The Scope and Method of Political Economy, 2002

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Abstract

In 1917, John Neville Keynes published an influential essay entitled "The Scope and Method of Political Economy." The essay, and others before and after, defined the methodological assumptions followed by economists to this day. Reading Keynes' essay in 2002, I feel that its main points need reconsideration and updating, particularly for real estate studies. As an applied form of economic analysis, real estate requires attention to the many empirical details that are assumed away in neo-classical economic theory and method. This applied holistic perspective would be useful throughout the fields of economics and finance. This paper briefly reviews four of the key papers that set the scope and method of mainstream economic research, points out the limitations of research along these positivist/empiricist lines and suggests an alternative similar to the Historical School/Institutional Economics paradigm. Jaffe and others have questioned real estate's claim to be a separate discipline, based on academic real estate authors' heavy use of economics and finance theory. This paper may provide food for thought in constructing arguments that real estate studies do involve a separate "scope and method" from mainstream economics and finance.

Introduction

In 1909, John Neville Keynes, John Maynard's father, published an influential essay entitled "The Scope and Method of Political Economy." Had I read the essay in 1909, I suspect that its argument would have convinced me. Reading it in 2002, however, I disagree with its conclusions and feel that its main points need reconsideration and updating. This paper has four sections: 1) A section outlining J.N. Keynes main points and why I disagree with them, 2) Scope of political economy (revised version), 3)

Method of political economy, looking forward from 2001, and 4) Implications for real estate research and teaching.

In 1990, Ernest Boyer published *Scholarship Reconsidered*, a short book advocating a major rebalancing of university scholarship. A high level task force of the Carnegie Foundation adopted Boyer's ideas as recommendations for universities. A similar Carnegie report in the 1950s had profound effects in changing philosophy and practice in universities, so Boyer's ideas have strong support. Boyer defined a generic term "scholarship" to mean taking account of literature, careful and comprehensive work and original thinking. He recommended that four kinds of scholarship be given equal attention in universities. In additional to traditional research, which he called the "scholarship of discovery," Boyer recommended equal attention to the scholarship of teaching, applications and integration. Applications scholarship recognises that the mundane details of implementation are a worthy and challenging topic for research. Abstract work does not get the job done, as there can be a gap between theory and applications. The scholarship of integration recognises the pitfalls of disciplinary specialisation and blindness to broader issues. This paper's recommendations for revising the paradigms of economic research are consistent with the Carnegie Foundation's call for more attention to applications and interdisciplinary studies.

Motivation for rethinking Economics' paradigm

Kuhn (1970) wrote in his influential *Structure of Scientific Revolutions* that "paradigm strain" occurs when observable facts fail to conform to the received theory in a discipline. Mainstream neo-classical economics can be said to be under considerable paradigm strain at the moment. Experimental work has been knocking some of the legs from under the assumption that humans are rational, averse to work and selfishly motivated. Responsible economic woman is as good a model as rational economic man, the former emphasising social context, teaching and learning with others, and mutual obligations. Question framing is important; it isn't just facts, but also understandings of facts that influence behaviour in ways that do not always conform to the model of rationality. We perceive and process information selectively. Everything we do reflects biases so profound we are not even aware of them. (Tversky and Kahneman, 1986)

And where do rational economic man's preferences come from? A world with war, drug addiction, gambling and so on does not conform well to the ideal world of rational consumers. Lack of information, strategic uncertainty, complex interactions and delayed feedbacks—all make it difficult for people to act rationally, even if they were so inclined (which they are not). By taking preferences as "given" economics puts to one side the most fundamental economic questions.

Accounting stance matters as well, due to external costs and public goods. What maximises welfare for me may not maximise welfare for you or for society. So there are many less than optimum solutions advocated due to special interests. In organisations, principal/agent conflicts abound and it is doubtful that social welfare is maximised or even approached. Events like the dot.com and telecommunications bubbles in the share markets, and collapses of corporations like Enron, One.tel and HIH demonstrate that information is frequently incomplete and emanates from biased sources with their own agendas. A leading Enron analyst kept a "strong buy" recommendation in place as Enron stock moved from $90 to 26 cents. Even if markets can be thought of as rational and information efficient, a questionable hypothesis, the information they use is often deeply flawed, biased, incomplete and confusing.

Meanwhile, more rigorous mathematical treatments have shown neo-classical theory as taught in introductory economics classes to be largely incorrect. There are emergent properties that destroy the assumed lack of connection between individual results and collective results. The invisible hand is connected to a body after all. With multiple goods and varying preferences between individuals, one can no longer assume that efficient outcomes will emerge from markets. Supply curves may be downward sloping for practical purposes, meaning prices and quantities are not set by a neat intersection of demand and supply curves. An overview is found in *Debunking Economics* by Steve Keen. These issues have been emerging in economic theory for the past forty years at least.

