

## From positivistic (positive) to naturalistic economics?

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### Abstract

I take as given that the logical positivist philosophy of science of the 1930s has had a defining influence on the mainstream economics profession until quite recently. Since then I argue a new philosophy of science, ‘20<sup>th</sup>-century American naturalism’, has exercised an even greater influence. While this new philosophy claimed to overthrow its predecessor, I argue that many of its conclusions have meant that so far it has reinforced the existing mode of positive, or scientific, economics. This is reflected in the intensification of mathematical modeling and econometric research in economics since around 1980. The paper sounds out some basic criticisms of naturalism in an effort to aid the return in economics to a pluralism in both method and competing schools of economic thought.

**Key words:** positivism, naturalism, reductionism, unity of science, value-free science,

**JEL codes:** B20, B40, B41

The central question addressed in this paper is the extent to which the social sciences can and should be modeled on the natural sciences. Friedman (1953) spoke for many, if not most, economists when he argued that ‘positive economics’ is or can be a science ‘in precisely the same sense as any of the physical sciences’. However, there have always been those who have questioned the extent to which social (and economic) inquiry can and should adopt the methodological standards and procedures of the natural sciences. While many regard Hutchison (1938) as some kind of early precursor of Friedman’s positivist leanings, I have argued that he can be counted among those sceptical of views such as Friedman’s (Hart 2003).

The positivist philosophy of science that supported Friedman’s views was a form of extreme empiricism which stressed that scientific knowledge was to be gained from empirical facts only. This lent support to the idea that the scope of positive (or scientific) economics was likewise limited to empirical facts: normative or value issues lay outside the domain of science. Following the intervention of Kuhn (1970) the view that the foundations of science were built only on empirical sense data appeared less persuasive to many philosophers of science. However, at the same time as these doubts about positivism arose so too developed a new philosophy of science: ‘naturalism in its 20<sup>th</sup> century American incarnation’ (Roth 2013, p. 646).

While there are many different types of naturalism, I focus here on its extreme or radical form deriving from Quine (1969). While it is distinct from positivism, for very different reasons it arrives at conclusions similar to positivism. These include the scientistic notion that science should dethrone philosophy as the arbiter of what constitutes knowledge, the unity of science,

reductionism and the notion that science is value-free (for naturalists this means free of value which cannot be reduced to natural terms).

I argue that, just as an extreme philosophy of science (subsequently found to be unsupportable) called positivism adversely affected the development of economics for much of the 20<sup>th</sup> century, so another extreme philosophy of science (radical naturalism) has adversely affected the development of economics since around 1980. Their affects have been adverse because they have circumscribed and limited the scope of economics by claiming that their view as the only ‘scientifically correct’ approach to economics. The paper attempts to counter such universal claims by drawing attention to some of the more egregious limitations of radical naturalism, thereby aiding the prospects for a pluralist approach to the methodology of economics as well as to the practice of economics in which non-naturalist investigations of the economy are also free to bloom.

One of the assumptions made in the above is that the methodology of economics has influenced the practice of economics. For example, Boland (1991) has argued that the methodological influence of the philosophy of science known as positivism on economics is virtually all pervasive. However, Hands (2003) flatly denies that economic methodology has influenced the practice of economics. In this paper I adopt Boland’s view.

I begin with a brief history of economic methodology and then outline some basic tenets of positivism. I then attempt to explain the meaning of naturalism in general before focusing on its radical form. With this background, I am in a position to distinguish the similarities between positivism and radical naturalism. Finally, I turn to a critique of naturalism in an attempt to temper its influence on the path of future economic research.

