

Missing Links: Hume, Smith, Kant and Economic Methodology

Stuart Holland and Teresa Carla Oliveira, Faculty of Economics, University of Coimbra, Portugal

sholland@fe.uc.pt, tcarla@fe.uc.pt

Abstract

This paper traces missing links in the history of economic thought. In outlining Hume's concept of 'the reflexive mind' it shows that this opened frontiers between philosophy and psychology which Bertrand Russell denied and which logical positivism in philosophy and positive economics displaced. It relates this to Hume's influence not only on Smith, but also on Schopenhauer and the later Wittgenstein, with parallels in *Gestalt* psychology and recent findings from neural research and cognitive psychology. It critiques Kant's reaction to Hume's claim that one may assume but cannot prove cause and effect and how Samuelson's *Foundations of Economic Analysis* has been Kantian but wrong in claims for axioms that are universal truths. It illustrates how Samuelson's presumption that language and mathematics are 'identical' was as mistaken as the logical atomism of Russell and the early Wittgenstein, relates this to Kleinian splitting, denial and projective identification and suggests that recovery of greater realism in economics needs to regain links with such philosophy and psychology.

Keywords: Cognition, *Gestalt*, grounded theory, reflexivity, paradigms, verification

Introduction¹

Bertrand Russell dismissed Hume as a mere empiricist and a dead end in philosophy. Yet this neglected that his aim was to outline an anatomy of the reflexive mind and connections between conscious and pre-conscious thought. Following Hutcheson, and influencing both Adam Smith and Schopenhauer, Hume claimed that anything that we think or believe connects external perception with internal perception and that no cognition is neutral rather than influenced by values, dispositions and beliefs acquired from earlier life experience.

Hume thereby opened frontiers between philosophy and psychology which logical positivism and positive economics later displaced. Further, while it also is well known that Schopenhauer influenced Wittgenstein it is less recognised that he had identified unconscious displacement and denial long before Freud. These, with what Melanie Klein conceptualised as splitting and projective identification, have been typical of mainstream economics, whether allegedly Keynesian in the case of Samuelson, or monetarist, as with Friedman. Both Samuelson and Friedman split from realities and projected idealised outcomes, as did the theories of efficient markets and rational expectations which paved the path to the subprime crisis and the second Wall Street Crash.

¹ Authors outlined in this introduction are cited fully in the main text of the paper and also in its references.

Moreover, while Bertrand Russell dismissed Hume as 'a dead end', this was less the case with him than with alleged 'truth functions' in the logical atomism of Russell and the early Wittgenstein, with parallels in the atomism of perfect competition theory and the presumption of many mainstream economists that they can determine principles, axioms and laws which are universally valid regardless of context.

This paper illustrates Hume and Smith's case that what is perceived to be objective depends subjectively on the perceiver and parallels to this in the *Gestalt* psychology of Jastrow which influenced the later Wittgenstein and, through him, Kuhn in his analysis of scientific paradigms. It also shows how different *Gestalt* perceptions of the same assumed axiom, such as by Keynes and Friedman of the Fisher definition of money, can give rise to entirely different views of the world and of managing economies.

It outlines Kant's reaction to Hume's claim that one could assume – but not prove – cause and effect, and Kant's counter case that there are *synthetic a priori* propositions which both are true by definition and empirically verifiable. It submits that Kant failed in this and compares such propositions with Samuelson's claims for truths in economics, and his presumption that language and mathematics are identical which Wittgenstein had assumed in his 1922 *Tractatus* but, in his later thought, rejected.

In showing how Samuelson stripped psychology from Keynes, it indicates that his case for comparative advantage in what became known as the Heckscher-Ohlin-Samuelson theorem was neither Heckscher's nor Ohlin's in that it denied capital mobility which Ohlin, following Heckscher, had recognised, and how Samuelson therefore wrongly projected, as had Ricardo, that comparative advantage would maximise trade and welfare.

Whereas the current phase of globalisation – notably in the case of Asia attracting the world's most advanced technology through foreign direct investment at lower labour cost than in the West – is closer to Spengler's prediction that this would cause its decline, Hume's warning that relocation to lower cost areas could prove to be its Achilles Heel, and to Smith's anticipation of absolute rather than comparative advantage for China once tariffs and transport costs were reduced.

1. Hume, Smith and Methodology

1.1 Where Russell was Wrong

Bertrand Russell opened a chapter on Hume in his *History of Western Philosophy* by claiming that he: 'is one of the most important among philosophers because he developed to its logical conclusion, the empirical philosophy of Locke and Berkeley, and by making it self-consistent made it incredible. He represents... a dead end: in his direction it is impossible to go further (Russell, 1946, p. 685)'.

Yet Russell could not have been more wrong, nor so in his dismissal of Schopenhauer and Nietzsche as philosophers who 'do not pretend to be rational' (Russell, *ibid*, p. 699).

First, Hume influenced not only Adam Smith but also Jeremy Bentham and other Utilitarians, Darwin and Einstein and, through Schopenhauer, the philosophy of existentialism (Magee, 1997) as well as both the earlier and later Wittgenstein (Anscombe, 1959). The later Wittgenstein then influenced the evolution of philosophy and sociology (Sluga, 1999; Summerfield, 1999), law (Patterson, 2004) as well as the economics of Keynes' *General Theory* (Keynes, 1936; Coates, 1996; Davis, 1993, 1996).

Second, while Hume and Smith are often aligned with Descartes (1637, 1641) as among the first of the 'moderns', they countered his *Cogito ergo sum* with the claim that how we think is who we have *become* through life experience and education; that our perceptions are influenced by dispositions, values and beliefs formed by these; that no cognition is value free, and that neglect of this in 'systems thinking' could lead to 'dangerous errors' (Smith, 1759, p. 499).

Third, rather than Hume in Russell's view being a 'dead end' in philosophy, it was his claim that one can assume – but cannot prove – cause and effect that woke Kant 'from his slumbers' and generated a counter philosophy based on the premise that there are axioms which are not only valid *a priori*, but empirically verifiable, or *synthetic*, and therefore 'truths'.

Fourth, Kant's claim that there are propositions which are true by definition and universally valid (Kant, 1781, 1783) was mirrored in Samuelson's *Foundations of Economic Analysis* (1947), as well as successive editions of his *Economics* from 1948, and wrongly encouraged the presumption that economics was an exact science whereas Kuhn (1962, 1996), drawing on Wittgenstein, and the influence on them both of *Gestalt* psychology, has shown that perception of the same phenomena by scientists can be entirely different.

Fifth, while Freud (1900, 1915) claimed that the unconscious was inaccessible other than by years of psychoanalysis, Hume's claims that there are reflexive connections between current perception and what is already 'antecedently present to the mind' influenced Schopenhauer (1813, 1818, 1839) and recently have gained confirmation from neural research and 'connectionist' theory in cognitive psychology, as well as supporting Soros' (1987, 1994, 2007) concept of 'reflexivity', even if Soros may have been unaware of this.

Sixth, Hume's stress that what is perceived depends on the habitual dispositions and values of the perceiver, has implications for suggesting that that there is no 'value free' social science and while decision makers on markets allegedly have been guided, as it were, by an invisible hand, most of them have been driven by values, beliefs and dispositions less than consciously acquired from life experience and education, or what Pierre Bourdieu (1977, 1984, 1990), if without reference to either Hume or Smith, later conceptualised as *habitus*.

1.2. Visible Worlds and Invisible Minds

It has been well recognised since the 18th century that Hume influenced Adam Smith. Also that he was an economist as well as a philosopher, and best known in his time as an historian, at least in Britain (Macfie, 1967; Raphael, 1977).

But there has been less ready recognition that Hume's aim was to outline a 'mental geography', an anatomy of 'the reflexive mind' and 'connections' between conscious and pre-conscious thought. He claimed that anything that we think, perceive or believe connects external perception with 'internal perception' (Hume, 1739, 1740, 1748, 1751). He also held that there was not an isolated cognitive self in the manner of Descartes' *Cogito*, rather than that how we think is who we have become through life experience – in a manner which later would come to be called a 'socially constructed self'.²

Both Hume and Adam Smith drew on the insights of Francis Hutcheson (1726, 1728, 1742) who had claimed that morality is grounded in the 'reflexive sentiments of the mind'. Locke (1690) already had claimed that our external perception relates to internal sensing. Yet

² Hume had published what he considered his definitive *Treatise on Human Nature* in his twenties (Hume, 1739, 1740). He lamented that this fell 'dead-born from the press' and much of his later work was a re-writing of it, such as his *Enquiry Concerning Human Understanding* (1748) and *Enquiry Concerning the Principles of Morals* (1751) as well as his *Dialogues Concerning Natural Religion* (1779) which was largely completed by 1751 but published posthumously since they could have subjected him to the then damaging charge of atheism.

Hutcheson qualified Locke in submitting that the ideas of extension, time, cause and motion are more properly ideas *accompanying* the sensations of sight, sound or touch than direct sensing alone and that the reflexive self was integral to any understanding (Hutcheson, 1742, Part. 1 Article. I).

In his *Theory of Moral Sentiments*, and directly citing Hutcheson (1726; 1742), Smith stressed that sensing and perception were dual processes, of which the first was direct, and the other reflexive. Thus sounds and colours were the objects of the direct senses. The reflex was not, including aesthetic and also moral judgements. The faculty by which we perceive either beauty or harmony or virtue – or vice – ‘was a reflex internal sense’ (Smith, 1759, pp. 473-474).