And there are the longer-term ecological constraints to worry about. Certainly our present economies based on fossil fuels and massive pollution are not indefinitely sustainable. Research on new technology to find alternatives looks promising, but we are still operating in a fossil fuel economy. There is no certainty about future inventions to replace oil—future innovations are by definition, unknown and

speculative. Ecological experts voice strong concerns about species losses, climate change and many other environmental problems.

Finally, and of considerable importance, the current economic set up, operating approximately according to the way economists see the world—companies and individuals out to maximise profits—does not seem to be delivering the goods for many people. Great material progress has been made in the last 300 years and there is still a good deal more diffusion of technology and capital at work raising standards of living around the world. So the current way of operating economies has accomplished a great deal that is positive and positive trends will continue. However, there are also serious problems. First, around 20% of all humans, about a billion people, live at a morally unacceptable level of poverty. These are levels of poverty so severe that malnutrition is a serious problem. About 10 million children die annually for lack of food and hundreds of millions grow up physically and mentally stunted by poverty. The percentage of poor people has dropped over the last century, but numbers of poor people and the desperateness of their circumstances have increased. A hundred and forty million people died in twentieth century wars and the 21st century shows no improvement. Why have production and standards of living increased so much without all children being fed, housed and educated?

The 19th and early 20th century problem of unfair distributions of wealth, income and power has returned to plague humankind and generate conflict. There is increasing concentration in most industries. The formation of enormous global multinational companies increases efficiency through economies of scale, but also creates market power for the big players that they can use to extract excess profits. The rich are still getting richer and the poor are still having children. Rather than Jefferson's ideal of independent, land-owning free citizens, most of us are underlings in hierarchical organisations with our careers dependent on the good will of bosses and rules over which we have little control. We are, in significant ways, not free.

And economic progress has been linked to environmental degradation and further losses are occurring. Problems include loss of soils, air pollution and climate change, water pollution and water supply, deforestation, loss of species and toxic chemicals in the environment. Many people, probably a majority, live in environments whose quality has been degraded by pollution, congestion or environmental impacts of

human activities. Of course, evaluation of these changes implies certain values and preferences—people who prefer cattle pastures to rainforest would be very pleased.

Population growth is behind most of the desperate circumstances, wars, ethnic conflicts and environmental degradation in the third world, but still continues in many countries despite the experience and good example of countries where a demographic transition has contributed to higher per capita incomes and productivity.

Economics is supposed to be about solving problems of scarcity, efficiency and distribution. An optimistic view would say the modern economies, guided by economic theory and empirical research are doing an excellent job of increasing production, increasing productivity and distributing goods and services widely. A pessimistic view would point out that current patterns of production are unsustainable and that environmental losses are reducing the earth's long run carrying capacity for humans, reducing our quality of life and creating serious risks for our children. There are serious social problems exacerbated by economic forces, especially unemployment and mal-distribution of wealth, income and power. Conflict over scarce resources—for example land and water in Palestine—threaten to undo economic progress and certainly create acute misery for millions of people. Is current economic theory the best we can do? Is it good enough to continue business and thinking as usual? Can scarcity, efficiency and distribution problems be solved within the current "scope and method" of economics?

Four essays and an equation that convinced economists to become "deductive positivists"

The above diagnosis suggests Economists choose to ignore some important issues. This section outlines parts of the history of how we came to leave the real world out of models to an extent that brings the validity of economic theory into serious question. My title for this paper is identical to the title of J.N. Keynes 1917 essay. However, I will discuss four essays—by J.S. Mill, J.N. Keynes, Lionel Robbins and Milton Friedman, all along the same lines—that led economics towards its current methodological assumptions. I will also comment on an important and widely employed model, the Cobb-Douglas production function, as an example of limiting the scope of economics to a degree that destroys predictive power.

John Stuart Mill

Hausman's introductory paragraph to an excerpt from Mill's "On the Definition and Method of Political Economy," originally published in 1836, notes that Mill, arguably the 19th century's finest thinker in economics, politics and ethics, was a genius who began learning Greek at the age of three. Mill's essay's main points on the method of political economy reprise classical Greek contributions to Western thought. Mill's recommendations for "how to do economics" take the Greek analytical approach of picking out aspects of a system to examine one at a time, holding other things constant. In an experimental context, this allows causation to be attributed to specific variables.

Mill begins by drastically circumscribing the scope of political economy theory saying "It does not treat the whole of man's nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging of the comparative efficacy of means for obtaining that end." (Mill in Hausman1984: 52)

Mill continues "It makes entire abstraction of every other human passion or motive; except those which may be regarded as perpetually antagonizing principles to the desire of wealth, namely aversion to labour, and a desire of the present enjoyment of costly indulgences." (Ibid: 52). Mill sees economics as necessarily a deductive science. From simple premises about human economic behaviour, economics deduces a set of theoretical consequences.

