This paper submits that while David Hume and Adam Smith are presumed to be founders of modernism in philosophy and economics they already were what now would be deemed post-modern. It outlines Hume’s concept of ‘the reflexive mind’ and to how this opened frontiers between philosophy and psychology that Russell denied and which logical positivism in philosophy and allegedly positive economics displaced. It links the anticipation of post-modernism in Hume to his influence on Smith, Schopenhauer and the later Wittgenstein, as well as to Gestalt psychology, grounded theory and recent findings from neural research and cognitive psychology. It outlines Kant’s reaction to Hume’s claim that one cannot prove cause and effect and how mainstream economics, since Samuelson’s Foundations, 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 wrong and that his premising comparative advantage on no capital mobility both misrepresented Ohlin and has led to ‘dangerous errors’ from premise dependent reasoning against which Smith warned. It then relates Hume’s case on ‘the reflexive mind’ to Soros’ concept of reflexivity and suggests that economics will not evolve unless it recovers some of Smith and Hume’s already post-modern methodology.¹

**Keywords**: Cognition, Dispositions, Gestalt, Grounded Theory, Paradigms, Post-Modernism, Reflexivity.

¹ We are especially grateful for suggestions concerning this paper from Ana Ganho, Joaquim Feio and Gerald Wooster. The normal disclaimers of course apply.
Introduction

It is more than a century since Veblen asked why economics was not an evolutionary science. The question has been revisited many times, but less so in terms of how David Hume and Adam Smith, as founders of experimental method, and of economics, were not so much modern than what now is deemed post-modern and that mainstream economics has been constrained by neglecting this. This paper draws on the under-recognised influence of Hume on Schopenhauer and his influence, in turn, on Wittgenstein and on post-modernism. It compares the logical atomism of the early Wittgenstein and Russell with the atomistic competition assumed in perfect competition theory and outlines how neoclassical economics became trapped in what the later Wittgenstein deemed language games. It contrasts this with the influence on Adam Smith of Hume’s insights into connections between cognition and what already is ‘antecedently present to the mind’, Hume’s relation of external perception to ‘internal perception’, his concept of ‘the reflexive mind’ and relates this to George Soros’ theory of reflexivity.

In doing so, the paper challenges the one dimensional empiricism which has been ascribed to Hume by Russell and shows how he and Smith opened frontiers between philosophy and psychology which logical atomism in Russell and the early Wittgenstein displaced. It outlines 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 both are true by definition and empirically verifiable. It compares these with Samuelson’s claims for axioms in economics and critiques Samuelson’s presumption that language and mathematics are identical. It cites how an allegedly ‘positive’ economics claiming to be derived from facts has displaced inference in favour of deduction from unsupported premises, against which both Hume and Adam Smith warned. It also draws also on Wittgenstein’s use of Gestalt psychology to demonstrate arbitrary claims of mainstream economics to be scientific.

1. Hume, Smith and Post-Modernism

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. First, since Hume influenced not only Adam Smith but also Jeremy Bentham and other Utilitarians, Darwin and Einstein, Schopenhauer and, through him, the philosophy of existentialism (Magee, 1997) as well as both the earlier and later Wittgenstein (Anscombe, 1959) while the later Wittgenstein then influenced the evolution of post-modernism in philosophy and sociology (Sluga, 1999; Summerfeld, 1999), in law (Patterson, 2004) as well as the economics of Keynes’ General Theory (Keynes, 1936; Coates, 1994; Davis, 1993, 1996).
Second, that while Hume and Smith often are 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 such experience, that no cognition is value free, and that neglect of this in ‘systems thinking’ could lead to ‘dangerous errors’.

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 not only are valid *a priori*, but empirically verifiable, and therefore ‘truths’. But that Hume in this was right in this and Kant was wrong.

Fourth, that 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, in other mainstream economics thereafter, and wrongly encouraged the presumption that economics was an exact science similar to physics.