Hume (1739) already had developed this from Hutcheson in terms of ‘connections’ between current cognition and what already is ‘antecedently present’ to the mind. He submitted that the ‘reflexive mind’ becomes habitually disposed to general ways of perceiving and thinking which influence how we make sense of the external world and what we expect the future to be. We are not normally conscious of this, or of how we come to acquire the values and beliefs that influence our behaviour.

Nor were Hume’s claims for his ‘connections’ a passing observation or metaphor, such as Smith’s one-off use of the term ‘invisible hand’ in *The Wealth of Nations*. He saw them as his main contribution, following Hutcheson, to human understanding. Findings from recent neural research support such connections between cognition and preconscious dispositions (Edelman, 1987, 1989, 1992, 1998; Cutting, 1997; Panksepp, 2003; McGilchrist, 2009) as does ‘connectionism’ in cognitive psychology (Dienes and Perner, 1996; Cleeremans, 1997; Glöckner and Betsch, 2008; Sadler-Smith, 2008; Glöckner and Witteman, 2010).

Hume held that we do not come to beliefs by reason, even if we may seek to justify them by it, rather than from sentiments or feelings. Belief is ‘a peculiar sentiment or lively conception produced by habit’ that results from the *manner* in which ideas are conceived and ‘in their feeling to the mind’ (Hume, 1748, p. 49). It is ‘more an act of the sensitive, than of the cogitative part of our natures’ (Hume, 1739, p. 183).

He also held that what we already presume to know from our own experience is how we should credit or discredit the claims of others, which has parallels with a ‘verification principle’ as argued by Carnap (1934), and derived from both Carnap and Hume in ‘strong’ and ‘weak’ variants by Ayer (1936, 1956). Yet Hume was more sceptical than Carnap or Ayer on verification and closer to Popper’s (1959) claims for falsifiability. Since what is perceived depends on the perceiver:

‘twill always be impossible to decide with certainty, whether [perceptions] arise immediately from the object, or are produc'd by the creative power of the mind... We may draw inferences from the coherence of our perceptions, whether they be true or false; whether they represent nature justly, or be mere illusions of the senses (Hume, 1739, p. 84)’.

Such scepticism in Hume may have been why Russell (1946) assumed that he was a ‘dead end’ and Bhaskar (1975) later presumed that he was a ‘wrong turning’. Yet, with others such as Ayer (1936), they thereby missed that he was opening frontiers between philosophy and psychology. Besides which key features of Hume’s approach to meaning and method are similar to Bhaskar’s ‘critical realism’ (Dow, 2000a, 2002b) while Parusnikova (1993) has compared them with ‘post modernism’ and which is supported by his stress on the need to deconstruct concepts and meanings.

Thus Hume recommended a sequence of questioning to determine cognitive content: begin with a term and ask what concept is connected to it. If there are no evident grounds for one, then recognise that it may have no basis, however prominently it figures in someone else's belief system. If there are connected concepts break them down into their constituent parts and, especially, search for the assumptions that may underlie them (Hume, 1739; Morris, 2007). This 'mitigated scepticism' anticipated what has become one of the main principles of organisational psychology in the case for 'reflective practice' and 'reflection-on-practice' (Argyris and Schön, 1974, 1978, 1996).

Hume also castigated a 'passion for hypotheses and systems' and found that they were 'a common source of illusion and error' (Hume, 1751, pp. 173, 175). Smith observed that those disposed to systems thinking 'attempt, to no purpose, to direct, by precise rules, what it belongs to feelings and sentiments only to judge of'. He denounced their 'frivolous accuracy', claiming that this 'almost necessarily betrayed them into... dangerous errors' (Smith, 1759, pp. 499-450). Such errors, for both Smith and Hume, included:

- a) the construction of theory *a priori* rather than deriving it from evidence;
- b) consequent circular reasoning which may be erroneous;
- c) the claim that knowledge can be objective, value free and uninfluenced by habitual thinking, feelings or beliefs;
- d) neglect of the degree to which conscious thought and perception always connect with what already is 'antecedently present to the mind' (Hume, 1739, p. 68);
- e) the presumption that cognition and inference are neutral, rather than influenced by personal or professional dispositions;
- f) the assumption that correlation demonstrates cause and effect, when what it correlates may only be coincidence;
- g) assuming that conclusions drawn from premise-dependent reasoning can be generalised to explain human behaviour without regard for understanding meanings in context, which also was criticised by the later Wittgenstein (1953, 1958, 1980, 1982).

2. The Missing Links

Hume's claim that what is perceived depends on the perceiver – and connects less than consciously with values, beliefs and dispositions – centrally influenced Schopenhauer (1813, 1818, 1839) in his conceptualisation of a socially constructed self and recognition of connected conscious and unconscious processes long before Freud.³ His philosophy of 'the self and the other' influenced existentialism from Kierkegaard to Sartre, as well as Tolstoy, Turgenev, Thomas Mann, Nietzsche, Zola, Maupassant, Conrad and Hardy, among others (Gardiner, 1963; Magee, 1997).

³ One of Schopenhauer's unfulfilled ambitions was to translate Hume into German and Kant into English, despite reservations on Kant, some of which are followed through later in this paper.

Schopenhauer's concept of a socially constructed self recently has been paralleled, if with little or no reference to either him or Hume, by cognitive and organisational psychologists (Epstein, 1990, 1994; Epstein and Pacini, 1999); philosophers (Bourdieu, 1977, 1984, 1990); sociologists (Davies and Harré, 1990; Harré and Gillet, 1994) and in recent neural research (Edelman, 1987, 1989, 1992, 1998; Leary, 2007; Lieberman, 2007).

The case that what is perceived depends on the dispositions of the perceiver also has been echoed in the phenomenology of perception by Merleau-Ponty (1962), although with no reference to Schopenhauer and with only two indirect references to Hume as cited by others such as Scheler (1927) and Husserl (1913, 1929), while Husserl rather than Schopenhauer has been assumed by Merleau-Ponty (1962) and theorists of social constructionism such as Berger and Luckmann (1967), to be the 'father' of the phenomenology of perception.

By Merleau-Ponty focusing on Husserl as if he were original, and thereby displacing both Schopenhauer and Hume, there also has been only scant recognition that Hume recognised that the mind may suppress challenges what we have come to assume to be a reality, which was developed by Schopenhauer in insights into displacement and denial of any unwelcome thoughts or feelings well before Freud (Magee, 1997), who claimed implausibly that he had only 'come across' Schopenhauer late in life (Webster, 1996).⁴

This anticipated Melanie Klein on 'splitting', 'denial' and 'projective identification' in terms of splitting what was good from what was bad and projecting either onto someone or something else. She developed this from her studies in child psychology and especially how an infant may projectively identify with a mother's 'good breast' when it was available and split from a presumed 'bad breast' when it was denied (Klein, 1932, 1952, 1961).

This was later seen by several psychologists and psychoanalysts to be relevant not only to child psychology but also to other behaviour. Thus Schneider (1975) and Richards (1989) have related splitting and projective identification to behaviour on markets. An example of which has been rating agencies splitting from recognition that subprime and other financial derivatives could be toxic and projecting them as safe as US Treasury bonds. Dinnerstein (1978) has extended Kleinian splitting in terms of splits between heart and head, feeling and reason, private and public and where what is private is deemed good and what is public bad regardless of evidence, as with Milton Friedman in his *Capitalism and Freedom* (1962), his *Free to Choose* (1980) and his vituperative parody of public purpose in the economics of John Kenneth Galbraith (Friedman, 1977).

2.1 Iterative Method and Grounded Theory

Iteration in mathematics is a technique deployed when there may be no finite solution to a problem. Hume and Smith's methodology also was a step-by-step iterative approximation to meanings without assuming that one had fully gained understanding, rather than might approach it. As in Smith's early but posthumously published *History of Astronomy* (Smith, 1795) in which he showed that there was an historical approximation to understanding in science but declined to confirm that Newton, in surpassing others such as Copernicus and Galileo, had definitively provided truths rather than 'constructs of the mind' that later theorists might choose either to accept or reject (Smith, 1795; Montes, 2004).

Iteration also was Smith's methodology in both his *Theory of Moral Sentiments* (1759) and in *The Wealth of Nations* (1776). These were grounded in serial examples and analysing step-by-step what was implied by them. Such as of a man striking a child in the street and first

⁴ Implausibly not only because Schopenhauer was published in German, but was gaining high profile recognition in Germany from the 1880s because of his influence on Wagner, who had organised reading sessions on him with others, often including Nietzsche (Magee, 1997).

presuming that this was a rebuke which might be justified. But then, if he continued beating the child in a manner that might do it harm, bystanders remonstrating or seeking to restrain him (Smith, 1759).

Rothschild has stressed that some contemporaries, such as Condorcet, found such method in Smith inadequate since it lacked 'geometry' (Rothschild, 2000). Yet geometry is a premise-dependent system of rules and axioms whereas both Smith and Hume were against 'systems thinking'. What Smith was seeking in his *Moral Sentiments*, and echoed in *The Wealth of Nations*, were people's values, motivations and beliefs as evident from how they acted. In such in a sense, he anticipated what came much later to be assumed to be the 'discovery' of 'grounded theory'.

