



**BA 513/STA 234: Ph.D. Seminar on [Choice Theory](#)**  
**Professor Robert Nau**  
**Spring Semester 2008**

**Alternative perspectives on choice theory**

**A. Methodological individualism, subjectivism, and Austrian economics**

1. "Time and thought" by G. L. S. Shackle, *British Journal for the Philosophy of Science*, v. 9, no. 36, 1959, pp. 285-298. Reprinted in *Time, Expectations, and Uncertainty in Economics: Selected Essays of G.L.S. Shackle*, edited by J.L. Ford, Edward Elgar Press, 1990
2. Chapters 1 and 2 from *The Meaning of Market Process: Essays in the Development of Modern Austrian Economics* by Israel M. Kirzner, 1994
3. "Methodological Individualism and Social Knowledge" by Kenneth Arrow, *American Economic Review*, v. 84, no. 2, 1994, pp. 2-9

**B. Bounded rationality and complexity theory**

1. Herbert Simon: "Behavioral Economics and Bounded Rationality" from *Models of Bounded Rationality, Vol. 3* (1997)
2. Daniel Isenberg: "How Senior Managers Think" (*Harvard Business Review*, 1984)
3. W. Brian Arthur: "Inductive Reasoning and Bounded Rationality" (*Amer Econ Rev*, 1994)
4. David Lane et al.: "Choice and Action" (*Journal of Evolutionary Economics*, 1996)

**C. Evolutionary psychology and cognitive neuroscience**

1. Leda Cosmides and John Tooby: "Cognitive Adaptations for Social Exchange" from *The Adapted Mind*
2. Stephen Pinker: "Good Ideas," chapter 5 from *How the Mind Works*

## Notes and guide to readings

### A. Methodological individualism, subjectivism, and Austrian economics

The first group of papers assigned for this week's class may appear rather eclectic at first glance, but they are actually organized around two of the important themes of rational choice theory—namely, *methodological individualism* and *subjectivism*. As we saw in Elster's 1986 paper at the beginning of the course, one of the cornerstones of rational choice theory is the principle of methodological individualism, which holds that social theories must be expressed in terms of beliefs, tastes, resources, and experiences of individuals. To this, the principle of subjectivism adds that the individuals are entitled to their own idiosyncratic tastes (“de gustibus non est disputandum”) and perhaps to their own idiosyncratic beliefs as well. These principles were first systematically applied in economics during the marginalist revolution of the 1870's, when economists started to build quantitative models in which individual consumers maximized subjectively-determined utility functions subject to a price system and budget constraints. Much later, in the mid-1900's, methodological individualism began to permeate the other social sciences—especially sociology, political science, and history—in opposition to discredited “holistic” or “historicist” schools of thought such as structuralism-functionalism, Marxism, group theory, and systems theory. A 1957 paper by **J.W.N. Watkins** (“Historical Explanation in the Social Sciences”, *British Journal for the Philosophy of Science*, reprinted as “Methodological Individualism and Social Tendencies” in *Readings in the Philosophy of the Social Sciences* edited by May Brodbeck, Macmillan, 1968) is often cited as an authoritative description of the individualistic method:

According to this principle, the ultimate constituents of the social world are individual people who act more or less appropriately in the light of their dispositions and understanding of their situation. Every complex social situation, institution, or event is the result of a particular configuration of individuals, their dispositions, situations, beliefs, and physical resources and environment. There may be unfinished or half-way explanations of large-scale social phenomena (say, inflation) in terms of other large-scale phenomena (say, full employment); but we shall not have arrived at rock-bottom explanations of such large-scale phenomena until we have deduced an account of them from statements about the dispositions, beliefs, resources, and inter-relations of individuals...

