Economic and Evolutionary Theories, Sociality, and the Origins of Economic Growth

John R. Fisher
University of Newcastle

Introduction

"The trouble with modern economics is its ultranarrow doctrinal basis. Proclaiming itself a science, it is grounded in a form of logical positivism which, elsewhere, was superseded 20 to 30 years ago. Neoclassical economics especially survives in almost total intellectual isolation from neighboring disciplines... The effect of modern (neoclassical) economics has really been to uncouple the economy from both its socio-cultural and political life support systems, to confer on it a self-determining reality of its own" (Emy, 1992, pp. 59-60).

Emy's accusations capture, succinctly, the major failings of contemporary economics. The present paper explores the possibility of remedies. These lie, logically enough, in an abandonment of aspirations to the status of a natural science and a re-establishment of communication with other social sciences.

The focus of this article is long run economic growth - very long run growth. This provides a convenient starting-point for noting the methodological shortcomings of contemporary economic orthodoxy and, given the general awareness of these, the most favored alternatives. Of these, while analogies drawn from evolutionary biology may be illuminating, they are not enough. The preferred approach here is to acknowledge the dynamics of growth as an historical process and to set it within the totality of cultural evolution.

Economics, fortunately, is not a monolithic discipline. There exist alternative strands of thought to the hegemony of neoclassicism. The epistemology of at least one of these provides a natural complement to the focus on human action and interaction characteristic of anthropology among other social sciences. This focus, it is argued here, and taking as an example the origins of economic growth, offers a potential basis for fruitful interdisciplinary exchange within the social sciences.

Economic Theory and Economic Growth

Economics and economists are presently regarded with a degree of distaste bordering on dislike by fellow social scientists (besides Emy, see also Dilley 1991). One obvious cause is their hegemony in public policy formation; another the consequences of this hegemony (with perhaps a tinge of envy, as in Pusey 1991). Certainly, the intellectual imperialism of economics has often been conducted with infuriating arrogance but this arrogance masks a fair amount of unease.

The continuing desire to make economics 'scientific' is due to the search for accurate prediction - which reflects, in turn, a wish to make the world a better place (Jacobi 1991). That the discipline, despite the indubitable power of its conceptual tools, cannot offer effective prescriptions for the relatively minor problems of affluent nations is one cause of concern. Much more devastating is the general irrelevance of conventional theory to a (perhaps the) central question of the discipline: the explanation of long run economic growth - of how and why productivity, and thus welfare, changes over time.

What passes for a theory of growth in neo-classical economics is patently inadequate. At its heart is the production function, with growth essentially a matter of increasing capital inputs, decreasing returns being offset by technological progress. Why technology, the driving force in the theory, changes, is not explained. It could hardly be. Knowledge is assumed to be perfect: a reflection of the comparative statics which dominates neoclassicism.

The inherent contradiction is of course evident and has led to vast literature on uncertainty and technological change. However, and even if these attempts to modify the more glaring defects of the theory retain analytical validity, reservations persist. Above all, such theoretical extrapolations lack any sense of time and this is reason enough, in itself, for continuing dissatisfaction on the part of economic historians among many others.
Economic Growth and Economic History

The concern with economic growth has lent economic history, long a poor relation in the discipline (seen mainly as a testing-ground for theory), a new respectability and vigor in recent years. On the one hand, an old tradition of scepticism (Clapham 1922) over economic method has been fruitfully renewed (McCloskey 1985 and 1986; also David 1986). On the other, a number of economic historians have tried to make sense of the record of economic growth over the very long run.

Common features of their work have included the rejection (if not always explicit) of the comparative statics inherent in neoclassicism, a focus on market dynamics and stress on the necessity of taking forces, usually reckoned non-economic in nature, into account (Fisher 1991). Economic growth cannot be approached in isolation from historical development as a whole, whether the non-economic elements are regarded merely as constraints or otherwise. The problem remains, however, of how to encompass these insights into a unified theory of long run growth, one which takes account of its extreme variability over time and space.

This is of course precisely the same challenge as faces contemporary growth theorists. Further, perhaps the most significant recent attempt at an analysis of long run growth by an economic historian draws on another intellectual current which has attracted at least some economists. This is the potential fruitfulness of analogies drawn from evolutionary biology.