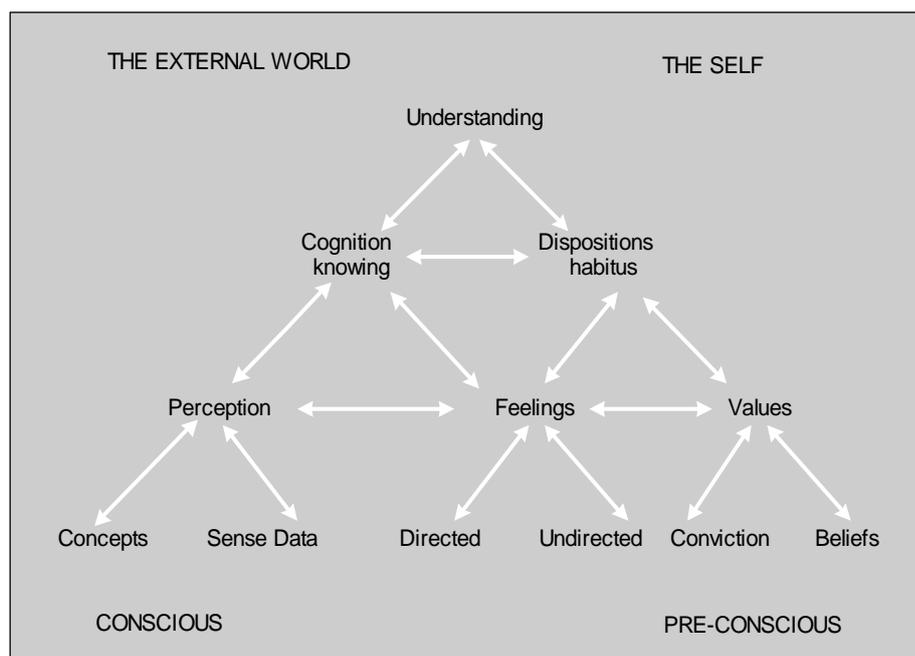
As a method developed among others by Glaser and Strauss, (1967), Charmaz (1990, 1994), and Henwood and Pidgeon (1995), this involves observation, as well as discourse and discourse analysis. As Shah and Corley (2006), and Symon and Cassel (2006) have stressed, grounded theory can be informed by quantitative analysis but is a process based on finding meanings in specific contexts rather than assuming general validity (Oliveira, 2000, 2001, 2002, 2006, 2007; Oliveira & Holland, 2012).

Condorcet's claim that Smith lacked geometry also contrasts with those who later claimed that his model was Newton, or that he was a forerunner of general equilibrium theory (e.g. Jevons, 1871; Samuelson, 1952; Robbins, 1962; Arrow-Hahn, 1971). Montes (2004) has convincingly argued that this is wrong, submitting that Smith 'did not have an atomistic-mechanistic view of the world in the manner of later modern mainstream economics' (Montes, 2004, p. 131) while also criticising such later claimants for assuming that Newton's own method was axiomatic-deductive, whereas it primarily was inductive (Montes, 2004, pp. 150-151).

3. Regaining the Links

How Hume and Smith had conceptualised central relations between conscious and pre-conscious thought processes is summarised in Figure 1.

Figure 1: The Self and the External World (Own formulation)



Belief in Figure 1 may appear to be confirmed by experience, or a mere presumption. Conviction is a belief held without doubt but which may well be unjustified. Understanding, at the apex of the figure, depends on the degree to which any cognition in the sense of knowing, or claiming to know, may be open to question. Sense data is a more modern term than in Hume or Smith, but consistent with what Smith (1752) was analysing in his essay *Of the External Senses*.⁵

Both Hume and Smith stressed that the values which influence our beliefs and dispositions are what we less than consciously have come to acquire from life or work experience, which parallels Bourdieu's (1977, 1984, 1990) concept of *habitus*. Notably, in his 1984 *Homo Academicus*, Bourdieu stressed that these tend to be reinforced in academic life by tacit censorship of what should or should not be thought or said, which relates to Wittgenstein's (1953) case on being trapped by 'language games' and pressure to play them even if they bear scant or no relation to realities. This also is relevant to Foucault's (1972, 1977) case that received knowledge has the power to inform, or to repress, at any level. This may be from the pinnacle of national assessment and funding hierarchies for research, down to lower levels concerning individual and group behaviour, while 'academic discipline' includes the power to punish by not gaining publication or gaining preferment if one challenges a prevailing paradigm.

Researchers thereby come to learn what is likely to be accepted by funding bodies and adapt their proposals accordingly, reinforcing conformism, however much they also resent this. A *Financial Times* survey of assessment exercises by the higher education authorities of England, Wales, Scotland and Northern Ireland reported the common view of academics that the criteria for such assessments of either teaching methods or research proposals:

'distorted research output, created a cut-throat hire-and-fire labour market among academics and imposed intolerable pressures on institutions that should be concentrating their efforts on producing excellence rather than demonstrating it to government inspections' (Green, 2008).

3.1 Questioning Cause and Effect

Centrally, Hume stressed not only that our assumption of cause-effect relations is grounded in what we have acquired from habitual thinking but that what we assume to be cause may be a coincidence. Thus although event B may always have followed event A, this means only that we know that it followed A rather than that it was caused by it.

'We must not be content here with saying, that the idea of cause and effect arises from objects constantly united; but must affirm, that it is the very same with the idea of these objects, and that *necessary connection* is not discovered by a conclusion of the understanding, but is merely a perception of the mind... From this constant union it *forms* the idea of cause and effect (Hume, 1740, p. 119, his emphases).'

⁵ The precise date of Smith's essay is uncertain, but before 1758, while 1752 has been deemed to be probable among others by Wightman in W. P. D. Wightman and J. C. Bryce (1980). *Adam Smith: Essays on Philosophical Subjects*. Oxford: Oxford University Press.

Yet although he claimed that assumption of cause and effect might be a coincidence Hume also recognised cause as the most important of three principles governing perception, cognition and dispositions (Figure 1), with the others being 'contiguity', and 'resemblance' (Hume, 1740, 1748).

The term 'contiguity' has an archaic ring and one may dismiss it simply as meaning something adjacent to something else. But the *Oxford Dictionary* defines contiguity as 'Contact: proximity; of ideas or impressions, in place or time, as a principle of association' which is precisely Hume's concept. This is consistent with his claims for the connection of cognition with what already is 'antecedently present to the mind', as also in the claim of Michael Polanyi (1958, 1962, 1968) not only that conscious and tacit knowing are connected, but that there is a 'tacit coefficient' to any conscious knowing or statement.

Hume's principle of resemblance or self-similarity also has a *casual* rather than causal connotation in recent use, suggesting something similar to something else, which may have been among the reasons why, in his reading of Hume, it was neglected by Russell. Yet when Benoit Mandelbrot (1977) made breakthroughs in the mathematics of complexity and chaos theory this was on the principle of self-similarity which Hume already had stressed in his resemblance principle.

3.2 Values, Dispositions and Feelings

Allegedly 'positive' economics claims to be value free and devoid of subjective dispositions or feelings. But for both Hume and Smith, as represented in Figure 1, and as supported by cognitive psychology and neural research (Bartlett 1995; Cutting, 1997; Panksepp, 2003; Lieberman, 2007; McGilchrist, 2009) feelings are central to not only values and dispositions but to any cognition. Further, on values and moral sentiments, as then echoed by Adam Smith (1759), Hume claimed that 'it is in vain to pretend that morality is discovered only by reason' and, argued that:

'We do not infer a character to be virtuous, because it pleases; but in feeling that it pleases after such a particular manner, we in effect feel that it is virtuous. The case is the same in our judgements of all kinds of beauty, and tastes and sensations. Our approbation is implied in the immediate pleasure they convey to us (Hume, 1739, p. 179)'.

This stress on the 'immediacy' of feelings presaged by more than two centuries Damasio's claims in his *Descartes' Error* (1994) and those of Goleman in his *Emotional Intelligence* (1996) that thinking cannot be divorced from feeling. In this, both stressed the role of the amygdala which, if damaged, means a loss of both inter-personal feelings and capacity for even simple decision-making. In more recent research Phelps (2006) has found that emotive and cognitive processes interface from early childhood through to mature conscious reasoning. Leary (2007) also has found from neural research that feelings are vital for understanding in both personal and social environments.

But while Hume and Smith stressed that thinking cannot be divorced from feeling, they also allowed a distinction between feelings that directly concern us and those which do not. This was the basis of Smith's concept of 'an impartial spectator' which is central to his *Theory of Moral Sentiments* (Smith, 1759). Thus liking someone or something, such as a person or their company in conversation, or a work of art, directly concerns oneself. Feeling that the behaviour of others is right or wrong may affect one deeply but does so indirectly, such as a 'disposition to admire the rich and the great, and to despise or neglect persons of

poor and mean condition' (Smith, *ibid*, p. 84), which Smith deemed both a denial of benevolence and a corruption of moral sentiments. In his later work on the philosophy of psychology, Wittgenstein made a similar distinction between directed and undirected feelings (Wittgenstein, 1980; Budd, 1989 and Figure 1).

4. Language, Truths and Economics

In his 1922 *Tractatus Logico-Philosophicus*, Wittgenstein had claimed that logic within propositions could represent 'truth functions' mirroring or picturing 'atomic facts' (Ricketts, 1999). In this 'logical atomism' he had been influenced by, and in turn influenced, Russell – while both were mirroring the advances in atomic physics in which, at the time, it was presumed that the atom was the least reducible element of matter. Russell had used the term 'logical atomism' before WW1, but it only gained wider resonance after he gave a series of lectures which were published as *The Philosophy of Logical Atomism* (Russell, 1918, 1919). As Russell acknowledged in a preface to them, he had been much influenced in this by Wittgenstein.

The parallel between neoclassical economics and such logical atomism is striking. The theory of the firm for some time was referred to as atomistic competition between small firms, and the microeconomic foundations of most macroeconomic modelling still premise that there are limits to their market share despite oligopoly domination of markets since the late 19th century and in the more recent 'finding' at the time of the subprime crisis that banks were 'too big to fail'.