Fifth, that while Freud (1900, 1915) claimed that the unconscious was inaccessible other than by years of psychoanalysis, Hume’s claims that there are constant reflex connections between current perception and what already is ‘antecedently present to the mind’ recently have gained confirmation from neural research and ‘connectionist’ theory in cognitive psychology, as well as supporting Soros’ (1987, 1994, 2007, 2008) concept of ‘reflexivity’.

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

### 1.2 The Metaphor of an Invisible Hand

Smith is renowned for two principles in his *Wealth of Nations*: that there are gains in economic efficiency from division of labour and that bakers, brewers and butchers are in business, not benevolence (Smith, 1776). But, in citing these, few economists have delved further, while Smith’s use of the metaphor of an invisible hand by which ‘man is led to promote an end which was no part of his intention’ has had such a resonance that any student not encouraged to read *The Wealth of Nations* could be forgiven for assuming that it was a treatise on it.

As Emma Rothschild (2000) has well illustrated, it was only in the later 20th century that the metaphor of an invisible hand gained iconic status through economists such as Milton Friedman (1962, 1980), Kenneth Arrow and Frank Hahn (Arrow & Hahn, 1971). Arrow and Hahn claimed that it was surely the most important contribution to economic thought even if James Tobin may have been nearer the mark in claiming...
that it was one of the most influential (Arrow & Hahn, ibid; Tobin, 1992). Yet, while praising him, this misrepresents Smith. As Kennedy (2009) has put it:

Modern economists took an isolated metaphor, used rarely by Adam Smith, and in his name invented a wholly misleading belief of how commercial markets function and how people in them necessarily and unintentionally work for public benefit ... (Kennedy, ibid, p.1).

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**Box 1 Hume, Smith and Post-Modernism**

The approach of Hume and Adam Smith to meaning, method and understanding already was what more recently has come to be termed 'post-modern'.

Thus Hume 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 also 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:

- the construction of theory *a priori* rather than deriving it from evidence;
- consequent circular reasoning which may be erroneous or metaphysical;
- the claim that that knowledge can be objective, value free and uninfluenced by habitual thinking, feelings or beliefs;
- neglect of the degree to which conscious thought and perception always connects with what already is ‘antecedently present to the mind’ (Hume, 1739, p. 68);
- the presumption that cognition and inference are neutral, rather than influenced by personal or professional dispositions;
- the assumption that correlation demonstrates cause and effect, when what it correlates may only be coincidence;
- 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).

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For Smith, rightly renowned as a pioneering advocate of free trade, only once used the metaphor of an invisible hand in the *Wealth of Nations* in a parenthesis within a paragraph of a chapter in which he allowed a preference for domestic rather than
foreign manufactures (Smith, 1776, IV, p. 400). Apart from this there are only two other cases of the metaphor in all his work. One was in his posthumously published essay on a *History of Astronomy* in which he refers to ‘the invisible hand’ of Jupiter (Macfie, 1971) to which the Greeks and Romans ascribed ‘all the irregular events of nature’ rather than optimal outcomes through the free working of markets, and which Smith cited as an example of ‘vulgar superstition’ (Smith, 1795, III.2). The other was in his *Theory of Moral Sentiments* where he wrote of how the rich:

> though the sole aim which they propose from the labours of all the thousands whom they employ be the gratification of their own vain and insatiable desires, … are led by an invisible hand... and thus, without intending it, without knowing it, advance the interests of the society and afford means to the multiplication of the species (Smith, 1759, pp. 264-265).

The reference is consistent with the concept of ‘trickle-down’ in the sense that such expenditure on luxuries generates employment and income for others, yet was not an endorsement. For one of Smith’s main aims in *The Wealth of Nations* (1776) was to shift an economy from luxury consumption by an aristocracy to productive investment to avoid a semi-stationary state of neo-feudalism. Apart from some papers which he burned before his death as not worth posthumous publication, what Smith had been writing towards the end of his life was concerned with the arts and *belles lettres* (Roncaglia, 2008). There was no draft for a treatise on an invisible hand even in outline. The implicit logic is that he did not deem the metaphor worth extending into one.