Economics and Evolutionary Biology

There is a long history of intellectual cross-fertilisation between evolutionary biology and economics (Gould 1980), although this has been essentially one way, towards economics, in the twentieth century. The disciplines share a common concern with the individual rather than the group and with optimality principles (Foley 1987, p.63). Positivist economists, assuming rational self-interest on the part of the individual in the search for an optimal allocation of scarce resources, have always found the Darwinian principle of the 'survival of the fittest' highly congenial (Hanappi 1992). Nelson and Winter (1974 and 1982), for example, draw on the analogy in attempting to model the dynamics of innovation (with a nod of acknowledgement to Joseph Schumpeter). The key to survival in competition between firms lies in success in introducing new technology (in its broadest definition).

In this context, sociobiology was welcomed as enabling a relationship beyond mere analogy (Becker 1976). There has always been a nagging doubt, however, over the linearity of models, based on biological analogy, which purported to explain either technological progress or economic growth (they hardly fit observable reality). Again, though, developments in evolutionary biology, responding to the same problem, have offered credible refinements. Indeed, biology has been cited as the most likely replacement for Newtonian physics as an intellectual exemplar for economics (Economist 15.2.91).

Two such developments lie in the concepts of 'coevolution' and 'path dependence' (Gowdy 1991). Coevolution relates to the interdependence of change within organisms and change in the environment (including changes to other organisms). Within this context, the fact that the selection processes inherent in evolution, at whatever level, do not necessarily produce optimal outcomes (and if they do only in a highly time/place specific fashion) is explicable in terms of path dependence. As variability is a pronounced feature of the experience of growth, in the present as in the past, there is considerable appeal to applying such concepts analogously to either technological progress or economic growth.

This is evident, for example, in Joel Mokyr's The Lever of Riches (among others; see also Basalla 1988). There are, in the context of the present state of growth theory, three aspects of Mokyr's work which are significant. The first lies in the focus on technology as the foundation of economic growth; his subtitle is Technological Creativity and Economic Progress. The second is his survey, emphasising its variability, of technological progress over space and time - or at least the past 1500 years or so. The third lies in the use of analogy from evolutionary biology as a basis for an analytical synthesis.

Mokyr's approach incorporates two of the conventional assumptions of neo-classicism. As noted above, technological progress is the key to growth; it is also essentially a supply-side phenomenon - demand can be taken as given. The question then is - why and how do inventions and innovations occur? An answer, Mokyr suggests, lies in the nature of processes which are analogous to mutation and selection.

Techniques (defined as 'the knowledge of how to produce a good or service in a specific way': p.275) are equivalent to species. An invention is the analogue of the genotype, its use in practice corresponds to the phenotype. New techniques,
inventions, are mutations, their survival dependent on their adaptive qualities in the given environment. While the transmission or dissemination of technology involves learning and intention rather than genetic change, analogies can still be found in terms of the constraints within which the processes operate - and the observably dynamic nature of interaction between distinct techniques in the process of change.

Mokyr finds a further, potentially significant, analogy. There is a contemporary debate in biology over 'punctuated equilibrium' - with adherents contending that the evolution of species has come in rapid bursts rather than gradually (as usually assumed). This mirrors a longstanding controversy in economic history over discontinuity in long run growth. In his historical section Mokyr identifies two eras of pronounced technological achievement: the early Middle Ages and the Industrial Revolution. Both were periods which saw the emergence of a significant number of 'micronventions' (inventions, the appearance of which is not readily explicable, although a degree of cross-fertilisation may be involved). These, in turn, set off a chain reaction of 'micronventions' (commonly found even in eras of relative stasis and largely explicable by conventional market analysis).

The analogy is attractive. It provides a possible starting-point for the better illumination of the seemingly wave-like phenomenon of technological progress in history. However, doubts persist (partly because the latter is wave-like rather than discontinuous), not least for reasons outlined by Mokyr himself (pp.279-83). There are problems even if technological progress is accepted as the driving force of growth. Despite his insistence on the primacy of supply-side factors, the nature of the environment, and specifically the cultural environment is 'the main determinant' of the pattern of eras of near-stasis 'punctuated' by intense change. And, ultimately, as he concedes, technological progress 'is basically un-Darwinian in nature. Technology is information acquired by learning not through genes.' The mode of transmission is through cultural rather than biological processes.

