certain provided that one has no actual grounds for doubting it. It is not further required that mistaken belief is logically impossible. In this way, Berkeley is able to contend that physical object propositions are certain, and he can avail himself of a much more modest criterion of what is to count as a foundational proposition. On this point, Berkeley lines up with Ockham (see §3 above), and with certain twentieth century philosophers (see §8 below).

Berkeley also aimed to refute scepticism regarding the external world. He argues that this may be achieved provided one can find a way to allow for the immediate perception of physical objects. His thought is that if we perceive physical objects immediately, then we also have immediate and certain knowledge of them. He claims that these results are all achieved by abandoning realism regarding physical objects, and embracing instead a thesis which entails that objects exist if and only if they are perceived. Thus, he defends the phenomenalist thesis that a physical object is identical to a collection of ideas (see Phenomenalism). Objects which are collections are immediately perceivable so long as one immediately perceives some of their constituent members. So, the phenomenalist thesis regarding objects allows Berkeley to defend the view that physical objects are immediately perceivable, and hence to argue for the claimed refutation of scepticism and a more expansive foundationalism. In these respects, Berkeley claims, he is merely defending the views of common sense.

7 Modern philosophy: from Hume to Peirce

Both Locke and Berkeley accept the theory that in every perceptual experience, one is immediately aware of at least one idea. Hume follows them in this, but he distinguishes between impressions, which are our more lively and original perceptions, and ideas, which are less lively. In seeing a red cup, one experiences a red impression (or perhaps an impression of red), while in remembering the cup one attends to an idea of the red cup. Hume's fundamental principle is that all ideas are derived from impressions, and in this regard he is a thorough-going empiricist about concepts (ideas).

He also seems to accept epistemic empiricism, at least in the sense that a proposition about an object not currently present to one's senses would count as knowledge only if that proposition were derivable from propositions about currently experienced impressions. Hume denies that physical-object propositions can be deduced from propositions about impressions. He also notes that inductive inference is not something that can be given a non-circular justification. Hence, the inductive inferences from impression propositions to physical-object propositions are not justified, and so scepticism regarding physical objects results.

Hume does note, however, that nature or our psychological make-up does not allow us actually to accept scepticism, or to refrain from making inductive inferences, especially causal ones. He may mean that the fact that we are built in such a way, psychologically, that we make inductive inferences beyond our impressions to beliefs about physical objects itself constitutes being justified in having these beliefs and making these inferences. If so, then Hume is an early externalist about justification and knowledge (see Internalism and externalism in epistemology). Or, he may mean that we can only describe the beliefs we have and the inferences we make; questions about the justification of these inferences and whether the beliefs count as knowledge cannot be settled. In that case, Hume accepts the sceptical results noted above (see Hume, D. §2).

Two very important critics of what they regarded as Humean scepticism were Reid and Kant. Reid argued that Hume's scepticism was generated by acceptance of the theory of ideas (impressions), arguing that no philosopher had ever given any good reason for accepting this theory, and that it gives a mistaken account of perception in any case. The correct account, for Reid, is a complex version of direct realism in which we gain immediate and certain knowledge of physical objects. The beliefs we gain in direct perception of objects are typically irresistible, and it is a first principle for Reid, a matter of common sense, that perception is reliable and so such beliefs are justified and constitute knowledge (see Reid, T. §§1, 7).

Hume's scepticism did not extend to what he called 'relations of ideas'. These included the necessary truths of mathematics, and of these Hume allowed we can have a priori knowledge (1748: IV, 1). It was only with respect to some statements of matters of fact that Hume was sceptical. For Kant, relations of ideas are analytic statements, while matters of fact are synthetic (see A priori; A posteriori; Analyticity). He felt that there was a third category, however, which Hume had missed, namely synthetic a priori propositions. These are necessary truths in which the meanings of the predicate terms are not contained in the meanings of their subject terms; hence, they are synthetic. But Kant argued that the necessary truths of geometry and arithmetic are synthetic a priori, as are some very general principles of science, and these can all be known a priori. He argues that the a priori concepts he calls categories genuinely apply to objects we experience, and that our experience actually is objective in the sense that it is of real physical objects. Kant also held that having experience of objects suffices for having knowledge of such objects, and so scepticism regarding physical objects is incorrect (see Kant, I. §§4, 6).