...the irreducible sociological laws postulated by holists are usually regarded by them as laws of social development, as laws governing the dynamics of a society. This makes holism well-nigh equivalent to historicism, to the idea that a society is impelled along a pre-determined route by historical laws which cannot be resisted but can be discerned by the sociologist. [whereas] ...the central assumption of the individualistic position—an assumption that is admittedly counter-factual and metaphysical—is that no social tendency exists which could not be altered *if* the individuals concerned both wanted to alter it and possessed the appropriate information. [pp. 270-271]

...the social scientist does not make daring innovations in psychology but relies on familiar, almost self-evident psychological material. His skill consists, first, in spotting

the relevant dispositions, and secondly in inventing a simple but realistic model which shows how, in a precise type of situation, those dispositions generate some typical regularity or process.” [p. 279]

In the explanation of regularities the same situational scheme or model is used to reconstruct a number of historical situations with a similar structure in a way which reveals hows typical dispositions and beliefs of anonymous individuals generated, on each occasion, the same regularity. In the explanation of a unique constellation of events, the individualistic method is again to reconstruct the historical situation, or connected sequence of situations, in a way which reveals (usually both named and anonymous) individuals with their beliefs and dispositions (which may include peculiar personal dispositions as well as typical human dispositions), generated, in this particular situation, the joint product to be explained. I emphasize *dispositions*, which are open and law-like, as opposed to *decisions*, which are occurrences, for this reason. A person’s dispositions ought, under varying conditions, to give rise to appropriately varying decisions...” [p. 280]

In rational choice theory as it has developed from the 1950’s to the present, the “dispositions” of individuals are formally modeled in terms of their *preferences*—and, more precisely, by the quantitative representative of those preferences in terms of *utility functions*—and the way in which “those dispositions generate some typical regularity or process” is usually through convergence to some kind of *equilibrium*.

Note that methodological individualism and rational choice theory are not synonymous. Most social science nowadays is individualistic (or at least reductionistic, even if the unit of analysis is not always the individual). Rather, rational choice theory results from the marriage of methodological individualism with *a particular type of quantitative model of how individuals behave and how they interact*. Other theories differ in the latter details. For example, “behavioral” decision theory and economics (as developed by Simon and March, Tversky and Kahneman, and others) is certainly individualistic, but it does not model the behavior of individuals in terms of complete and consistent preferences, nor does it seek to explain social phenomena in terms of equilibria.

The papers by Shackle and Kirzner represent some more extreme strains of individualist theorizing that are also, for different reasons, at odds with rational choice theory and its progenitor, neoclassical economics. Although their ideas have faded from prominence during the last few decades, as rational choice has swept over the landscape, the points they raise are still worth considering. **Shackle** represents the “radical subjectivist” school of economics. For Shackle, the economic decision maker is not merely an idiosyncratic individual, but an idiosyncratic individual heroically isolated in time, living in the moment and freely exercising her imagination and her will to shape the course of events. Section 3 of his paper, on “the nature of decision,” throws down the gauntlet. I recommend that you read the whole thing, but here are some choice excerpts:

“If we regard the history of the world and of each person in it as the unrolling of an initially complete design, as determinate and pre-destinate, then ‘decisions’ can play no

more vital and spontaneous a role in this process than the shapes of the pieces of a jigsaw puzzle play in the fitting together of the puzzle. The final picture takes its character from the necessity of fitting the pieces together in just the one possible way; yet the profile of each piece was cut before ever the fitting together came to be attempted; the character of the ultimate picture was pre-determined, and it would be against all sense to ascribe what gradually emerges as being created by the profiles. Yet we speak and think as though decisions were *creative*. Our spontaneous and intuitive habits of mind treat a decision as introducing a new strand into the tapestry as it is woven, as injecting into the dance and play of events something *essentially* new, something not implicit in what had gone before...

...The true basis of the disaster wrought upon economic theory by the *games of chance* universe of ideas is the notion of the existence and attainability of a list, complete and known to be complete, of all the possible outcomes of an action. In games of chance this possibility, of listing completely all the contingencies, is assured by the very nature of these games, their inherent and essential dependence upon a set of explicit rules. It is the completeness of this list which makes it logically possible to distribute relative frequencies over the contingencies. Once we abandon the notion of rules of an artificial game and the 'objective' list of its possible states, and mean by 'possible' outcome of an act anything that the individual thinks to be possible, we find that outcomes are not *given* to the individual but imaginatively *created* by him.

