

"HUMAN LOGIC" AND KEYNES'S ECONOMICS

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In his review of Frank Ramsey's **Foundations of Mathematics**, Keynes points approvingly to Ramsey's distinction between formal and "human" logic. "Formal Logic," Keynes writes, "is concerned with nothing but the rules of consistent thought (X 338)."<sup>1</sup> Human logic, on the other hand, is concerned with the analysis of something in addition to these rules--with the analysis of "certain" useful mental habits for handling the material with which we are supplied by our perceptions and by our memory and perhaps in other ways, and so arriving at or towards truth (Ibid.)." Keynes appears to use the term "mental habits" to refer, among other things, to what I shall call metaphysical premises. This paper examines the possibility that Keynes's own use of human logic led to the adoption of metaphysical premises very different from those underpinning orthodox economics, in particular, that it led to his rejection of an "atomist" in favour of an "organicist" metaphysical description. I shall argue that this was an important aspect of the "escape from habitual modes of thought and expression" associated with the composition of the **General Theory**.

The paper has two parts. The first provides a brief summary of the main philosophical ideas used in the rest of the paper and then examines the metaphysical foundations of Keynes's economics, particularly those of the **General Theory**. The second attempts to establish that this interpretation of the philosophical foundations of Keynes's economics is consistent with the changes in his philosophical views reported in his explicit discussions of metaphysical questions following the publication of the **Treatise on Probability** in 1921.

THE METAPHYSICAL FOUNDATIONS OF THE **GENERAL THEORY**

I will use the term "metaphysical description" to mean a set of interconnected assumptions about the ultimate character of reality. The elaboration and grounding of such assumptions is the task of what Alfred North Whitehead, an exponent of organicism with direct connections to Keynes, calls speculative philosophy. Whitehead defines speculative philosophy as

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"the endeavor to frame a coherent, logical, necessary system of ideas in terms of which every element of our experience can be interpreted (Whitehead 1978, p.3).2

Two metaphysical descriptions, atomism and organicism, are relevant to a discussion of Keynes's metaphysical views. The tradition in philosophy with which Keynes's own views are usually associated embodies atomist metaphysical premises. The most important Cambridge representatives of this tradition from the perspective of direct influence on Keynes are G.E. Moore, Bertrand Russell, and W.E. Johnson (VIII 1). Keynes, however, also had access at Cambridge to organicist views. To begin with, Marshall's economics, as Keynes himself points out (Keynes 1925, pp. 10-11, 13, and 33-34), was significantly influenced by such views, views which Marshall derived in part from his study of Hegel (Winslow 1985, Chap. 2 and Appendix B). Keynes was also connected to the two most important early twentieth century Cambridge exponents of organicism, J. McTaggart and A.N. Whitehead. There is a set of lecture notes among the Keynes Papers at King's taken by Keynes in what appear to have been McTaggart's lectures on Hegel in 1903 (Keynes, 1903). Keynes is known to have recommended McTaggart's lectures to his friends (Harrod 1951, p. 61). In 1904 Keynes was the only student to attend a set of lectures given by Whitehead (Harrod 1951, pp. 96-97). Harrod says that Whitehead once mentioned Keynes and Russell to him as among his best pupils (Harrod 1951, p. 97). McTaggart and Whitehead were also fellow members with Keynes of the Apostles.

Whitehead once said of Cambridge that "incessant conversations, with our friends, undergraduates, or members of the staff" supplied the portions of the education left missing by the lectures (Whitehead, 1984, p. 10). He attributes a great deal of importance to these conversations, particularly to those which took place at meetings of the Apostles (Ibid.). James Strachey, who became a member after Keynes, claims that, during his undergraduate period of membership, "Angels" such as Keynes and Whitehead were often present at the society's meetings, that philosophical topics were often discussed, and that "internal relations" was one of these topics (Strachey, as cited in Holroyd 1968, vol. 1, p. 207).

Whitehead played an important role in Keynes's fellowship research. He and W.E. Johnson were appointed by King's as assessors of Keynes's dissertation when it was first submitted in 1908. In part at least because of Whitehead's criticisms of its philosophical foundations, this first version failed to win Keynes's election. Johnson and Whitehead were also assessors of the second version, submitted the following year, which won him his fellowship. Whitehead's response to Keynes's fellowship research and to his 1921 *Treatise on Probability* will be examined more fully below.

I turn now to a brief examination of the main philosophical ideas I intend to make use of in the rest of the paper. Because of Whitehead's connection to Keynes and the close correspondence between Keynes's final views and Whitehead's, the discussion is based largely on Whitehead's "philosophy of organism".