The aspiration of logical atomism to mirror reality by claims for 'truths' was Platonic, if only indirectly so since Plato had claimed that reality could but imperfectly reflect universal truths while both Russell and Wittgenstein were claiming that algebraic propositions could do so. Whether Wittgenstein had read Plato is less clear than indications that such Platonism came through the influence of Moore (1903) on Russell. That Wittgenstein had read Schopenhauer when as young as sixteen is well attested (Anscombe, 1959; Gardiner, 1963; Magee 1997) and also reflected in the last, shortest and most enigmatic proposition in his *Tractatus* that 'Whereof one cannot speak, thereof one must be silent'. This was derived from Schopenhauer not in the sense that philosophy had nothing to say but that there are limits to what it can meaningfully say (Magee, *ibid*), which neoclassical economics in a Kleinian manner has assiduously displaced.

Wittgenstein's *Tractatus* influenced the 'logical positivism' of the Vienna Circle of philosophers including Rudolf Carnap (1934). Yet the differences between him and the Vienna Circle were diametric. Carnap – and others following his approach to language, truth and logic, such as Ayer, (1936) – insisted on a verification principle for any concept from personal experience, whereas Wittgenstein in his *Tractatus* was not the least interested in verification. By contrast, in his later posthumously published work (Wittgenstein, 1953, 1958, 1980, 1982) he was centrally concerned with it, and in questioning the universality of meanings.

4.1 Wittgenstein's Epiphany

The renowned epiphany in this change, from 1929, was in discussions with Piero Sraffa of which Wittgenstein remarked that, after them, he felt like a tree from which all the branches had been cut (Malcolm, 1958; Sen, 2003). What struck him was that he neither could give a practical example of his assumed 'truth functions', nor ascribe one for a gesture which Sraffa

made of flicking the tips of fingers from the neck to the chin. Common in southern Italy, this could have multiple meanings depending on who used it, how, and in which context, ranging from doubt, scepticism or disbelief through to 'who knows' or 'that is the way of the world'. The gesture was singular. But its meanings were not. It had no propositional or logical form. It could not be reduced to an algebraic function, or to anything similar claiming to have universal meaning.⁶

Wittgenstein thereafter echoed Hume (Urmson, 1958; Anscombe, 1959) in seeking whether or what cognitive content there might be in any proposition, statement, or gesture, or facial expression; abandoned his own (1922) and Russell's (1918) 'logical atomism'; he discarded an analytic philosophy which claimed to mirror reality in algebra and became concerned with the interfacing of psychology and philosophy (Wittgenstein 1953, 1958, 1980, 1982) that both Hume and Adam Smith had pioneered. The principles that he re-iterated thereafter also have direct relevance for the long-standing failure of economics to evolve (Veblen, 1898).

- We may become trapped by 'language games' and the rules of such games (such as the concept of equilibrium and presuming linear transition between equilibria rather than recognising that change may be asymmetric).
- Even in specific contexts, meaning never is 'self-evident' in the manner of an axiom, nor can be reduced to it (such as in an assumedly neutral Fisher definition of money supply, on which more later) since there can be different perceptions of such axioms.
- Rather than only looking for 'the right answer' we may be asking 'the wrong question' (such as what is the optimal equilibrium balance between unemployment and inflation, or the optimal rate of growth of money supply to avoid inflation).

There are parallels of this in Spengler who had claimed that premise-dependent reasoning was likely to be one of the main reasons for the decline of the West. An example he gave was its presumption that it would retain control of the science and technology by which it had come to master most of the world whereas, when Asia adopted them and combined them with lower wage costs, this would cause its decline (Spengler, 1918, 1920).

Hume already had warned in his essay *Of Money* that while rich nations had advantages in manufacturing over their backward competitors, their Achilles Heel was in their higher wage costs and that, to preserve their competitiveness, industries could well relocate to lower-wage areas (Hume, 1752; Hont, 2008).

This was also anticipated in by Adam Smith in advising in his Glasgow Lectures of 1763 that:

'[t]he cotton and other commodities from China would undersell any made with us were it not for the long carriage, and other taxes that are laid upon them (Smith, 1763, in Napoleoni, 1975, p. 141)'.

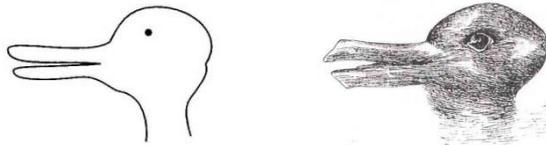
⁶ Sen (2003) has claimed that when he asked an elderly Sraffa about the gesture incident, Sraffa could not remember it. But the earlier attesting of this, not least by Wittgenstein himself, is convincing.

4.2 Meanings, Perceptions and Gestalt

In his *Philosophical Investigations* (1953), Wittgenstein drew on *Gestalt* psychology, notably using the Jastrow figure which can be seen as the head of a duck or a rabbit. (Figure 2). His point, as in Hume's observation that dispositions influence what 'we are pleas'd to call a reality', was that 'facts' are how we are disposed to see them. The 'fact' of the duck-rabbit figure does not change. How we see it can.

Figure 2: Jastrow-Wittgenstein Duck-Rabbit Images

PHILOSOPHICAL INVESTIGATIONS II



Sources: Wittgenstein, (1953). Jastrow, J. (1899).

Thomas Kuhn (1962, 1996) directly acknowledged the influence of Wittgenstein's (1953) *Investigations* and his examples of *Gestalt* in helping him come to understand how this could dispose scientists to perceive the same phenomena differently, such as:

'An investigator who hoped to learn something about what scientists took atomic theory to be asked a distinguished physicist and an eminent chemist whether a single atom of helium was or was not a molecule. Both answered without hesitation, but their answers were not the same. For the chemist the atom of helium was a molecule because it behaved like one with regard to the kinetic theory of gases. For the physicist, on the other hand, the helium atom was not a molecule because it displayed no molecular spectrum (Kuhn, 1996, p. 50)'.

Kuhn observed that those who achieve the invention of a new paradigm often 'have been either very young or very new to the field' and that: 'being little committed by *a priori* practice to the traditional rules of normal science, they are particularly likely to see that those rules no longer define a playable game and to conceive another set that can replace them' (Kuhn, 1996, p. 90).

But Kuhn was pessimistic whether a paradigm shift could be achieved by reason alone, citing Max Planck's claim that 'a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die off, and a new generation grows up that is familiar with it' (Planck, 1949, cit Kuhn, 1996, p. 151). Yet Planck in this regard may have been unduly optimistic since – in the case of neoclassical economics – a paradigm may survive successive generations despite its premises such as perfect information and perfect competition being patently unreal.

4.3. Questions Arising

A key question arising for economic methodology is that if everything ‘connects’ in Hume’s sense with what already is antecedently present to the mind (Figure 1), and if inference of cause and effect ‘is nothing but the effects of custom on the imagination’ (Hume, 1739, p. 119), where does this leave correlation and the regression analysis which has become *de rigueur* for professional recognition in economics? Answers depend both on recognising his warning that correlation does not prove cause and effect, rather than a disposition to assume it, and also on *Gestalt* in perceiving either presumed facts or an alleged axiom in an entirely different way.

An example is how economists can subjectively make different sense of the same ‘objective’ data found in national accounts, or make different sense of Hume’s own quantity theory of money, with different perceptions of it by Keynesians and monetarists (Hume, 1752; Blaug, 1985; Gatch, 1996; Wennerlind, 2005). Another is the allegedly neutral and value free definition by Fisher of money supply as $m v = p t$, where m is money, v its velocity of circulation, p is prices and t is transactions demand (Fisher, 1911).

Figure 3: Keynes, Fisher and *Gestalt*

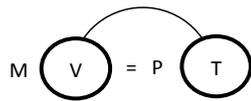
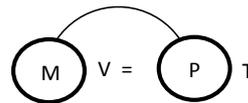


Figure 4: Friedman, Fisher and *Gestalt*



As indicated in Figure 3, Keynes (1936) saw the central ‘connection’ within Fishers’s $m v = p t$ as between v , the speed with which money circulates, and t , the level and rate of growth of transactions and demand. Inversely, as indicated in Figure 4, Milton Friedman (1969) saw it as between m , the rate of growth of money supply, and p , the rate of increase of prices.

Thus the Fisher definition appears to be an axiom. But what Keynes and Friedman ‘saw in’ and then derived from it was diametrically different. For Keynes, the level and rate of growth of demand was vital, and governments should assure effective demand to recover an economy from recession or depression. For Friedman (1969) the only role for governments was to assure a constant rate of increase in money supply to restrain increases in prices and thereby, allegedly, to stabilise expectations. Different perceptions of the same axiom gave entirely different ways of viewing the world and managing economies. Correlations and regression analysis could support either case. But neither could prove it.

There also is Wittgenstein’s (1953) point on different meanings-in-use. There are different definitions of money ranging from M1 (cash in hand, the total of all physical currency, plus part of bank reserves, plus current account balances); M2 (most savings accounts, money market accounts, mutual funds and small certificates of deposits); M3 (other certificates of deposits, institutional money, mutual funds and repurchase agreements), plus others which also vary between different countries.

Yet none of these definitions yields a reliable correlation with prices in the manner that Friedman (1969) claimed. The incoming Thatcher government in the UK in 1979 tried to project inflation in terms of M3, then tried M2 and M1, thereafter invented M0 (M nought – the total of all cash plus accounts at the Bank of England) – but then gave up entirely on trying to correlate money supply and prices (Holland, 1987). In 2006 the US Federal Reserve stopped

publishing figures on M3 on the grounds that it was not a sufficiently reliable indicator to be worth the time and cost of collecting data for it.