Hegel's *Phenomenology of Spirit* (1807) contains an extended criticism of a doctrine often thought to be common to all empiricists, namely that there is immediate knowledge of something *given* in

perception (for the classical empiricists, ideas), and that this knowing is passive in the sense that it is unmediated by concepts. This criticism, of course, would apply to any variant of empiricism, including a view which holds that physical objects and not subjective ideas are perceptually given and are objects of passive, immediate knowledge. Hegel's view is that there simply is no knowledge of this sort. Rather, all knowledge is conceptually mediated. Hegel seems to have drawn the conclusion that there is nothing at all which is given, a doctrine later given great currency in the twentieth century (see Hegel, G.W.F. §5).

Charles Peirce was another important critic of foundationalism, both empiricist and Cartesian. Against the former, Charles Peirce held that no empirical belief is certain – we can be mistaken in any empirical belief – and neither is it unrevisable – we can be reasonably motivated to give up any empirical belief in the light of new evidence. These two points make up part of Peirce's fallibilism (see Fallibilism). The Cartesian programme is criticized on the grounds that wholesale doubt is not a psychologically possible action, so that Descartes' method of securing foundations for knowledge does not succeed (see Peirce, C.S. §2).

8 Twentieth century

The empiricist tradition continued into the twentieth century in sense-datum theories of the sort found in Russell, with special attention paid to knowledge of the external physical world. It was argued that, in any perceptual experience, one is immediately aware of sense-data rather than physical objects. Sense-data are taken to be phenomenal objects having qualities such as colour and shape (see Sense-data). Immediate awareness of sense-data is acquaintance, itself a form of certain knowing, namely, knowing objects rather than propositions about objects. Propositional knowledge of objects is knowledge by description, and it is inferential, based upon acquaintance knowledge of sense-data (see Knowledge by acquaintance and description).

The needed inferences were to be underwritten by analytical phenomenalism, that is, the thesis that all physical-object sentences are analysable into, and so equivalent in meaning to, sets of sense-datum sentences. Given this equivalence, it was felt, inferences from sense-datum sentences to physical-object sentences would be secured as legitimate; thus the problem of the external world was solved.

Related theories were defended by Ayer and C.I. Lewis. Ayer dropped the notion of acquaintance. Sense-data were taken as items of immediate awareness, which typically issued in incorrigible propositional knowledge. Lewis dispensed with sense-data; he expressed the foundational sentences using ordinary idioms such as 'This seems red', but he made the same demands on these as Ayer did of sense-datum sentences. They are certain, and the basis of all other empirical knowledge. As in Russell, inferences from these were supposed sanctioned by analytical phenomenalism.

Interestingly enough, G.E. Moore also defended a sense-datum theory of perception, but did not couple it with an empiricist version of foundationalism. Rather, he defended common sense, which for him included the view that there are many particular material-object propositions which are known immediately and with certainty. For instance, Moore claimed to know, immediately and with certainty, that a certain mantelpiece was closer to his body than a specific bookcase. For Moore, knowledge of this proposition and of many other material-object propositions need not be based on more secure knowledge of sense-data. In this regard, then, Moore's view is more a version of epistemic direct realism than it is empiricist foundationalism (see Moore, G.E. §3).

The programme of empiricist foundationalism and analytical phenomenalism was widely criticized. The alleged incorrigibility or certain knowledge of sense-data was influentially attacked by J.L. Austin. All empirical sentences, he argued, are corrigible because in forming a belief about an object, such as is

expressed by 'This is red', one is classifying the object as among the red things and so is relying on one's wholly fallible memory of other comparably red items. Moreover, certainty or incorrigibility is not needed for knowledge. Many critics argued that certainty in the sense of lack of actual grounds for doubt was a more adequate analysis of this concept, and in this sense many physical-object sentences would count as certain. Analytical phenomenalism was also criticized, principally by Chisholm (see Phenomenalism §2). He showed that physical-object sentences do not entail sense-datum sentences, and hence are not equivalent to them.