The main difference between atomism and organicism is found in their differing conceptions of the nature of the final real entities making up

the universe. Atomist descriptions conceive these as "substances" in the following two senses: each possesses properties without being itself a property; and each requires nothing but itself in order to exist; its essential properties are independent of its relations with all other entities. This is what is meant by terming such relations "external". In some versions of atomism, atoms are assumed to be of two fundamental kinds--mental and material. Keynes refers to this assumption as "habitual" (VIII 278). In others they are assumed to be of only one kind--material. However, all atomist descriptions share one essential feature; the ultimate components of reality are assumed to be elements whose existence and essence are independent of their relations with all other entities. They are assumed to be "substances" in the two senses given above.

Organicist descriptions, on the other hand, do not conceive the final real entities as substantial in either of these senses. Instead, each entity is an "adjective" of its situation, and each depends for its essential properties on its relations with the rest of totality. These relations are therefore "internal" rather than external. In atomism interdependence affects only the non-essential properties of ultimate entities; in organicism, in contrast, the existence and essence of an ultimate entity depend upon its relations with other entities.

In what Keynes calls the moral sciences, atomism takes the form primarily of the assumption that individual character and motivation are fixed and consequently independent of economic, social and other relations; organicism of the assumption that they are variable and dependent on these relations. Though there are economic theories which treat character as variable while retaining atomist metaphysical foundations, in the main atomism has been associated with the assumption of a fixed human nature. In orthodox economics, for example, atomism is embodied in the premises which define the "rational economic man". In contrast, Keynes's psychological premises, as I shall attempt to show, embody organicist assumptions.

Internal relations can be conceived to allow for the possibility of what Whitehead calls "abstraction". This is the possibility of disregarding--abstracting from--certain aspects of interdependence. The possibility results in part from the assumption that the internal relations within which a particular entity is embedded form what Whitehead calls a nested hierarchy of societies (Whitehead 1978, p. 34 and pp. 89-91). A "society" in this context refers to a set of entities in which each member has the common character which makes it a member of the set as a result of its internal relations to other members. An entity belongs to more than one society. These societies are assumed to form a nested hierarchy in the sense that the more inclusive the society, the more stable the internal relations which define the society and, therefore, the more stable the characteristics to which these relations give rise. This means that some factors can be treated as what Keynes calls "givens" because the internal relations on which they depend are relatively stable. In the absence of the possibility of abstraction, internal relations would rule out the possibility of knowledge since they would require that we know everything before we can know anything.

For Whitehead, the grounding and elaboration of the claims that (1) reality is a system of internal relations and (2) these internal relations

are consistent with the possibility of abstraction, form the main part of his answer to Keynes's dismissal of the possibility of rational induction in an organic world. If these claims can be grounded it follows that internal interdependence is such that we can begin with some limited aspect of reality and slowly build up knowledge of a hierarchical structure of interdependence.

Once it is granted that alternative metaphysical descriptions are logically possible, the question arises as to how to rationally choose between them. Whitehead provides a basis for Keynes's claim that the method of speculative metaphysics must be "human" rather than formal logic. Deduction cannot be the main method of metaphysical description. Deduction presumes knowledge, namely, knowledge of the premises from which the deductive argument begins. Whitehead makes this point repeatedly.

It must be clearly understood that we are not arguing from well-defined premises. Philosophy is the search for premises. It is not deduction. ... We thus dismiss deductive logic as a major instrument for metaphysical discussion. Such discussion is concerned with eliciting self-evidence. Apart from such self-evidence, deduction fails. Thus logic presupposes metaphysics. (Whitehead 1968, pp. 105-7; see also pp. 48-9)

Whitehead also repeatedly argues that metaphysical descriptions can be grounded in experience. "All knowledge is derived from and verified by, direct intuitive observation. I accept this axiom of empiricism as stated in this general form (Whitehead 1967B, p. 177; see also 1978, p. 39 and 1968, p. 112)." He also claims, however, that "empiricism" is not itself sufficiently empirical. He complains that the exponents of a particular and ungrounded ontology, the "a priori doctrine of sensationalism", have "arrogated to themselves the title of empiricists (Whitehead, 1978, p. 145)." Sensationalism embodies atomic metaphysical premises. Keynes, having uncritically adopted a version of sensationalism in the Treatise on Probability, came eventually to reject it on grounds very like Whitehead's.

As we shall see, in the **Treatise on Probability**, Keynes, while admitting that he is unable to provide adequate grounds for doing so, argues for the adoption of atomist metaphysical premises in both the physical and the moral sciences primarily on the ground that only atomism is compatible with the possibility of rational induction. As we shall also see, however, he eventually rejected atomism in favour of organicism as the metaphysical description appropriate for the moral sciences. Specifically, one of the main grounds he gives for rejecting utilitarianism as the foundation for economics is its embodiment of atomist metaphysical premises. In economics, the "atomic hypothesis" breaks down because

we are faced at every turn with the problems of Organic Unity, of Discreteness, of Discontinuity--the whole is not equal to the sum of the parts, comparisons of quantity fail us, small changes produce large effects, the assumptions of a uniform and homogeneous continuum are not satisfied. (X 262)

As I shall now attempt to demonstrate, this rejection of the atomic hypothesis led Keynes to underpin his economics with an organicist view of interdependence.