This admission negates the central thesis (see also Menger 1963, pp.129-38, and Hanappi 1992, p.115). In his introduction (pp.4-6), Mokyr isolates 'four distinct sources' of economic growth: capital investment, commercial expansion, scale effects and increases in the stock of human knowledge (including technological progress). But these are not distinct but interdependent processes. And if technological progress and economic growth have more to do with cultural than biological evolution, then a more holistic theoretical approach is required. It is proposed here that such an approach can be found in an alternative epistemology to neoclassicism, one which has deeper historical roots.

**The Evolution of Economic Order**

Adam Smith's celebrated concept of 'an invisible hand' has had an unfortunate intellectual progeny. In the neoclassical tradition, the market became a self-equilibrating mechanism, producing optimal results under given constraints. This was never Smith's intention. An economic order "is not originally the effects of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature which has in view no such extensive utility, the propensity to truck, barter and exchange one thing for another" (Wealth of Nations, ch.2: quoted in Buchanan 1979, pp.18-19).

Smith's insight is one of the intellectual foundations for those schools in economics which reject the utilitarianism of the neoclassicists (and others, often considered their chief antagonists, such as the Marxists). The market is not a mechanism which 'processes information, accepts inputs, and transforms these into outputs, which it then distributes' (Buchanan 1979, p.30). It is rather the network of relationships between individuals and groups which emerges through exchange.

Economic orders evolve, but not in a biologically analogous fashion. The preferred analogy is with language - a result of human action but not design. (Shenoy 1992). The approach, with its focus on exchange as social interaction, has been developed most fully in what is known as the 'Austrian' school of economics (see von Mises 1957 & 1966). An economic order is 'a self-maintaining complex structure', a result of 'spontaneous evolution' (Hayek 1979, pp.158-9). At its heart lie the three interdependent strands of the division of labor, the capital structure and the body of rules which govern exchange (Shenoy 1992).

The logic underlying the division of labor lies in the mutual gain inherent in specialisation, whether on the basis of absolute or comparative advantage, in that form of social cooperation known as exchange. The capital structure develops in similar fashion. The use of capital - 'roundabout production' in the original Austrian terminology - is productive as a part of a larger structure allied to the division of labor (which, in turn, is underpinned by and also stimulates the further use of capital).
Finally, the division of labor and the capital structure can develop only in interdependent association with 'rules of conduct'. These rules are not the result of rational calculation; in a sense they are an alternative. The rules arise out of the specific circumstances of exchange; they differ in different circumstances and they evolve as circumstances change. Individuals and groups do not act, in either the short or long run, on the basis of rational calculation or choice. This is impossible in the face of a multitude of imponderables and uncertainties. Rather, rules emerge as the result of human action. What survives is what works although this may not be particularly efficient let alone optimal.

The epistemology of Austrian economics then lies in human action and interaction. In turn, the basis of a theory of economic growth - of an increase in the complexity of exchange relations which yields improvements in human welfare - is clear. It lies in the potential for individual and social gain which exchange offers when conducted on the basis of rules the origin of which are unknowable for (and do not need to be known by) participants.

In contrast to neoclassicism, the approach emphasises the subjectivity of economic processes. Variability of economic orders, variation in economic processes over time and space, are guaranteed by variability in humans, individually and collectively, as well as in the environment. In a sense, the dynamic nature of the theory would seem to presage the 'progress' in very long run growth that has actually taken place. However, what happens over time and space is not predetermined. Economic growth, especially in the relatively short run, was and is not inevitable. It cannot be predicated let alone prescribed.

Rather, Austrian praxeology offers illumination of the evolution of economic order without seeking to impose design on history. Something of the fruits, it is suggested here, can be seen, especially as related to recent developments in social anthropological theory, when applied to the question of the ultimate origins of economic growth.

**Palaeoanthropology and Cultural Evolution**

Anthropology presently exhibits much the same level of debate over epistemology as economics. It is perhaps greater (Fletcher 1989), given that postmodernism has had a minimal impact on economics (Dow 1991, although see Backhouse 1992). The concern here, however, is with the response to the challenge of sociobiology and other forms of neo-Darwinism.