### **A brief history of economic methodology**

Despite the influence of positivism a relatively pluralist approach to methodology has prevailed and which now seems to stand in danger of being cast aside by the incoming naturalist approach. At least six different interventions may be distinguished. (1) Historically, much economic methodology has been of the ‘critical/supportive’ kind. Neoclassical (J. N. Keynes), Institutionalist (e.g. Veblen), Austrian (e.g. von Mises, Hayek) and Marxist economists used methodological arguments to criticize other approaches and to support their own. (2) Another example is those economists who reflected on their subject and in so doing drew on a wide variety of sources, only one of which was the philosophy of science. These include Jevons, Knight, Viner, Friedman, Machlup, Samuelson, Koopmans, Boulding and Reder. (3) For Hutchison, the history of economic thought mattered as much, if not more, to economic methodology than any ‘outside’ philosophy of science (Hart 2002, p. 369). (4) Myrdal, Heilbroner, and Galbraith were largely uninfluenced by the philosophy of science and so saw no reason not to argue that political factors were relevant to the practice of economics. (5) Keynes (1973, p. 300) regarded economics as a ‘moral science’, famously emphasizing how unlike was its material compared to that of an apple falling to the ground. (6) Perhaps the methodological writings of Knight (1935) best reflect what has been lost as a result of the dominance of the philosophy of science in economic methodology.

Blaug (1980) arguably established economic methodology as a sub-discipline and adopted a Popperian approach. Caldwell (1982) represents a reaction to positivism in particular regarding its dismissal of Austrian methodology. Then in 2001 Wade Hands published his authoritative *Reflection without Rules* in which he adopted an explicitly ‘naturalistic perspective’ (Hands 2001, p. 2) and approvingly reviewed the naturalistic turn that had been taking place in economic methodology from around the 1990s. According to Reiss (2013b), since then work in the philosophy of economics (as it is increasingly referred to) has split into two main divisions: a) a Millian revival (Hausman 1992) and b) a rejection of the ‘traditional’ philosophical appraisal of economic science (e.g. positivism) in favour of a close examination of ‘scientific practice’. ‘Thus, more applied work in economics moved into the center of methodological attention: econometrics, modeling, experiments, and measurement’ [e.g. Cartwright (1989), Maki (1992), Reiss (2008), Kincaid and Ross (2009)] (Reiss 2013b, p. 720). While Reiss explains that b) occurred as the result of adherence to ‘a trend initiated by a group of general philosophers of science’, he does not tell us anything about this group (who are all philosophers rather than economists). It seems to me -- and I may be wrong -- that this ‘group’ refers to those embracing (in some degree or other) a naturalist philosophy of science.

### **Some key ideas of positivism**

Positivism was a philosophy of science whose heyday spanned the 1930s to 1960s which adopted an extreme version of empiricism: knowledge can be obtained *only* from experience (Hahn et al. 1973, p. 309). Logical positivism had its origins in the *Wiener Kreis*, or Vienna Circle, which met regularly in Vienna between the years 1925 and 1936. From the late 1930s through to the early 1960s there developed a less radically empiricist and more sophisticated positivism known as logical empiricism.

I focus here on two important tenets of (logical) positivism. The first is the methodological unity of both the social and natural sciences. For Ayer (1959, p. 21), this is because the social sciences are also ‘concerned in the end with physical events’. It is this implication that makes positivism directly relevant to social disciplines such as economics: to be scientific they must conform to the method of natural science. The second is reflected in their famous (or notorious) verifiability principle of meaning. This says that a statement has meaning only to the extent that it is verifiable by experience. Accordingly there were only two types of meaningful statements: synthetic ones which could be verified and analytic ones. While the latter could not be verified, these were admitted as meaningful at the price of being tautological. This radical restriction of what was considered meaningful excluded metaphysical statements (e.g. value statements) and thereby controversially excluded them from the domain of science.

I turn briefly to three criticisms of positivism. (1) The best-known is the self-contradiction involved in their famous verifiability principle of meaning. While this principle was put forward as an objective criterion for separating out meaningful from meaningless (metaphysical) statements, it is itself unverifiable and therefore according to positivist logic premised on a metaphysical claim. (2) The positivist notion that science proceeds from observation and careful measurement to theory was criticized early on by Popper (1959, p. 107n) who pointed to the theory-ladenness of observations: observations ‘are always interpretations of the facts observed; they are interpretations in the light of theories’. (3) A third criticism concerns the