In Chapter 18 of the **General Theory** Keynes provides an account of the nature of social interdependence and of its implications for the treatment of psychological premises. This account is consistent not only with the assumption that social relations are internal relations so that individual character and motivation are conditioned by the circumstances within which individuals develop and live, but also with Whitehead's notion of such relations as forming a nested hierarchy of societies such that the higher in this hierarchy is the society on which a particular characteristic depends the greater will be the characteristic's stability. As I pointed out above, this last notion is an important part of Whitehead's answer to Keynes's claim in the **Treatise on Probability** that internal relations place us under the necessity of knowing everything at once and therefore rule out the possibility of rational induction.

Keynes divides the elements in the economic system into "givens", on the one hand, and "independent" and "dependent" variables on the other. The "givens" are those things for which the possibility of change is ignored. Keynes emphasizes, however, that they are not constants; they are those features of the environment which display the greatest stability.

We take as given the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labour and of the activities of supervision and organisation, as well of the social structure including the forces, other than our variables set forth below, which determine the distribution of income. This does not mean that we assume these factors to be constant; but merely that, in this place and context, we are not considering or taking into account the effects and consequences of changes in them. (VII 245)

The independent variables are independent of the other independent and dependent variables. They are, dependent on, though not completely determined by, the givens. The most important independent variable is made up of the "three fundamental psychological factors, namely, the psychological propensity to consume, the psychological attitude to liquidity and the psychological expectation of future yield from capital-assets (VII 246-247)." Keynes's discussion of these factors in relation to business motivation portrays them as expressions of a character type--the typical business personality. This personality is the outcome of a specific set of social relations that are relatively stable; they are givens in Keynes's sense. Hence, the factors can be treated as independent variables. As we shall see, however, this does not rule out a great deal of variation in business motivation. Keynes's psychological premises allow for discontinuous changes in the motivation and rationality of individuals with no change in character type, that is to say, with no change in those psychological characteristics which, given the nature of social interdependence,

can be treated as givens. Such discontinuous changes are in fact an expression of the given character type. Keynes claims that the independent variables, like the givens, are not "atomic" elements. "These again would be capable of further analysis, and are not, so to speak, our ultimate atomic independent elements (VII 247)." The givens and the independent variables, taken together, determine the dependent variables--"the volume of employment and the national income (or national dividend) measured in wage-units (VII 247)." As we shall see, Keynes repeats the main elements of this account of the nature of social interdependence and its implications for methodology in his 1938 correspondence with Harrod respecting Tinbergen's early work in econometrics.

The main implication of organic interdependence is that the "material" of economics--the character of the human agents upon whom economic forces act--will not be constant and homogeneous through time, but will change with changes in the environment. Whitehead himself emphasizes this implication in criticizing conventional economic and business theories for their failure to take account of organic interdependence. In treating economic motives as constant these theories overlook both the internal relations of the motives to "conditions" and the rapidity of change in the conditions and, hence, in the motives. Whitehead claims that "our sociological theories, our political philosophy, our practical maxims of business, our political economy, and our doctrines of education" are based on a tradition in thought which "is warped by the vicious assumption that each generation will substantially live amid the conditions governing the lives of its fathers and will transmit those conditions to mould with equal force the lives of its children (Whitehead 1967B, p. 92)." "We are living," he then goes on to claim, "in the first period of human history for which this assumption is false (Ibid.)." Yet "this assumption subtly pervades the premises of political economy, and has permitted it to confine attention to a simplified edition of human nature (Ibid., p. 93)." Unfortunately for this approach "the element of novelty which life affords is too prominent to be omitted from our calculations. A deeper knowledge of the varieties of human nature is required to determine the reaction, in its character and strength, to those elements of novelty which each decade of years introduces into social life (Ibid.)."

Alfred Marshall also pointed to this implication of organic interdependence for economics. "If the subject-matter of a science passes through different stages of development, the laws which apply to one stage will seldom apply without modification to others; the laws of the science must have a development corresponding to that of the things of which they treat (Marshall 1961, vol. I, p. 764)."

Keynes's treatment of character and motivation therefore provides an excellent illustration of the role played by organicist metaphysical premises in his economics. Keynes treats character as variable in response to variations in the circumstances in which individuals develop and live. Moreover, even where character is "given", the nature and operation of the motives behind economic behaviour can change discontinuously in response to changes in circumstances other than those upon which character depends. Keynes's account of each of "the three fundamental psychological factors" is organicist in this sense.

In the **General Theory**, he says of the "subjective factors" underpinning the "psychological propensity to consume" that

the subjective factors ... include those psychological characteristics of human nature and those social practices and institutions which, though not unalterable, are unlikely to undergo a material change over a short period of time except in abnormal or revolutionary circumstances. In an historical inquiry or in comparing one social system with another of a different type, it is necessary to take account of the manner in which changes in the subjective factors may affect the propensity to consume. But, in general, we shall in what follows take the subjective factors as given; and we shall assume that the propensity to consume depends only on changes in the objective factors. (VII 91; see also VII 109)

Note that this assumes the possibility of the sort of "abstraction" from internal relations made possible by Whitehead's notion of a nested hierarchy of societies. Keynes intends to treat the "main background of subjective motives" as "given".