Also, while Marshall (1890) claimed that *natura non fecit saltum*, there can be leaps in perception which bear no relation to whether or not a regression analysis has confirmed a correlation, or been found wanting. Just before the 1971 devaluation of the dollar, Richard Nixon had declared that 'I am now a Keynesian'.⁷ Yet, with the impact of the 1973 oil shock, a *Gestalt* shift inverted Keynes' concern to avoid low velocity of circulation to concern with inflation and money supply. Even though this directly contradicted Friedman's (1980) claim that inflation starts in one place and one place only, national treasuries, and although Friedman hitherto was offstage in what had been assumed to be a 'Keynesian era', he and monetarism gained a general audience near overnight with his claim that inflation was due to too much money chasing too few goods.⁸

This is not to suggest that Keynes always was right and Friedman always wrong. Too much money chasing too few goods is inflationary. Keynes in *The General Theory*, in turn, addressed under-consumption such as followed the 1929 crisis, whereas the financial crisis of 2008 was due both to fictitious derivatives and to over-consumption through unrestrained credit. Yet the demise of Keynesianism was not grounded in evidence by Friedman 'disproving' Keynes, but rather a fractal event in the sense of Mandelbrot's (1977) aptly named 'chaos theory', as when OPEC in 1973 quadrupled the price of oil and threw the western world into disarray.

5. Hume and Kant

It was Hume's claim that one could not prove cause and effect which so shook Immanuel Kant as to 'wake him from his slumbers' and seek to develop a *Critique of Pure Reason* (1781) in which it could be proven that there were certain principles which were both true by definition and verifiable by evidence. He defined these as *synthetic - a priori* even if, in terms of cognitive sequence, they were *a priori-synthetic* since Kant claimed that *a priori* knowledge was intuitive rather than derived from evidence.

Kant initially had little more success in gaining recognition for his claims than had Hume and therefore wrote a more succinct introduction or *Prolegomena* to them (Kant, 1783). In this he recognised both the central importance of Hume and explained in charitable manner how he was provoked by him:

'Hume started in the main from a single but important concept in metaphysics, namely that of the *connection of cause and effect*... He proved irrefutably: that it is wholly impossible for reason to think such a conjunction *a priori* and out of concepts... From this he inferred: reason has no power to think such connections... because its concepts would then be mere fictions, and all its ostensibly *a priori* knowledge is nothing but falsely stamped ordinary experiences, which is as much as to say that there is no metaphysic at all, and cannot be any (Kant, 1783, his emphases, pp 6-7)'.

Kant then with equal charity commented in a manner anticipating the misguided dismissal of Hume by Russell that:

⁷ What he actually said - rather than that 'We're all Keynesians now'.

⁸ As one of us found from experience when an economic adviser to both the 1960s and early 1970s Labour governments in the UK. Whereas until September 1973 Treasury officials had deemed themselves Keynesians, by early 1974 there was hardly a Keynesian to be found among them.

'One cannot observe without feeling a certain pain, how [Hume's] opponents... so entirely missed the point of his problem... The question is not whether the concept of cause is correct, useful, and in respect of all knowledge of nature indispensable, for this Hume never held in doubt; but whether it is thought *a priori* by reason and in this way has an inner truth independent of all experience (Kant, 1783, pp. 7-8).'

Thereafter stating also:

'I freely admit that it was David Hume... that first, many years ago, interrupted my dogmatic slumber and gave a completely different direction to my enquiries in the field of speculative philosophy (Kant, 1783, p. 9).'

The examples that Kant claimed for his *synthetic a priori* propositions were impressive - mathematics, whose axioms were assumed *a priori* true by definition but also verifiable by numbers; Euclidian geometry; Pythagoras' theorem, which had been found before him by Chinese geometers (Needham, 1986); calculus, independently developed by Newton and Leibniz; and Newtonian physics which could explain both the movement of planets and tides, was invaluable in navigation and later was sufficient to calculate how to launch people into space.

But the challenge from Hume was not over. For the Newtonian principles which Kant assumed were universal in physics, such as the constancy of time and space, were later to be qualified by Einstein (1905), while Heisenberg's (1927) 'indeterminacy principle' in sub-atomic physics then challenged the presumption that physics could predict any rather than some outcomes. Another ongoing challenge is that Euclidean geometry is only one of several geometries, and while *a priori* true by definition is only an abstraction rather than descriptive. Mandelbrot (1977) stressed this in the introduction to his *Fractal Geometry of Nature*, in which he drew centrally on the same principles of resemblance and self-similarity as had been stressed by Hume:

'Clouds are not spheres, mountains are not cones, coastlines are not circles, and bark is not smooth, nor does lightning travel in a straight line (Mandelbrot, 1977).'

A key insight of Mandelbrot's also was that fractal small changes in initial conditions may yield asymmetric outcomes not only in storms, the growth and decline of wildlife and the incidence and spawning of disease but also in economics (Mandelbrot and Hudson, 2004; Mandelbrot and Taleb, 2006; Taleb, 2007a, 2007b). An example was the declaration by Bear Stearns in 2007 that two of its hedge funds had lost \$18 billion which at the time should have been covered by any large and soundly based financial institution, but then spawned trillions of losses in the ensuing subprime crisis (Roubini, 2008; Tett, 2009).

Nor is change realistically captured by comparisons of static equilibria as in Samuelson's (1947) influential *Foundations of Economics* nor by Hicks (1965) in his *Capital and Growth*, both of which assumed 'neutral' technical progress which denies the asymmetric outcomes from innovations that Schumpeter (1911, 1949) had seen as destructive yet also raising economies and societies to higher levels of income and welfare.

5.1. Kant and Samuelson

So far as we are aware, Samuelson never referred to Kant or Wittgenstein. Yet one of Samuelson's main claims (Samuelson, 1942), then developed in his *Foundations*, was that:

'Mathematics *is* language. I mean this quite literally... For in deepest logic – and leaving out all tactical and pedagogical considerations – the two media are strictly identical (Samuelson, 1942, p. 40, his emphasis)'.

This is precisely what Wittgenstein had assumed in the algebraic truth functions of his *Tractatus* (1922) yet then abandoned. There also is a parallel between this and Samuelson's assertion in successive editions of his *Economics*, that 'modern political economy' could determine truths:

'The first task of modern political economy is to describe, to analyze, to explain, and to *correlate* the behaviour of production, unemployment, prices and similar phenomena... To be significant, descriptions must be more than a series of disconnected narratives. They must be fitted into a systematic pattern - i.e., constitute true analysis (Samuelson, 1976, p.7, his emphasis)'

Samuelson appears to have been unaware that the task he set himself was that at which Kant had failed and oblivious of Hume's warning that correlation may not prove cause rather than be coincidence. Many of the alleged 'laws' and 'truths' which he then purported were founded on 'as if' premises against which Hume and Smith had warned and which were demonstrably false, such as allegedly diminishing returns to scale without which there can be no micro partial equilibrium nor therefore macro general equilibrium.

Similarly in claiming to 'prove' that comparative advantage would maximise global welfare Samuelson, like Ricardo, assumed no capital mobility (Ricardo, 1817; Samuelson, 1948, 1949, 2004a). In an article in the *New York Times* in 2004, he allowed that the economies of China and India can combine low wages, increasingly skilled workers and rapidly improving technology. He put his case in terms of a labour market 'clearing wage' that has been lowered for all countries by globalisation, and observed that:

'If you don't believe this changes the average wages in America, then you believe in the tooth fairy (Samuelson, 2004b)'.

Yet it was Samuelson's expositions of comparative advantage, over decades, that gave such a tooth fairy wings. Unlike Ohlin (1933), who had recognised that foreign direct investment could substitute for exports from a country of its outflow, Samuelson had displaced both the mounting US FDI outflow to Asia since WW2, and that half of China's exports by the time he wrote this, in 2004, were from foreign direct investment (Yadev, 2010; McKinsey, 2010) which, at much lower labour costs, was yielding Smith's absolute advantage rather than Ricardian comparative advantage.

This also meant asymmetric export substitution and import promotion rather than equilibrium outcomes. Imports were increased into the country of origin of the FDI outflow when manufactures produced at lower labour cost in China or other Asian countries were exported back to it, such as to the US. Nor would this be on either a marginal cost or cost-plus basis, but via tax havens through which the final import price could be vastly inflated through transfer pricing with the additional advantage for the outwardly investing corporation

of thereby declaring either no profit or a loss in its international trade and the disadvantage for the country of FDI outflow of next to no tax take (Holland, 1987, 2010, 2011).

Samuelson not only entirely ignored this but, further, in the multiple editions of what has been perceived as his 'Keynesian' *Economics* from 1948, displaced that Keynes' key concepts in *The General Theory* depended on psychology and stripped it from them. Examples are the propensity to consume (or save), which is psychological, or the marginal efficiency of capital which is what entrepreneurs hope future returns may be if they invest now.

Thereby he neglected Keynes' (1936) crucial Chapter 12 on long-term expectations which Keynes stressed depend not on mathematical calculation but on mass psychology, as recently reinvoked in his metaphor of animal spirits by Akerloff and Shiller (2009). This was ignored also in the regression analyses presuming cause and effect in the theories of rational expectations and efficient markets which projectively identified past with future prices and paved the path to the subprime crisis (e.g. Fama, 1965; Fama and French, 1992; Lucas, 1972, 1976, 1996; Merton, 1973, 1997; Scholes, 1997). Since when Fama and Shiller have shared a Nobel for their contributions to 'economic science' despite, like Keynes and Friedman, having entirely different views on how markets and economies function.