underdetermination of theories by data. The so-called Duhem-Quine problem is that no conclusive or decisive empirical test of a theory can ever be performed. This is because a theory is never verified (or falsified) in isolation but always in conjunction with a number of auxiliary hypotheses. Thus if it fails the test, it is not clear if this is due to the theory under examination or to one of the many auxiliary hypotheses. Relevant to both points (2) and (3) is Quine's (1951) widely-accepted 'demolition' of the analytic-synthetic dichotomy fundamental to positivism and upon which (2) and (3) depend. There are, he said, instead large ranges of propositions which are neither purely synthetic nor purely analytic. It seems to me, and I may be wrong, that Quine attacked positivism because it allowed too great a role for purely conceptual (analytic) statements and therefore did not represent a thorough-going enough empiricism. It seems as if for Quine there are no statements which are not empirical in some degree. Quine (1969) then laid out a more thorough-going, though not foundationalist, empiricism so 'incarnating' 20<sup>th</sup> century American naturalism.

Following these criticisms, confidence in this positivist-inspired Received View began to break down in the 1960s and 1970s. In terms of this view, philosophers of science had seen themselves as prescribing to scientists general rules for scientific method. With the rise of naturalism, philosophers renounced this role.

## **Naturalism**

According to Papineau (2015, p. 1) 'few active philosophers nowadays are happy to announce themselves as "non-naturalists"' i.e. most would regard themselves as naturalists of some sort. Furthermore 'the great majority of contemporary philosophers' accept the metaphysical assumption that the whole of 'reality is exhausted by nature, containing nothing supernatural' where 'nature' is understood as referring only to the subject matter of the physical sciences.

Another way to grasp a basic idea of naturalism is given by Roth (2013) when he distinguishes it from 'traditional' philosophy (of science). In the 'traditional' approach, he says, there is the assumption that a body of (commonsense) knowledge existed prior to science so that it was up to philosophy, not science, to pronounce on the question of how we arrive at knowledge e.g. by stipulating general methodological (positivist) rules for (good) scientific practice. By contrast, in the naturalist approach rejects the idea that it is possible to specify rules or a criterion that demarcates science from non-science. As Roth acknowledges 'what defines a science . . . creates a lingering strain with naturalism as originally conceived' (p. 647). Notwithstanding this problem, for naturalists it is 'science', and not philosophy, that pronounces on what constitutes knowledge.

Setting aside whether Papineau is correct in his view that most philosophers today are naturalists, it is extremely difficult to gauge the meaning of his claim that most also accept that reality does not extend beyond the reach of 'nature'. There are many different types or versions of naturalism each with different takes not only on metaphysical (ontological) questions about 'nature' but also on epistemological ones.

Since perhaps the easiest way to understand naturalism is to look at its extreme version, I turn to this first. A second reason for doing so is that I am concerned in this paper especially with its

extreme or ‘radical’ version and/or in the sense used by those who are all too ready to proclaim their adherence to it upfront (e.g. Kincaid and Ross 2009, p. vi) and even to ‘the charms of scientism’ (Ross 2005, p. 16). Sorell (1994, p. 1) has described scientism as putting too high a value on natural science in comparison with other branches of learning or culture’. Here Putnam’s (2012a, pp. 109-110) wry comment on this issue is apposite.

### *Radical naturalism*

Radical naturalists regard epistemology as having only a descriptive, not a normative role. This is because they view philosophy as ‘continuous with science’ (Quine 1969, p. 126). Kincaid (2013, p. 796) seems to adopt this radical view since he explains that, for him, a naturalist approach ‘takes social science and the philosophy of social science to be continuous . . . issues in the philosophy of social sciences are in the end empirical issues’ with conceptual matters taking second place. Radical naturalists, then, reject any ‘extrascientific gold standard for adjudicating knowledge claims’ i.e. they dispense with *any* role for philosophy in pronouncing on what constitutes knowledge (Roth 2013, p. 648). ‘There is no useful mission for the philosopher of economics to perform that an economist [scientist] could not in principle perform at least as authoritatively (Ross 2014, p. 6).

Concerning ontology, some radical naturalists make an ontological commitment. This may involve materialism, ‘one of the few orthodoxies of American academic philosophy’ (Mautner 1999, p. 342). However, others might make no commitment deferring such problems to science: ‘those things exist which science finds it fruitful to employ in its explanations’ (Jarvie 2011, p. 24). However, according to Ross (2011, p. 122), ‘no contemporary scientist’ takes seriously a denial of the ontological thesis that ‘social phenomena are natural in the sense of not transcending the contingent regularities studied by science.’