Ayer and Lewis also were in rough agreement on the definition of the concept of knowledge. They held that propositional knowledge is justified true belief, an account shared by many others. Edmund Gettier (1963) argued that this definition was incorrect. His idea was that one could have a true justified belief which is not knowledge in a situation in which one reasons from some already justified beliefs to a new belief that, as it happens, is coincidentally true. Since it would then be a matter of coincidence that one's belief was correct, it would not count as knowledge, even though it was a justified belief because it was knowingly inferred from already justified beliefs (see Gettier problems).

Gettier's 1963 article generated a great deal of interest. While some argued that his argument was unsatisfactory, a majority assumed that he was more or less right, and many new analyses of knowledge were proposed, including many which incorporated the justified true belief analysis as a part. What has emerged as perhaps the most promising and least prone to new counterexamples is the defeasibility analysis. The key idea is that of defeated justification: where one is justified in believing a proposition *p* on the basis of evidence *e*, one's justification is defeated when there is a true proposition *q*, such that the conjunction (*e&q*) does not justify *p*. The defeasibility analysis would then be that knowledge is justified, true, undefeated belief. Sophisticated versions of the defeasibility analysis have been worked out in detail by a number of authors, including Klein (1971), Lehrer (1974) and Swain (1972) (see Knowledge, defeasibility theory of).

Closely connected to the concept of knowledge is the concept of a justified belief, and a number of important theories of epistemic justification have been developed, the principal ones being foundational theories, coherence theories and reliability theories (see Justification, epistemic). We have already noted Cartesian and empiricist versions of foundationalism. In recent years some philosophers have defended modest versions of foundationalism. That is, they have defended the view that a belief would be justified if and only if either it were a basic, foundational belief, or were inferrable from basic beliefs. The modesty of the theory would then derive from the fact that basic beliefs need not be certain or incorrigible; it would suffice if the basic beliefs were to be non-inferentially justified. Beliefs are non-inferentially justified when their justification need not result from being based on or inferrable from other justified beliefs.

Many philosophers have found even modest foundationalism suspect, primarily because they have found problematic the notion of a basic, non-inferentially justified belief. Some have accordingly avoided this notion altogether, and developed coherence theories of justified belief. The core idea in all such coherence theories is that a belief is justified if and only if it is a member of a system of beliefs, and this system of beliefs is coherent. A number of different accounts of coherence have been proposed, but most favoured has been that of explanatory coherence. On such a view, some beliefs (explainees) in the coherent system are justified because they are explained by other beliefs in the system; the remaining beliefs in the system are justified in virtue of their role in explaining the explainees. A problem for these theories has been to provide a reasonable way of selecting those beliefs within the system which are to be explained (see Knowledge and justification, coherence theory of).

The most widely discussed reliabilist theory has been the reliable-process theory. The core idea here is that a belief is justified if and only if it is caused by, or causally sustained by, a reliable process. A process is reliable when it has a high truth-ratio; that is, when that process produces more true beliefs

than false ones. Typical processes selected as reliable belief-forming or belief-sustaining ones are perception, memory, introspection, and inferring or reasoning.

A problem which has proved especially vexing for supporters of the reliable-process theory is that of generality. Any specific belief is produced (sustained) by a process token which is an instance of many different process types. The generality problem is essentially that of fixing how broadly to individuate the process types in question (see Reliabilism).

9 Recent issues

In a reliable-process theory cognizers may have no knowledge or awareness of the processes which cause or causally sustain their beliefs, or of the reliability of these processes. Most foundational and coherence theories, however, construe the notion of justification in such a way that a person's belief is justified only if they have some access to, or awareness of, whatever it is that serves to justify that belief. Theories with this access condition are generally thought of as internalist theories; those which dispense with the access requirement are externalist. Though widely discussed, no fully adequate resolution of the question of whether an access requirement should be imposed on a theory of justification has yet gained general acceptance (see Internalism and externalism in epistemology).

Proponents of reliable-process theories have typically tried to develop a naturalistic theory (see Naturalized epistemology). Minimally, a naturalistic epistemological theory is one in which key epistemic concepts such as knowledge and justification are analysed or explained in a form which makes use only of non-epistemic concepts. A more radical form of naturalism in epistemology, proposed by Quine, dispenses outright with the normative elements of traditional epistemology, and reconceives the subject as a part of empirical psychology (see Quine, W.V. §2). On this view, epistemology becomes a wholly descriptive discipline, one which studies how beliefs are formed, and how they are related to what we take evidence to be. Whether a minimal or more radical form of naturalized epistemology is acceptable is an open question at present.