5.2 Positivist Pretensions

Underlying Samuelson's pretension for economics to be scientific have been claims for a 'positivism' claiming to derive principles from 'facts', rather than Hume's (1739, 1740) warnings that 'facts' are no more than how we are disposed to assume them.

Thus Milton Friedman (1962, 1980) alleged that 'positive' economics is scientific and value free, while Richard Lipsey claimed in his *Positive Economics* that 'the separation of the positive from the normative is 'one of the foundation stones of science' and that:

'Positive statements concern what is was or will be. These may be simple or they may be very complex but they are basically about what is the case. Thus disagreements over positive statements are appropriately handled by an appeal to the facts. Normative statements concern what ought to be. They depend upon our judgements of what is good and what is bad; they are thus inextricably bound up with our philosophical, cultural or religious dispositions (Lipsey, 1975, p. 6).'

Such 'positive' economics, like logical positivism in philosophy, has displaced the claim of both Hume and Smith that perception cannot be divorced from values, beliefs and dispositions, and therefore cannot be cognitively neutral. Friedman or Lipsey might refer to Comte's (1848, 1851-54) positivism as the basis for their claims to be able to derive general principles from 'facts'. Yet Comte, like Hume and Smith, and Bourdieu, had stressed that what we assume to know is influenced by dispositions formed by life and work experience and, especially, education and professional training. He also had protested against the usurpation of knowledge by algebra, fulminated against the limitations of calculus, and claimed that if a theorem was not understood in the same way as a poem, this could deprive us both of understanding and our humanity (Muglioni, 1996).

Summary

This paper has argued that Russell was wrong to dismiss Hume as a 'dead end' in philosophy. It has shown that, drawing on Hutcheson, Hume's claims for 'reflexive connections' between conscious and pre-conscious thought opened frontiers between philosophy and psychology that Russell and the early Wittgenstein displaced. It has also shown that Hume's stress that no cognition is neutral, rather than what is perceived depends on the perceiver, not only influenced Adam Smith, but was central to the philosophy of Schopenhauer.

It has recounted the influence on the early Wittgenstein of Schopenhauer's claim that there are limits to what philosophy meaningfully can say as well as the well-known epiphany of his encounters with Sraffa, and his rejection of his earlier presumption, with Russell, that propositions could embody truth functions that could be expressed in algebra. But it has suggested that it was the deeper perception in Hume that what is perceived depends on the values, beliefs and dispositions of the perceiver, and that one could assume but not prove cause and effect, that was recaptured by the later Wittgenstein and, in this regard, from the early 1930s, may have influenced Keynes.

The paper has linked this to the parallel influence of the *Gestalt* psychology of Jastrow on the later Wittgenstein and, through him, on Kuhn's critique of presumptive claims in scientific paradigms. It illustrated how different *Gestalt* perceptions of the same assumed truth or axiom, such as by Keynes and Friedman of the Fisher definition of money, can give rise to entirely different views of the world and of managing economies.

It also has submitted that Hume's 'mitigated scepticism' has been nearer to Popper on falsifiability than to the verification principles of logical positivists such as Carnap and Ayer and that his stress that what is perceived depends on the predispositions of the perceiver challenges the claims of positive economics to be cognitively neutral.

It evidenced Kant's reaction to Hume's claim that one could not prove rather than assume cause and effect, and Kant's counter claim that there are *synthetic a priori* propositions which are both true by definition and empirically verifiable. It has submitted that Kant failed in this and compares such pretensions with Samuelson's claims for truths in economics, and his presumption that language and mathematics are identical which Wittgenstein had assumed in his 1922 *Tractatus* but, in his later thought, rejected.

In recounting the differences between Hume and Kant, and how Samuelson's *Foundations of Economic Analysis* less than consciously were Kantian, it has claimed that mainstream economics has been wrong in assuming that it is a science capable of universal axioms. It suggests that there has been little follow-through whether Keynesian, monetarist or otherwise, of Schopenhauer's insights, before Freud, into displacement and denial of challenges to a prevailing paradigm. It also has sought to complement and enhance Dinnerstein, Richards and Schneider's extension of Melanie Klein to market behaviour and suggests that her concepts of splitting and projective identification could inform research into the failure of theories of rational expectations and efficient markets, not least in relation to Adam Smith's claim, influenced by Hume, that systems thinking can lead to 'dangerous errors'.

Acknowledgements

We are grateful for suggestions informing this paper from Madalena Abreu, Ana Ganho and Gerald Wooster and for comments on an earlier draft from Nuno Martins and John Latsis

which led us also to modify its earlier provisional title. We thank them for this, while the normal disclaimers apply.

References

- Akerloff, G. A. and Shiller, R. J. (2009). *Animal Spirits: How Human Psychology Drives the Economy and Why It Matters for Global Capitalism*. Princeton: Princeton University Press.
- Anscombe, G. E. M., (1959). *An Introduction to Wittgenstein's Tractatus*. London: Hutchinson.
- Argyris, C. and Schön, D. A. (1974). *Theory in Practice*. San Francisco: Jossey-Bass.
- Argyris, C. and Schön, D. A. (1978). *Organisational Learning: A Theory of Action Perspective*. Reading: Addison-Wesley.
- Argyris, C. and Schön, D. A. (1996). *Organisational Learning II*. Reading: Addison-Wesley.
- Arrow, K. J. and Hahn, F. (1971). *General Competitive Analysis*. San Francisco: Holden-Day.
- Ayer, A. J. (1936). *Language, Truth and Logic*. London: Gollancz.
- Ayer, A. J. (1956). *The Problem of Knowledge*, London: Macmillan.
- Bhaskar, R. (1975). *A Realist Theory of Science*. Leeds: Leeds Books.
- Bartlett, F. C. (1995). *Remembering: A Study in Experimental and Social Psychology*. Cambridge: Cambridge University Press.
- Berger, P. L. and Luckmann, T. (1967). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. NY: Anchor.
- Blaug, M. (1985). *Economic Theory in Retrospect*. 4th ed. Cambridge: Cambridge University Press.
- Bourdieu, P. (1977). *Outline of a Theory of Action*. Cambridge: Cambridge University Press.
- Bourdieu, P. (1984). *Homo Academicus*. Paris: Editions de Minuit.
- Bourdieu, P. (1990). *The Logic of Practice*. Cambridge: Polity Press.
- Brown, K. L. (1992). Dating of Adam Smith's Essay 'Of the External Senses'. *Journal of the History of Ideas*, 53: 333-337.
- Budd, M. (1989). *Wittgenstein's Philosophy of Psychology*. London: Routledge.
- Carnap, R. (1934). *Logische Syntax der Sprache*, Leipzig: Felix Meiner Verlag. Translated (1939) as *The Logical Syntax of Language*, London: Kegan Paul.
- Charmaz, C. (1990). Discovering Chronic Illness: Using Grounded Theory. *Social Science and Medicine*.30:11, 161-172.
- Charmaz, C. (1994). Between Positivism and Postmodernism: Implications for Methods. In N.K. Denzin (Ed.). *Studies in Symbolic Interaction*. 17. Greenwich, CT: JAI Press.
- Cleeremans, A. (1997). Principles for Implicit Learning, in D. C. Berry (Ed.) *How Implicit is Implicit Learning?* Oxford: Oxford University Press.

- Coates, J. (1996). *The Claims of Common Sense: Moore, Wittgenstein, Keynes and the Social Sciences*, Cambridge: Cambridge University Press.
- Comte, A. (1848). *Discours sur l'esprit positif*. Paris: Vrin (1987).
- Comte, A. (1851-54). *Système de politique positive*. 4 vols. Paris: Anthropos (1969).
- Cutting, J. (1997). *Principles of Psychopathology*. Oxford: Oxford University Press.
- Damasio, A. (1994). *Descartes' Error: Emotion, Reason and the Human Brain*. New York: Grosset and Dunlap.
- Davis, J. B. (1993). Sraffa, Interdependence and Demand: The Gramscian Influence, *Review of Political Economy*. 5:1, 22–39.
- Davis, J. B. (1996). Convergences in Keynes' and Wittgenstein's Later Views. *The European Journal of the History of Economic Thought*, 3: 3, 433 – 448.
- Davies, B. and Harré, R. (1990). Positioning: the Discursive Production of Selves. *Journal of the Theory of Social Behaviour*. 20, 43-65.
- Descartes, R. (1637). *Discourse on Method*. Harmondsworth: Penguin (1986).
- Descartes, R. (1641). *Meditations*. (Ed.) D B. Manley and C. S. Taylor. Dayton Ohio: Wright State University (1996).
- Dienes, Z. and Perner, J. (1996). Implicit knowledge in people and connectionist networks. In G. Underwood, (Ed.) *Implicit Cognition*. Oxford: Oxford University Press, 227-256.
- Dinnerstein, D. (1978). *The Rocking of the Cradle and the Ruling of the World*. London: Souvenir Press, p. 130.
- Dow, S. C. (2002a). Historical Reference, Hume and Critical Realism. *Cambridge Journal of Economics*. 26, 683-695.
- Dow, S. C. (2002b). Interpretation: The Case of David Hume. *History of Political Economy* 34:2, 399-420.
- Edelman, G. M. (1987). *Neural Darwinism: The Theory of Natural Group Selection*. New York: Basic Books.
- Edelman, G. M. (1989). *The Remembered Present: A Biological Theory of Consciousness*. New York: Basic Books.
- Edelman, G. M. (1992). *Bright Air, Brilliant Fire: on the Matter of the Mind*. Harmondsworth: Penguin.
- Edelman, G. M. (1998). The Matter of the Mind. Conference on *European Culture*. Lisbon: The Gulbenkian Foundation, May.
- Epstein, S. (1990). Cognitive-experiential self-theory. In L. Pervin (Ed.) *Handbook of Personality: Theory and Research*. New York: Guilford Press.
- Epstein, S. (1994). Integration of the Cognitive and Psychodynamic Unconscious. *American Psychologist*. 49:8 709-724.
- Epstein, S., and Pacini, R. (1999). Some Basic Issues Regarding Dual-Process Theories from the Perspective of Cognitive-Experiential Self-Theory. In S. Chaiken, and Y. Trope, (Eds.) (1999). *Dual-Process Theories in Social Psychology*. New York: The Guilford Press.

