
The future of economics: The case for an evolutionary approach

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Abstract

Much theoretical and empirical work by economists and psychologists has shown that the neo-classical approach is defective, and economists are now looking for an alternative. Evolutionary economics is the answer. It starts from the realistic premise that society and the economy are shaped by competition, but unlike neo-classical economics, it proceeds empirically by observing and analysing what has been happening to the economy and society. It does so on the premise that a process of social selection is taking place, analogous but not identical to that of biological selection. This dynamic approach requires a revival of economic history. By reporting on, and inviting debate over, what is happening and its implications, the adoption of an evolutionary approach should help restore the moral content of economics and the surrounding social sciences. Such a change in approach would be a paradigm shift, and will take time. That it will happen is likely: in the end facts kick.

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Keywords

Accelerating innovation, distribution, dynamic economic analysis, empirically based economics, evolutionary economics, neo-classical economics, paradigm shift, social selection

Economists are now looking for an alternative to neo-classical theory. I believe an evolutionary approach is the answer. At 92, I am too old to write a book. I can offer only my views in brief.

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Much theoretical and empirical work by economists and psychologists has shown that the neo-classical approach is defective. It creates an unrealistic model of the economy by making unrealistic assumptions about human behaviour, markets and other aspects of society. Nevertheless, that model is still at the heart of textbooks, and it has been used to produce unwarranted propositions: rational expectations; efficient markets; 40% as the maximum rate of income tax, and, in macro-economics, the proposition that deviations from full employment are caused only by external shocks such as wars.

Neo-classical theory has two inherent defects:

1. Its emphasis is static: it abstracts from the fact that society and the economy have been changing at an accelerating rate.
2. It is politically prejudiced: it concentrates on the allocation of scarce resources and does not consider how the ownership of those resources comes about, and it offers a vague vision of an ideal future brought about by market forces alone.

An evolutionary approach avoids these defects. Like neo-classical economics, it starts from the realistic premise that society and the economy are shaped by competition, but instead of making assumptions as to the nature and outcome of that competition, it is empirical. It invites the observer to examine what has been changing to the economy and society. It does so on the premise that a process of social selection is taking place, analogous, but not identical, to that of biological selection.

It is useful to consider how social selection came into existence alongside biological selection – or perhaps one should say on top of it.

The evolution of an inventive species

We human beings are the product of biological evolution over millions of years. In this we are no different from other species. But in a vital respect we are different. We have come to possess a mental capacity for language, writing and analytical thinking that has permitted us to generate and exchange ideas and pass them cumulatively from one generation to another, a gift that is now seen to have followed a period of cultural–genetic interactive evolution in which practices were communicated from person to person without written language (Heinrich, 2016). This mental capacity has permitted us in a manner not found in other species to exploit with increasing power from generation to generation our physical environment, and it has enabled us to shape our society. We keep inventing new physical products and also new ways of engaging with one another in economic and social life, and new ways of organising the institutions within which we live our lives.

This process of social evolution began remarkably recently. It started with the invention of metal tools and simple agriculture, and then took off when the writing of alphabetic language – the key to the accumulation of knowledge – was invented. That is put at about 1000 BC. The development of mathematics and abstract reasoning followed with roots in the Middle East and Asia. In Europe, it reached a peak in Ancient Greece in about 500 BC, and it was in Europe that today's process of invention and innovation evolved.

Since the Second World War, social evolution has accelerated at an astonishing rate with technological innovation to the fore, driven by military and economic competition. Statistics gathered by UNESCO show that the number of scientists and engineers

engaged in research and development worldwide reached 5.8 million by 2002, and is now around 10 million, of whom about 2 million are in China. I append in a Supplementary file a short description of the acceleration in the evolution of technology, principally with respect to Britain.

There is no reason to suppose that investment in research and development will not continue to grow. Even if it continued only at its present level, it would produce a continuing flood of new products – unless researchers are reaching the limits of what human beings can discover and devise, with the consequence that decreasing returns to research are setting in.

Other elements of social evolution of direct relevance to economics have accelerated, too – for example, the invention of new financial contracts and new methods of dealing in them; and new means of communication and persuasion. They have evolved hand in hand with technology.