### 1.3. Visible Worlds and Invisible Minds

It has been well recognised both that Hume influenced Adam Smith and that he was a polymath - an economist as well as a philosopher, and best known in his time as a historian, at least in Britain. But there has been less 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 processes. He claimed that anything that we think, perceive, or believe connects external perception with ‘internal perception’ (Hume, 1739, 1748). 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 Hutcheson qualified Locke in claiming 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 a reflexive self was integral to any perception or concept (Hutcheson, 1742, Part. 1 Article. 1).

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 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.
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 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 & Perner, 1996; Cleeremans, 1997; Glöckner & Betsch, 2008; Sadler-Smith, 2008; Glöckner & 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). What we believe or presume to know relates 'to our internal perception or senses; and every particular of this system, joined to the present impressions, we are pleas'd to call a reality' (Hume, ibid, p. 108, his emphasis).

Hume 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 Hume in 'strong' and 'weak' variants by Ayer (1936, 1956). Yet Hume was more sceptical than Carnap or Ayer on verification from personal experience and closer to Popper's (1959) claims for falsifiability. What is perceived depends on the perceiver:

'twill always be impossible to decide with certainty, whether they 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 is in part why Russell assumed that he was a 'dead end' in philosophy. But he, and others who saw in Hume only a one dimensional empiricism, such as Ayer, thereby missed that he was opening frontiers between philosophy and psychology.

1.4 The Missing Links
Hume’s claim that what is perceived depends on the perceiver and connects less than consciously with previous 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. This influenced existentialism through from Kierkegaard to Sartre, as well as Tolstoy, Turgenev, Thomas Mann, Nietzsche, Zola, Maupassant, Conrad and Hardy among others (Gardiner, 1963; Magee, 1997).

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 & Pacini, 1999); post-modern philosophers (Bourdieu, 1977, 1984, 1990); sociologists (Davies & Harré, 1990; Harré & 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 theory of phenomenology, as by Merleau-Ponty (1962), although without reference to Hume, or to Schopenhauer.

Hume also recognised that the mind may repress evidence that challenges what we have come to assume to be a reality, which was developed by Schopenhauer in insights into repression of unwelcome thoughts and feelings before Freud (Magee, 1997) who claimed implausibly that he had only ‘come across’ Schopenhauer late in life (Webster, 1996). Hume’s concept of ‘mitigated scepticism’ also anticipated what has become one of the main principles of organisational psychology in the case for ‘reflective practice’ and ‘reflection-on-practice’ (Argyris & Schön, 1974, 1978, 1996).

Thus Hume recommended a sequence of questioning, or what post-modernism has deemed ‘deconstruction’, 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 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 implicit presumptions that may underlie them (Hume, 1739; Morris, 2007).

Hume’s methodology therefore was an iterative approximation to meanings without assuming that one had gained understanding rather than might approach it. It also was Smith’s methodology both in his Theory of Moral Sentiments (1759) and in The Wealth of Nations (1776). These were grounded in case after case of examples and analysing iteratively what was implied by them. Such as of a man striking a child in the street and first presuming that this was a rebuke which could 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).

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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.

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 Tolstoy and Thomas Mann and also on Wagner, who had organised reading sessions on him with others, including Nietzsche (Magee, 1997).
Rothschild has stressed that some contemporaries such as Condorcet found such method in Smith unsatisfactory since it lacked ‘geometry’ (Rothschild, 2000). Yet what Smith was seeking was what Wittgenstein (1953) later stressed should be understanding ‘meanings in context’. He also was seeking people’s values and beliefs as evident not only from what they said but from how they acted. In such a sense he anticipated what came to be assumed within post-modernism as 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, 2005, 2007; Oliveira & Holland, 2012).

