Brit. J. Phil. Sci. 41 (1990), 333–350 *Printed in Great Britain*

The Epistemology of J. M. Keynes[1]

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ABSTRACT

This paper has two objectives, neither previously attempted in the published literature—first, to outline J. M. Keynes's theory of knowledge in some detail, and, secondly, to justify the contention that his epistemology is a variety of rationalism, and not, as many have asserted, a form of empiricism. Keynes's attitude to empirical data is also analysed as well as his views on prediction and theory choice.

1 INTRODUCTION

Widespread disagreement exists among both philosophers and economists as to how best to characterize J. M. Keynes's epistemology, such differences showing little appearance of being resolved. In the belief that resolution is possible, this paper attempts a twofold task. It presents an account of Keynes's theory of knowledge (thus filling a gap in the existing literature), and it provides an interpretation of his epistemology consistent with *all* his writings. My basic thesis is that Keynes is a *particular kind of rationalist*, rather than an empiricist or pragmatist.[2] His own phrase 'Cambridge rationalism' might be

[1] This paper is partly based on ideas initially advanced in O'Donnell [1982], a revised and expanded version of which is to be published as O'Donnell [1989]. I should like to thank an anonymous referee for helpful comment, and King's College, Cambridge for permission to quote from the Keynes Papers.

[2] Harrod ([1951], p. 646) and Hayek ([1978], p. 288) have also described Keynes as a rationalist, but in these and other accounts the term is simply an *obiter dictum*, and one is left no wiser as to its meaning. Reasons of space preclude reference to Keynes's economic writings, but it is not difficult to show that these are underpinned by the same rationalist epistemology; see O'Donnell ([1982], [1989], chapter 10).

used to distinguish his version from other varieties of rationalism. Support for the claim derives from Keynes's philosophical writings, both published and unpublished—particularly the *Treatise on Probability*, his successful fellowship dissertation [1908], and his early philosophical papers.[3] Reference is also made to the contemporary Cambridge philosophy so crucial to his intellectual formation.

Strongest opposition to the thesis comes from those who classify Keynes as an empiricist,[4] a viewpoint seemingly based on two confusions. First, it confuses the part with the whole—impressed by Keynes's clear stress on the importance of empirical data, it is blind to the fact that within a wider perspective this empirical concern is quite consistent with rationalism. And secondly, it appears to draw support from the simplistic historical conception that British philosophy is inevitably empiricist in orientation. Occasionally, the term 'pragmatic' is applied to Keynes, but usually in the context of his practical views rather than as a characterization of his epistemology.

2 EPISTEMOLOGY AND LOGIC

The main concern of the *TP*, however, was logic rather than epistemology. Its basic objective was to solve the puzzle of *rational but non-conclusive argument*—to analyse and justify the innumerable arguments in science, daily life and elsewhere which are believed to be rational in some sense, but which are not deductively conclusive. Keynes's solution was to bring this family of argument under the sway of logic by making the theory of probability synonymous with the theory of logic. Probability then became the general theory of logic, dealing with the logical relationships between virtually any pair of propositions, and containing the traditional deductive logic as a special case. The natural vehicle for this project was a logical conception of probability in which probability was concerned with logical relations between propositions, the typical case being that of an argument in which the premisses lend only *partial* support to the conclusion. Keynes referred to these relations of partial support or entailment between propositions as *probability-relations*, and made the additional claim that such relations expressed the *degrees of rational belief* that individuals were warranted in placing in the conclusions of such arguments.

Nevertheless epistemology was indispensable to Keynes's logical project for it was necessary to explain how individuals came to know these probability-

[3] References to the *Collected Writings of John Maynard Keynes* are written as the volume number in italics followed by page numbers. In the case of the *Treatise on Probability* (hereafter *TP*), page numbers only are cited. King's College, Cambridge have kindly granted the author permission to publish a collection of Keynes's unpublished philosophical papers in the near future.

[4] Those who view Keynes as belonging to the empiricist tradition include Braithwaite ([1975], pp. 237–8; *VIII xv*), Giere ([1983], p. 285), Gruchy ([1948] p. 243), and Littleboy and Mehta ([1983], p. 3). Lakatos ([1968], pp. 322–4) also classifies Keynes as an empiricist, but later dismantles the distinction between rationalism and empiricism (Lakatos [1968], p. 403, n. 1).

relations and degrees of rational belief. But although required to take up an epistemological position, Keynes displayed markedly different attitudes to the two disciplines. While generally confident on matters of logic, he expressed hesitancy in regard to epistemology, viewing it as a 'disordered and undeveloped' area of philosophy (292).[5]

3 KEYNES'S THEORY OF KNOWLEDGE

The distinction between *direct* and *indirect* knowledge, between 'that part of our rational belief which we know directly and that part which we know by argument' (12), is of central importance. Equivalent to the usual distinction between foundational and inferential knowledge, it is explained by three theses.