Issues in social epistemology have also loomed large recently, as have topics in feminist epistemology. Within the former, two important questions are whether social factors play a role in determining whether a person has knowledge or justified belief, and whether non-individuals such as groups or institutions can be said to have knowledge or justified beliefs (see Social epistemology). Within feminist epistemology a leading question has been whether women acquire knowledge in ways that differ from methods of knowledge acquisition open to men. Another important issue has been whether social and cultural factors as they affect women have a bearing on what it is that women know (see Feminist epistemology).

All these recent developments in epistemology are being vigorously pursued and explored. They have served to expand and enrich the field in ways not appreciated just a few decades ago.

References and further reading

Adams, M. (1987) *William Ockham*, Notre Dame, IN: University of Notre Dame Press. (Authoritative work; chapters 13 and 14 are especially relevant.)

Alston, W. (1989) *Epistemic Justification*, Ithaca, NY: Cornell University Press. (Defends a modest foundationalism.)

Aquinas, T. (1266–73) *Summa Theologiae*, trans. by Fathers of the English Dominican Province, Westminster: Christian Classics, 5 vols, 1981. (Particularly relevant to the matter of abstracting intelligible species from sense impressions, mainly in Questions 84–7.)

Aquinas, T. (1271–2) *Commentary on Aristotle's Posterior Analytics*, trans. F. Larcher, Albany, NY: Magi Books, 1970. (Contains Aquinas' account of genuine knowledge and demonstrative syllogism.)

Aristotle (*c.* mid 4th century bc) *Posterior Analytics*, ed. and trans. J. Barnes, Oxford: Clarendon Press, 1975. (Contains Aristotle's account of scientific knowledge.)

Aristotle (*c.* mid 4th century bc) *De Anima*, ed. and trans. D. Hamlyn, Oxford: Clarendon Press, 1968. (Aristotle's account of perception and perceptual knowledge is found in Books 2 and 3.)

Augustine (386) *Contra academicos (Against the Academicians)*, ed. and trans. P. King, Indianapolis, IN: Hackett Publishing Company, 1995. (Augustine's extended criticism of academic scepticism, mainly that found in Cicero.)

Ayer, A.J. (1940) *Foundations of Empirical Knowledge*, London: Macmillan. (A defence of empiricist foundationalism and of analytical phenomenalism.)

Ayer, A.J. (1956) *The Problem of Knowledge*, Baltimore, MD: Pelican. (An account of knowledge as roughly justified true belief.)

Ayers, M. (1993) *Locke: Epistemology and Ontology*, London: Routledge. (Authoritative, scholarly treatment of Locke on all matters pertaining to his epistemology.)

Bayle, P. (1695–7) *Historical and Critical Dictionary, Selections*, trans. R. Popkin, Indianapolis, IN: Hackett Publishing Company, 1991. (Some of the *Dictionary* material strongly influenced Berkeley and Hume.)

Berkeley, G. (1710) *A Treatise Concerning the Principles of Human Knowledge*, ed. K. Winkler, Indianapolis, IN: Hackett Publishing Company, 1982. (One of Berkeley's main writings on epistemological topics.)

Berkeley, G. (1713) *Three Dialogues Between Hylas and Philonous*, ed. R.M. Adams, Indianapolis, IN: Hackett Publishing Company, 1979. (Important for Berkeley's discussion of scepticism.)

BonJour, L. (1985) *The Structure of Empirical Knowledge*, Cambridge, MA: Harvard University Press. (Both an influential criticism of foundationalism and a defence of explanatory coherence.)

Broad, C.D. (1975) *Leibniz – an Introduction*, Cambridge: Cambridge University Press. (A fine introduction to Leibniz by a master expositor, but it is somewhat advanced.)