Keynes also assumes that the motivation behind consumption is capable of discontinuous short-run changes. An example of this is the influence on consumption of an irrational feeling which he calls "psychological" poverty (VI 176-7; VII 93). This is a psychological state brought on by a collapse in the paper values of bonds and shares. Keynes claims it "should be classified amongst the major factors capable of causing short-period changes in the propensity to consume (VII 93)."

Another example of the employment of organicist premises is found in Keynes's discussion of historical, national and class differences in attitudes toward gold and money. He says that "the conception of what contributes to 'liquidity' is a partly vague one, changing from time to time and depending on social practices and institutions (VII 240)." In illustration of this, he claims that at one time the high liquidity premium now attaching to money was attached to land (VII 241). A similar claim about attitudes to gold and money is made in the **Treatise on Money**. Keynes points first to a stable element in attitudes toward gold.

Dr. Freud relates that there are peculiar reasons deep in our subconsciousness why gold in particular should satisfy strong instincts and serve as a symbol. The magical properties, with which Egyptian priest craft anciently imbued the metal, it has never altogether lost. (VI 258)

Over time, however,

gold has ceased to be a coin, a hoard, a tangible claim to wealth, of which the value cannot slip away so long as the hand of the individual clutches the material stuff. It has become a much more abstract thing. (VI 260)

Attitudes also differ between countries.

The history of India at all times has provided an example of a country impoverished by a preference for liquidity amounting to so strong a passion that even an enormous and chronic influx of the precious metals has been insufficient to bring down the rate of interest to a level which was compatible with the growth of real wealth. (VII 337)

A third example of Keynes's organicist treatment of character and motivation is provided by the well-known discussion in Keynes's 1937 **Quarterly Journal of Economics** article of short-run changes in liquidity-preference. This also provides another illustration of the point made above that short-run changes in motivation are possible even though it is assumed that character remains stable. Keynes claims that a particular feeling about money, which operates at a "deeper level of our motivation" than other attitudes, "takes charge" when these other attitudes break down. "Why," Keynes asks, "should anyone outside a lunatic asylum wish to use money as a store of wealth?"

Because, partly on reasonable and partly on instinctive grounds, our desire to hold money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future. Even though this feeling about money is itself conventional or instinctive, it operates, so to speak, at a deeper level of our motivation. It takes charge at the moments when the higher, more precarious conventions have weakened. The possession of actual money lulls our disquietude; and the premium we require to make us part with money is a measure of the degree of our disquietude. (XIV 115-6)

This passage also points to Keynes's assumption that discontinuous short-run changes in "the psychological expectation of future yield from capital assets" are possible. Business expectations are "subject to sudden and violent changes (XIV 114-5)." Note that Keynes claims that the association between the desire to hold money and distrust of calculations and conventions concerning the future is based on both rational and instinctive grounds.

This consistency with organicist rather than atomist metaphysical premises is not the only significant difference between Keynes's psychological assumptions and orthodox ones. Keynes attributes a significant degree of systematic irrationality to economic behaviour. R.B. Braithwaite has said of "My Early Beliefs" that "the genuine volte-face reported in the memoir is the abandonment of the belief that human nature is reasonable" (Braithwaite 1975, p. 245). In the memoir Keynes claims this belief "was flimsily based ... on an à priori view of what human nature is like, both other people's and our own, which was disastrously mistaken." In particular, it ignored the "deeper and blinder passions", the "vulgar passions" (X 449-450). Rejecting this early belief, he now claims there are "insane and irrational springs of wickedness in most men (X 447)." The most significant impact of this change in his psychological views on his economics is found in his claim that it is the love of money, of money-making and of power, rather than consumption, which is the ultimate motiva-

tion behind business behaviour (IX 293 and VII 374). Keynes makes it very clear that, in his view, this complex of money motives is pathological (IX 268-9 and 329). I have attempted to show elsewhere that all these characteristics of Keynes's psychological premises--their consistency with an organicist metaphysics, their attribution of a significant degree of irrationality to thought and behaviour, and their emphasis on the role of a pathological love of money, money-making and power in business motivation--are consistent with a particular psychological theory--psychoanalysis (Winslow 1985, Part II).

Keynes's organicist treatment of character and motivation is only one example of the important effects of organicist metaphysical premises on his economics. I believe it can be shown, for example, that organicism also underpins his treatment of business expectations (as might be expected given the implications of organicism for rational induction) and his critical treatment of the role of mathematical and statistical methods in economics (see Winslow 1985, Chap. 5).