1.5 Recovering the Links

Figure 1 synthesises how Hume and Smith had anticipated central relations between conscious and unconscious thought processes which only later were to be recovered by cognitive psychology and confirmed by neural research. Its right side parallels a figure by Budd (1989) including features of Wittgenstein’s (1980, 1982) later thinking on the philosophy of psychology, but relates them to the ‘connections’ between conscious and preconscious processing in Hume and Smith. It extends Hume’s stress on habitual thinking to Bourdieu’s concept of habitus, including how we are raised and educated (Bourdieu, 1977, 1984) and which Bourdieu (1990) scathingly extended in his Homo Academicus to the narrowing of norms that needed to be regarded for academic success.
Cognition in Figure 1 is used in the sense of knowing or, with Hume’s qualification, assuming to know. This depends on perception, which is influenced by feelings and values which in turn are influenced by dispositions, beliefs and convictions. Sense data is a more modern usage than in Hume or Smith but consistent with their warning that what we sense whether by sight, sound, touch or smell either may be the case or may be misinformed, (Hume, 1739; Smith, 1795). Belief in Figure 1 may appear to be confirmed by experience, or a mere presumption. Conviction is a belief held without doubt which may be justified or 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. Values, which influence both our feelings and dispositions are what we less than consciously have come to acquire from experience, as also in Bourdieu’s *habitus*, rather than by reasoning.

### 1.6 Questioning Cause and Effect

Hume stressed 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 knows 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).

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, dispositions and ideas, 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 Hume’s 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.

### 1.7 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 not only to values and dispositions, but also to perception and 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 interpersonal 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, apparently unaware of the precedent for this in Adam Smith, Wittgenstein made a similar distinction between directed and undirected feelings (Wittgenstein, 1980; Budd, 1989).

2. Language, Truths and Economics

In his 1922 Tractatus Logico-Philosophicus Wittgenstein had claimed that logic within propositions or statements could represent ‘truth functions’ mirroring or picturing alleged ‘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 in 1918 were published as ‘The Philosophy of Logical Atomism’. 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 much 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 represent them. Whether Wittgenstein had read Plato also 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 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 could meaningfully say, which neoclassical economics has assiduously disregarded (Magee, ibid).

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 those 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) was centrally concerned with problems in verification, and in questioning the universality of meanings.

2.1 From Modern to Post-Modern: Wittgenstein’s Epiphany

The renowned epiphany in this change, from 1929, when Wittgenstein came back to Cambridge, was in discussions with 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 (Malcolm, 1958; Von Wright; 1982; Sen, 2003).5

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’; 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) which both Hume and Adam Smith had pioneered. The principles that he re-iterated thereafter both echo Hume and have direct relevance for the failure of economics to evolve.

5 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.
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 explicit logic, nor can be reduced to it (such as in an assumedly neutral Fisher definition of money supply, on which more later) since alternative logics may be implicit within allegedly neutral 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 in relation to inflation, of which also more later).

There are parallels of this in Spengler (1918) who had claimed that premise dependent reasoning was likely to be one of the main reasons for the decline of the West. Such as its presumption that it would retain mastery of the technology that it had evolved whereas, when Asia adopted it, and combined it with lower wage costs, it would outcompete it. As also anticipated in terms of absolute advantage by Adam Smith in advising in his Glasgow Lectures 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, pp. 141-1422).

### 2.2 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, but not both at the same time (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 Figure*


Thomas Kuhn (1962, 1996) directly acknowledged the influence of Wittgenstein’s (1953) *Philosophical Investigations* and his examples of *Gestalt* in helping him come to understand how this could dispose different 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).

Wittgenstein’s (1953) influence in terms of ‘language games’ and how we play them also is evident in Kuhn observing 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, much as Hume and Smith claimed that values and beliefs cannot be proved, or displaced, by reason, Kuhn was pessimistic about whether a paradigm shift could be so, 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.

2.3 Questions on Methodology

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, 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?

Answers depend both on recognising Hume’s (1739, 1748) warning that correlation may not signify 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 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 example 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](image)
Figure 4
Friedman, Fisher and Gestalt

\[ M \times V = P \times T \]

For, 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 if an economy was in recession or depression. For Friedman the only role for governments was to assure a constant rate of increase in money supply both to restrain increases in prices and thereby allegedly 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 (all 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 significant correlation with prices in the manner that Friedman (1969) assumed. The incoming Thatcher government in the UK in 1979 tried to project inflation in terms of M3, then tried M2 and M1 and ended by inventing M0 (M nothing – 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 was not a sufficiently reliable indicator to be worth the time and cost of collecting data for it.