First, Keynes claims we have *direct acquaintance* with three main classes of objects—sensations, meanings and perceptions.

> The most important classes of things with which we have direct acquaintance are our own sensations, which we may be said to *experience*, the ideas or meanings about which we have thoughts and which we may be said to *understand*, and facts or characteristics or relations of sense data or meanings, which we may be said to *perceive*;—experience, understanding and perception being three forms of direct acquaintance. (12)

Although the meaning of direct acquaintance is not always perfectly clear in Cambridge philosophy, it seems to mean a state of unmediated, error-free awareness in which the object itself is directly apprehended. That is, individuals are acquainted in perception and thought with things themselves, and not merely with their impressions or ideas of these things.[6] Direct acquaintance, however, does not itself constitute knowledge. The second thesis therefore is that *contemplation* of these objects of direct acquaintance produces *direct knowledge* of them in the form of propositions. Keynes offers no general account of direct knowledge, only selected instances.

> Let us take examples of direct knowledge. From acquaintance with a sensation of yellow I can pass directly to a knowledge of the proposition 'I have a sensation of yellow'. From acquaintance with a sensation of yellow and with the meanings of 'yellow', 'colour', 'existence', I may be able to pass to a direct knowledge of the propositions 'I understand the meaning of yellow', 'my sensation of yellow exists', 'yellow is a colour'. Thus, by some mental process of which it is difficult to give an account, we are able to pass from direct acquaintance with things to a knowledge of propositions about the things of which we have sensations and understand the meaning. (13)

[5] Epistemology is introduced in chapter 2 of the *TP*, immediately after the reader has been acquainted with the general logical problem. Chapters 22 and 25 are also relevant.

[6] For further discussion of acquaintance and knowledge by acquaintance, see Broad [1919], Russell [1980], Passmore [1968], Regan [1986].

The third thesis is that we pass from direct to *indirect knowledge* by means of argument, this requiring the *perception* of logical relations between propositions. Such relations are, of course, probability-relations, and consistent with the first thesis, their perception is a matter of direct acquaintance. 'With this logical relation', Keynes insisted, 'we have direct acquaintance' (13), a point also made in his dissertation ([1908], pp. 59, 89): 'How then do we know any probability? . . . I am inclined to believe that we possess some power of direct inspection in the case of every judgment of probability. By this I mean that relations of probability are things that can be directly perceived, just as many other logical relations are by general admission objects of intuition.' From the contemplation of this perception then arises an item of direct knowledge, namely, a 'secondary proposition' expressing the probability-relation.

> In the case of every argument, it is only directly that we can know the secondary proposition which makes the argument itself valid and rational. When we know something by argument this must be through direct acquaintance with some logical relation between the conclusion and premiss. (15)

No explanation of the mental process involved in the passage from direct to indirect knowledge is proffered by Keynes and he accepts that it is not always capable of analysis. Nevertheless, even if we are not explicitly aware of it, some logical relation is said to be present in all legitimate argument.

Direct knowledge, whether of sensations, meanings or logical relations, provides the foundation of Keynes's theory of knowledge upon which is erected the superstructure of indirect or probabilistic knowledge. Despite its vital role, however, direct knowledge is only discussed in generalized and rather imprecise terms.

> About what *kinds* of things we are capable of knowing propositions directly, it is not easy to say. About our own existence, our own sense-data, some logical ideas, and some logical relations, it is usually agreed that we have direct knowledge. Of the law of gravity, of the appearance of the other side of the moon, of the cure for phthisis, of the contents of Bradshaw, it is usually agreed that we do not have direct knowledge. But many questions are in doubt. Of *which* logical ideas and relations we have direct acquaintance, as to whether we can ever know directly the existence of *other people*, and as to when we are knowing propositions about sense-data directly and when we are interpreting them—it is not possible to give a clear answer. (14)

4 KNOWLEDGE, TRUTH AND RATIONAL BELIEF

In Keynes's epistemology, knowledge, truth and certain rational belief are inseparably bound together.

> . . . knowledge of a proposition always corresponds to certainty of rational belief in it and at the same time to actual truth in the proposition. We cannot know a proposition unless it is in fact true. (11)

Their correspondences are also evident in his necessary conditions for rational belief in proposition p. In the case of certain rational belief, one of two conditions must hold—either 'we know p directly', or 'we know a set of propositions h, and ... some secondary proposition q asserting a certainty-relation between p and h' (17). And in the case of less than certain rational belief, we are required to 'know a set of propositions h, and also know some secondary proposition q asserting a probability-relation between p and h' (17). Degrees of rational belief less than certainty thus equally spring from knowledge, in this case knowledge of secondary propositions asserting probability-relations.