This implicit use of organicist premises in the **General Theory** is consistent with the change in Keynes's metaphysical views recorded in his explicit discussions of philosophical questions following the publication of the **Treatise on Probability** in 1921. In these discussions Keynes explicitly abandons atomism in favour of organicism as the metaphysical description appropriate in the moral sciences generally and in economics particularly.

#### THE EVOLUTION OF KEYNES'S METAPHYSICAL VIEWS

Keynes examined organicism and atomism in the **Treatise on Probability** in the context of attempting to establish the assumptions about "the character of the actual world" which are required for the validity of induction and analogy (VIII 276-278). One of the assumptions which Keynes claims is required is what he calls "the atomic character of natural law." He claims that, for natural law to have this character, "the system of the material universe must consist ... of bodies which we may term ... legal atoms, such that each of them exercises its own separate, independent, and invariable effect, a change in the total state being compounded of a number of separate changes each of which is solely due to a separate portion of the preceding state. ... Each atom can, according to this theory, be treated as a separate cause and does not enter into different organic combinations in each of which it is regulated by different laws (VIII 276-277)." Keynes also claims that we "habitually assume that the size of the atomic unit is for mental events an individual consciousness, and for material events an object small in relation to our perceptions (VIII 277; see also 468)."

Natural law need not be atomic, however. If there were "quite different laws for wholes of different degrees of complexity, and laws of connection between complexes which could not be stated in terms of laws connecting individual parts," then "natural law would be organic and not, as it is generally supposed, atomic (VIII 277)." Keynes claims that, if this were the character of the actual world, rational induction would be

impossible because it would require, as he puts it, "an exhaustive knowledge of all the coexisting circumstances (VIII 277; see also 342-3)." As I have already pointed out, one of the main elements in Whitehead's defence of the organic view of natural law is an attempt to demonstrate that this is not the case.

The **Treatise** also contains a discussion of the validity of atomism (VIII 290-4). Though this is not explicitly discussed, it is implicitly at issue in Keynes's discussion of what he calls "the inductive hypothesis". This is the assumption "that the system of nature is finite"--another assumption whose validity he makes necessary to the possibility of rational induction. This hypothesis, he claims, "while not formally equivalent to" the atomic hypothesis, "amounts to very much the same thing (VIII 290)". Keynes admits to being unable to provide adequate grounds for the belief that there is "a finite á priori probability in favour of the inductive hypothesis." In particular, he claims that it is "neither a self-evident logical axiom nor an object of direct acquaintance (VIII 293)." In explanation of his inability, he points to the "disordered and undeveloped condition" of epistemology, particularly with respect to the question--"of what sorts of things are we capable of direct knowledge (VIII 291)?"

This discussion is implicitly dependent on an atomic (specifically, a sensationalist) account of experience. The implicit dependence is found in Keynes's account of direct acquaintance. There are, he claims, three types of direct acquaintance: "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 (VIII 12)." Whitehead would subsequently argue in criticism of this account that, without justification, it confines experience to sense experience and that experience so conceived cannot provide an adequate ground either for induction or for what Keynes calls the inductive hypothesis. Using a method very like what Keynes would subsequently call human logic, Whitehead attempts to demonstrate that it is the organic rather than the atomic hypothesis which best describes reality, that organicism is compatible with the possibility of rational induction, and, in particular, that it is consistent with the inductive hypothesis. As we shall see, in "My Early Beliefs" Keynes makes a criticism of his early beliefs about direct acquaintance consistent with the criticism of sensationalism found in Whitehead.

In his 1926 biographical essay on Edgeworth, Keynes rejects "the atomic hypothesis" as a metaphysical basis for work in the moral sciences. In a discussion of the philosophical foundations of the "Marginal Theory" (X 260-262), he claims that the problem with this theory is that it derives its assumptions from "Utilitarian Ethics" and "Utilitarian Psychology". These foundations are unsound (X 260). In particular, utilitarianism assumes that the atomic hypothesis is applicable to the subject matter of the moral sciences. In contrast to the position he had taken in the **Treatise**, Keynes now claims that this is not the case.

Mathematical Psychics has not, as a science or study, fulfilled

its early promise. In the seventies and eighties of the last century it was reasonable, I think, to suppose that it held great prospects. When the young Edgeworth chose it, he may have looked to find secrets as wonderful as those which the physicists have found since those days. But, as I remarked in writing about Alfred Marshall's gradual change of attitude towards mathematico-economics ..., this has not happened, but quite the opposite. The atomic hypothesis which has worked so splendidly in Physics breaks down in Psychics. We are faced at every turn with the problems of Organic Unity, of Discreteness, of Discontinuity--the whole is not equal to the sum of the parts, comparisons of quantity fail us, small changes produce large effects, the assumptions of a uniform and homogeneous continuum are not satisfied (X 262)