Burnyeat, M. (1980) 'Can the sceptic live his scepticism?', in M. Schofield, M. Burnyeat and J. Barnes (eds) *Doubt and Dogmatism*, Oxford: Clarendon Press. (Deals with the question of whether those Hellenistics professing scepticism can actually withhold belief in the relevant ways.)

Chisholm, R. (1948) 'The Problem of Empiricism', Journal of Philosophy 45 (19): 512–17. (A trenchant criticism of analytical phenomenalism.)

Chisholm, R. (1957) *Perceiving*, Ithaca, NY: Cornell University Press. (Contains an anti-sense-datum account of perception.)

Chisholm, R. (1966) *Theory of Knowledge, Englewood Cliffs, NJ: Prentice Hall*, 2nd edn, 1977. (General discussion which includes a defence of foundationalism.)

Code, L. (1991) *What Can She Know? Feminist Theory and the Construction of Knowledge*, Ithaca, NY: Cornell University Press. (Defence of feminist epistemology as a reorientation of the field of epistemology, by a leading researcher in the area.)

Cornman, J. (1980) *Skepticism, Justification, and Explanation*, Dordrecht: Reidel. (Careful discussion of scepticism and many varieties of theories of justification.)

Descartes, R. (1641) *Meditations on First Philosophy*, in J. Cottingham, R. Stoothoff, D. Murdoch and A. Kenny (eds) *The Philosophical Writings of Descartes*, Cambridge: Cambridge University Press, 3 vols, 1984–91. (Now the standard English edition of the main philosophical works.)

Everson, S. (1990) 'Epicurus on the Truth of the Senses', in S. Everson (ed.) *Epistemology*, Cambridge: Cambridge University Press. (Especially helpful on Epicurus' relations to sceptical doctrines.)

Feldman, R. (1985) 'Reliability and justification', The Monist 68 (2): 159–74. (Penetrating statement of the generality problem for reliabilism.)

Fine, G. (1978) 'Knowledge and Belief in Republic V', Archiv fur Geschichte der Philosophie 58: 121–39. (Deals with knowledge of Forms and the contrasts between knowledge and belief in Plato's *Republic*.)

Fogelin, R. (1985) *Hume's Scepticism in the Treatise of Human Nature*, London: Routledge. (Interprets Hume as an epistemological sceptic.)

Frede, M. (1983) 'Stoics and sceptics on clear and distinct ideas', in M. Burnyeat (ed.) *The Sceptical Tradition*, Berkeley, CA: University of California Press. (A very sympathetic examination of Stoic doctrines; particularly helpful in understanding the role of cognitive impressions.)

Fumerton, R. (1988) 'The internalism/externalism controversy', Philosophical Perspectives 2: 442–59. (Good discussion of the matters at issue in this dispute.)

Gettier, E. (1963) 'Is justified true belief knowledge?', Analysis 23 (6): 121–3. (This brief paper stimulated more than two decades of work on the analysis of factual knowledge.)

Goldman, A. (1979) 'What is justified belief?', in G. Pappas (ed.) *Justification and Knowledge*, Dordrecht: Reidel. (Exceptionally lucid early statement of a reliable-process theory of justification.)

Goldman, A. (1986) *Epistemology and Cognition*, Cambridge, MA: Harvard University Press. (Updated version of reliabilism, along with some attempt to solve the generality problem and a detailed look at the relevance of psychological theories and findings to epistemology.)

Hegel, G.W.F. (1807) *The Phenomenology of Spirit*, trans. A.V. Miller, Oxford: Clarendon Press, 1977. (The introduction contains trenchant criticism of empiricism and Cartesian epistemology.)

Hookway, C.J. (1985) *Peirce*, London: Routledge & Kegan Paul. (Good account of Peirce's views of science and scientific method.)

Hume, D. (1740) *A Treatise of Human Nature*, ed. P. Nidditch, Oxford: Clarendon Press, 2nd edn, 1978. (Hume's views on knowledge and scepticism are found in Book 1.)

Hume, D. (1748) *Enquiry Concerning Human Understanding and Enquiry Concerning the Principles of Morals*, ed. L.A. Selby-Bigge, revised P. Nidditch, Oxford: Clarendon Press, 1975. (Hume here expresses his views in a more accessible manner than in the *Treatise*.)