... Between man in his spontaneous naturalness, and man in his superior scientific wisdom, there is a deep divorce and alienation. Natural man believes, without thought or question, in his own creativity, in his power to conjure from the air a new strand in the texture of affairs, by merely saying *I decide*... Scientific man says that he can predict the course of events. Give him an adequate description of what has been up to now, and he will tell you what will be after this. Now these two decisions are utterly at variance."

Someone who writes so poetically about scientific ideas is easily dismissed as a crank, but I think he has a point. His emphasis on the creative element in decision-making resonates (for me, anyway) with Ralph Keeney's recent work on "value focused thinking" in decision analysis, and it seems to capture the way we feel about *important, interesting, open-ended decisions*, as opposed to decisions about whether to order chicken or fish from the restaurant menu that has been placed in front of us. And it seems to describe the kind of lofty decision making ability that commands a high price in the marketplace by those who can exercise it. But Shackle's portrayal of the "natural" and the "scientific" views of decision as "utterly at variance" places him at a pole far away from the main body of received economic theory, especially equilibrium theory. (Incidentally, it appears on the surface that Shackle's views are also quite far from those advanced by Watkins: Shackle seems to celebrate the element of "arbitrary fiat" whose effects on history Watkins would rather minimize. But Shackle credits Watkins, in the footnote on the first page, as a source of inspiration and support.)

The modern Austrian economists, of whom **Kirzner** is a prominent spokesman, try to stake out a middle ground in between the radical subjectivism of Shackle and the deterministic subjectivism of neoclassical economics. The "Austrian school" of economics originated with Carl Menger,

the Austrian member of the triumvirate that started the marginalist revolution, but it gradually evolved in a direction away from the rest of neoclassical economics, through the subsequent contributions of Ludwig von Mises, Friederich von Hayek, Joseph Schumpeter, and Oskar Morgenstern (among others), as well as an American contingent that includes James Buchanan, Andrew Schotter, and Kirzner. (By the way, you can find out more about these guys by following the [“Austrian school” link](#) at the bottom of the “who’s who” page of the course web site.) The Austrians (at least since Hayek) have tended to emphasize that markets are typically in a state of (at least mild) *disequilibrium*, that economic agents have incomplete knowledge of possible future conditions, that price systems play an important role in coordinating the decentralized activities of many different agents, and that “spontaneous order” tends to emerge under such conditions. Recall Arrow’s observation that “if every agent has a complete model of the economy, the hand running the economy is very visible indeed.” The Austrians are fond of pointing out that under the assumptions of neoclassical economics, the superiority of *laissez faire* over central planning is not apparent. (The Austrians have been among the most rabid critics of socialism and welfarism, while at the same time they disagree with neoclassical free-market economists.) Kirzner notes [pp. 11-12]:

“The decisive elements of the Austrian approach which rendered it incompatible with the Walrasian version of neoclassical theory were elements which grew out of a more lively sense for the subjectivism of the Austrian tradition. Mises stressed the autonomy of individual choice, the uncertainty of the environment within which choices are made, the entrepreneurial character of market decisions, and the over-riding importance of human purposefulness. Hayek stressed the role of knowledge and discovery as facilitated during the process of dynamic competition. ...it is only by incorporating these subjectivist insights that we can adequately understand the spontaneous, coordinative properties of the market process.

... What renders the market process a systematic process of coordination is the circumstance that each gap in market co-ordination expresses itself as a pure profit opportunity. It is the existence of these profit opportunities which attracts the attention of alert entrepreneurs. A gap in co-ordination is itself the expression of sheer mutual ignorance on the part of potential market participants. The profit-grasping actions of entrepreneurs dispel the ignorance which was responsible for the profit opportunities, and thus generate a tendency towards co-ordination among market decisions. In this way economic theory is able to understand how market prices, market allocation of resources and market distribution of incomes can be understood as the outcomes of a systematic equilibrating tendency—a tendency indeed never completed but, at the same time, never completely suspended. Market phenomena are not to be seen as nothing more than the immediate expression of spontaneously changing preferences and expectations, but as the outcome of a process which, while certainly not completely determined, is nonetheless systematically set in motion by the relevant underlying realities.”

Thus, like Shackle, the Austrians emphasize the autonomy and spontaneity of the individual—and also her “alertness” to opportunities for profit—although unlike Shackle the Austrians see these qualities as contributing to a systematic process of market coordination.