The nature and implications of the evolutionary approach

The essence of the evolutionary approach is that the competitive selection of successful social innovations (technological and non-technological) from the unsuccessful is like the competitive selection of new species from the many mutations and re-combinations of genes that occur in biological evolution. Points to note:

1. It is inherently dynamic.
2. It has been applied successfully to technological innovation in industry (Freeman, 2008; Nelson and Winter, 1982), and over the years, it has been explored and toyed with by a considerable number of economists. Veblen (1898; 1914) emphasised the importance and diversity of cultural evolution that shaped institutions. Schumpeter (1947) creatively identified two evolutionary phenomena that have gained recognition – technical innovation and creative destruction – but he did not abandon conventional equilibrium economics. Boulding (1981) elegantly explained evolutionary theory and showed how much of traditional economics could be fitted into it; but he did not identify any new evolutionary phenomena.
3. Its adoption in economics does not imply that existing economics needs to be thrown out wholesale. Many theories and many modern empirical studies will fit into it. Partha Dasgupta's (2007) introduction to economics provides examples of how bits of Neo-classical economics can help us to understand some economics and social problems.
4. It implies that mathematical modelling, physics-style, based on unreal reductionist assumptions should be replaced by direct observation of what has been and is happening in the world, and by description and interpretation of the findings in words and numbers that are comprehensible to politicians and other interested citizens. This does not mean that mathematics cannot be useful in the interpretation of data, or that mathematicians cannot be good at realistic economics and at economic debate in plain words: think of Marshall and Keynes.
5. It requires a revival of narrative economic history, including comparative economic history of different societies. It also requires a revival among economists of informed debate about what is currently happening in the economy, achieved

by taking part in economic life, by getting close to those who do take part (by chat and by organising enquiries) and by journalistic debates.

6. It requires a re-integration of economics into the other social sciences through the adoption by them all of evolutionary theory: it is the theory that best explains the world around us. It has been explored and advocated within sociology, recently by Runciman (1989, 1998, 2009) and earlier by Veblen and others.
7. It is important that in applying the evolutionary approach, the detailed concepts and language of biological genetics should not be imposed on economic and social phenomena that they do not fit. We should not replace 'physics envy' with 'biology envy'. The risk is that social scientists, seeking to be 'scientific', may be carried away to seek and talk about genotypes, phenotypes and alleles in society and the economy, instead of describing directly in everyday language the things they observe.

I see these implications for different aspects of economics:

1. *Macroeconomics*. It fits Keynes' vital point that the future is unpredictable, for it tells us that innovations, like new biological species arising from mutations and re-combinations of genes, occur essentially at random. Thus, it completes Keynes' 'struggle to escape', in which he was not wholly successful since he failed to find a substitute for Marshallian economics. Similarly, it provides a framework for the work of economists like Galbraith, Kaldor, Kalecki, Myrdal and Joan Robinson, who rejected neo-classical economics and produced alternative interpretations of aspects of the economy but not the whole.
2. *Microeconomics*. It directs attention to the dynamic way in which producers, seeking monopoly for as long as possible, introduce new products and use new methods of persuasion, while consumers, as they get richer, give expression to induced demands rather than basic wants.
3. *Distribution*. It invites attention to what is happening to the distribution of income and wealth as part of the evolution of the whole system, and to consideration of the implications for social justice, for the propensity to save and for risk-taking.
4. *Moral judgement*. Because it is an approach that seeks to explain what is happening with no values built into it, its findings should invite moral judgement and political debate. An evolutionary approach does not imply that the way the system is evolving as a whole, or in any of its parts, is good or bad. It does not say or imply that the world is heading towards a misty Utopia, as advocates of laissez-faire and Marxism have done (the first visualising its achievement by peaceful progress, the latter by violent revolution). Nor does it say that the world is likely soon to come to an end because of the foolish behaviour of mankind. It invites social and physical scientists to report what is happening and debate its implications. Consequently, its adoption should help restore the moral content of economics and the surrounding social sciences.

Evolution and human behaviour

Evolutionary theory tells us that the way we behave is the product of (a) primal instincts that are embedded in our genes and (b) thoughts that are moulded by our education, our

experience and all the persuasive influences to which we are subject in life, including religion.

Today we can identify our instincts only by looking at human behaviour and speculating how it came about. There can be no question that instincts exist, shape our behaviour and are durable. Think of the importance of the instincts for mating and the rearing of offspring. Nor can there be doubt that they came about through evolutionary selection. Ours must still be close to those of our hunter-gatherer ancestors, but changing social conditions must be modifying them (Cochran and Harpending, 2010).