Evidently, then, when Keynes speaks of knowledge he means true propositions, regardless of whether direct or indirect knowledge, or primary or secondary propositions are in question. It is also clear that his theory takes all rational belief to be ultimately grounded on knowledge, and hence on truth. As Ramsey pointed out ([1931], p. 190), Keynes's method was that of 'justifying probable belief solely by relation to certain knowledge'. The importance of truth and certainty in Keynes's philosophy is also evident in the famous memoir, 'My Early Beliefs' [*X* 436, 438, 447].

5 REAL DEFINITIONS AND ANALYSIS

In the philosophy of definition, rationalism has traditionally allied itself with realism, according to which definition is of things, whilst empiricism has sided with nominalism according to which all definition is of words.[7] While Keynes nowhere explicitly acknowledges his acceptance of real definitions, it is not difficult to show that his arguments depend upon them, particularly the claims of the *TP* that probability is indefinable and that meanings may provide relevant evidence for probabilistic argument.

According to the real definition thesis, 'What is x?', where x denotes 'man', 'goodness', 'probability', 'economics', or 'utility', for instance, has an answer of the form 'x is yz' where y and z are also things. 'Man is a rational animal' (Aristotle) and 'economics is essentially about relations of production' (Hollis and Nell [1975], p. 21) are relevant instances. The following properties are attributed to real definitions:

(a) They give an account of the essence, or real nature of the thing defined.
(b) They have truth-value, providing knowledge about the true character of things.
(c) They are discoveries not inventions, the outcome of enquiries into reality which may require repeated effort before the pure idea is apprehended.
(d) The process of discovery is ultimately intuitive in that it is the mind alone

[7] For discussion of the philosophy of definition, see Robinson [1954], Hollis and Nell ([1975], pp. 177–81), and Popper ([1966], II, pp. 9–21).

which 'sees' the essence. Experience, however, contributes in two important ways—it provides the raw material for analysis, and it serves to test putative definitions.

(e) That there are indefinable objects is a corollary of the real definition thesis. Given that the proper method of definition is *analysis*, or the breaking down of things into their component parts, it follows that only complex things can be defined and that all simple or non-decomposable things are indefinable. Such arguments are fundamental to Moore's claims in *Principia Ethica* that concepts like 'good' and 'yellow' are indefinable.[8]

Unlike the positivist von Mises [1957] who begins with a nominalist definition ignoring ordinary usage, Keynes commences the *TP* with a discussion of 'The Meaning of Probability', the object of which is to reveal the common element in such words as probable, likely, doubtful and uncertain. What he believes these words 'strictly' (3) to express is a logical relation between propositions justifying degrees of rational belief. And, secondly, in arguing that probability is indefinable, Keynes's reasoning is identical to that of Moore's—'we cannot analyse the probability-relation in terms of simpler ideas'; it is 'a new logical relation . . . which cannot be explained or defined in terms of our previous notions' (8). As Moore ([1903], p. 6) says of his ethical indefinable, 'good is good and that is the end of the matter', so Keynes says of his logical indefinable, 'Probability begins and ends with probability' (356). In justifying his stance, Keynes criticized previous attempts at definition as failures and relied upon the capacity of the mind to perceive new ideas, adding that the logical view of probability depended for its acceptance on '*a reflective judgment on the true character of the concept*' (9, emphasis added). He thus understood concepts to have true characters which can be determined by reflection (or intuition).[9] The realist position is also evident in relation to the second class of things with which individuals are claimed to have direct acquaintance, these being *ideas or meanings*, the contemplation of which results in knowledge or true propositions.

6 DIRECT KNOWLEDGE AND INTUITION

The foundation to Keynes's epistemology, its anchor against infinite regress, is direct knowledge. Such knowledge is achieved by means of a mental capacity which goes by a number of names but of which the chief and most

[8] See Moore ([1903], pp. 6–10), and Moore ([1952], pp. 660–7). Indefinables are also fundamental to Russell [1937]. It is significant that a Platonic form of realism pervades the two most important books in Keynes's philosophical apprenticeship, Moore's *Principia Ethica* and Russell's *Principles of Mathematics*.

[9] See also Keynes's remarks on 'the true meaning of cause' (306), and on one of Aristotle's senses of induction as 'the process of forming scientific conceptions and correct notions of "simple natures"' (305).

fundamental is intuition (69, 73, 94, 103). Variants are logical intuition (18, 56), human intuition (19), intuitive judgment (345), reflection (8), reflective judgment (9), contemplation (12, 14), a priori determination (94, 100, 108, 226), direct inspection (57), direct recognition (56–7 & n. 1), insight (137, 330) and perception (19, 57). Another important name is self-evident knowledge:—'propositions in which our rational belief is both certain and direct, are said to be *self-evident*' (18). The commonest synonym, however, is judgment, often prefaced by the adjectives direct, reflective or intuitive. When correctly performed, judgments result in true propositions or knowledge; when not, in mistakes or false propositions. As Broad ([1919], pp. 213–14) noted, the 'most usual and important meaning of knowledge is true judgement'.