Science as envisioned by Sir Francis Bacon, David Hume and others is essentially inductive—generalisations would come from empirical evidence or observed instances. Deduction plays a role in science in setting up tests of hypotheses and generating hypotheses, but the key validation step involves induction, not deduction.

So Mill places economics back with the medieval style of thinking that preceded the Renaissance where Church authorities deduced results from unquestioned religious premises. Economics, Mill implies, cannot use scientific method. He discusses the difficulty of performing experiments in economics as making it necessary to take these deductive leaps of faith.

The problem he clearly and correctly sees is the complexity of human behaviour. He notes "the immense multitude of the influencing circumstances" determining human

behaviour. (Ibid: 59) Any given instance where a general "law" of economics does not seem to hold true can be explained by local circumstances or mental states. There is so much "noise" that the signal is lost. Unless, Mill suggests, simplifying assumptions are taken as unquestioned premises.

"Since, therefore, it is vain to hope that truth can be arrived at, either in Political Economy or in any other department of the social science, while we look at the facts in the concrete, clothed in all the complexity with which nature has surrounded them, and endeavour to elicit a general law by a process of induction from a comparison of details; there remains no other method than the *a priori* one, or that of 'abstract speculation.'" (Ibid: 59)

But, interestingly, Mill acknowledges the shortcomings of this approach. He goes on to remark "Not that any political economist was ever so absurd as to suppose that mankind are really thus constituted… the law of the effect is compounded of the laws of all the causes that determine it… There is, perhaps, no action of a man's life in which he is neither under the immediate nor under the remote influence of any impulse but the mere desire of wealth." (Ibid, 53-54)

And he writes "When the principles of Political Economy are to be applied to a particular case, then it is necessary to take into account all the individual circumstances of that case" (not only abstract theory) but also "*disturbing causes*"… "An uncertainty inherent in the nature of these complex phenomena, and arising from the impossibility of being quite sure that all the circumstances of the particular case are known to us sufficiently in detail, and that our attention is not unduly diverted from any of them." And this uncertainty exists in all of the "moral sciences in general." (Ibid: 61)

He adds a lovely exhortation for humility and dialogue between theoreticians and practitioners: "But while the philosopher and the practical man bandy half-truths with one another, we may seek far without finding one who, placed on a higher eminence of thought, comprehends as a whole what they see only in separate parts; who can make the anticipations of the philosopher guide the observation of the practical man, and the specific experience of the practical man warn the philosopher where something is to be added to his theory." (Ibid: 64) This implies that economics should

have two sides—theory and applications—but the method discussed by Mill only deals with the theory side of economic research.

I feel Mill has been led astray by "Newton envy," the desire for simple universal laws regarding phenomena that are not so orderly as physics processes. His essay makes the remarkable admissions that economics is a) not scientific, but rather deductive, like religion, and b) unable to comment reliably on real world phenomena due to their complexity and economists' inability to test theory. In seeking laws like Newton's, Mill has, as he admits when it comes to applications, set an impossible task, because the phenomena studied are not "nomological." Gordon, 1991, in his comprehensive *History and Philosophy of the Social Sciences* points out the difficulty of finding general theories about disorderly and evolutionary processes.

It might be more sensible to set more practical, less universal goals for economics, like figuring out how to keep children from starving, stop wars and prevent species going extinct. Let it be practiced as a "moral science." Why not settle for solving or mitigating economic problems, rather than seeking universals like Newton's laws of motion. Of what use are universal laws that do not prove informative in particular cases? Pragmatic tinkering to solve problems in specific cases is what the dialogue between the "philosopher" and the "practical man" could work towards with some hope of success, even in a complex world. Gunnar Myrdal, the Nobel prize-winning economist who directed attention to America's racial discrimination and convinced Sweden to "invest in equality" is an exemplary role model, not Newton.[1]

John Neville Keynes

Keynes essay was written following a long argument in economics called the "methodenstreit" about the methods and purpose of the field between the German Historical School, oriented towards Institutional Economics, and Austrians who insisted on methodological individualism. Keynes begins by saying economics needs to clarify "whether political economy is concerned with the actual or the ideal, whether it merely treats what is, or asks further what ought to be, laying down rules for the attainment of those ends that it pronounces desirable." (Hausman, 1984:71)

He is also aware of the limitations of both deductive and inductive method, saying the former is "hypothetical until it is determined how far, and under what conditions, the assumptions on which it rests are realised in fact" while the inductive method

establishes results "only with a more or less degree of probability" and "cannot be extended far beyond the range of space and time over which the instances on which it is based were collected." (Ibid: 72)

Keynes claims that economics aims to be a "positive" discipline or science. (Ibid: 75) Economics, he writes, "stands neutral between competing social schemes." Recall that in 1917 as Keynes wrote, anarchists and socialists advocated the violent overthrow of capitalism and Institutional Economists, such as Richard Ely, had risked their jobs to advocate reforms such as legalising labour unions.[2] "It furnishes information as to the probable consequences of given lines of action, but does not itself pass moral judgements or pronounce what ought or what ought not to be." (Ibid: 76) But Keynes recognises the "vital importance" of social and ethical aspects of practical problems of economic policy and, in effect, says economists should "change hats" and comment on social issues as citizens or human beings rather than as economists. Fact is to be separated from opinion.