Keynes returned to the question of the metaphysical description which is appropriate in economics in his examination over the period from 1938 to 1940 of Tinbergen's early work in econometrics and in some correspondence with Harrod about this (XIV 285-320). At issue in both the examination and the correspondence is the "habit of mind" which is appropriate in economics. As we have seen, Keynes had, by this time, designated human logic as the field concerned with the analysis of the "useful mental habits" we have for "handling the material with which we are supplied by our perceptions and by our memories and perhaps in other ways." In his correspondence with Harrod, he describes economics as "a branch of logic, a way of thinking" in which the appropriate "habit of mind" is "directly counter" to that appropriate in the natural sciences (XIV 296 & 300). In the moral sciences, Keynes appears to be saying, human logic leads to the adoption of mental habits very different from those of the natural sciences. The specific habits to which Keynes points are those characteristic of an organicist metaphysical description. Thus he claims the main distinguishing characteristic of economics (and the main obstacle to the use in it of conventional mathematical and statistical methods) is the lack of homogeneity, uniformity and continuity in its material (XIV 286 296 299 300 316). This is the main outcome of internal relations--of Organic Unity--and hence the main reason Keynes gives, in the passage from his Edgeworth essay cited above, for the inapplicability of the atomic hypothesis in the moral sciences. The motives behind economic behaviour will, on the hypothesis of internal relations, change with changes in the relations within which individuals develop and live. Therefore, the regularities observable in behaviour will, since they depend on these motives, also change. Moreover, these changes may occur discontinuously.

In addition to its consistency with the general notion of internal relations, Keynes's discussion here of the habits of mind appropriate in economics is also consistent with Whitehead's description of such relations as a nested hierarchy of societies, a description which makes abstraction possible and which is a central component of Whitehead's answer to Keynes's claim that internal relations make it necessary for us to know everything before we can know anything. In one of his letters to Harrod, Keynes makes a claim which implicitly assumes that abstraction in this sense is possible: "the object of a model is to segregate the semi-permanent or relatively constant factors from those which are transitory or fluctuating so as to develop a logical way of thinking about the latter, and of



understanding the time sequences to which they give rise in particular cases (XIV 296-7)." As we have seen, the **General Theory** provides a more detailed account of this method and of Keynes's use of it in his own analysis (VII 245-247).

Keynes claimed in the **Treatise on Probability** that internal relations would rule out the possibility of rational induction. There is evidence that he subsequently changed his mind about this as well. Though he abandoned the atomic hypothesis, he continued to believe that rational induction was possible in "psychics". In his review of Ramsey's **Foundations of Mathematics**, he continues to assert, in opposition to Ramsey's claim that human logic cannot provide an objective or rational ground for probability and induction, his belief in this possibility and points to human logic as potentially containing the solution to the problem of induction (X 339). In addition, Keynes's own work subsequent to his adoption of organicist metaphysical premises implicitly presumes that rational induction is possible. He continues to construct "general" theories and to make inductive judgements based on these. He also assumes that, in certain limited conditions (the limitations now resulting in part from organic interdependence), business expectations can be formed rationally (though he also argues that even in those circumstances where rationality is possible expectations are often not formed in a rational way). His rejection of the atomic hypothesis did not lead, therefore, to a rejection of the possibility of rational induction. Moreover, Keynes provides discussions of aspects of induction which are consistent with an organicist solution to the problem of rational induction--specifically, with the organicist solution set out in Whitehead's philosophy of organism.

As I pointed out above, Whitehead played a role in Keynes's work on probability and induction beginning at least as far back as Keynes's 1908 fellowship dissertation. He acted as a referee of both the 1908 and 1909 versions of the dissertation. Whitehead was very critical of what he called the "philosophical" aspects of Keynes's argument, meaning by philosophical what Keynes in the dissertation and in the **Treatise on Probability** calls the difficult problem of grounding the assumptions upon which the formal part of probability, the calculus of probabilities, is to be based (Whitehead 1908A, 1908B & 1909; VIII 86). The focus of his criticism was Keynes's attempt to find such grounds in atomism. Whitehead was of the view that atomism could not provide an adequate foundation for either probability or induction; organicism, however, could. Keynes's account was defective because it overlooked the problems created by atomism while unjustifiably claiming that organicism was inconsistent with rational induction. Whitehead was also of the view that a defensible frequency theory of probability could be constructed on the basis of organicism. Without noting its connection with organicism, Keynes discusses Whitehead's version of the frequency theory in both his 1909 fellowship dissertation and in the **Treatise on Probability** (VIII 109-20). In contrast to his treatment of Venn's frequency theory, Keynes does not reject Whitehead's version outright. His criticism takes the form of a series of questions which he claims exponents of this theory must answer before the theory can be accepted.

Following the publication of Keynes's **Treatise** in 1921, Whitehead, in direct response, it appears, to Keynes (Whitehead 1948, p. 111; 1978, p.