6.1 *The Nature of Intuition*

Sustained by Whewell, Sidgwick, Moore and others, the doctrine of intuitionism has been a significant strand in much Cambridge philosophy. Intuition is conceived as a form of intellectual perception which enables individuals to 'see' with the mind what is to be known. Allusion to the analogy with visual sight is common, Keynes's expressions being no exception—'the gaze of intuition' ([1908], p. 282), 'the peering eyes of philosophy' (294), 'the eyes of common sense' (424) and the 'mind's eye' [*V* 90]. His [1905] paper portrayed the primary task of the philosopher in strongly visual terms: 'the philosopher's first duty is to spy out the land. He must train his perceptions to see the objects of experience as they precisely are; he must shake off the cloud of convention in which not only our mental powers but our organs of sensation are also involved. He must learn to see precisely what is there, cleared of all preconception and false association'.[10]

Within this philosophy, intuitions are viewed not as contrary to reason but as consistent with it, a stance of Moore's ([1903], pp. 143–4) also taken up by Keynes: 'the fact that we ultimately depend upon an intuition need not lead us to suppose that our conclusions have, therefore, no basis in reason, or that they are as subjective in validity as they are in origin' (76). And even if intuitions ultimately come in a flash, they are characterized as often arriving only after a considerable expenditure of mental energy. Of a paper by Moore, Keynes remarked in 1906: 'The whole thing has simply been produced by mental muscles and by keeping his nose to the stone when anyone else would have given way. . . . If he doesn't [give way] and if he lives forever, I think there's no doubt the riddle of the Universe will be printed.'[11] Later, he wrote of

[10] In this context, see Paul's ([1967], pp. 126–7) summary of Moore's method. Russell also used visual metaphors to convey his thought, describing analysis ([1959], p. 133) as analogous to seeing something approaching through a fog or through a microscope, such that the initial vague blur gives way to clarity of outline and articulation.

[11] Keynes to Lytton Strachey, 16 March 1906 (Keynes Papers, King's College Library), the paper in question apparently being Moore's 'The Nature and Reality of Objects of Perception' of 1905.

Newton's pre-eminence being 'due to his muscles of intuition being the strongest and most enduring with which a man has ever been gifted' [*X* 365].

Intuitionism also elevates *persuasion* to an essential part of philosophical argument. Since intuitions are propositions incapable of proof but capable of disproof (Moore [1903], pp. 58–9, 75–7, 229), their truth cannot be demonstrated but only argued for. Persuasive appeals to the intellect then become necessary to philosophical debate. Russell described it thus in1903 ([1937], pp. 129–30):

> ... results may be disproved, but can never be proved. ... The disproof will consist in pointing out contradictions and inconsistencies; but the absence of these can never amount to proof. All depends, in the end, upon immediate perception; and philosophical argument, strictly speaking, consists mainly of an endeavour to cause the reader to perceive what has been perceived by the author. The argument, in short, is not of the nature of proof, but of exhortation.

Keynes's arguments for the indefinability of probability fundamentally rely on such an approach. The idea of persuasion as an essential element of rational discussion is also prominent in his later economic and political writings.

7 WHY KEYNES IS A RATIONALIST

The main grounds for classifying Keynes as a particular kind of rationalist will now be advanced. His epistemology may be represented as a critical but constructive form of rationalism, the aim of which was to transcend the old conflict between empiricism (seen as narrow and insufficient, though partially true), and classical rationalism (regarded as prone to exaggeration and excess). Ultimately, however, it drew its inspiration from the rationalist side. Accepting with empiricism that experience is a precondition of knowledge, it aligned itself with rationalism in maintaining that much knowledge is impossible without a priori reasoning or intuition. Compared to past rationalisms, it is more cautious and disciplined.

(1) *Intuitions as Foundations for Knowledge.* That Keynes's philosophy is a form of foundationalism or justificationism is evident from the fact that intuitions (or direct knowledge) prevent infinite regresses by providing supposedly true propositions requiring no further proof. Empiricism, by contrast, seeks its foundations solely in sense-experience, while pragmatism rejects all foundationalisms and turns to coherence. According to Ackermann ([1965], p. 24), rationalism attempts to explain knowledge 'by some means other than an origin in sense experience' with the result that 'rationalistic philosophers after Plato have entities in their theories of knowledge corresponding to Platonic forms or ideas, as well as a non-sensual faculty corresponding to what has been called Intuition that enables these entities to be known'. Keynes's theory

is essentially of this form, relying, as Russell observed ([1948], p. 393), on a 'kind of knowledge which empiricism holds to be impossible'.

(2) *Real Definitions.* Acceptance of real definitions has long been part of the rationalist tradition, from Spinoza and Descartes, for example, to Hollis and Nell [1975]. Lewis ([1968], p. 674) characterized Moore's indefinables as 'a relic of the rationalistic epistemology of Leibniz'. Both empiricism and pragmatism repudiate the search for Platonic essences.

