

# Economic Institutions and Behavior: An Evolutionary Approach to Microeconomics

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**Preface:**  
**Economics and evolutionary social science**

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*[Economics is the study of] human behavior as a relationship  
between given ends and scarce means...*

L. Robbins (1935):16

*An economic transaction is a solved political problem ... Economics  
has gained the title Queen of the Social Sciences by choosing solved  
political problems as its domain.*

Abba Lerner (1972):259.

This book develops a microeconomic theory of how individual behaviors and economic institutions interact to produce aggregate outcomes and how both individuals and institutions change over time. It is based on assumptions that are at once quite different from those which define the Walrasian paradigm (for Leon Walras (1834-1910) one of the founders of neoclassical economics), and that are considerably closer to what we know empirically about human behavior and institutions and how they have evolved. The reader will not encounter here the “given ends” invoked by Robbins’ celebrated definition of economics. Nor will you find the exchange process described as a “solved political problem” with the consequence (as in Lerner’s reasoning) that because economic interactions are governed by complete contracts there is nothing for the exercise of power to be *about*.

The assumptions of the Walrasian model reduce economic behavior to the solution of an individual’s constrained optimization problem in a virtually institution-free environment. In this formulation the passage of time is represented simply by an interest rate and the actions of others are represented by nothing more complicated than a given vector prices; distance appears as a cost of transportation. An economic actor in this model is roughly Robinson Crusoe with prices standing in for nature.

By contrast, what may be termed post-Walrasian microeconomics takes as the generic situation one in which individuals interact strategically, preferences and beliefs evolve in response to experience, individuals affect one another in ways going far beyond the exchange of contractible goods and services, economies of scale and other positive feedbacks lead to historically contingent (and often inefficient) outcomes, and partly for these reasons the exercise of power and collective action have important impacts on social outcomes.

I draw on recent developments in evolutionary economics, game theory, the theory of

economic institutions, behavioral and experimental economics, and other contributions to micro-economics. While the tools of analysis are from economics (with some borrowing from biology), the subject matter is strongly interdisciplinary, augmenting the usual economic subject matter with concerns of culture, power, asymmetric social relationships, social networks, and norms. I also make considerable reference to empirical studies, beginning each chapter with an empirical puzzle that an adequate theory should be able to address. I do this both because economic theory benefits from the challenge of illuminating real world problems, and in order to ground the assumptions of the models in what is known about actual human behaviors and institutions.

Contrary to its conservative reputation, economics has always been about changing the way the world works. From the mercantilist counselors in the courts of the absolute rulers of early modern Europe and Louis XVI's brain trust of physiocratic economists to today's macroeconomic managers and peripatetic architects of the transition from Communism to market based societies, economists have never been strangers to policy making and constitution building. The hope that economics might assist in alleviating poverty and securing the conditions under which free people might flourish is at once its most inspiring calling and its greatest challenge.

Like many, I was drawn to economics by this hope. Having been a schoolboy in India and secondary school teacher in Nigeria before turning to economics, I naturally came to the field expecting that it would address the enduring problem of global poverty and inequality. At age eleven I had noticed of how very average I was among my classmates at the Delhi Public School-- in sports, in school work, in just about everything. A question has haunted me since: how does it come about that Indians are so much poorer than Americans, given that as people we are so similar in our capacities. And so I entered graduate school hoping that economics might, for example, explain why workers in the United States produce almost as much in a month as those in India produce in a year, and why the Indian population is correspondingly poor (Hall and Jones (1999)). We now know that the conventional economic explanations fail: by any reasonable accounting the difference in the capital labor ratio and in the level of schooling of the U.S. and Indian workforces explain much less than half of the difference in productivity. It seems likely that much of the gap results from causes more difficult to measure and less studied by economists: namely differences in historical experience, institutions and conventional behaviors. These are the subject matter of this book.