Darwinian biology, with sociobiology representing its extreme form, seems to occupy much the same sort of position in anthropology as neoclassicism in economics. It possesses powerful conceptual tools which underlie its ability to extend its domain (Lieberman 1989); its adherents dominate public discourse. It remains, however, an inadequate basis for an understanding of the dynamics of cultural evolution. In fact, the necessity to correct its neglect of human relationships provides the potential for fruitful interaction between anthropology and economics. The common debt to biological evolution can be acknowledged and used, not as a basis for analogy but as the starting-point for an exploration of the dynamics of human relations.

One such way forward can be found in Ingold’s (1990, p.208) view that ‘it is necessary to substitute a kind of “relationships thinking” [for Darwinian biology], which locates the organism or person as a creative agent within total field of relations whose transformations describe a process of evolution.’ As he argues, there is a continuity between biological and cultural evolution. Human beings are organisms and social life is an aspect of organic life. But the dichotomies between humanity and nature, between culture and behavior, presently pervading the literature of the discipline, must be avoided. This can be achieved by a focus on “sociality”: with its ‘mutual entailment of consciousness and intersubjectivity’ (p.221).

Persons play an ‘active role in the origination of social order’: they are not merely ‘passive vehicles for the replication of a design written into the materials of hereditary or tradition’ (p.221). The relevance of this for economics is that, if social evolution requires the ‘exploration, over time, of the generative potentials of society,’ then the role of exchange, and the potential of gains from exchange, must loom large. The congruence of Austrian praxeology and ‘sociality’, and the gains from interdisciplinary cooperation can be demonstrated, in fact, by way of an exploration of the ultimate origins of economic growth.

**Human Origins and Economic Growth**

The emergence of the human species is not necessarily purely a question of biological evolution. All species are unique; conversely, the emergence of humans cannot be attributed to any single specific distinguishing characteristic (Foley 1987). Nevertheless, and in terms of the human evolutionary path as a whole, as Carruthers (1990, p.194) emphasises, ‘at some point there must have been directed selection for social intelligence’. There
is an essentially continuity between biological and cultural evolution.

Further, logically, the driving-force in this relationship would be the gains to be realised from the division of labor. Humans are and hominids were social animals. As Carruthers also notes, the potential gains from exchange go well beyond the opportunity, inherent in the gender division of labor, for the transmission of knowledge (or allowing an increased investment in the quality of children) between generations. Productivity would be enhanced within the social unit through specialisation on the basis of both absolute and comparative advantage. This would derive not only from sex and age differences but also from differences in aptitude and training. Over time, basic patterns of the division of labor would become established as rules of conduct in production. In complementary fashion, sharing would become the rule governing the distribution of the returns from the division of labor.

Here are the origins of economic growth. Realisation of the gains from exchange is not, self-evidently, a matter of individual calculation, choice or fitness. The gains from the division of labor run counter to the epistemology of either sociology or neoclassicism. Rather, it is the establishment of rules underpinned by the gains from exchange which provide the basis for the growth of human intellectuality. As Hayek (1979, p.163) puts it: ‘Man did not adopt new rules of conduct because he was intelligent. He became intelligent by submitting to new rules of conduct’.  

The ultimate origins of the process which culminated in homo sapiens sapiens may be conjectural but there is a concrete record of economic growth from a very early stage. Neither the division of labor nor tool use are unique to the human species. However, the archaeological record of hominid use of stone tools is one of the development of a capital structure, of ‘roundabout production’. The record is one of increasing levels of investment: in acquiring appropriate materials, in the tools themselves, in using tools to make other tools, and in the widening range of tool function (Gowlett 1984; Mellars 1989; Gibson 1991). It is this scale of investment, involving increasing planning and forethought, which provides the first clear evidence for setting hominids apart from other species. It is also indissolubly linked to the division of labor and the growth of exchange.

It is generally agreed that there are ‘complex mutual relationships between tool-using, social behavior and language. Human capacities in these varied domains reflect the evolved ability to organise large amounts of information hierarchically both within and across domains’ (Gibson 1991, p.262). As with hominid origins, the nature of these relations is central to the final stage (so far) of human evolution, to the emergence of homo sapiens sapiens. It is also the focus of intense controversy.