(3) *Synthetic A Priori Truth.* The belief in synthetic a priori truth is often presented as the hallmark of rationalism. Keynes's philosophy either adopts, or irresistably gravitates towards, this position. Already integral to his (and Moore's) ethics, it emerges in his probability theory through the need to bring logic and reality into contact. What emerges is a belief in synthetic a priori propositions of a general kind.

It is in Keynes's justification of induction that the clearest illustrations occur. His analysis of induction relies in part on the isolation by prolonged reflection of the fundamental assumptions, or 'presuppositions' in Burks's [1955, 1977] terminology, which are perceived to lie at the root of all inductive argumentation. After detection, these propositions are examined for their truth or self-evidence. The main assumption Keynes uncovers is *the principle of limited independent variety*, also called 'the inductive hypothesis', which states in essence that the myriad properties of objects result from a finite number of independent 'generator properties'. To justify induction without circularity, Keynes then has to justify the inductive hypothesis without appealing to experience.[12] He ultimately concludes that the hypothesis is self-evidently true, but in the lead-up to this he makes the following significant claims.

> In the case of logical terms, it seems generally agreed that if we understand their meaning we can know directly propositions about them which go far beyond a mere expression of this meaning;—propositions of the kind which some philosophers have termed *synthetic.* In the case of non-logical or empirical entities, it seems sometimes to be assumed that our direct knowledge must be confined to ... an expression or description of the meaning or sensation apprehended by us. If this view is correct the inductive hypothesis is *not* the kind of thing about which we can have direct knowledge as a result of our acquaintance with objects.
>
> I suggest, however, that this view is *incorrect*, and that *we are capable of direct knowledge about empirical entities which goes beyond a mere expression of our understanding or sensation of them.* It may be useful to give ... two examples.... the first is that of the causal irrelevance of mere position in time and space, commonly called the uniformity of nature.... This belief arises directly, I think,

[12] Keynes's justification also contains a probabilistic qualification (288–9), but this need not detain us. For further discussion of the principle of limited independent variety, see 279–88.

> out of our acquaintance with the objects of our experience and our understanding of the concepts of 'time' and 'space'. The second is that of the law of causation. We believe that every object in time has a 'necessary' connection with some set of objects at a previous time. This belief also, I think, arises in the same way. It is to be noticed that neither of these beliefs clearly arises, in spite of the directness which may be claimed for them, out of any one single experience. *In a way analogous to these, the validity of assuming the inductive hypothesis, as applied to a particular class of objects, appears to me to be justified.* (292–3, emphases added)

Keynes is here contending that direct knowledge of empirical entities is not restricted to specific experiences or understandings, but includes some very general propositions transcending particular sensations and meanings. That is, some general truths about matters of fact can be known directly or intuitively. 'We are capable', he claims, 'of direct synthetic knowledge of the *nature* of the objects of our experience' (293, emphasis added). Substituting a priori for 'direct' in this remark results in an explicit version of the synthetic a priori. Such crucial claims are rejected by empiricists, and are only comprehensible in the context of rationalism.

In approaching the final step of his argument—the self-evidence of the inductive hypothesis—Keynes proceeds cautiously but does not falter. First comes an acknowledgment of the difficulty of attributing self-evidence, for what seems to be in question is an unusual type of self-evidence that is neither logical nor based on direct acquaintance.

> The inductive hypothesis stands in a peculiar position in that it seems to be neither a self-evident logical axiom nor an object of direct acquaintance; and yet it is just as difficult . . . to remove from the organon of thought the inductive method which can only be based in it or something like it. (293–4)

The difficulty, however, does not lead him into scepticism. Even though the intuition is unclear and the labour of philosophical clarification incomplete, he commits himself.

> We *need not* lay aside the belief that this conviction [about induction] gets *its invincible certainty* from some valid principle darkly present to our minds, even though it still eludes the peering eyes of philosophy. (294, emphasis added)

Further evidence regarding the claim that induction rests on a self-evident principle of universal validity is provided by Keynes's fellowship dissertation.

> The fundamentally unsatisfactory character of the empirical method of establishing Induction leads me to entertain some hope that it may some day be perceived to be, with due qualifications, a self-evident and universal logical principle. . . . [The] principle stands out before the gaze of intuition with qualities not altogether different from those of admittedly self-evident principles. . . . I cannot but believe that in some obscure way it derives its plausibility—its more than plausibility—from a connexion with some . . . properly qualified self-evident principle which is darkly present to the minds of all thinking beings, but which

> has not yet been disentangled and displayed by the reflective consciousness of philosophers. ([1908], pp. 275, 280–2)

It is notable that Keynes's stance on induction has been portrayed in similar terms by other philosophers. Burks ([1955], p. 606, [1968], p. 448, [1977], p. 642) has consistently advanced the interpretation that Keynes viewed his inductive assumptions as synthetic a priori propositions, while Barker also concludes ([1957], p. 59) that 'Keynes's philosophy of induction seems to require us to possess a priori information about matters of fact'. Popper's position ([1972a], pp. 264, 315) is that the probabilistic approach to induction (of which the *TP* is an instance) must 'either lead to an infinite regress, or operate with an a prioristic principle of induction, a synthetic principle which cannot be empirically tested'. Lakatos ([1968] pp. 366, 403 n. 1) also presents Keynes's principle of induction as synthetic a priori.