Alfred Marshall (1842-1924), with Walras one of the founders of the neoclassical paradigm, introduced his major work with these lines:

Now at last we are setting ourselves seriously to inquire whether it is necessary that there should be any so called "lower classes" at all: that is whether there need be large numbers of people doomed from their birth to hard work in order

to provide for others the requisites of a refined and cultured life, while they themselves are prevented by their poverty and toil from having any share or part in that life. ...the answer depends in a great measure upon facts and inferences, which are within the province of economics; and this is it which gives to economic studies their chief and their highest interest.

Marshall( (1930):3-4 ) wrote this in 1890. I suspect he would be disappointed by the progress economics has made towards these lofty aims in years since.

Thus, as I wrote the pages which follow I asked this question: might these models (however abstract) illuminate something important about the workings of contemporary capitalist economies as we know them, and might they suggest ways that economic and other social institutions might better meet people's needs. Though motivated by a concern about the impact of economic institutions on human well being, I have adopted an evolutionary rather than a social engineering approach. Like the idea of genes seeking to maximize their replication or a grand auctioneer hitting upon general equilibrium prices by trial and error, the omniscient and omnipotent social engineer seeking to maximize social welfare is a fiction whose usefulness depends on keeping in mind its fictive character. Social outcomes – even those involving states and other powerful bodies – are the combined result of actions taken by large numbers of people acting singly. Understanding the complex processes that generate these outcomes cannot be short-circuited by such devices as fictive auctioneers or social engineers. Rather, we need to understand how real individuals behave and the way that distinct institutions generate population-level dynamics which aggregate these behaviors to produce social outcomes. The evolutionary character of the analysis will become evident in the way that individual behaviors are modeled, the kinds of population level dynamics studied, and the ways that behaviors and institutions co-evolve.

The first section introduces a variety of models applied to what I have just called the generic social interaction. I begin with two chapters on institutions and the evolution of structures of social interactions before turning to preferences and beliefs. The unconventional ordering of these topics – most microeconomics texts start with preferences -- reflects the importance of institutions as influences on the norms, tastes, and understandings that individuals bring to the situations in which they act. The middle section of the book concerns the institutions of capitalism and especially markets, lending institutions, and firms. I give particular attention to the complex institutions governing transactions in these arenas and the way that the incomplete nature of most contracts gives rise both to a well defined political structure of the capitalist economy and an important role for what I term social preferences including such things as trust, generosity, and reciprocity, in addition to the more conventional self interest. The last section concerns the process of institutional change; I emphasize the role of technical change, collective action, and intergroup conflict as constituent parts of the process by which social rules and individual behaviors co-evolve.

While most of what follows is the result of recent research, virtually all of the models and ideas presented there were anticipated by writers a half a century ago or more, sometimes much more. The importance of adaptive agents (with realistic cognitive capacities and predispositions) was a central part of the work of Frederich Hayek (1945) and Herbert Simon (1955). Simon's pioneering work on the incomplete nature of the employment contract Simon (1951) formalizes the earlier work of Coase (1937) and long before Coase, Marx (1859, 1976). The basic concepts of game theory, bargaining and other non-market social interactions were introduced in the early writings of John Nash (1950a), Oskar Morgenstern and John von Neumann and Morgenstern (1944), Thomas Schelling (1960) and Duncan Luce and Howard Raiffa (Luce and Raiffa (1957)). Nash even suggested the basic ideas of evolutionary game theory in his doctoral dissertation Nash (1950b). Endogenous preferences were central to the work of James Duesenberry (1949) and Harvey Leibenstein (1950) both drawing on the much earlier work of Veblen (1899/1934) and developing themes initially raised by Smith (1776) and Marx. The application of biological reasoning to economics now prominent in evolutionary game theory was developed a half a century ago by Alchian (1950) and Becker (1962).

The fact that most of the key ideas presented in the pages which follow were anticipated in the 1950s but ignored in subsequent decades poses an intriguing question. Why did the Walrasian paradigm become virtually synonymous with economics in the third quarter of the previous century only to be challenged at the century's end by a set of ideas most of which had been articulated by well placed academics just prior to the rise to prominence of the Walrasian paradigm? Gintis and Bowles (2000) have taken a stab at the question but to address it here would be a diversion.