Naturalists with strong ontological commitments about nature, accept a thesis concerning the ‘causal completeness’ of the physical realm (‘every physical effect is fixed by a fully physical prior history’). This thesis implies that ‘any mental or biological causes must themselves be physically constituted, if they are to produce physical effects’, i.e. the physicalist doctrine that ‘anything that makes a difference to the physical realm must itself be physical’ (Papineau 2015).

For example, eliminative materialists reject the view that knowledge is a kind of belief, in particular justified true belief, claiming that beliefs ‘simply do not exist, and thus, all talk about beliefs should be eliminated from scientific discourse and replaced by talk about that which does exist: neurophysiological processes in the human brain’ (Hands 2001, p. 165). They thus reject as ‘folk psychology’ explanations of human action as being ‘the effect of our desires working together with our beliefs about matters relevant to their attainment’ (Rosenberg 1998, p. 195). This means, radically, that they reject the standard microeconomic explanation of economic behavior in terms of ‘preferences’ (i.e. desires) and ‘expectations’ (i.e. beliefs).

Such strong ontological commitments seem to imply the possibility of (ontological) reductionism or the unity science. According to Spurrett (2013, p. 793), ontological physicalism is dominant. ‘This is the view that everything that is real is in some sense physical’. However, he points out

that physicalism is not mechanism ‘because what is physical includes things not recognized by mechanists (e.g. fields and forces)’ which things are recognized by physics.

Secondly, they seem to imply ethical naturalism. According to Crisp (1995, p. 606) this is the view that ethical terms can be defined in non-ethical, or natural terms or, further, that ethical properties are natural properties where ‘natural’ is understood (as before) as referring to the subject matter of the physical sciences. (Long ago Moore (1903) attacked this view as the ‘naturalistic fallacy’ when he denied that the meaning of an ethical term, say ‘good’, could ever be reduced to an empirical expression such as maximizing happiness or indeed ‘any definition intended to elucidate (analyse) its meaning’ Quinton 1977, p. 412). In this vein Roth (2013) argues that there seems to be no reason why a ‘properly’ naturalized philosophy cannot analyse norms empirically to show ‘how this or that rule came as a matter of fact to be taken as a norm . . . [and how others] . . . pass away’ (Roth 2013, p. 649).

If we take ethical naturalism seriously then the substance of the famous fact-value or positive-normative distinction (derived from Hume and the positivists) appears to dissolve since any significant? (non-natural) values could be reduced to natural (i.e. purely descriptive) terms. It is from this perspective that Roth (2013) dismisses as a red herring the view that normative practices fall outside the sphere of science since they are ‘items of another sort’ (p. 648). Ethical naturalism then has major implications for the question of objectivity in science (Reiss and Sprenger 2014).

### **Some common features of radical naturalism and positivism**

Twentieth-century American naturalism arose as a rejection of positivism, particularly of commitments such as empiricist foundationalism (the foundational base of science can be reduced to sense data). Apart from Quine’s (1951) demolition of the analytic-synthetic crucial to positivism, interventions such as Chomsky (1959) sounded the knell of Skinnerian-type behaviourism (regard only observable implications of behaviour as scientifically valid). However, despite there being fundamental differences between the new naturalism and positivism, I argue that the new naturalism resulted in a number of conclusions that had the same effect as the old positivism.

The first issue concerns the continued attempt to uphold the unity of scientific method. It was this characteristic of positivism that made it relevant to economics: there is just one way of doing science and if economics is to be regarded as one, then it must conform to the method of natural science. While naturalism dismisses the idea that such a thing exists as ‘scientific method’ as a positivist notion, nevertheless active discussion of the issues of the unity of science and reduction still continues among naturalists. (Spurrett 2013) distinguishes among ontological, methodological and theoretical reduction and stresses the importance of distinguishing between general and specific reduction. Kincaid (2013) discusses reductionism in the social sciences focusing on the notion of methodological individualism (as opposed to holism) common in economics (all macroeconomic matters are reducible to microeconomic issues). His response to problems related to theoretical reduction is that ‘reductionism in the social sciences is an empirical issue and we need not expect any uniform answer’ (p. 799).