At the heart of the debate is the question of whether modern humans emerged as the end result of a gradual process of evolution (with interlinked biological and cultural aspects) or in a (the) final burst in the process of punctuated equilibria, with a radical shift taking place in human cognitive capacities. Associated aspects include questions relating to timing and location of the emergence of humans, the nature of their global dispersion and its relationship to the fate of archaic populations.

Two major strands in the advance of knowledge in palaeoanthropology underpin the debate. On the one hand has been work on DNA and human genetics generally. On the other, are the advances in archaeological techniques associated with a series of major discoveries. Other features include the gains from research into primate behavior. In turn, a high level of interdisciplinary research and speculation been stimulated in pursuit of greater understanding (Gibson 1991; also Strauss 1991). Within this context, it is possible that the praxeology of Austrian economics can make a modest contribution.

The Economics of the Human Revolution

Developments in the Upper Palaeolithic have been characterised as ‘the creative explosion’ (Pfeiffer 1982), or as a human revolution (Mellars and Stringer 1989). There is certainly abundant evidence for an upsurge in cultural complexity, a series of major advances, in the millennia around 45-35,000 B.P. (Mellars 1989). Three themes stand out in the evidence: advances in material technology, in artistic and spiritual expression and the successful colonisation of new regions and ecosystems. The association with the posited emergence of modern humans lends credence to the notion that this involved a radical advance in cognitive capability, in the ability of humans to process information efficiently. Above all, it supports the view of major breakthroughs in the human capacity for communication - for the development of language as the critical means to social sophistication (Davidson & Noble 1989; Noble & Davidson 1991, but see Kendon 1991). Davidson and Noble explicitly argue that this could be viewed as the trigger for the last burst of punctuated equilibrium in human evolution.

One consequence of the growing popularity of
the case for a surge in mental capacity has been a
tendency to question the intellectual capability of
Neanderthals or other archaic populations (querying
previously accepted evidence for such capacity:
Gargett 1989, James 1989, although see Smith
1991). This flies in the face of the considerable
achievements of such humans, not just Neanderthals
but including *erectus*, who moved on a large scale
into new and very different ecosystems (Baker 1984;
Rightmire 1991). There is, in fact, as Mellars (1989,
p.377) points out, a danger of equating ‘the
expression of culture with the potential for culture’
(see also Lindly and Clark 1990). Further, while
archaeological evidence may never provide an
incontrovertible verdict, Austrian praxeology
suggests that a dramatic suddenness in the
acquisition of the capacity for language is not a
necessary precondition for the ‘human revolution.’

The evidence from the Upper Palaeolithic is
clearly of economic growth, of a rise in human
productivity. There were further extensions of the
capital structure and, by implication, further
advances in the division of labor. Most significantly,
there is considerable evidence, in the form of kill
sites, ornaments and tool materials (Gamble 1982,
1983; Mellars 1989, pp.355-61), of advances which
take the division of labor beyond the bounds of the
basic foraging unit. The significance of this step is
that such an extension of the division of labor, while
conceptually revolutionary, is explicable in terms of
an evolutionary process which does not evoke
punctuated equilibria.

There are definite limits to the capacity for
productivity growth within small autonomous units
(whatever the mental capabilities of individual
members). Further, the ‘rules of conduct’ which
evolved with the division of labor in hominid
foraging units would have had little or no relevance
to inter-group exchange. They may even have been
antithetical. Hayek suggests that the ‘solidarity’ and
‘sharing’ characteristic of such autonomous groups,
genetically fixed by the Upper Palaeolithic, were at
variance with the move towards the ‘abstract rules
and impersonal signals’ characteristic of a wider
division of labor. He suggests even that the
beginnings of the process were ‘all initially
infringements of customary rules - so many falls
from grace’ (Hayek 1979, pp.161-2).

This may be over-dramatic. Hayek is conflating
the long run trend from particularist to universalist
social relations which provides the context for the
growth of wider economic orders (and the tensions
between which remain evident today). In the
Pleistocene, perhaps even earlier, the potential for
tension and conflict in contact between groups is
evident (Knauf 1991), even if Ardrey-type theses
can be discounted. Even so, the potential for
reducing such costs is precisely one of the reasons
why the evolution of ‘rules of conduct’ governing
human action between groups, or individuals within
different groups, could be expected to appear.