The content of the book was developed while teaching two micro-economic theory courses for doctoral candidates at the University of Massachusetts over the past decade, one addressed to new developments in micro-economics, and the other a seminar in institutional, behavioral and evolutionary economics. These courses develop economic models to address real world problems using a series of mathematical problem solving exercises, but with little attention given to formal proofs. In this respect both the courses and this book differ markedly from the usual first year graduate micro-economics sequence. The book is intended for readers interested not only in a synthesis of contemporary social science reasoning applied to problems of economic institutions and behavior but also wanting to learn the basic modeling skills necessary to participate -- as a user or a producer -- in further development of the field.

The book is intended for use in graduate level microeconomics courses, as well as courses in institutional and evolutionary economics, and formal modeling courses in sociology, anthropology, and political science. The book could also be used in advanced undergraduate courses in these subjects. General readers may find the book a useful introduction to the emerging paradigm of evolutionary social science. Little previous exposure to economics is

presumed. The mathematical techniques used are limited to what is generally learned in a two-semester calculus sequence.

The book originated long ago when over a period of years I taught the advanced microeconomic theory course to doctoral candidates at Harvard University. While the content of the course was thoroughly Walrasian, seeds of doubt were nurtured in long discussions with my co-teachers Wassily Leontief, Tibor Scitovsky, and David Kendrick as well as from reflection on our students' often puzzled reactions. The difference between the text Kendrick and I published based on that course and this book measures the distance traveled by economic theory in the intervening decades (Bowles and Kendrick (1980)).

But the two books share a common emphasis on the importance in learning microeconomics of acquiring basic modeling skills through exposure to intellectually challenging yet mathematically tractable analytical problem-solving exercises. The extensive problem sets at the end of this book offer practice in developing these skills, as well as examples of applications of the theory to important real world problems. In the body of the text, I have italicized frequently used terms where they are first introduced (and defined) in the text (the definitions can be located by consulting the index). The quotes that head each chapter serve to remind you that the problems to which these pages are addressed have been around for a while and probably will not be fully resolved anytime soon, and that they extend far beyond economics. (If you suspect the authors of the headquotes are among those with whom I conduct imaginary conversations, you would not be far wrong, though I would not want to invite them all to dinner on the same evening!)

Much of the book reflects my long term research collaboration with Herbert Gintis whose text in game theory, ( Gintis (2000) ) constitutes a valuable complement to this book.. Many of the ideas presented here were developed jointly with him (especially in those in chapters 8, 9, 10 and 14). Important contributions to these pages have come, as well, from my graduate students at the University of Massachusetts, whose suggestions, criticisms and sometimes quizzical looks account for many improvements in the text. Some of the material in chapters 11 and 13 draws on my collaboration with Jung-Kyoo Choi and Astrid Hopfensitz. I have also benefitted from the comments of the doctoral candidates I have taught at the University of Siena. My teaching assistants over the years -- especially from Katie Baird, Christina Fong, Jung-Kyoo Choi, Minsik Choi, James Heintz, Mehrene Larudee, Edward McPhail, Yongjin Park, Dori Posel, and Eric Verhoogen, -- are also responsible for numerous improvements.

Comments on the entire manuscript by Elisabeth Wood and Peter Skott have made it a much better book. I have also benefited from the contributions of Robert Boyd, Karla Hoff, Kenneth Sokolof, Junfu Zhang [acknowledgements to be completed.]