The second issue concerns attempts by certain naturalists (ethical naturalists?) to uphold the positivist conclusion that science is value-free. While the emotivism of positivists is clearly different to ethical naturalism, similar conclusions follow. For example, while Ross (2012) accepts that economics and ideology have ‘profoundly’ influenced one another, he rejects the view that most economics is ideology (p. 242). Those who make such accusations are not economists but ‘anti-economists’. While the meaning of ‘ideology’ is not clear, it would seem that it can be read as being charged with political (non-natural) values. In somewhat similar vein Boumans and Davis (2010, p. 183) conclude that although economics can be value-laden this does not mean that it is ‘politically manipulative or ideological’. Their conclusion seems to be that although values enter economics they do so in only a trivial way so that the positivist conclusion that economics can be viewed as an objective science when it comes to matters political prevails.

More generally, the influence of naturalism in promoting the idea that science is value-free is to be found, not in positive statements such as Ross (2012) and Boumans and Davis (2010), but in the silence on the issue. For example, in a major text such as Hands (2001) the issue is not mentioned. This may be read as implying that the old positivist conclusions continue to apply. Yet it is now widely acknowledged that science is value-laden (Hausman and McPherson 1993, Mongin 2006, Reiss and Sprenger 2014). Among further issues are the following:

(1) The central status of empirical data in developing and testing theories remains intact. For positivists, this stemmed from their commitment to empiricist foundationalism: for them beliefs that derived from sense data required no further justification and so represented the building blocks of knowledge. While naturalists reject foundationalism (empiricist or rationalist), they nevertheless continue to accord a central role to empirical data. However, as Kitcher (1992, p. 84) subtly explains, “‘empirical findings’ should now be read as referring to the deliverances of the sciences’. Nevertheless Hands (2001, p. 133) goes so far as to say that ‘the [generic] naturalist holds everything, including our epistemological beliefs up to the tribunal of experience; the result is an empiricism without the traditional epistemological justification of that position’. (2) Closely related to the paramountcy of empirical data is the focus on the importance of measurement, along with the implicit assumption that most, if not all, important economic variables can be meaningfully measured. Jacob Viner explicitly rejected such a view when he responded to the inscription of Lord Kelvin’s famous dictum on Chicago’s social sciences building: ‘When you cannot measure your knowledge is meager and unsatisfactory’. According to George Stigler, Viner said Kelvin should have added the rider ‘and even when we can measure a thing, our knowledge will be meager and unsatisfactory’ (Merton et al. 1984, p. 324). Likewise Joan Robinson has decried the extent to which calculations in economics ‘are made in terms of units that cannot be measured’ (Walsh and Gram 1980, p. xi). (3) Finally they hold in common the idea of (scientific) progress and therefore lean towards an absolutist or Whig interpretation (Ross 2005) of the history of economic thought (and science), seemingly dismissing the criticism of this Whig interpretation, not only of Herbert Butterfield himself but also of fellow economists (Blaug 1968; Freeman et al. 2014). (4) Similar to positivist ideas, (radical) naturalism makes totalizing scientific claims such as that all philosophical problems can and should be dealt with only by science and that if any ‘non-science’ such as the history of economic thought is to make a genuine contribution to knowledge, it must adopt the methods of

science (whatever these are supposed to be). (5) Most importantly, the radical naturalist claim follows that of positivism: the universal claim to be the *only* path to knowledge.

### **Criticisms of radical naturalism**

Here I want to briefly mention two perspectives that articulate the limitations of radical naturalism: moderate naturalism and Putnam's (2012a) rejection of naturalism.

#### *Moderate naturalism*

Concerning epistemology, Kitcher's (1992) moderate, or what he calls 'traditional' naturalism rejects two key tenets of analytical philosophy as first set out by Gottlob Frege (1848-1925). The first Fregean tenet is that there is 'a sharp distinction' between philosophy and empirical science. The naturalist argument is that Fregean-influenced positivists started on the path of trying to understand knowledge as a form of belief by mistakenly embarking on the conceptual analysis of language. They became too concerned with how we should acquire knowledge if we were logically consistent, rather than with how empirically fallible human beings actually *acquire* their beliefs.