206), set out to demonstrate that atomism could not provide an adequate foundation for probability and induction, that organicism could solve the problems created by atomism while avoiding the problems which Keynes had attributed to it in the **Treatise**, and that the questions Keynes raised in the **Treatise** respecting Whitehead's version of the frequency theory could be adequately answered (Whitehead 1927; 1948, pp. 101-11; 1967C, Chap. X; 1978, pp. 200-6). Keynes's discussions of probability and induction following his rejection of the atomic hypothesis express views consistent with the solution Whitehead offered (Winslow 1985, pp. 110-140 and Chap. 5).

In explaining his inability to provide adequate grounds for his adoption of the atomic hypothesis in the **Treatise on Probability**, Keynes pointed to the disordered state of epistemology, particularly with respect to the question of what sorts of things are we capable of direct knowledge. In moving to what appears to be an organicist view of induction and probability and of the habits of mind appropriate in psychics, Keynes also moved to an understanding of direct acquaintance capable of solving this problem of grounding metaphysical beliefs. The change in his view of the nature of experience is recorded in his criticisms, in "My Early Beliefs", of his early beliefs about experience--criticisms which, as we shall see, are very like Whitehead's criticisms of these same beliefs.

One of the criticisms which Keynes makes of his early beliefs (beliefs which he associates with Bloomsbury and G.E. Moore) is that they involved "a dogmatic treatment as to the nature of experience (X 438)." He appears to associate this with uncritical adherence to a variant of sensationalism in which all experience was treated as having the same precise character as sense experience. (In the **Treatise on Probability**, as we have seen, Keynes identified experience with sense experience.) In particular, experience of "good" was treated as having this character (X 438). This, he claims, was "a method of handling experience which was extravagantly scholastic." Keynes follows Ramsey in defining "excessive scholasticism" as "the treatment of what is vague as if it were precise and trying to fit it into an exact logical category (Ramsey, as cited by Keynes, X 343)."

Ramsey uses this term to critically describe Moore's approach to ordinary language (Ibid.). Moore held that fundamental issues in philosophy could be resolved by means of an analysis of the precise meaning of ordinary language. There could be no appeal against the meanings so revealed. Ramsey argued, in agreement with Whitehead, that meaning was vague rather than precise and that philosophy could change meaning (Ibid.; see also Ramsey 1965, pp. 116, 117 and 136-7). Keynes makes the same criticism of this aspect of "Moore's method". According to this method, Keynes writes,

you could hope to make essentially vague notions clear by using precise language about them and asking exact questions. It was the method of discovery by the instrument of impeccable grammar and an unambiguous dictionary. What exactly do you mean? was the phrase most frequently on our lips. If it appeared under cross-examination that you did not mean exactly anything, you lay under a strong suspicion of meaning nothing whatever. It was a

stringent education in dialectic but in practice it was a kind of combat in which strength of character was really much more valuable than subtlety of mind. (X 440)

In his Cambridge lectures of 1933, Keynes associates scholasticism in economics with excessive precision, over generalization and mechanical logic--problems which can be shown to result in part from a failure to take account of internal relations (Keynes, as cited in Tarshis, 1933, Notes for Nov. 6).

Whitehead makes essentially the same criticism of conventional philosophic methods. He claims they involve "dogmatic" attachment to "the presupposition that all knowledge starts from the consciousness of spatio-temporal patterns of *sensa* (Whitehead 1968, p. 74)." This presupposition imports a false sense of "clarity" into our conception of our experience (Ibid., pp. 111-2). The sensationalist doctrine is excessively scholastic in Ramsey's sense. In opposition to this doctrine, Whitehead claims that "the study of human knowledge should start with a survey of the vague variety, discernable in the transitions of human experience (Ibid., p. 75)." Whitehead also makes the same criticism as Keynes and Ramsey of the conventional treatment of meaning and language. What he calls the "Dogmatic Fallacy" is "the belief that [philosophy's] working hypotheses are clear, obvious, and irreformable (Whitehead 1967B, p. 144; see also p. 223)." This ignores the fact that "except perhaps for the simpler notions of arithmetic, even our more familiar ideas, seemingly obvious, are infected with this incurable vagueness (Whitehead 1967B, p. 145)." He calls the belief that philosophy can reveal but cannot change the meanings implicit in ordinary language "The Fallacy of the Perfect Dictionary".

There is an insistent presupposition continually sterilizing philosophic thought. It is the belief, the very natural belief, that mankind has consciously entertained all the fundamental ideas which are applicable to its experience. Further it is held that human language, in single words or in phrases, explicitly expresses these ideas. I will term this presupposition, "The Fallacy of the Perfect Dictionary." (Whitehead 1968, p. 173)

He also associates both this fallacy and the Dogmatic Fallacy with excessive scholasticism (Whitehead 1968, p. 173).