(4) *Ethics.* Here Keynes's rationalism and its acceptance of synthetic a priori truths about intrinsic goods is quite explicit. In some notes on *Principia Ethica* of April 1906 he wrote: 'What it is difficult to prove or persuade is the truth of the universal a priori *synthetic* judgment (for my point is that it *is* synthetic and not merely analytic) "Good states of mind are the things and the only things which ought to exist or be pursued for their own sakes".'[13] The claims of ethical rationalism that truths about intrinsic goodness exist and are knowable by intuitive insight are rejected by competing philosophies.

(5) *Moore, Russell and Cambridge Philosophy.* Of the influences on Keynes during the years of his philosophical apprenticeship, the strongest two were sympathetic to rationalism, and critical of empiricism and pragmatism. Moore's *Principia Ethica* was based on intuitionism or ethical rationalism and presented a thoroughgoing critique of empiricist ethics. As Findlay ([1970] p. 76) has observed, the degree to which 'Moore appeals to synthetic a priori connections in his ethics' is remarkable. And while Moore ([1904], p. 130) may have found Kant's idealism inadequate as an answer to the question of how synthetic a priori knowledge was possible, he certainly did not abandon the idea that such knowledge was indeed possible. Later, in the USA, his rationalism became even more explicit with his declaration 'to scandalized empiricists that he believed in the synthetic a priori' (White [1960], p. 806). That Moore 'never subscribed to the dogma that there could be no synthetic a priori propositions' has also been noted by Ewing ([1970], p. 157), while Regan ([1986], pp. 79–80, 101–3, 195, 200) portrays him as always rejecting empiricist epistemology and favouring synthetic a priori truths.[14]

[13] Untitled notes, 26 April 1906, Keynes Papers, King's College Library.

[14] Moore's objections to James's pragmatism were set forth in his [1908], and to Hume's epistemology in 1910–11 [1953]. For hints of Keynes's negative attitude towards pragmatism, see 272; [*X* 439].

Although Russell's views varied more with time, he too displayed rationalist, anti-empiricist and anti-pragmatist inclinations. In 1903 his *Principles of Mathematics* reposed on intuitionism and rejected empiricism, while in 1912 he tended towards rationalism on ultimate questions ([1980], p. 41). The a priori knowledge accepted by Russell at the time embraced the propositions of logic and of mathematics, the basic propositions of ethics, and the inductive principle. The resulting philosophy was a modified rationalism based on the idea that while limits were to be set on its scope, a priori reasoning was essential to knowledge. And although the later Russell was more sympathetic to empiricism, he was never able to adopt it entirely. It may have been unwelcome to him but in ([1950], p. 381) his conclusion was that 'uncompromising empiricism is untenable'. Similarly, in ([1959], pp. 131–2) he was quite prepared to 'admit at once that there are difficulties in explaining how we acquire knowledge that transcends experience,' but he thought 'the view that we have no such knowledge is utterly untenable'. Russell's anti-empiricist position in this later writings was essentially that if scientific knowledge is to be justified, acceptance of some synthetic a priori propositions is forced upon us.[15] Others in Cambridge philosophy such as Whewell, Sidgwick, Whitehead and Broad also made contributions to rationalism and intuitionism. Although common, it is far too simplistic a view to identify British philosophy with empiricism and to place them in opposition to Continental rationalism. Moore, in particular, was a rationalist and not, as in numerous asides, an empiricist.

(6) *Keynes's View of Earlier Philosophies of Probability.* The *TP*'s historical retrospect of probability theory also conveys the suggestion of a limited but higher form of rationalism as the outcome of modern philosophy. It opens with a criticism of the enthusiasm of the 18th century rationalists which pushed them beyond the bounds of reason into claims which they could not prove (89–92, 266). As his earlier dissertation ([1908], pp. *iii–iv*) had put it, 'by the end of the eighteenth century it seemed to enthusiastic Frenchmen that . . . [the Calculus of Probabilities] might be the means of leading in the Age of Order and Reason. . . . Its formulae were deemed applicable to all questions alike, to trial by jury, the perfectibility of the human race or the existence of God—to all those questions . . . which seemed to the French rationalists the most pressing of their time'. Against these exaggerated claims, two lines of reaction were detected in the 19th century, one in England leading to the modern frequency theory (Ellis, Venn, Edgeworth, Pearson), the other on the Continent (von Kries, Czuber, Sigwart, Lotze). While criticizing the English retreat into 'the arms of empiricism' for having gone 'too far in the opposite direction' (93–4),

[15] See Russell ([1948] ch. 10); ([1950], pp. 381–2); ([1944], pp. 683–4); Agassi ([1975], p. 309); Bamborough ([1970], p. 194); Popper ([1972c], pp. 27–8); Passmore ([1968], p. 238); Jager ([1972], p. 411); and Lakatos [1962].