Recall that in neoclassical economics the central question is how to allocate existing resources so as to optimize existing preferences. This allocation process yields a surplus in the sense that it increases the utility of the participants, but the potential surplus is already implicit in the description of the original situation—nothing new is created or discovered. In such a world, an entrepreneur plays no distinguished role except perhaps as a middleman in transactions that would have been made anyhow as part of an inexorable convergence to equilibrium, someone who simply manages to snag a share of the surplus for herself. In contrast, the Austrians give a much more active, creative, questing role to the entrepreneur. The entrepreneur *creates new surplus* by *discovering* profit opportunities that others have overlooked and perhaps would continue to overlook if not for her own alertness. As such, she is held to be *entitled* to the lion's share of the surplus that she happens to create. Note that this view of entrepreneurial activity is very much at odds with rational-choice concepts of optimal search and “Bayesian” learning:

“The emphasis we have placed on the discovery (rather than deliberate search) character of the market process is of considerable importance. Processes of deliberate search are, in a definite sense, fully determinate. At each point in the search process one knows, as it were, exactly as much as one has chosen to know. The amount one has chosen to know is completely determined by the value of what one might seek to know and by the costs of search. At each point in time one possesses the optimal degree of knowledge (and thus also the optimal degree of ignorance). Were the market process to be of this character it would be a completely determinate process—one fully explicable in terms of equilibrium theorizing. That is, one would not then describe the market process as following a course from disequilibrium to equilibrium, but rather as following a course from equilibrium with a great deal of (optimal) ignorance to equilibrium with a lesser (but of course, still optimal) degree of ignorance.

What we have been underlining, on the other hand, is that in the market process view the passage leading from many prevailing prices towards a single price is not at all determined, but nonetheless systematic and expressive of a powerful tendency. There can never be a guarantee that anyone will notice that of which he is utterly ignorant; the most complete rationality of decision making in the world cannot ensure search for that the existence of which is wholly unsuspected. Yet we submit that few will maintain that initial ignorance concerning desirable opportunities costlessly available can be expected to endure indefinitely. We recognize, surely, that human beings are motivated to notice that which it is to their benefit to notice. We identify this general motivation with the alertness which every human being possesses, to greater or lesser degree... Because of its non-deterministic, non-mechanical character, this market process of discovery does not lend itself to the kind of modeling central to equilibrium economics. Yet the systematic nature of the process requires that we not permit any methodological predilections in favour of formal modeling techniques to obscure vitally important features of the market economy.” [pp. 48-49]

This view of the market process also has significant implications for the concept of individual liberty:

“What a free market does is to offer its participants incentives to make profitable discoveries. This central feature of the free market has *two* implications for individual liberty. First... it is able to harness individual freedom to generate the systematic discovery process which is the basis of the co-ordinative properties of the market. Second, by offering the incentive of pure profit opportunities to alert market participants, the market is affording an outlet through which an essential element of the individual freedom can be expressed and exercised. If freedom includes, in an important sense, the freedom to recognize hitherto unnoticed profit opportunities, and if, as argued, one’s ability to recognize opportunities depends vitally on one’s ability to seize benefit for oneself from such opportunities, then *only* a system that permits the grasping of opportunities for gain is capable of providing scope for individual liberty (other than the kind of freedom enjoyed by Robinson Crusoe).” [p. 54]

Thus, “finders keepers” is elevated to the status of an ethical principle. Needless to say, adherents of the Austrian view tend to be libertarian in their politics.

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Let’s take stock of where we have gotten so far with today’s theme: the radical subjectivists, the Austrian economists, and rational choice theorists all subscribe to the principles of *methodological individualism* and *subjectivism* and also to the notion that individual behavior is *purposeful*. They agree that social and economic systems (should) enable individuals to make their own decisions and seek their own ends. And at the moment of decision, they regard the individual as a solitary actor. (“It’s a game, and it’s played alone.”) These competing schools of thought differ, though, in the ways in which they view purposeful individual behavior. From the rational choice perspective, purposeful behavior means nothing more than the satisfaction of preferences that the individual already possesses, and social and economic systems are assumed to converge, by unspecified means, to conditions of equilibrium whose parameters are uniquely determined by initial conditions (i.e., preferences and resource endowments). The behavior of the individuals and the larger system are thus regarded as determinate, at least in a quantifiable probabilistic sense. In contrast, the Austrians and the subjectivists regard the behavior of individuals to be free and spontaneous as well as self-interested, they consider the natural condition of social and economic systems to be a state of disequilibrium, and the behavior of individuals and the larger system is held to be not determinate even in a probabilistic sense, although they do exhibit certain regularities.