The second Fregean tenet is that philosophy is an a priori discipline able to generate epistemological principles independently of any experience. Mainstream naturalists argue that there are no purely a priori epistemological principles. Instead all such principles are to be viewed as themselves vulnerable to revision in the light of experience. According to naturalists, Kuhn's study of the history of science supported this view since it highlighted the gap between a priori methodological norms and actual scientific practice.

In light of these two tenets, mainstream naturalists are concerned with the project of trying to preserve the possibility of a normative epistemology (Kitcher 1992, p. 58). They acknowledge that there may be constraints that prevent 'cognitive progress'. Among the many problems they acknowledge is that of the theory-ladenness of observation (that plagued positivism). This interferes with the objective comparison of theories. They acknowledge that if epistemology is to be a normative discipline, it needs to specify those strategies which promote the attainment of cognitive goals such as truth. Non-naturalists are yet to be convinced by naturalists that using cognitive theory to understand truth, while accepting truth as a cognitive goal, does not involve circular reasoning. Dismissing a pragmatic conception of truth, Kitcher argues that the aim of science concerns the 'project of trying to understand nature' (1992, p. 104). One way to pursue this project is to adopt a realist approach to explanation à la Salmon (1984) and Cartwright (1983). 'The aim of science is to expose the causal structure of the world, by delineating the pre-existent natural kinds (of objects) and uncovering the mechanisms that underlie casual dependencies' (Kitcher 1992, p. 104).

Dupré (1993) criticizes the idea of reduction and the unity of science in general. Instead, he argues, the world has a pluralistic structure and so speaks of the disunity of science. Against radical eliminative reductionists, he points out that the history of science shows that while theories have been replaced, they have been replaced by theories at the same structural level, while 'the putative redundancy of traditional mental concepts has yet to be demonstrated'. Those



philosophers who accept the practical failure of reductionism only maintain the possibility of reduction in principle: ‘one common such position is referred to as “supervenience” whereby mental states are said to supervene on brain states i.e. changes in mental states are not possible unless accompanied by changes in brain states but not vice versa (Kincaid 1998). Besides he adds that the relationship of supervenience to reduction is controversial (Dupré 2001, p. 403). This lends doubt to Hands’s (2001, p. 170) claim that supervenience ‘allows one to maintain a commitment to a materialist ontology’.

Moderate naturalists then retain a role for the philosophy of science, as distinct from science, in allowing that philosophical discussion of questions may prove a means to contributing to the advancement of genuine knowledge. Philosophy is not continuous with science.

### *Putnam’s rejection of naturalism*

Non-naturalists such as Putnam (2012a) question the radical naturalist view of reality as referring to no more than the subject matter of the physical sciences as being too shallow. For Putnam, the world at large is not reduced to the physical world manageable by ‘naturalist’ science. That is, the existence of entities other than those accepted by naturalistic science is admitted. These are entities which are ‘part of a common sense view of the world such as moral features, free will, normativity, consciousness, intentional properties . . . [such entities] are not explainable by naturalistic science but are not supernatural either’ (de Caro, undated).

Putnam (2002) argues that the positivist fact-value dichotomy has collapsed. Instead there is an ‘entanglement’ of facts and values. (This does not mean there is no difference between facts and values or that Putnam supports postmodern ideas that the whole notion of an objective world should be scrapped.) This entanglement is most easily understood in terms of certain facts that only come into view through the lenses of an evaluative outlook e.g. brave, cruel (Putnam 2012b, p. 112). These have been called ‘thick’ ethical concepts because they simultaneously describe and evaluate (Murdoch 1970). Ethical naturalists agree with Putnam about the entanglement of facts and values and that thick ethical concepts cannot be analysed into a purely descriptive part and a purely evaluative part (Hurley 1985). However, they do so for very different reasons: for Putnam values are not explainable in terms of natural science. Against naturalism he points out that the classical pragmatists (Pierce, James, Dewey) all held that value permeates all of experience. Knowledge of facts presupposes knowledge of values and knowledge of values presupposes knowledge of facts i.e. there is no a priori ethics (2002, p. 136).