Keynes quotes Senior's dictum that "economics depends more on reasoning than observation." (Ibid: 77) He agrees with Mill that complexity of economic phenomena requires use of deductive methods derived from "a few simple and indisputable facts of human nature." (Ibid: 76) These he takes to be the same "Rational Economic Man" (REM) assumptions as Mill, such as desire for wealth. And he repeats Mills warning that deductive method makes economics an "abstract" science so that "it has to leave out of account many circumstances, which are of importance in individual cases." (Ibid: 77). Keynes asserts that mathematics and physics use similar "abstractions."

It seems to have escaped notice that the abstractions of physics seem to be true everywhere measured and at all times, whereas the premises of economics are counterfactual in many cases and always approximations leaving out issues that might overrule their effects. Even a greedy man might not sell his mother. The weakness of REM as a model for human behaviour has been increasingly apparent in recent decades through experimental demonstrations of behaviour inconsistent with REM assumptions, e.g. the work of Tversky and Kahneman, Shiller, marketing research and the advertising industry. Real marketers do not assume REM, quite the contrary, they appeal to emotions and relationships.

In my opinion, REM is as bad a foundation for economics as the humour theory (blood, phlegm, bile, etc.) as a basis for medicine. Economics is still at a stage analogous to applying leeches or bloodletting where the results of treatment are uncertain and possibly negative (ask the Argentines or Indonesians) and the underlying mechanisms that would truly explain economic behaviour are not merely unknown but actually assumed to be outside the purview of economics. It is as if medicine had decided that nutrition and chemistry were irrelevant to health because they are too complex.

Despite his apparent belief that economics is a deductive, non-normative discipline, Keynes points out that good economic work has included empirical studies and "ethical treatment of economic problems." He is for unity and discourse rather than splitting into warring methodological camps.

Keynes gives a balanced and sympathetic account of the German Historical School (GHS), which he, as a follower of the more abstract and positivist English branch of economics, rejects. He summarises the main methodological characteristics of the German Historical School as follows:

"A more extended scope…avowedly made to treat of what ought to be as well as of what is…. The School…regards Political Economy as having a high ethical task….not merely to classify the motives…but…also weigh and compare their moral merit. It must determine a standard of the right production and distribution of wealth, such that the demands of justice and morality may be satisfied."

Moreover, GHS economists advocate a wider scope encompassing "intellectual and moral, as well as the merely material life… the ways and means…such as the strengthening of right motives, and the spread of sound customs and habits….as well as the direct intervention of the State." (Ibid: 80) Therefore GHS adherents "insist upon the interdependence of economic and other social phenomena…political economy cannot be treated adequately except in close connexion with other branches of social science." (Ibid: 80)

Therefore, abstraction is to be avoided and close attention paid to the actual complexities of economic life and human behaviour. Men are not assumed to be motivated solely by wealth. This leads to relativism—economic conditions are subject to variation and evolution. So "great stress is laid on …specific observation of the

actual economic world, and generalising there from. Hence the school is spoken of as inductive and statistical." (Ibid: 80) History is important in that only historical context and reference to the past can adequately explain the present. Comparison between countries and time periods increases understanding. The Historical School were concerned with designing institutions (rules, laws, organisations, customs, habits) that would improve economic outcomes and increase both welfare and social justice. The more radical GHS economists are "not simple reformers, but revolutionaries" (Ibid: 81)

Keynes sympathies are with eclectic methods and moderation as opposed to narrow dogmatism about methods of whatever kind. He quotes a moderate GHS author who says essentially that deductive and inductive methods both have something to offer and that the nature of the particular problem should influence the method used. Abstract deduction and GHS attention to detail would seem to be complementary approaches, the latter more adapted to applications.

Keynes ends with an odd combination of assertions: Economics is a positive science, he says, but based on deductive method based on simple assumptions, that is, not on a positive foundation. He wants it to be objective, not moral, but again, without actually looking at how people behave and, it seems to me, accepting the pursuit of wealth as an acceptable goal—i.e. a specific moral teleology is implicitly assumed as the rock on which economic theory is built.