Also, while Marshall (1890) claimed that \textit{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 ‘we are all Keynesians now’. Yet, with the impact of the 1973 oil shock, a Gestalt shift occurred which inverted Keynes’ concern to avoid low velocity of circulation to concern with high velocity due to the inflated price of oil. 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 stepped centre stage near overnight with his claim that inflation was due to too much money chasing too few goods.\(^6\)

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 rather than a fractal event more typical of chaos theory, as when OPEC more than quadrupled the price of oil.

3. Hume, Kant and Samuelson

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 both were 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 be derived from evidence.

Kant initially had little success in gaining recognition for his claims and therefore wrote a more succinct introduction or *Prolegomena*. 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, ibid, his emphases, pp 6-7).

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

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, ibid, 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, ibid, p. 9).

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\(^6\) As one of us found from experience when an economic adviser to the 1974 British government. Whereas until September 1973 Treasury officials had considered themselves Keynesians, by the end of 1974 there was hardly a Keynesian to be found among them.
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 land a man on the moon.

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. 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 & Hudson, 2004; Mandelbrot & Taleb, 2006; Taleb, 2007a,b). Such as the in itself initially small change in a declaration by Bear Stearns in 2007 that two of its hedge funds had lost $18 billions which 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 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 raising economies and societies to higher levels of income and welfare.

3.1 Samuelson, Kant and Wittgenstein

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, ibid, 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 it 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 in 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 Samuelson then purported were founded on ‘as if’ premises against which Hume and Smith had warned (Box 1) and which were demonstrably false such as diminishing returns to scale without which there can be no micro partial equilibrium nor therefore macro general equilibrium. Or by assuming no capital mobility in ‘proving’ axioms of comparative advantage (Samuelson, 1948, 1949, 1971, 2004) despite half of China’s absolute advantage in trade by 2004, when he wrote his last article on this, being from foreign direct investment in China and joint ventures with Chinese firms yielding Smith’s absolute advantage rather than Ricardian comparative advantage (Holland, 2010).

Further, in the multiple editions of what has been perceived as his ‘Keynesian’ Economics from 1948, Samuelson displaced that Keynes’ key concepts in The General Theory depended on psychology and stripped it from them. Such as 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. As well as ignoring Keynes’ (1936) central Chapter 12 on long-term expectations, which he stressed depend not on mathematical calculation but on individual and mass psychology, which was ignored also in the regression analyses presuming cause and effect in the theories of rational expectations and efficient markets which paved the path to the cliff of the subprime crisis (Akerloff & Shiller, 2009).

Underlying Samuelson’s pretension for economics to be scientific were claims for a positivism which presumed to derive its principles from ‘facts’, rather than Hume’s (1739, 1740) warnings that these 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 out philosophical, cultural or religious dispositions (Lipsey, 1975, p. 6).

Yet 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, 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).

4. Summary and Implications

This paper has sought to recover the degree to which the thought of David Hume, as a founder of modern philosophy and of Adam Smith as assumed founder of modern economics, already were what since has come to be deemed post-modern. In recounting the differences between Hume and Kant, and the manner in which Samuelson’s Foundations of Economic Analysis were both Kantian and mistaken, it has claimed that neoclassical economics has been trapped by the assumption that it is a science capable of universal axioms and truths and, therefore answering – at least in part – Veblen’s question why it was not an evolutionary science, presumed that it needed no evolution.

It has suggested that there has been little follow through by mainstream economics, Keynesian, monetarist or otherwise, of Hume’s insights into what now is recognised as cognitive psychology. One notable exception from a practitioner of finance has been George Soros who, in his The Alchemy of Finance (1987), set out a theory of reflexivity but admitted that it ‘was not taken seriously in academic circles’ (Soros, ibid, p. 8). Yet, consciously or otherwise echoing Hume’s connections between current cognition and what already is ‘antecedently present to the mind’, Soros claimed that:

If reality were independently given, our views could correspond to reality. And if our decisions were based on knowledge, the outcomes would correspond to our expectations (Soros, 2007, p. 7).