- Fama, E. (1965). *Random Walks in Stock-Market Prices*. Chicago: University of Chicago Press.
- Fama, E, and French K. (1992). The Cross-Section of Expected Stock Returns. *Journal of Finance* 47:427-465.
- Fisher, I. (1911). *The Purchasing Power of Money*. New York: Macmillan.
- Freud, S. (1900). The Interpretation of Dreams, in *The Complete Psychological Works of Sigmund Freud*, London: Hogarth Press
- Freud, S. (1915). The Unconscious, in *The Complete Psychological Works of Sigmund Freud*, London: Hogarth Press.
- Friedman, M. (1962). *Capitalism and Freedom*. Chicago: University of Chicago Press.
- Friedman, M.(1969). *The Optimum Quantity of Money and Other Essays*. London: Macmillan.
- Friedman, M.(1977). *From Galbraith to Economic Freedom*. London: The Institute of Economic Affairs.
- Friedman, M. (1980). *Free to Choose*. New York: Harcourt Brace Jovanovitch.
- Foucault, M. (1972). *The Archaeology of Knowledge*. New York: Pantheon Books
- Foucault, M.(1977). *Discipline and Punish*. London: Allen Lane.
- Gardiner, P. (1963). *Schopenhauer*. Harmondsworth: Penguin Books.
- Gatch, L. (1996). To Redeem Metal with Paper: David Hume's Philosophy of Money. *Hume Studies* 22:169–92.
- Glaser, B G. and Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine.
- Glöckner, A. and Betsch (2008).Modelling option and strategy choices with connectionist networks. In *Judgement and Decision-Making*, 3:3, 215-228.
- Glöckner, A. and Witteman, C. (2010). *Foundations for Tracing Intuition: Challenges and Methods*. Hove: Psychology Press, 1-23.
- Green, M. (2008). Hard lessons of assessment. *The Financial Times*, July 14th.
- Harré, R. and Gillet, G. (1994). *The Discursive Mind*. London: Sage Publications.
- Henwood, K. and Pidgeon, N. (1995).Grounded Theory and Psychological Research. *The Psychologist*.8:3. 115-118.
- Hicks, J. (1965). *Capital and Growth*. Oxford: Clarendon Press.
- Holland, S. (1987). *The Global Economy: From Meso to Macroeconomics*. London: Weidenfeld and Nicolson.
- Holland, S. (2010). Why Did They Get Ricardo So Wrong? Inaugural address to the 6th Conference of the Iberian Association for the History of Economic Thought, Faculty of Economics, Coimbra, December. Published in *Central European Political Science Review*, (2011) 45:12, 9-33.
- Hont, I.(2008). The Rich Country-Poor Country Debate Revisited. In (Eds.) C. Wennerlind and M. Schabas (2008). *David Hume's Political Economy*, London: Routledge, 243-323.

Hume, D. (1739, 1740). *A Treatise on Human Nature: Being an Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects*. London: Dent (1911).

Hume, D. (1748). *An Enquiry Concerning Human Understanding*. L.A. Selby-Bigge, (Ed.) Oxford: The Clarendon Press (1978).

Hume, D. (1751)..*An Enquiry Concerning the Principles of Morals*. L. A. Selby-Bigge, (Ed.) 3rd edn by P. H. Nidditch, Oxford: Clarendon Press (1975).

Hume, D. (1752). Of Money, in *Political Discourses*. Edinburgh: Kincaid and Donaldson.

Hume, D. (1779). *Dialogues Concerning Natural Religion*. Edinburgh: William Blackwood (1907).

Husserl, E. (1913) *Logische Untersuchungen*. Halle: Niemeyer.

Husserl, E.(1929). *Formal and Transcendental Logic*, The Hague: Nijhoff, 1969.

Hutcheson, F. (1726). *An Inquiry into the Original of Our Ideas of Beauty and Virtue*.(Ed.) W. Leidhold, Indianapolis: Liberty Fund, (2004).

Hutcheson, F. (1728). *Illustrations Upon the Moral Sense*. Cambridge, MA. Harvard University Press, (2009).

Hutcheson, F. (1742). *An Essay on the Nature and Conduct of the Passions and Affections, with Illustrations on the Moral Sense*.(Ed.) A. Garret, Indianapolis: Liberty Fund (2002).

Jastrow, J. (1899). The Mind's Eye. *Popular Science Monthly*, 54: 299-312.

Jevons, W. S. (1871). *The Theory of Political Economy*. London: Macmillan.

Kant, I. (1781) *The Critique of Pure Reason*.(1918) (Ed.) N. Kemp Smith. London: Allen and Unwin.

Kant, I. (1783). *Prolegomena to Any Future Metaphysics that Will Be Able to Present Itself as a Science*. (Ed.) P. G. Lucas. Manchester: Manchester University Press (1953).

Keynes, J.M. (1936). *The General Theory of Money, Interest and Employment*.London: Macmillan.

Klein, M. (1932).*The Psycho-Analysis of Children*. London: Hogarth.

Klein, M. (1952).*Developments in Psychoanalysis*. London: Hogarth.

Klein, M. (1961).*Narrative of a child analysis*. In R. Money-Kyrle (Ed.). (1984)*The Writings of Melanie Klein* (Vol.4). New York: Free Press.

Kuhn, T. (1962).*The Structure of Scientific Revolutions*. Chicago: University of Chicago Press. 2ndedn, 1970.3rdedn, 1996.

Leary, M. R. (2007). Motivational and Emotional Aspects of the Self. *Annual Review of Psychology*.58: 317-344.

Lieberman, M.D. (2007). Social Cognitive Neuroscience: A Review of Core Processes. *Annual Review of Psychology*.58: 259-289.

Lipsey, R. (1975). *An Introduction to Positive Economics*. London: Weidenfeld and Nicolson.

- Lucas, R.E. (1972). Expectations and the neutrality of money. *Journal of Economic Theory*.4, 103-24.
- Lucas, R.E. (1976). Econometric policy evaluation: a critique. In K. Brunner and A.H. Metzler, (Eds.), *The Phillips curve and labour markets*. Amsterdam: North Holland.
- Lucas, R. E. (1996). Nobel Lecture: Monetary Neutrality. *Journal of Political Economy*.104, 661–82.
- Locke, J. (1690). *An Essay Concerning Human Understanding*. Menston: Scolar Press.
- Macfie, A.L. (1967). *The Individual in Society*. London: Allen and Unwin.
- Magee, B. (1997). *Schopenhauer*. Oxford: The Clarendon Press.
- Malcolm, N. (1958). *Ludwig Wittgenstein: A Memoir*. London: Oxford University Press.
- Mandelbrot, B. (1977). *The Fractal Geometry of Nature*. New York: Freeman.
- Mandelbrot, B. and Hudson; R. L. (2004). *The (Mis)Behavior of Markets: A Fractal View of Risk, Ruin, and Reward*, New York: Basic Books.
- Mandelbrot, B. and Taleb, N. (2006). A focus on the exceptions that prove the rule. *The Financial Times*, March 24th.
- Marshall, A. (1890). *The Principles of Economics*. London:Macmillan
- McGilchrist, I. (2009). *The Master and His Emissary: The Divided Brain and the Making of the Western World*. New Haven and London: Yale University Press.
- McKinsey (2010). Growth and Competitiveness in the United States: The Role of its Multinational Companies: McKinsey Global Institute, June.
- Merleau-Ponty, M. (1962). *The Phenomenology of Perception*. London: Routledge.
- Merton, R. C. (1973). Theory of Rational Option Pricing. *Bell Journal of Economics and Management Science*, 4:1: 141–183.
- Merton, R.C. (1997). Applications of option pricing theory: Twenty-five years later. Stockholm: Nobel Lecture, December 9th.
- Montes, L. (2004). *Adam Smith In Context: A critical reassessment of some central components of his thought*. Palgrave Macmillan.
- Moore, G.E. (1903). *Principia Ethica*. Cambridge: Cambridge University Press.
- Morris, W.E. (2007). David Hume, in *Stanford Encyclopaedia of Philosophy*. [Metaphysics Research Lab](#), [CSLI](#), [Stanford University](#).
- Muglioni, J. (1996). Auguste Comte. In *Prospects*, XXVI: 1, 209-22.
- Napoleoni, C. (1975). *Smith, Ricardo, Marx*. Oxford: Basil Blackwell.
- Needham, J. (1986). *Science and Civilization in China: Volume 3. Mathematics and the Sciences of the Heavens and the Earth*. Cambridge: Cambridge University Press).
- Ohlin, B. (1933). *International and Inter-regional Trade*. Harvard: Harvard University Press.
- Oliveira, T.C. (2000) Implicit Logic in Unstructured Interviewing, *Selection and Development Review*, British Psychological Society, London, 16: 2, 10-14.