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### *Works Cited*

- Alchian, Armen. 1950. "Uncertainty, Evolution, and Economic Theory." *Journal of Political Economy* (Journal of Political Economy), 58, pp. 211-21.
- Becker, Gary S. 1962. "Irrational Behavior and Economic Theory." *Journal of Political Economy* (Journal of Political Economy), 70:1, pp. 1-13.
- Bowles, S., and Herbert Gintis. 2000. "Walrasian Economics in Retrospect." *Quarterly Journal of Economics*.
- Bowles, Samuel and David Kendrick. 1980. *Notes and Problems in Microeconomic Theory*. Amsterdam: North Holland (Advanced Texts in Mathematical Economics) 2nd edition with P.Dixon.
- Coase, R. H. 1937. "The Nature of the Firm." *Economica* (Economica), 4, pp. 386-405.
- Duesenberry, James S. 1949. *Income, Saving, and the Theory of Consumer Behavior*. Cambridge, MA: Harvard University Press.
- Gintis, Herbert. 2000. *Game Theory Evolving*. Princeton, NJ: Princeton University Press.
- Hall, Robert and Charles Jones. 1999. "Why do some countries produce so much more output per worker than others?" *Quarterly Journal of Economics*, pp. 83-116.
- Hayek, F.A. 1945. "The Use of Knowledge in Society." *American Economic Review*, 35:4, pp. 519-30.
- Leibenstein, H. 1950. "Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand." *Quarterly Journal of Economics*, 64, pp. 183-207.
- Lerner, Abba. 1972. "The Economics and Politics of Consumer Sovereignty." *American Economic Review* (American Economic Review), 62:2, pp. 258-66.
- Luce, R. Duncan and Howard Raiffa. 1957. *Games and Decisions*. New York: John Wiley.
- Marshall, Alfred. 1930. *Principles of Economics (Eighth Edition)*. London: MacMillan (original publication 1890).

- Marx, Karl. (1859 )1976. *Capital I*. Harmondsworth: Penguin.
- Nash, John F. 1950a. "Equilibrium Points in n-Person Games." *Proceedings of the National Academy of Sciences* (Proceedings of the National Academy of Sciences), 36, pp. 48-49.
- Nash, John F. 1950b. "Non-cooperative games.". Princeton University.
- Neumann, John Von and Oskar Morgenstern. 1944. *Theory of Games and Economic Behavior*. Princeton, NJ: Princeton University Press.
- Robbins, Lionel. 1935. *An Essay on the Nature & Significance of Economic Science*. London: Macmillan.
- Schelling, Thomas. 1960. *The Strategy of Conflict*. Cambridge, MA: Harvard University Press.
- Simon, Herbert. 1951. "A Formal Theory of the Employment Relation." *Econometrica* (Econometrica), 19, pp. 293-305.
- Simon, Herbert. 1955. "A Behavioral Model of Rational Choice." *Quarterly Journal of Economics*, 69, pp. 99-118.
- Smith, Adam. 1776. *An inquiry into the nature and causes of the wealth of nations*. London,: W. Strahan and T. Cadell.
- Veblen, Thorsten. 1899/1934. *The Theory of the Leisure Class*. New York: Modern Library.

Economic Behavior and Institutions. Principles of Neoinstitutional Economics. Get access. Subjects: Economics, Microeconomics, Economic Theory, Political Economy, Politics and International Relations. Series: Cambridge Surveys of Economic Literature. Export citation. The author proposes a unified approach to this research, integrating the work of various contributors and emphasising the common principles of inquiry that tie the work together. The theoretical discussion is accompanied by empirical studies dealing with a range of institutions and economic systems. This book will serve as the primary resource for economists and students who want to learn about this important branch of economic theory. Reviews. Evolutionary economics has also stimulated renewed attention to issues of variety generation and selection processes which are closely related to issues of path dependence, increasing returns, and transitions between different social and market "paradigms." From: Handbook of the Economics of Innovation, 2010. Related terms: Economic Theory. Business Cycle. Institutional Economics. Economists. Cambridge surveys of economic literature. Economic behavior and institutions. Cambridge surveys of economic literature. program, a new approach to the study of economics systems, which at the same time is essentially a generalization or extension of microeconomics. Most of the work I discuss is new; Neoinstitutional Economics as a unified research program took shape in the 1980s. I hope the book will convey a sense of the tremendous potential I see in the new approach that I predict will one day be referred to as economics. The main contributors to neoinstitutional analysis usually operate at only one of the three levels of analysis that I have described, except for Douglass North.