Then, in a manner paralleling also Hume’s claim that cognition is not knowledge rather than presuming to know and not of itself understanding:

People buy and sell stocks in anticipation of future stock prices, but those prices are contingent on investors’ expectations. The expectations cannot qualify as knowledge (Soros, ibid).

Further, despite his regard for Popper, reflected in naming his Open Society foundation after Popper’s (1945) The Open Society and Its Enemies, Soros disagreed with Popper’s (1959) claims, paralleling those of Samuelson, for a ‘unity of scientific method’ and assuming that the same methods and criteria apply to social affairs as to natural phenomena, asking:

How could that be? The participants in social affairs act on the basis of imperfect understanding. Their fallibility introduces an element of uncertainty into social affairs that does not afflict the study of natural phenomena. The difference needs to be recognized (Soros, 2007, p. 18.).

Soros ascribed denial of this to ‘market fundamentalism’, claiming that:

Fundamentalists believe that markets tend towards equilibrium and the common interest is best served by allowing participants to pursue their self interest. It is an obvious
misconception, because it was the intervention of the authorities that prevented financial markets from breaking down, not the markets themselves. Nevertheless, market fundamentalism emerged as the dominant ideology in the 1980’s... because people began to believe in what former US president Ronald Reagan called the magic of the market place (Soros, ibid).

Commenting on the widespread presumption after the fallout from the subprime crisis that the solution to this was re-regulation of financial institutions, Soros then added:

We need new thinking, not a reshuffling of regulatory agencies. The Federal Reserve has long had authority to issue rules for the mortgage industry but failed to exercise it... All the innovations, risk management, trading techniques, the alphabet soup of derivatives and synthetic financial instruments... remained unregulated because the authorities believed markets are self-regulating... (Soros, ibid).

The need for such new thinking is transparent after the failure of rational expectations and efficient market theories which were based on the premise dependent reasoning against which Spengler warned, were addicted to what Smith denounced as ‘systems thinking’, and led to what Smith also warned could be ‘dangerous errors’.

Whether there is a prospect that mainstream economics can evolve in the 21st century any more than Veblen lamented that it had not by the end of the 19th is open to question. An agenda for this would mean education as educare, ‘leading out’ and opening frontiers between philosophy, psychology and history as both Hume and Smith had rather than the inducare of induction into techniques of analysis which are fraught with precisely the premise dependent reasoning and metaphysical presumptions against which, long before post-modernism, they already had warned.

But the outcome may be an ironic example of demand and supply. For, even before the financial crisis of 2007-8, enrolment for courses in economics was being overtaken by those for management while management schools were themselves thereafter questioning whether they had been addicted to techniques of analysis in a manner displacing understanding.

In April 2008 the Harvard Business School celebrated a hundred years of its MBA. A year later, following the financial crash of August, it began an online debate on ‘How to Fix Business Schools’. In the spring of 2009, the US Business School Accreditation Association held an international meeting which one dean described as ‘a therapy session’. For what they had been teaching was based on theories that not only had been confounded by events but had bankrupted banks and hedge funds which until then had been of the key recruiters of their graduates (Bradshaw, 2009).

Economics also could learn from leading management theorists such as Mintzberg (2004) and Senge (1990), who have advocated that if managers want to learn how to manage they should first study philosophy. In which case they and advocates of a more heterodox economics could well introduce students to the excellent summary of Hume by Morris (2007), Kant’s short Prolegomena and the first hundred pages of Wittgenstein’s Investigations in which he rejects the methodology of his and Russell’s logical atomism from which, by implication, a current and future generation of students concerned to achieve understanding should reject not only the atomistic competition premises of neoclassical economics but also its mistaken claims to be a science.
References


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