The following inter-connected instincts appear to be most relevant to understanding the evolution of our social world, composed as it is of societies among which there is both military competition and economic competition:

1. *Out-group suspicion and hostility.* For a tribe to survive, it was necessary for it to be on its guard, ready to defend itself against rival tribes and predators. Those that did not have this instinct will not have survived.
2. *In-group cooperation and altruism.* Darwin (1871) suggested that groups whose members cooperated with one another would survive better than groups whose members did not (Ch. 4). This proposition, after considerable controversy among geneticists, stands up well today. A starting point was Hamilton's (1964) proposition, put forward in the 1960s, that to help one's kin was to improve the survival of one's own genes. Much subsequent research by behavioural economists, psychologists and animal behaviourists has indicated that human and primate behaviour is much more widely generous and cooperative than can be explained in that way (see, for example, Bowles and Gintis, 2011; De Waal, 2016).
3. The fear of death and injury, which surely is connected with (1) and (2) above: this powerful instinct is played upon to a remarkable extent in social life, for example, by authors (thrillers), the media (the gross over-reporting of murders and other horrors), advertisers (playing on fear of illness and mishaps), and politicians (playing on fear of external enemies).
4. The pursuit of power, meaning the desire to acquire economic, coercive or persuasive power, or any combination of them; power meaning the ability to influence the behaviour of others to one's own liking. This may have come from the instinct to compete for mates through the possession of physical power and the display of physical magnificence (peacocks).

This is a crude and tentative list. Psychologists and economists who explore economic behaviour, notably Kahneman (2011) and Herbert Simon (2008) have shown that in making choices and taking risks human beings often depart from pleasure–pain behaviour. But they have commonly recoiled from suggesting that the behaviour they observe is influenced by instincts. Yet it is hard to see where the behaviour they observe comes from if it is not partly – perhaps mostly – from instincts. And one study at least – Daley and Wilson (1988) in their study of homicide – has offered strong suggestive evidence of the influence of instincts on social behaviour.

Uninhibited discussion and research into the role on instincts is needed. We may hope that advances in psychology and neuro-science will one day illuminate the subject.

Brief thoughts on teaching

Since society – the subject to be observed – is an organic whole, economics, politics and sociology should be taught together.

The lesson one wishes to put across is that society and the economy have been evolving by a process of accelerating social evolution in which there has been interaction between events and theories: what has been happening to the economy and society has influenced the theories, and the theories have influenced the economy and society. I suggest that the first year should consist largely, if not wholly, of compulsory courses on (a) economic and social history and (b) the history of economic and political thought: how did we go from Adam Smith to Neo-classical economics? In later years, students should be able to choose among specialised papers across a wide range, but some broad papers that test in words their understanding of the real economy should be compulsory. Mathematics beyond basics should not be compulsory: historians and other social scientists are needed.

The understanding of corruption

An example of where I have found the evolutionary approach useful is the study of corruption (Neild, 2002). What we call corruption, meaning the formally unconstrained pursuit of wealth and power, has been normal for most of history and is still normal in many parts of the world. Why then, I asked, was corruption cleaned up in northern Europe in the late 18th and 19th centuries? (I did not study other historical cases.) For if rulers gain and hold power by corrupt means, for them to abolish corruption is likely to be political suicide. It looked as if some form of evolutionary process must have been at work, an idea I derived from Runciman. The answer I came to was that while other factors had of course been at work (in the social sciences mono-causal explanations are naive), a prime cause was military competition, a subject I had studied. In brief, when the development of firearms gave advantage to costly, trained standing armies, states that could raise tax and spend it on their army with least corruption – for example, the highly militarised Prussia as it expanded to become Germany – were at an advantage and expanded, or induced their neighbours to clean up in competition with them. (This is scarcely the case now since weapons have become so cheap relative to national income and so abundant.) I concluded that students of public corruption should turn from asking why there is corruption (to which the answer is rather obvious) to the question, why is it ever cleaned up? To which the answer is far from obvious.