Keynes found the German and Austrian logicians more persuasive. Their constructive proposals might have been inadequate, but they at least saw the necessity of the principle of non-sufficient reason and of a priori reasoning (94–9). Thus without resorting to empiricism, Keynes sought in developing his own theory to tame the extreme rationalism of 18th-century France with insights drawn from 19th-century German-speaking logicians, the outcome being a modified and cautious form of English rationalism.

(7) *Keynes's Own Characterization.* In his 1938 memoir, 'My Early Beliefs', Keynes wrote of the philosophy of his youth to which he still owed basic allegiance in his maturity. Drawing attention to its dependence on reason, intuition, truth and a priori thought, he described the philosophy which so repelled D. H. Lawrence as 'Cambridge rationalism and cynicism' [*X* 434]. The memoir's criticisms and qualifications of this rationalism, moreover, constitute an immanent critique and not total repudiation.

These seven arguments constitute the main grounds for characterizing Keynes as a particular kind of rationalist and for rejecting the claim that he was an empiricist. Further remarks relating to synthetic a priori knowledge occur in the final section.

8 THE ROLE OF EXPERIENCE

Within Keynes's rationalism experience is regarded as essential to the generation of knowledge. It is therefore a mistake to attribute empiricism to him simply because of his frequent stress on the importance of experience. Nor should it be imputed because he associates himself in the preface to the *TP* with a concern for 'what is matter of fact' (*xxv*), an expression best interpreted as 'what is true'. The simplest way of capturing his epistemology on this issue is provided by the phrase, *experience is necessary but insufficient.* As he himself put it: 'However essential the data of experience may be, they cannot by themselves, it seems, supply us with what we want' (94).

Experience is essential because it provides the raw material for the generation of knowledge. As Russell ([1980], p. 41) noted, 'even that part of our knowledge which is logically independent of experience (in the sense that logic cannot prove it) is yet elicited and caused by experience. It is on occasion of particular experiences that we become aware of the general laws which their connections exemplify'. But experience alone is insufficient and requires the additional element of intuition or mental insight. Russell again expressed the matter neatly ([1980], p. 41): 'while admitting that all knowledge is elicited and caused by experience, we shall nevertheless hold that some knowledge is a priori, in the sense that the experience which makes us think of it does not suffice to prove it, but merely so directs our attention so that we see

its truth without requiring any proof from experience'. Keynes made a similar point in a probablistic context: 'The actual constitution of the phenomenal universe determines the character of our evidence, but it cannot determine what conclusions *given* evidence *rationally* supports' (246). The importance of mental insight into empirical data is also evident in his [1909] paper, 'Science and Art'.

> [The scientist] is presented with a mass of facts, possessing similarities and differences, arranged in no kind of scheme or order. His first need is to perceive very clearly the precise nature of the different details. After concerning himself with this precise and attentive perception, he holds the details together clearly before his mind, . . . Finally he will with a kind of sudden insight see through the obscurity of the argument or of the apparently unrelated data, and the details will quickly fall into a scheme or arrangement, between each part of which there is a real connection.

To Keynes, empiricism rightly emphasized the importance of experience,but erred in maintaining that experience, without the guidance of intuition or a priori reasoning, could provide an adequate foundation for knowledge. It is therefore absurd to hold that Keynes's rationalism requires a dismissive or cavalier attitude towards empirical data, and Bray's [1977] mistaken claim that empirical information had no value to Keynes is rightly criticized by Meeks [1978].

9 PREDICTION AND THEORY CHOICE

Although central to other philosophies of science, prediction is not valorized in Keynes's. Positivism makes conformity with prediction a vital test of a theory and Popper emphasizes the confirmation of novel predictions derived from bold conjectures, but Keynes's stance is that such stress on predictive requirements is exaggerated.

> The *peculiar* virtue of prediction . . . is altogether imaginary. . . . the question as to whether a particular hypothesis happens to be propounded before or after [the] examination [of instances] is quite irrelevant. . . . It is the union of prior knowledge, with the inductive grounds which arise out of the immediate instances, that lends weight to an hypothesis and not *the occasion* on which the hypothesis is first proposed. (337–8, emphasis added)

To avoid misinterpretation, it requires noting that Keynes is *not* arguing that prediction has no value whatsoever, *nor* is he contending that rational persons should ignore novel facts. His position is rather that no special importance belongs to the *arrival times* of hypotheses and facts. Popper's ([1972a], p. 272; [1972b], p. 247) claim that Keynes takes the value of predictions to be 'imaginary' is thus erroneous. What is of imaginary value in Keynes's view is the 'peculiar virtue' of a prediction that it necessarily precedes its confirmation

or refutation. Since logical relations between propositions are timeless entities, they are unaffected by issues of temporal order. The historical question of whether theory or evidence came first is irrelevant to the logical question of the probability-relation between them. On this view, rational theory choice depends on probability comparisons based on the total information available, such information including the success or failure of predictions. The theory with the highest probability is always the rationally preferred theory, and while predictive outcomes enter into the determination of probabilities, they do not directly determine theory choice.