- Oliveira, T.C. (2001) Power in Panel Interviewing. *Selection and Development Review*, British Psychological Society, London 1: 3, 7-10.
- Oliveira, T.C. (2002) Procedural Justice in Selection, *Selection and Development Review*, British Psychological Society, London 18: 2, 3-7.
- Oliveira, T.C. (2006). Implicit Logic in Managerial Discourse: A Case Study in Choice of Selection Criteria. *Notas Económicas*, 23,53-71.
- Oliveira, T.C. (2007). Delving Down to Learn Up. Plenary paper to the Joint Portugal-MIT Seminar on Organizational Behavior, Lisbon.
- Oliveira, T.C. and Holland S, (2012). On the Centrality of Human Value. *Journal of Economic Methodology*, 19:2, 121-141.
- Panksepp, J. (2003). At the interface of the affective, behavioral and cognitive neurosciences: decoding the emotional feelings of the brain. *Brain and Cognition*, 52:1, 4-14.
- Parusnikova, Z. (1993). Against the Spirit of Foundations: Postmodernism and David Hume. *Hume Studies* XIX:1,1-18.
- Patterson, D. (Ed). *Wittgenstein and Law*. Aldershot: Ashgate.
- Phelps, E.A. (2006). Emotion and Cognition: Insights from Studies of the Human Amygdala. *Annual Review of Psychology*, 57: 27-53.
- Planck, M. (1949). *Scientific Autobiography and Other Papers*. New York: Philosophical Library.
- Polanyi, M. (1958). *Personal Knowledge* Chicago: University of Chicago Press.
- Polanyi, M. (1962). Tacit Knowing: Its Bearing in Some Problems of Philosophy. *Review of Modern Physics*, 34:4, 601-616.
- Polanyi, M. (1968). *The Tacit Dimension*. London: Routledge.
- Popper, K. (1959). *The Logic of Scientific Discovery*. London: Hutchinson.
- Raphael, D. D. (1977). The True Old Humean Philosophy and Its Influence on Adam Smith. In *David Hume: Bicentenary Papers*, (Ed.) S. P. Morice. Edinburgh: Edinburgh University Press, 25-38.
- Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. (Ed.) Sraffa, P. (1951) Cambridge: Cambridge University Press.
- Richards, B. (1989). *Images of Freud: Cultural Responses to Psychoanalysis*. London: Dent.
- Ricketts, T. (1999). Pictures, logic and the limits of sense in Wittgenstein's *Tractatus*. In H. Sluga, and D.G. Stern, (Eds.) *The Cambridge Companion to Wittgenstein*. Cambridge: Cambridge University Press.
- Robbins, L. (1962). *An Essay on the nature and Significance of Economic Science*. London and New York: Macmillan.
- Rothschild, E. (2000). *Economic Sentiments: Adam Smith, Condorcet and the Enlightenment*. Cambridge MA: Harvard University Press.
- Roubini, N. (2008). The rising risk of a systemic financial meltdown. www.rgemonitor.com. February 5th.

Russell, B. (1918, 1919). The Philosophy of Logical Atomism. *The Monist*. October 1918, January, April, July 1919.

Russell, B. (1946). *History of Western Philosophy*. London: George Allen and Unwin.

Sadler-Smith, E. (2008). *Inside Intuition*. London and New York: Routledge.

Samuelson, P. A. (1942). Economic Theory and Mathematics – An Appraisal. *The American Economic Review*, 52, 39–52.

Samuelson, P. A. (1947). *Foundations of Economic Analysis*. Cambridge MA: Harvard University Press. Republished 1983.

Samuelson, P. A. (1948). International Trade and Equalisation of Factor Prices. *The Economic Journal*, 58, 163-84.

Samuelson, P. A. (1949). International Factor-Price Equalisation Once Again. *The Economic Journal*, 59, 181-97.

Samuelson, P. A. (1952). A Modern Theorist's Vindication of Adam Smith. *The American Economic Review*, 67:1, 42-9.

Samuelson, P. A. (1976). *Economics*. 10th edn. New York: McGraw–Hill.

Samuelson, P. A. (2004a). Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization. *Journal of Economic Perspectives*, 18, 3, 135–146.

Samuelson, P. A. (2004b). Economists May be Wrong about Good Balancing Bad in Outsourcing. *The New York Times*. September 9th.

Scheler, M. (1927). *Die Formalismus in der Ethik und die Materiale Wertethik*. Halle: Niemeyer.

Scholes, M. (1997). Derivatives in a dynamic environment. Stockholm: Nobel Lecture, December 9th.

Schneider, M. (1975). *Neurosis and Civilization*. New York: Seabury Press.

Schopenhauer, A. (1813, 2nd edn 1847). *On the Fourfold Root of the Principle of Sufficient Reason*. Open Court Publishing.

Schopenhauer, A. (1818). Trans. (1883). *The World as Will and Representation*. London: Routledge and Kegan Paul, 3 vols. See also, (1969), New York: Dover Publications, 2 vols.

Schopenhauer, A. (1839). Trans. (1960). *Essay on the Freedom of the Will*. Indianapolis: Bobbs-Merill

Schumpeter, J. (1911, 1949). *The Theory of Economic Development*. Cambridge MA: Harvard University Press.

Sen, A. (2003). Sraffa, Wittgenstein, and Gramsci. *Journal of Economic Literature*. XLI, 1240–1255.

Shah, S. K. and Corley, K. G. (2006). Building better theory by bridging the quantitative-qualitative divide. *Journal of Management Studies*, 43: 8, 1821-35.

Sluga, H. (1999). Whose House Is That? Wittgenstein on the Self. In H. Sluga and D. G. Stern (Eds.), *The Cambridge Companion to Wittgenstein*. Cambridge: Cambridge University Press, 320-353.

Smith, A. (1752). Of the External Senses. In W. P. D. Wightman and J. C. Bryce, (Eds.), *Adam Smith: Essays on Philosophical Subjects*. (1980) Oxford: Oxford University Press, 135-170.

Smith, A. (1759). *The Theory of Moral Sentiments*. References in this paper are to the 1853 edition London: Henry Bohn, which reproduced the paging of the original, rather than to D.D. Raphael and A.L. Macfie (Eds.) Oxford: Oxford University Press (1979).

Smith, A. (1763). *The Glasgow Lectures*. Republished in C. Napoleoni, (1975). *Smith, Ricardo and Marx*. Oxford: Basil Blackwell, 136–152.

Smith, A. (1776). *An Enquiry into the Nature and Causes of the Wealth of Nations*. Republished (1910) London: Dent.

Smith, A. (1795). The History of Astronomy, in W. P. D. Wightman and J. C. Bryce, (Eds.), *Adam Smith: Essays on Philosophical Subjects*. (1980) Oxford: Oxford University Press, 33-105.

Soros, G. (1987). *The Alchemy of Finance*. New York: Wiley

Soros, G. (1994). The Theory of Reflexivity. Address to the MIT Department of Economics World Economy Laboratory Conference Washington, D.C., April 26th.

Soros, G. (2007). *The Age of Fallibility*. Public Affairs: Perseus Books..

Spengler, O. (1918, 1922). *The Decline of the West*. George Allen & Unwin, London, 1959. Volume 1 was originally published by Verlag C.H. Beck, Munich, in 1918, as *Der Untergang des Abendlandes*, and vol 2 in 1922.

Summerfield, D. M. (1999). Fitting and tracking: Wittgenstein on representation. In H. Sluga and D. G. Stern (Eds), *The Cambridge Companion to Wittgenstein*. Cambridge: Cambridge University Press. 100-139.

Symon, G., and Cassel, C. (2006). Beyond positivism and statistics: Neglected approaches to understanding the experience of work. *Journal of Occupational and Organizational Psychology*, 79: 3, 307-516.

Taleb, N.N. (2007a). The pseudo-science hurting markets. *The Financial Times*, October 24th.

Taleb, N.N. (2007b). *The Black Swan*. London: Penguin Books.

Tett, G. (2009). *Fool's Gold*. London: Little, Brown. New York: Simon & Schuster.

Urmson, J.O. (1958). *Philosophical Analysis*. Oxford: The Clarendon Press.

Veblen, T. (1898). Why is Economics Not an Evolutionary Science? In Max Lerner (1948). Ed. *The Portable Veblen*. New York: The Viking Press.

Webster, R. (1996). *Why Freud Was Wrong*. London: Harper Collins.

Wennerlind, C. (2005). David Hume's Monetary Theory Revisited: Was He Really a Quantity Theorist and an Inflationist? *Journal of Political Economy*, 113: 1, 223-237.

Wittgenstein, L. (1922). *Tractatus Logico-Philosophicus*. London: Routledge and Kegan Paul.

Wittgenstein, L. (1953). *Philosophical Investigations*. Oxford: Blackwell.

Wittgenstein, L. (1958). *The Blue and Brown Books*. Oxford: Blackwell.

Wittgenstein, L. (1980, 1982). *Remarks on the Philosophy of Psychology*. Oxford: Blackwell. Vols. 1 and 2.

Yadev, M. (2010). Foreign Direct Investment in China Past, Present and Policies. suite101.com/.../international-trade-in-china-imports.

SUGGESTED CITATION:

Holland, S. and Oliveira, T.C. (2013) 'Missing Links: Hume, Smith, Kant and Economic Methodology'. *Economic Thought*, 2.2, pp. 46-72.
<http://www.worldeconomicsassociation.org/files/journals/economicthought/WEA-ET-2-2-HollandOliveira.pdf>