In arguing for the validity of deductive, abstract method, Keynes uses the phrases "tendencies" and "other things are equal" (Ibid: 90) as well as "ceteris paribus" and "absence of disturbing causes" (Ibid: 88) to argue for the validity of economic "laws" based on REM. The assertion is that after assuming away or holding constant real world complexity, it remains *empirically* true that REM is how people really are when we clear away the confounding detail and look at our key motives and ways of acting. (Ibid: 89) He says that given the "other things aside" assumption, the laws of economics are categorical, that is universally valid, rather than merely hypothetical or unreal. Essentially he is saying economists have got it right from an empirical point of view—basically we are REM. So for Keynes, economic research has a large inductive element—for checking the validity of the premises used in deduction.

Keynes assertions of the validity of neo-classical theory are more self-confident than those of Mill, being based on 80 more years of research, much of it of an empirical nature that may have produced findings reasonably consistent with theory. Market economies and wealth maximising behaviour certainly characterised late 19th and early 20th century economies. Keynes experienced REM behaviour, whether or not it is in fact universally true of human nature for all time. People might have become greedier in market economies than they used to be in traditional agricultural societies.

Still, it seems to me that one of the ways economists convinced themselves of some rather self-contradictory positions was simply by long repetition and effective rhetoric, rather than by scientific testing. Given the existence of Jesus and Buddhism, it is clearly not a law of nature that we have to be wealth maximisers and certainly not to be taken as an ethical supreme end of human life. Economics is based on a platonic or religion-like set of ideals and on some degree of evidence, but also on ignoring some other issues and contradictory evidence. I'm not convinced that you and I are REM.

Lionel Robbins

By 1935, when Robbins published "The Nature and Significance of Economic Science," economists had convinced themselves of the postulates of economics so thoroughly that they had become a form of dogma. By then the struggle with the communists had become a key focus of attention. Economists, particularly Hayek, were key thinkers in formulating the arguments against communism.

Robbins still admits in passing "Now of course it is true…that the development of the more complicated application of these propositions (the basic assumptions of economics--MK) involves the use of a great multitude of subsidiary postulates regarding the condition of markets, the number of parties to the exchange, the state of the law, the *minimum sensible* of buyers and sellers, and so on and so forth." (Hausman: 120) Robbins essentially repeats Mill and J.N. Keynes arguments for deductive method more forcefully, ending a bit hysterically with "If irrationality, if the surrender to the blind force of external stimuli and unco-ordinated impulse at every moment is a good to be preferred above all others, then it is true the *raison d'etre* of Economics disappears. And it is the tragedy of our generation, red with fratricidal strife and betrayed almost beyond belief by those who should have been

intellectual leaders, that there have arisen those who would uphold this ultimate negation, this escape from the tragic necessities of choice which has become conscious… The revolt against reason is essentially a revolt against life itself." (Hausman: 136)

From a way to make us better off by seeking laws based on a few simplifying assumptions, economics based on rational economic man has become the defender of life itself! Neo-classical economics has become an ideology to protect us from the Red menace and the anarchists who believe in pernicious doctrines. But hang on—isn't REM the one who is out to maximise material wealth and his own utility pursuing the surrender to the "unco-ordinated impulse of every moment" Robbins warns about? What right does Robbins have, in economic theory, to criticise someone else's economic choices? What does rational mean—where did Robbin's idea that hedonism (the basis of REM, surely) means saving for your old age or whatever, come from? Why is it rational for me to put off gratification, if gratification is the purpose of the exercise? And where do we draw the line? Is it my own life span over which I am rationally supposed to maximise utility? Or am I allowed to consider my children? What about the rights of bears and whales? Does their utility count? What about trees? Rationality comes close to being meaningless "he did it because he wanted to do it" with so much flexibility. When is it rational to use heroin and when not? Robbins must have in mind an Enlightenment or Protestant Ethic version of rationality. We are supposed to soberly decide not to have that extra shot of booze, clearly, in order to save the money for our old age, to worry, perhaps, about our own children, but not to worry about the poor because the invisible hand will take care of them. We don't have enough to go on here. REM proves to be an incomplete model that offers very little substantive content to help with specific decisions.

In pointing out the ideological or quasi-religious nature of Robbins' faith in neo-classical theory I do not mean to be overly critical or dismissive of his position. Faced with Stalin and Hitler across the English Channel, passion in defence of an open society and market economies seems in hindsight to have been entirely necessary and reasonable. If there is a contradiction between claims of objectivity and rationality versus the passion of a pro-market ideological position, the resolution is simply to admit that the passion was necessary to motivate actions to solve pressing historical problems.