The potential gains from the extension of
exchange, from sociality - because they are far from
limited to the material sphere - are so great that
they would undoubtedly be pursued at an
evolutionary stage before the emergence of modern
humans. Inter-group contacts might begin only on
an intermittent and irregular basis but ethnographic
and ethnohistorical observation of hunter-gatherers
suggests the basis of a cultural explanation for
developments in the late Pleistocene.

Exchange between hunter-gatherer groups is
conducted within a frame work of particularist
relations, with kinship and spiritual links looming
as all-important (for example, see Maddock 1982).
In this respect, the essential complementarity of
biological and cultural evolution again asserts itself.
From the first, the biological imperatives underlying
gender alliances outside of immediate kinship would
have been a factor making for inter-group contacts
(Rodseth et al 1991). It would not necessarily be
the only factor and it is possible to surmise that the
late Pleistocene saw a crucial extension of the
cultural processes.

This is certainly an implication of one line of
enquiry developed by palaeoanthropologists in
recent years. This is into the emergence of human
symbolic capacity (and the relation to linguistic
capacity), as revealed in the record of prehistoric
art. Stylistic change has been linked to the nature
and development of inter-group relations in Europe
and Australia. The research program is as yet in its
infancy (McBrewtry 1990, p.137). Presently the main
focus is on social responses to differences in and
changes to the natural environment (Gamble 1982,
David and Cole 1990). Nevertheless, there is also
clearly scope for tracing the dynamic evolution of
inter-group relations, of shared supernatural beliefs
and rituals, in prehistoric art (Knauf 1991,
pp.398-9).

In rock art, for example, there is a progression
from forms, such as stencils, which do not fit the
narrower definitions of art, to the well-known
realistic cave paintings of Europe at the end of the
Ice Age (Lindly and Clark 1990). It is possible and
even likely that these can be associated with the
evolution of rules of conduct pertaining to group
alliances and networks. Such rules are likely to be
particular (relating to specific bonds) rather than
universal, to be set within a context of shared
supernatural belief and ritual. Even so, they would provide the evolving framework necessary for the extension of exchange, for the growth of wider economic orders.

It is this increasing ability to act on the basis of rules (as distinct from the pursuit of purposes) which is the basis of cultural evolution and, within that context, of economic growth. A research program into the concrete expression of human symbolic behavior thus has the potential to complement and supplement the knowledge of evolving capital structures presently provided by stone tools. Together, this should illuminate further the processes involved in the emergence of *homo sapiens sapiens*, in cultural evolution and of economic growth in the late Pleistocene.

**Conclusion**

Research programs in social and palaeoanthropology are presently enhancing our knowledge of the origins and evolution of hominids and humans. The congruence of social theory and Austrian praxeology, it is argued here, offers gains in the pursuit of an understanding of the processes involved. The potential gains are not limited to an understanding of the early stages of cultural evolution and the origins of economic growth. The central implication - that the two are interdependent - has universal relevance. Exploration of the origins of economic growth reinforces the general theme of studies in long run economic history (of any serious economic history in fact). Growth is an evolutionary process, the nature of which can be understood only within the study of the totality of human relations.

The lesson is clear. Within the discipline of economics, there is a need to go well beyond merely relaxing the constraints of comparative statics or toning down the stridency of intellectual imperialism. The way forward lies in seeking, with appropriate modesty, for better relations with its sister social sciences. It is in this context that the power of the conceptual tools of economics can be employed to best effect.

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**Notes**

1. This desire is genuine. Neo-classicists are not the lackeys of capitalism. They are as sensitive to social problems and human aspirations generally as the Keynesians or neo-Keynesians they displaced from hegemony in policy matters in the 1970s (or even other social scientists).


3. Neo-Darwinian analogy may have its best fit in the near-future, in the implications of the development of artificial intelligence; see the review of Levy, Stephen, *Artificial Intelligence*, London, Pantheon, 1992, in the *Economist*, 18.7.92. This is not a predication. As Mokyr says (p.269), 'the essence of technological change is its unpredictability.'

4. For a comprehensive development of the argument, see Hayek 1973, pp.8-34 & 1979, pp.135-76.


**References**


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