Irwin, T. (1988) *Aristotle's First Principles*, Oxford: Clarendon. (A fine, detailed treatment of Aristotle's epistemological doctrines.)

Kant, I. (1781/1787) *Critique of Pure Reason*, trans. N. Kemp Smith, London: Macmillan, 1964. (This difficult work contains Kant's answer to both empiricists and rationalists. Most relevant is the 'Transcendental Analytic'.)

Kim, J. (1988) 'What is naturalized epistemology?', Philosophical Perspectives 2: 381–405. (Helpful discussion of Quine's view, and a defence of the idea that traditional epistemology should not be, and perhaps cannot be, given up.)

Klein, P. (1971) 'A proposed definition of propositional knowledge', Journal of Philosophy 68 (16): 471–82. (An early defence of the defeasibility theory.)

Lehrer, K. (1974) *Knowledge*, New York: Oxford University Press. (Contains a powerful criticism of explanatory coherence theories, and a defence of a subjective coherence theory.)

Lehrer, K. (1989) *Thomas Reid*, London: Routledge. (A comprehensive discussion of Reid's philosophy. It includes an excellent account of Reid's criticisms of Hume, and of Reid's defence of common sense.)

Lehrer, K. (1990) *Theory of Knowledge*, Boulder, CO: Westview Press. (Contains Lehrer's latest defence of defeasibility and much besides.)

Leibniz, G. (1765) *New Essays on Human Understanding*, trans. P. Remnant and J. Bennett, Cambridge: Cambridge University Press, 1981. (Comments on and responds to Locke; notable for Leibniz' discussion of innate truths.)

Leibniz, G. (1969) *Philosophical Papers and Letters*, ed. and trans. L.E. Loemker, Dordrecht: Reidel. (Contains most of Leibniz' important philosophical writings.)

Lewis, C.I. (1946) *Analysis of Knowledge and Valuation*, LaSalle, IL: Open Court Publishing. (Defence of a complex form of analytical phenomenalism, and of empiricist foundationalism without sense-data.)

Locke, J. (1689) *An Essay Concerning Human Understanding*, ed. P. Nidditch, Oxford: Clarendon Press, 1975. (The best modern edition of Locke's classic. Most important are Books I, II, and IV.)

Long, A. and Sedley, D.N. (eds) (1987) *The Hellenistic Philosophers*, Cambridge: Cambridge University Press. (Contains relevant Epicurean and Stoic texts.)

MacDonald, S. (1992) 'Aquinas's Epistemology', in N. Kretzmann and E. Stump (eds) *Aquinas*, Cambridge: Cambridge University Press. (Comprehensive discussion of Aquinas' scattered epistemological remarks.)

Montaigne, M. de (1576) *Apology for Raimond Sebond*, trans. D. Frame in *The Complete Works of Montaigne*, Stanford: Stanford University Press, 1958. (Very influential early modern text.)

Moore, G.E. (1953) *Some Main Problems of Philosophy*, London: Allen & Unwin. (Contains Moore's account of the common sense view of the world.)

Moore, G.E. (1959) *Philosophical Papers*, London: Allen & Unwin. (This collection contains Moore's famous paper 'A Defence of Common Sense'.)

Moser, P. (1989) *Knowledge and Evidence*, New York: Cambridge University Press. (A defence of foundationalism.)

Pappas, G. (1991) 'Berkeley and Common Sense Realism', History of Philosophy Quarterly 8 (1): 27–42. (Discusses Berkeley's commitment to epistemic direct realism.)

Pappas, G. and Swain, M. (1978) *Essays on Knowledge and Justification*, Ithaca, NY: Cornell University Press. (Contains many papers on the analysis of knowledge and on foundational and coherentist theories of justified belief.)

Parkinson, G.H.R. (1954) *Spinoza's Theory of Knowledge*, Oxford: Clarendon Press. (Comprehensive treatment of Spinoza's doctrines about knowledge.)

Peirce, C. (1931–58) *Collected Papers of Charles S. Peirce*, ed. P. Weiss, C. Hartshorne and A. Burks, Cambridge, MA: Harvard University Press, 8 vols. (Volume 5 contains papers most relevant to

epistemological issues.)