Milton Friedman

Friedman's 1954 essay had inordinate influence on economists and almost universal criticism from philosophers of science. Friedman begins his essay by quoting J.N. Keynes "scope and method" essay. Friedman's essay addresses, once again, the problem of how to be a positive science (his goal for economics) while at the same time starting the theorizing process with counterfactual assumptions. Friedman asserts that counterfactual assumptions are irrelevant if the theory makes successful predictions.

Philosophers of science dismiss this as "naï ve instrumentalism" (e.g. Gordon, 1991). Consider a theory like "the moon is green cheese, therefore I predict that I will eat a banana." Suppose I do eat a banana. Does this make my proposition a good theory for explaining banana consumption? Is this what Friedman meant by a good theory? What Friedman may mean is that the assumptions of REM are approximately true, so they are "close enough" to use as approximations, or that they are confounded with true, unobservable causes and therefore predict correctly even if they themselves are false.

Herbert Simon proposed that economists should replace the false assumptions with truer ones and construct a better theory based on empirically supportable premises. Simon was not afraid of complexity and in fact regarded the human sciences as "the sciences of the artificial" in which it is necessary to "design" solutions to problems, rather than simply observe nature. While compatible with positivism, after all Simon recommends starting with observation rather than assumptions, this activist view goes beyond positivism to a normative idea that one could change a reality one did not like.

In hindsight, Friedman's essay looks to me like another Cold War ideological statement in support of neo-classical theory and method and market economies. As such it is contrary in spirit to a genuinely positive economics. One should not have to begin theorising by accepting counter-factual assumptions.

Cobb-Douglas

In my opinion, one of Economics' main fallacies has been to use functions to model processes where the actual relationships are not functions. The Cobb-Douglas production function is an example.

In the natural sciences, many functional relationships are found. Sound intensity and gravitational force dissipate proportionately to the inverse square of distance. The probability density of an electron is well represented by the Schroedinger wave equation. Force equals mass times acceleration. $E=MC^2$. And so on. As the empirical results in all of these and many other cases are measured with increasing accuracy, the functional relationships are found to hold to more and more decimal places of accuracy. Moreover, these relationships hold true in all cases, although their effects may be masked by other variables.

Economic relationships are historical, that is, they can change over time. Moreover, complexity means there can be discontinuities, catastrophes, changes in the (psuedo) "functional" relationship, and so on. "Side conditions" can and often do reverse effects of variables or change intensity of responses. There are emergent properties. A very interesting example is human historical population growth, one of the drivers of economic activity. Cohen tried to fit functions to population growth, but found that while "super-exponential" worked best during a good part of history, no functional relationship between time and human population exists. It depends on how many children people have and how many survive. And those have causes so complex that no simple or even complex function can capture the process. Representing population growth with a function is therefore quite misleading. Malthus committed this fallacy and proven wrong by events.

Using mathematical models so intensively, as economists are taught to do, leads easily to the fallacy of reification, that is, assuming the model is reality or at least a summary of reality. The model is not, it is just a model with more or less correspondence to the states of nature it represents. Any thoughtful econometrician is fully aware of this. Peter Kennedy quotes G.P. Box who remarked that "All models are false, some are useful." Reification leads to serious trouble when it implies that non-included variables don't matter or that what is represented as a function is an unchanging necessary relationship rather than an historical accident.

The Cobb-Douglas equation is a good example. The economies of specific countries in the short run and the world in the long run are threatened by environmental limits and problems, the limited capacity of the earth's life support systems to handle human induced changes such as exploitation of resources and pollution, the inflows and outflows between the natural world and the human economy. Cobb-Douglas,

meanwhile, claims that all we need to think about is capital and labour and the rest will not be limiting. This is nonsense if the first and second laws of thermodynamics hold true. Moreover, Cobb-Douglas leaves out a host of human societal side conditions—absence of war, integrity of governments, cultural values, and other institutional issues essential to maintaining production. Cobb-Douglas includes a productivity or technology coefficient to set capital and labour output equal to actual output, but, again, it ain't necessarily so.

Besides internal inconsistencies (as discussed by Keen—the math doesn't work if you do it properly), the major complaint against the current scope and method of the dominant economic paradigm—positivist method, neo-classical theory—is what it leaves out. In particular it leaves out physics (the natural environment) and morality (the relationships between people and between people and the environment), and complexity.