What is required in place of these methods is what Keynes calls human logic. "Our task is to understand how in fact the human mind can successfully set to work for the gradual definition of its habitual ideas (Whitehead 1967B, p. 145; see also 1967A, p. 106)." Human logic involves appeal to "direct insight" rather than deduction or "verbal analysis within the limits of the dictionary" (Whitehead 1968, p. 173). It is possible, by means of such an appeal, to change meaning and thereby "enlarge the dictionary" (Ibid.). In fact, "the great difficulty of philosophy is the failure of language. ... Language halts behind intuition. The difficulty of philosophy is the expression of what is self-evident. Our understanding outruns the ordinary usages of words (Ibid., p. 49)."

We have found Keynes adopting Ramsey's notion of human logic as the method appropriate to the analysis of the habits of mind we have for "handling the material with which we are supplied by our perceptions and by our memories and perhaps in other ways" while dissenting from Ramsey's claim that human logic cannot provide rational or objective grounds for the adoption of particular habits of mind. Whitehead provided an alternative account of such methods, an account which, like Ramsey's, disconnected them from formal logic but, unlike Ramsey's, pointed to "direct intuitive observation" as a method of human logic alternative to formal logic which could provide objective and rational grounds for the adoption of particular habits. Whitehead also claimed that it only becomes evident that experience can be used for this purpose when it is recognized that the conventional sensationalist account of experience is not an account of uninterpreted direct experience but contains ungrounded atomic habits of mind. Keynes, as we have seen, makes a similar criticism of the conventional account of experience on which his own work in probability had initially been based. This suggests that Keynes, having accepted Ramsey's discrimination of human from formal logic, adopted something like Whitehead's rather than Ramsey's account of the actual methods and potential results of human logic.

#### CONCLUSION

In summary, there is evidence that Keynes moved over time from an atomist to an organicist metaphysical description. He appears to have initially accepted atomism as the description valid for both the natural and the moral sciences. As his discussion in the **Treatise on Probability** shows, this initial acceptance of atomism was based primarily on his belief that it was the only description compatible with the possibility of rational induction. He subsequently abandoned atomism in favour of organicism as the description valid for the moral sciences. The conception of internal relations to which he moved allowed for "abstraction" and for the mutual interplay of efficient causation, final causation and freedom. His treatment of internal relations as compatible with the possibility of abstraction is consistent with Whitehead's notion of a nested hierarchy of societies and points to a way out of the difficulty which he had claimed internal relations create for induction--the apparent necessity they place us under of knowing everything at once. The removal of this difficulty explains his continued acceptance of the possibility of rational induction following his rejection of atomism. These changes in Keynes's metaphysical beliefs were accompanied by changes in his methodological views. He came to reject formal logic and analysis of ordinary language as adequate methods for grounding metaphysical premises, and replaced them with human logic. He was also very critical of his early conception of experience. His treatment of these questions has much in common with Whitehead's.

The changes in Keynes's metaphysical and epistemological beliefs had important effects on his economics. They underpin his treatment of human character and motivation, his treatment of business expectations, and his criticism of conventional uses of mathematical and statistical methods. His treatment of character and motivation, for example, allows for environmentally conditioned long-period and short-period changes in the motivation



behind economic behaviour. It also appears to employ Whitehead's notion of a nested hierarchy of societies. In this and other areas, Keynes's economics appears to be based on metaphysical premises very different from orthodox ones.

#### References

<sup>1</sup>References to the Collected Writings of John Maynard Keynes take the form of the volume number followed by page numbers eg. (X 338) indicates page 338 of volume X.

<sup>2</sup>Note that what Whitehead calls speculative philosophy is very like what Keynes calls human logic.

<sup>3</sup>It should be noted that the meaning of caeteris paribus alters when we move from an atomist to an organicist conception of interdependence. As Keynes notes in this **Treatise on Probability** discussion, atomic premises do not rule out changed behaviour of ultimate entities under changed conditions. Amidst such changes the nature of the entities themselves, however, remains unchanged. This is not so under organicist premises. Marshall makes the same point in contrasting mechanical and biological analogies in economics. Because mechanical premises do not rule out the changed behaviour of atoms under changed conditions, "mechanical analogies ought ... not to be abandoned hastily on the ground that economic events react upon the conditions by which they were produced; so that future events cannot happen under exactly the same conditions as they did (Marshall 1925, p. 317)." In mechanics, however, it is quantitative change in the forces at work to which all results can be traced. In contrast,

in life their character changes also. `Progress` or `evolution,` industrial and social, is not mere increase and decrease. It is organic growth, chastened and confined and occasionally reversed by the decay of innumerable factors, each of which influences and is influenced by those around it; and every such mutual influence varies with the stages which the respective factors have already reached in their growth.

In this vital respect all sciences of life are akin to one another, and are unlike physical science. (Ibid).

<sup>4</sup>Moore claimed, for example, that the conception of relations as internal was unacceptable because it was in conflict with the conception embedded in ordinary language (Moore 1959, p. 33). Ramsey says of any attempt to ground atomism in the analysis of ordinary language that it mistakes "for a fundamental characteristic of reality what is merely a characteristic of language (Ramsey 1965, p. 117; see also Whitehead 1978, p. 12 and 1967B, p. 234)."

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