Further points

1. The evolutionary approach might lead to more rational regulation. At the moment extremely tight precautionary regulations are applied to medical drugs. No drug can be sold before it has been through intense and prolonged testing. Health and Safety precautions in Britain, and probably all of Europe, are excessively restrictive and expensive. On the other hand, new speculative financial instruments have been, and still can be, introduced into financial markets without prior inspection and approval. One can see that fear of death or injury on the

part of the population (a strong instinct), combined with fear of having to pay compensation on the part of drug companies, have produced a tight precautionary system for drugs. Similarly fear, together with the policy of Brussels to 'build Europe' by increasing its functions, have probably contributed to the proliferation of Health and Safety Regulations. On the other hand, fear of financial crises may be lacking because such crises occur only at intervals and their consequences are diffuse: they do not directly cause the death of individuals. The evolutionary approach might induce economists to compare regulation in different parts of the economy and suggest a rebalancing. A rational political debate along those lines might replace, or at least moderate, the often rather jejune exchanges that take place between those who indiscriminately oppose regulation and those who favour it.

2. Neo-classical theory used not to represent reality as badly it does today. In the 18th and 19th centuries, in which it has its roots, wages were so low and working conditions so bad that it was reasonable to hold that, for the masses at least, extra income brought the unquestionable pleasure of satisfying basic needs, and extra work in factories, fields or mines brought pain. Agriculture, in which there are decreasing returns, was an important part of the economy. Technical innovation, though it was taking off, was slow compared to today.
3. The exchange between economics and biology of theories about competition is not new. The idea of a biological selection through competition came to Darwin (1887 [1958]) when reading Malthus' theory that the human population would be limited by lack of food: '... it at once struck me', he wrote,

that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here then I had at last got a theory by which to work ... (p. 120)

Nearly a century later, John Maynard Smith (1982) took game theory from economics and applied it to biological selection.

4. In the late 19th century, William Cunningham (1892), the great economic historian who criticised Marshall for his adoption of deductive theorising, warned against treating economics like physics:

The movement of the earth, the principle of gravitation, are entirely independent of human existence and unmodified by its changes. Economic principles on the other hand are statements about human nature in some of its aspects; and the alterations in the human race, their habits and practices, cannot be left out of account. (p. 3)

5. In recent decades, the view that economists should abandon the emulation of physics and return to reality has been voiced by some highly respected members of the profession. In 1974, Hayek in his Nobel Prize lecture said,

We have indeed at the moment little cause for pride: as a profession we have made a mess of things. It seems to me that this failure of the economists to guide policy more successfully is closely connected with their propensity to imitate as closely as possible the procedures of the brilliantly successful physical sciences – an attempt which in our field may lead to outright error ... If we are to safeguard the reputation of science, and to prevent the arrogation of knowledge based on superficial similarity of procedure with that of the physical sciences, much effort will have to be directed toward debunking such arrogations,

some of which have become the vested interests of established university departments. (Hayek, 1974, 1984)

In 1991, Frank Hahn, a leading mathematical economist, in an article headed ‘The Next Hundred Years’ predicted that ... theorising of the “pure” sort will become both less enjoyable and less and less possible’, because the pursuit of long chains of reasoning from a small number of fundamental axioms had run its course. Not for his successors ‘the pleasures of theorems and proof. Instead the uncertain embrace of history and sociology and biology’ (Hahn, 1991: 47, 50).

Finally, in 1997 Robert Solow (1997), a Nobel Prize winner, wrote,

... there is a lot to be said in favour of staring at the piece of reality you are studying and asking, just what is going on here? Economists who are enamoured of the physics style seem to bypass that stage, to their disadvantage. (p. 56)

Conclusion

The change that is required in economics is what Kuhn (1970) called a paradigm shift. To bring that about, a revolution in thought is required: a new generation of economists, guided by the notion of social evolution and the evidence they see around them, will have to displace the old. How quickly that will happen it is impossible to say. But I believe it will come about: in the end facts kick.

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Robert Neild is Emeritus Professor of Economics at Cambridge University, where he has been a Fellow of Trinity College since 1971. His career spanned posts in *the UK civil service*, the Secretariat of the UN Economic Commission for Europe, and the MIT Center for International Studies, India Project. His appointments include Deputy Director of the National Institute for Economic and Social Research, *Economic Adviser to the UK Treasury* and founding Director of the Stockholm International Peace Research Institute. Professor Neild is widely published in economics, peace studies, and *economic and social history*, including his *The English, the French and the Oyster*. He is famous for rebutting Blair's claim that UN inspectors had found enough weapons of mass destruction in Iraq 'to have killed the world's population several times over', by likening it to a claim that because 'a man in his prime can produce a million sperm any day, therefore he can produce a million babies a day. The problem in both cases is that of delivery systems'.