For example, let A and B be competing theories of equal probability on existing information. A prediction, subsequently confirmed, is made by the adherents of A. Their opponents respond by showing that B also conforms to the new evidence, so that the updated probabilities of the two theories remain equal. Does the fact that prediction preceded confirmation for A while the facts arrived prior to theoretical accommodation for B indicate that A is rationally preferable to B? Keynes thought not; only the logical probability-relations mattered and no special power could be attributed to the chronology of events. Suppose now a second example in which an established theory with an initially substantial probability on existing data confronts a bold conjecture with a low probability on the same data. The predictive ability of each theory is put to the test for the same event, the established theory being judged a failure and the conjecture a success. The result is that the probability of the former theory is reduced, that of the latter increased. Since it is the relative magnitudes of the probabilities that counts for Keynes, theory choice is determined by the updated logical relations between the theories and the expanded evidence. No general rules can be laid down here, for such situations are totally context-dependent. To sum up: Keynes's position is that prediction has some value because of its ability to provide new information, but that no value resides in its unique property of preceding its confirmation or confutation. In his theory it is always a probability-relation which ultimately matters—such relations include, but are not displaced by, the results of forecasting.

Given Popper's long opposition to Keynes's type of philosophy, it is instructive to juxtapose their stances regarding discrimination between theories. Clarity on this issue, however, requires that Popper's distinction be borne in mind between the *potential* satisfactoriness of a theory and its *actual* satisfactoriness (or acceptance$_1$ and acceptance$_2$ on Bar-Hillel's [1974] terminology). While Keynes and Popper clash on the former, they are considerably closer on the latter. On the criterion of potential satisfactoriness (acceptance$_1$) the rationally preferable theory has the highest degree of empirical content, testability or falsifiability, this being equivalent to the theory with the *lowest* logical probability. This is the opposite of Keynes's criterion that higher probability implies higher acceptability. But as regards

actual satisfactoriness (acceptance$_2$), Popper selects the theory which has withstood severe testing and made successful predictions. For Keynes, such developments would result in a significant increase in this theory's probability on the new evidence, possibly raising it to the head of the list. Thus instead of *both* potential and actual satisfactoriness varying directly with logical *improbability*, a point Popper insisted on for many years, only the former always does so; the latter, by contrast, may move in the same direction as probability.[16]

10 SENSES OF OBJECTIVITY

Two senses of objectivity are used in the *TP*. On the one hand, the objectivity that Keynes claims for his probabilities derives from *logic*, from a timeless realm independent of individual psychology. On the other, Keynes links objectivity to *reality*, probabilistic reasoning being viewed as the foundation of all knowledge about the world, including science. Implicitly, however, he conflates these two senses, and implies some unspecified connection between logic and reality. An identical ambiguity surrounds the term 'real'. This sliding between senses may be illustrated as follows.

> We believe that there is some real objective relation between Darwin's evidence and his conclusions, which is independent of the mere fact of our belief, and which is just as real and objective, though of a different degree, as that which would exist if the argument were as demonstrative as a syllogism. (6)

> So in the case of probability we may believe that our judgments can *penetrate into the real world*, even though their credentials are subjective. (56, emphasis added)

The implication is that probable knowledge is real and objective, both in reference to logic and in reference to the world. This provides additional insight into Keynes's epistemology. Since probability-relations are a priori logical facts that cannot be refuted by empirical data, and since science involves probablistic reasoning, at least some synthetic knowledge is grounded in probabilities or a priori propositions. Some link between the a priori and the synthetic seems to be implied, for, in the absence of such a connection, how can intuition, a form of intellectual insight into logical relations, possibly 'penetrate in to the real world'? This represents a further ground for believing Keynes to be committed to the rationalist doctrine of synthetic a priori knowledge.

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[16] On Popper's theory, see his ([1972a], Chapters 6, 10, Appendix **ix*); ([1972b], Chapter 10); ([1972c] Chapter 1); Bar-Hillel [1974] and Lakatos [1968]. Popper later modified his views ([1972a], pp. 414–15, 418–19) and accepted a severely restricted form of convergence between actual corroboration and logical probability; see also his ([1983], p. 346). Musgrave's [1974] useful distinction between 'logical' and 'historical' approaches to confirmation neatly captures the contrast between Keynes and Popper on prediction.

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