Putnam goes on to point out that philosophers of science have ‘in the last half century’ evaded dealing with the issue that science presupposes value judgments (in a non-naturalist sense). He addresses the most common alternative to admitting that value judgments are presupposed by scientific inquiry. According to Goldman’s (1986) ‘reliabilist’ epistemology, a belief in science is justified because it was arrived at by a method that is ‘reliable’ in the sense of having a high probability of resulting in the acceptance of true hypotheses (p. 144). Instead of going into the sophisticated criticisms and reformulations of Goldman’s theory, Putnam elects simply to point out that Einstein’s ‘method’ neither made use of probability theory, nor avoided making value judgments. Einstein tells us that he arrived at the special theory by applying an empiricist critique to the notion of ‘simultaneity’ and that he arrived at the general theory by seeking the ‘simplest’

theory of gravity compatible with special relativity (p. 144). Both these methods are completely topic specific (so that probability theory is inapplicable) and both presuppose judgments of reasonableness that cannot be assigned probabilities and so therefore cannot be reduced to non-normative judgments (p. 145).

## Conclusion

One problem arising from the growing influence in economic methodology of naturalist philosophy of science concerns the implication for the kind of economic society that is held to be possible. Knight began his famous Chicago text on price theory by emphasizing that the economy is a social system: 'Economics deals with the social organization of economic activity . . . there are many ways in which economic activity may be socially organized . . . [one of which] is the price system, or free enterprise' (1933, p. 6). For non-naturalists like Knight the free enterprise economic system is just one socially possible outcome, the result, in part, of purposeful behavior by human beings: other social organizations could have been possible.

About this time (Knight 1935, p. 346) he protested against 'the virtual deification of science in modern thought'. Knight (1940) attempted to combat this view by distinguishing six categories of interpretation of human-social subject matter. Only the first three, according to Knight, were amenable to natural science. The last three referred to human purposiveness. All six, he argued, were required in any realistic treatment. Naturalists, by rejecting Knight's last three categories, deny the possibility that human beings can purposefully create the societies in which they live and instead stress the extent to which the current social organization of economic activity has evolved naturally à la Darwin. For non-naturalists there is nothing 'natural' about it: humans develop their economic societies in accordance with their (non-natural) social values, economic and political power.

Another problem concerns the effect of the authority of science on society particularly since, as Kitcher (1992, p. 93) notes, 'there is no basis for concluding that the actual evolution of science is self-correcting'. For example, Kitcher points to the problems concerning heterodox views which, he says, 'have only a small chance of acceptance or transmission because of the importance of reliance on authority within scientific communities' (p. 95). Economists (e.g. Marshall, Robbins, Samuelson) have long wanted to rescue economic theory from the slough of anecdotalism and other weaknesses that so infect history and sociology and instead claim the authority of science for their subject. Pre-1980 economic methodology has through the years heaped healthy doses of scepticism on such claims. However, the naturalist approach by apparently inverting the traditional hierarchy among the fields of philosophy, natural science and social science (Hands 2001, p. 140; Quine 1969, p. 63) seems now to view formerly lowly social science as potentially an exemplar of science. The effect of the resulting stamp of authority on such a (cognitive) 'social science' of society is obviously open to abuse, as Feyerabend (2011) has so eloquently warned. Hence his contention that 'science should be taught as one view among many and as the one and only road to truth and reality' (Feyerabend 1975, p. viii).

Amongst other problems resulting from the influence of radical naturalism is the demise of the history of economic thought since, as historically taught, is far too detached from empirical measurement and testing. More important is the marginalisation within today's economics

profession of theoretical work, particularly that which steps outside the assumptions of current economic theory. Tragically this has seen the separate development of heterodox economics instead of the enrichment of economics from within. Naturalism's anti-'theory' bias has had a conservative effect on the mainstream, both in terms of its scope, and its chances of breaking out of the current paradigm. Even though Keynes (1936) lived before the age of American naturalism, he famously talked about his long struggle of escape from the old 'classical' ideas. His last sentence emphasized the importance of ideas for good or evil, not empirical measurement and testing.

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