Scope of political economy, 2002 version

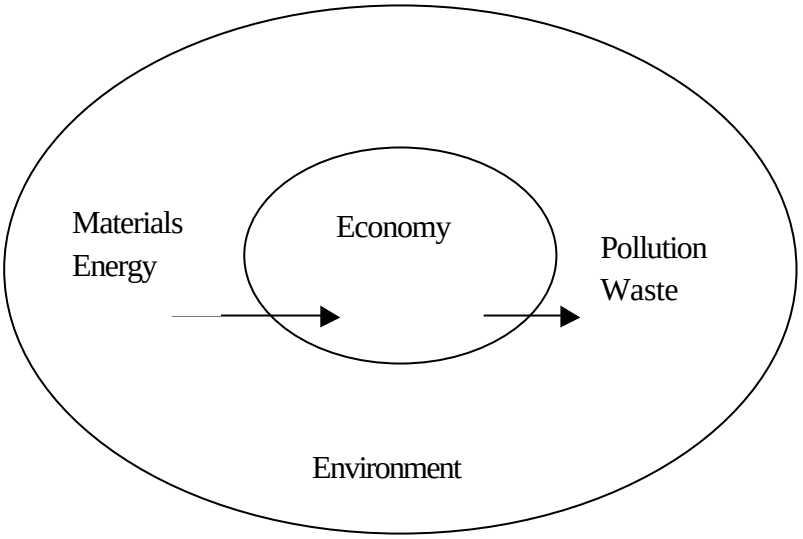
There are a number of areas where economic thinking needs reformation and where introductory teaching needs to be revised in light of up to date research and thinking in the field. One area for reform is to include "things left out" in mainstream economic theory. So the corrections to "scope" would include:

1. Adding the physical world
2. Adding human learning, psychology and socialisation
3. Adding complexity
4. Adding the moral/cultural world

Adding the physical world

Neo-classical theory treats economies as closed systems. The circular flows of income and investment take place in the models at least, without physical constraints. In the real world, as ecologists have pointed out, the laws of thermodynamics (matter is neither created nor destroyed, energy flows in one direction towards higher entropy, less ability to do work) require an open system. To function the economy has to have inputs and outputs across the boundaries of the economic system.

Figure 1 Adding the natural world



This simple diagram says production functions need to consider the natural constraints imposed by living on a small, finite planet where production depends on a very complex set of life support systems.

Adding human learning, psychology and socialisation

Where do preferences come from, how are we actually motivated, how do we think, what is rationality and are we rational? By taking preferences as "given" economics fails to address central questions that economics does not make sense without considering: What should be produced? Why is one set of goods and services better than another? What really contributes to utility or is utility just a tautology—another way of saying "I want it because I want it." Why do preferences differ? When preferences conflict, how does society resolve differences. Whose preferences count? Human societies include a range of preferences ranging from Buddhist monks who set themselves on fire to protest American intervention in Vietnam, to Chilean generals who chose to torture prisoners, to the ordinary person who wants a cheeseburger in a fine Gary Larsen cartoon. Some people prefer peaceful green countryside, others fine it boring. Some love city life, some find it unbearable. A significant percentage of the world's population are motivated mainly by religious fanaticism of one variety or another. These issues are simply too important to leave out, particularly in a world where the dominant ethic of happiness through buying at Wal-Mart is stripping the

planet of resources and long term carrying capacity for humans. We need a better set of preferences, rather than given preferences. The questions of how to acquire healthy and sustainable preferences would seem to be at the foundation of economic studies. Otherwise economics is forced to ratify heroin addiction as an expression of assumed preferences. Economics has left out too much of the story—all of the first chapters.

Adding complexity

The early writers quoted above were acutely aware of complexity and use the complexity of economic phenomena a major reason for adopting a deductive approach. Developments since then include good news and bad news. The good news is that we have much more powerful tools for dealing with complexity. Computers can keep track of variables, we can build complex simulation models, we have econometric tools to attempt to measure responses and so on. Progress across a range of disciplines can reinforce this ability to understand complexity. We can use teamwork—multidisciplinary teams—as advocated by Senge to work on complex problems in something closer to holistic fashion.

The zeitgeist now is not to be afraid of complexity, but rather, fascinated by it. The Santa Fe Institute, for example, exists to study complexity. There are mathematics of cybernetics and computing, fractal geometry, chaos, complexity, catastrophe and strategic behaviour. All of these are tools to help understand and cope with complexity better.

The bad news is that the mathematics shows that we cannot compute the answer to every problem. Complexity defeats attempts to create LaPlace's demon—the concept that knowing the state of everything now would allow us to predict everything in the future. We start from Heisenberg's uncertainty principle at the quantum level and all the way up the line from there into "our world" scale systems find unpredictability, risk, indeterminacy and uncertainty. Popper's argument about the unpredictability of history is powerful and convincing. The stock market is a random walk, or something else and maybe something else again tomorrow. Or maybe somebody will invent something else and we won't need a stock market. That is the reality of human societies.

The response to complexity is not to assume it does not exist, but to acknowledge that it places limits on our ability to model, predict and understand. The best we can do is

try to muddle through. We can't find universal economic laws because they don't exist and if they did would be uninformative because they oversimplify too much.

Of course, the instinct of the Greeks and the early economists were right—to understand complexity, try to find simple bits to understand piece by piece. We do need to search for relationships and generalisations. But it is a mistake to pursue them too far. We can be Myrdal, but we can't be Newton.