The paper by **Arrow** is a very nice counterpoint to the previous three papers—and if you have already read the other papers (and these notes), you will understand the issues and the protagonists that he is talking about. Arrow points out that, despite the appeal of the individualist position, economic theories must have *social* elements that transcend the individual. He notes that both Austrian and neoclassical economists pay homage to the principle of methodological individualism, but he argues that “standard economic models ... do not conform to its requirements... In fact, every economic model that one can think of includes irreducibly social principles and concepts.” For example, in general equilibrium theory, individuals choose optimal allocations under a given price schedule, but the process of price formation is unmodeled. Presumably the prices are determined by some kind of social process. (Here, as we

have seen, the Austrians have somewhat more to say than the neoclassicists, but even the Austrian entrepreneur does not operate in a social vacuum.) Arrow goes on to point out that a similar problem lurks in the background of game theory: in equilibrium, every agent behaves optimally while taking the equilibrium strategies of the other agents as given. But who determines the equilibrium strategies? And prior to that, who determines the rules of the game that is being played?

“...the *rules of the game* are *social*. The theory of games gets its name and much of its force from an analogy with social games. But these have definite rules which are constructed, indeed, by a partly social process. Who sets rules for real-life games?

More generally, individual behavior is always mediated by social relations. These are as much a part of the description of reality as is individual behavior.” [p. 5]

Elsewhere, he comments:

“It strikes me... that the current focus of evolutionary analysis on strategy choice in games might be better directed toward changes in the rules of the game. This would be a formalization of the notion of spontaneous order.” [p. 3]

Later, Arrow observes that *knowledge* plays an important role in economic models—but much of the useful knowledge in a society is *scientific and technological* knowledge that accumulates over time and is transmittable between individuals. “Technical and other knowledge exists in social form: books or universities.” In some situations “it may be easier to think of information breeding information and to suppress the role of individuals.” (I will pass over his gratuitous remark that “professors in many courses are largely interchangeable,” but I must admit that since the notes for this course are available to anyone on the world wide web, they are now part of the stock of social knowledge.)

Arrow concludes on the following note:

“Methodological individualism has indeed one major implication for information acquisition, ironically one not very compatible with neoclassical paradigms, particularly not with rational choice. Information may be supplied socially, but to be used, it has to be absorbed individually. The limits on the ability to acquire information are a major barrier to its diffusion. This line of argument leads to Herbert Simon’s concept of bounded rationality, and to the emphasis on learning as a process in time.

I have no easy summary. But I do conclude that social variables, not attached to particular individuals, are essential in studying the economy or any other social system and that, in particular, knowledge and technological information have an irremovably social component, of increasing importance over time.”

Now, strictly speaking, the idea that much of our knowledge is social knowledge and that our interactions with others are usually mediated by social processes is perfectly compatible with the general principle of methodological individualism as enunciated by Watkins—as long as it is

possible, in particular cases, to describe the knowledge or the social processes in concrete terms as they apply to individuals. However, I agree with Arrow that the extreme form of methodological individualism that is the hallmark of rational choice models, in which nearly *all* the relevant knowledge is imagined to be stored inside the individual at the moment of decision, does not lead to a very satisfactory explanation of the role of social and economic institutions. Meanwhile, I side with Shackle and the Austrians in thinking that “unknowledge” (what you don’t know that you don’t know) is an important issue in decision making and in economic modeling, although I think that Arrow’s observations on social knowledge and social processes are applicable here too. The alert entrepreneur does not literally conjure new discoveries out of thin air: she is aided by the technology, the customs, and the institutions that surround her.