Pitcher, G. (1977) *Berkeley*, London: Routledge & Kegan Paul. (Penetrating analysis of Berkeley's thought, a modern classic which interprets Berkeley as an empiricist foundationalist.)

Plato (427–347 bc) *The Collected Dialogues of Plato*, ed. E. Hamilton and H. Cairns, Princeton, NJ: Princeton University Press, 1961. (Contains all of Plato's dialogues in English translation. See especially the *Meno*, *Theatetus*, *Cratylus* and *Republic*, discussed in §1 above.)

Popkin, R. (1979) *The History of Scepticism from Erasmus to Spinoza*, Berkeley, CA: University of California Press. (A great source of information, both historical and philosophical.)

Quine, W.V. (1969) 'Epistemology naturalized', in *Ontological Relativity and Other Essays*, New York: Columbia University Press. (Defends abandonment of traditional epistemology and the view that epistemology should be taken as a branch of empirical psychology.)

Reid, T. (1785) *Essays on the Intellectual Powers*, ed. B. Brody, Cambridge, MA: MIT Press, 1969. (Reid's systematic treatment of epistemological themes.)

Russell, B. (1912) *Problems of Philosophy*, London: Williams & Norgate. (Discusses and defends the sense-datum theory and empiricist foundationalism; also contains Russell's famous distinction between knowledge by acquaintance and knowledge by description.)

Russell, B. (1914) *Knowledge of the External World*, London: Allen & Unwin. (As with his 1912 work, this also discusses and defends the sense-datum theory and empiricist foundationalism; analytical phenomenalism is defended under the term 'logical constructions'.)

Russell, B. (1918) *Mysticism and Logic*, New York: Longmans. (Discusses and defends the sense-datum theory and empiricist foundationalism – see especially Essays 7, 8 and 10.)

Schmitt, F. (1994) *Socializing Epistemology*, Lanham, MD: Rowman & Littlefield. (Contains many important recent papers on social epistemology, with notable attempts to map out the field in Schmitt's introduction and in papers by Kornblith, Kitcher and Schmitt.)

Sellars, W. (1963) 'Empiricism and the philosophy of mind', in *Science, Perception and Reality*, New York: Humanities. (A most influential criticism of foundationalism.)

Sextus Empiricus (*c*. ad 200) *Outlines of Pyrrhonism* and *Against the Mathematicians*, ed. R. Bury, London: Heinemann, 4 vols, 1933–49. (Complete offering of Sextus' writings)

Shope, R. (1983) *The Analysis of Knowing*, Princeton, NJ: Princeton University Press. (A most useful in-depth survey of a wealth of material on the concept of knowledge.)

Spinoza, B. (1677) *Ethics* and *Treatise on the Improvement of the Intellect*, in *The Collected Works of Spinoza*, ed. E. Curley, Princeton, NJ: Princeton University Press, 2 vols, 1985. (The primary texts.)

Stroud, B. (1977) *Hume*, London: Routledge & Kegan Paul. (Fine discussion of all Hume's main ideas and arguments.)

Swain, M. (1974) 'Epistemic defeasibility', American Philosophical Quarterly 11: 15–25. (The Klein and Swain papers deal with defeasibility and knowledge in roughly the same way; both are very polished complex discussions of the issues.)

Taylor, C.C.W. (1990) 'Aristotle's Epistemology', in S. Everson (ed.) *Epistemology*, Cambridge: Cambridge University Press. (Very clear discussion, easily accessible to the non-specialist.)

William of Ockham (*c*.1287–1347) *Ockham: Philosophical Writings*, ed. P. Boehner, Indianapolis, IN: Bobbs-Merrill, 1964. (Good translations of major writings in philosophy.)

William of Ockham (1322–7) *Quodlibeta Septem*, in R. McKeon (ed.) *Selections from Medieval Philosophers*, New York: Charles Scribner's Sons, 1930. (The seven 'quodlibeta' are directly concerned with intuitive cognition.)

Williams, B. (1978) *Descartes: The Project of Pure Enquiry*, Harmondsworth: Penguin. (Outstanding and detailed treatment of all of the main ideas in Descartes' epistemology; this book is very helpful in understanding Descartes' relation to sceptical arguments.)