Adding the moral/cultural world

Lost in this complex world of uncertainty, a moral compass and the cultural traditions of humanity are needed to tell us where to try to go. We cannot be certain of arriving or what we will meet on the way, but we can at least try to go in the direction that seems morally correct.

As a matter of record, it seems to me the Historical School did very well with their value directed tinkering with institutions. In Germany, the "socialists of the chair" as these professors were called, contributed ideas for modernising and uniting the country. In the U.S. the combination of the Progressive Political party movement to reform government and conserve natural resources after the closing of the American frontier revitalised government and the economy. The anti-trust reforms, legalisation of labour unions, augmenting of public education, progressive taxes, regulation of monopolies, pure food and drug laws, regulation of financial institutions, social security for the elderly, unemployment insurance, workmen's compensation and other measures created institutions to a) improve market efficiency, b) more widely distribute the benefits of capitalist production. This in turn created a climate of unprecedented social "peace, prosperity and progress", the slogan of the Eisenhower election campaigns of the 1950s.

By contrast, the laissez faire policies of classical economics and the market "economic rationalist" policies of both the 19th and late 20th centuries led to increasing gaps between rich and poor and corruption of democratic processes.

Any human action reflects some moral vision and set of values. This is no less true of "positivist" positions that claim to leave moral questions to others. In fact, it is a moral position to merely observe a situation that might call for some intervention based on moral concerns. It is not so easy to separate the moral actor from the scientific actor as Keynes (and others) claim. We are all moral actors all of the time.

This is a separate issue from respect for evidence and truth. Objectivity is impossible, but it is important not to be deceived by one's own biases and selection of information. The ideals of scientific objectivity are in themselves a moral stance and a good one. But scientists, as experts, need to go further and advocate positions consistent with their evidence and values. A more sophisticated view of objectivity would include Karl Mannheim's "sociology of knowledge" insights that we often believe what it is convenient for our interests and Russell Hanson's 1950's work on "theory laden facts." Hanson pointed out that merely deciding what to observe is a product of values and theory, so that strictly speaking there is no such thing as objective data in a pure sense of the term. All observation, like all actions of any kind, implies values.

The world's great cultural traditions are a huge resource to guide economic policies. And in general, by the way, they are not sympathetic to the notion of wealth maximisation. Greed, Isaiah warned, leads to thorns and thistles and the ruination of kingdoms. More or less the same message shows up in Buddhism and Christianity.

Method of political economy in the 21st century

Austin Jaffe and others have questioned real estate's claim to be a separate discipline, due to academic real estate authors' heavy use of economics and finance theory and methods. Real estate is an applied form of economics. As an applied form of economic analysis, real estate requires attention to the many empirical details that are assumed away in neo-classical economic theory and method. This applied holistic perspective would be useful throughout the fields of economics and finance. The issues we confront in real estate have something to teach that is of more general interest.

The positivist empiricist research paradigm recommended to generations of graduate students says: Find a problem in the literature, get some data, build and test a model consisting of some simple causal hypotheses. Publish the results.

If we return to the Historical school method (as updated by authors like Peter Checkland and Peter Senge) we would instead recommend something like:

1. Become bothered by a practical historical problem.
2. Enter the problematic system in some kind of role.

3. Study and understand the problem.
4. Identify possible solutions, often an institutional innovation.
5. Build models to simulate effects of solutions.
6. Attempt to implement a preferred solution through advocacy, debate and dialogue.
7. Re-evaluate and correct the course of action based on results.

This process is clearly motivated by moral concerns and implies dealing with complexity, since in applications, complexity matters. Teamwork may be needed to bring to bear sufficient variety of expertise. The details of implementation can make great ideas like Marx's theories or Adam Smith's theories fall over. Results are examples of Simon's "design" and "satisficing" concepts, not optimal, but the best that can be found with available time and resources.

Conclusion

Economics is in the middle of a transition from the Newton inspired attempt to understand based on simple "laws of nature" to a more complex worldview more like commonsense everyday problem solving.

Economics now has better tools to deal with complexity. The insights gained from using these tools include understanding of their inherent limits. After the reformation, the quality of debates in economics will be improved, although debate will not be ended.

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[1] Myrdal used the phrase "invest in equality" in a speech at the University of Wisconsin, circa 1973.
[2] My Alma mater, the University of Wisconsin, proudly displays a bronze plague quoting a 5-4 decision of the Regents not to sack Ely in 1896. It says "Whatever the limits that trammel inquiry elsewhere, the Great State University of Wisconsin must ever encourage that endless sifting and winnowing by which alone the truth may be found." Ely's work had offended the "Robber Baron" capitalists who then controlled state government.

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