## **B. Bounded rationality and complexity theory**

**Herbert Simon: “Behavioral Economics and Bounded Rationality”** from *Models of Bounded Rationality, Vol. 3 (1997)* Simon was the founder of the behavioral/bounded-rationality movement in economics in the 1940’s and 1950’s. These excerpts from his 1997 book give a summary of the main ideas and also some of his reflections on the fact that rational choice ideas have continued to dominate the field of economics despite their unrealistic assumptions and descriptive inadequacies. By the 1980’s, Simon had become somewhat disillusioned by the fact that behavioral theories and bounded rationality models had not been adopted more widely in economics and organization theory, and he had turned his attention to the field of artificial intelligence, which at that time showed promise of emulating the cognitive processes of real human decision makers. (Alas, this field has not yet lived up to its early promise either: we finally have a computer that plays chess at the grand-master level, but it does so by brute-force calculation, not by emulating the pattern-recognition and intuitive judgments of human chess players.)

**Daniel Isenberg: “How Senior Managers Think”** (*Harvard Business Review*, 1984, reprinted in *Decision Making*, edited by Bell, Raiffa, and Tversky, 1988) This is a wonderful article that describes the decision processes typically used by real managers. It emphasizes that “the primary focus of on-line managerial thinking is on organizational and interpersonal processes,” that managers rely on intuition developed through experience, and they have a high tolerance for ambiguity. These observations are very much in accord with Simon’s bounded-rationality view of the world and with the notion that “other people’s brains” are needed to solve hard problems in business.

**W. Brian Arthur: “Inductive Reasoning and Bounded Rationality”** (*American Economic Review*, 1994) This short paper gives a complexity-theoretic view of the role of inductive reasoning by boundedly rational agents who live in complex environments. (The use of inductive rather than deductive reasoning is also a theme that runs through Simon’s work. It also appears frequently in the literature of management consulting) This paper also shows how artificial models of inductive reasoning can give rise to chaotic dynamics.

**David Lane et al.: “Choice and Action”** (*Journal of Evolutionary Economics*, 1996) This long paper gives a more detailed critique of the rational choice paradigm from the perspective of complexity theory. (The authors of this paper, like Brian Arthur, are all affiliated with the Santa

Fe Institute.) The descriptions of how complex decisions are made in several real applications echo the points raised by Simon and Isenberg. On one hand, expert decision makers usually rely on pattern-recognition skills and automatic responses developed through experience, rather than on conscious, reasoned deliberation. On the other hand, the solution of really complex problems is usually achieved through “networks of generative relationships” involving many individuals.

### **C. Evolutionary psychology and cognitive neuroscience**

**Leda Cosmides and John Tooby: “Cognitive Adaptations for Social Exchange”  
from *The Adapted Mind***

**Stephen Pinker: “Good Ideas,” chapter 5 from *How the Mind Works***

Much of received social science, including much of rational choice theory, is based implicitly or explicitly on the viewpoint that the human brain is a general-purpose computer that is equipped to solve arbitrary optimization problems and whose goals and objectives are to a large extent culturally determined and encoded in a globally consistent set of preferences. (Recall Watkin’s statement that “no social tendency exists which could not be altered *if* the individuals concerned both wanted to alter it and possessed the appropriate information.”) The emerging fields of evolutionary psychology and cognitive neuroscience take a rather different viewpoint, namely that “humans have a faculty of social cognition, consisting of a rich collection of dedicated, functionally specialized, interrelated modules (i.e., functionally isolatable subunits, mechanisms, mental organs, etc.) organized to collectively guide thought and behavior with respect to the evolutionarily recurrent adaptive problems posed by the social world.” In other words, *the human brain has specialized organs for solving particular kinds of cognitive and social problems that were faced by our distant ancestors and which were shaped by natural selection.* On this view, humans are much better at solving some kinds of problems (namely, those for which our brain has specialized modules) than others, and many aspects of human behavior (such as how we play prisoner’s dilemma games) are determined by evolutionary biology rather than by cultural programming or by rational calculation based on the appropriate information. Thus, social tendencies are to some extent universal and immutable, insofar as they are partly based on neurophysiological traits which are hard-wired in our genes and for which explanations must be sought in the prehistoric environment. These two selections represent the views of some of the leaders in these fields.