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BOOK REVIEWS

Review of *Human Nature and the Limits of Science*

Robert A. Olsen

Human Nature and the Limits of Science, John Dupre, 2003, Oxford, UK: Oxford University Press, 201 pp.

It is generally acknowledged that neoclassical economics is impotent to explain much about market dynamics because of its tendency to treat tastes and preferences as exogeneous. That is, the significance of important feedback loops are ignored because of the assumption that market behavior and social phenomena are no more than aggregates of current individual preferences. In addition, neoclassical economics has been saddled with the behaviorally simplistic assumption that human behavior represents an exercise in "rational choice" wherein optimization is the overriding decision objective.

More recently, evolutionary psychology (the successor to sociobiology) has begun to explore the evolutionary origin of decision- making processes in an attempt to improve our understanding of individual choice and market dynamics. Evolutionary psychology begins by postulating that the way to understand behavior lies with understanding the structure and working of the human brain. However, the understanding of brains requires an understanding of the genetic processes that guide the development of brains. Thus, the understanding of human decision-making requires reflection on the process of natural selection. This chain of logic has led to the position that the investigation of current decision processes should be reframed as a "reverse engineering" inquiry into the human behaviors that might have been evolutionarily adaptive. For example, might we expect people to be naturally "risk averse" and/or display an evolved tendency to "follow the crowd" as a consequence of long term ecological conditions? While Dupre acknowledges that such an approach may provide some interesting insights, he argues that this process results in hypotheses that cannot be subjected to rigorous scientific testing.

In this scholarly and thoughtful book, John Dupre, Professor of Philosophy of Science and Director for the Center of Genomics at Exeter University, warns that our understanding of human nature is being distorted by "pseudo scientific" thinking. In particular he argues that the purveyors of both the Economics of Rationality and Evolutionary Psychology are guilty of "Scientism". "Scientism" is an exaggerated and distorted conception of what science can be expected to do or explain for us. As an example he explains how classical physicalist reductionism has been of little value in deriving biological facts about organisms from facts about molecules. He further argues that the standard reductionist dream of deriving higher order and more complex sciences from lower order sciences, and in particular, physics, has not born much useful fruit. In this regard, he argues that the problem with rationalist economics and evolutionary psychology is that they are based on the idea that there is some ultimate fundamental perspective that will let us fully understand why people do what they do.

He suggests that the study of human decision- making may be on the verge of succumbing to "eliminativism". "Eliminativism holds that where a higher level science cannot be reduced to a lower level science in the structural hierarchy, it should be replaced with scientific knowledge from the more basic lower level. In particular, Dupre clearly feels that much evolutionary psychology and neuroscience have little to offer when it comes to explaining specific individual economic decisions or market fluctuations. More specifically he postulates that information about brain structure and process can tell us little about individu-

Robert A. Olsen is Professor Emeritus from California State University, Chico and a Research Fellow with Decision Research in Eugene, Oregon. He holds graduate degrees in Finance from the University of Oregon and the University of Massachusetts. Professor Olsen has business experience as a Financial Analyst and consulting experience with small business start-ups. Professor Olsen's research interests are focused on Risk Perception and Behavioral Finance.

Requests for reprints should be sent to: Robert Olsen, Decision Research, 1201 Oak Street, Eugene, OR 97401. Email: olsenbfin@msn.com

als' intentions and beliefs. As an alternative, the author suggests that decision theorists should treat psychology and biology instrumentally rather than realistically. That is, the concepts and methodologies of these higher level sciences should be retained as useful devices for interacting with and interpreting the physical world. To his thinking, they constitute a level of "truth" that has practical situational value. Retreating to the more basic level of neuroscience may tell us much about the structure and chemistry of the brain but it may not tell us very much about why normal people have the thoughts that they do and why they chose to react as they do. Likewise, an evolutionary theory of "mate selection" probably can tell us little about investor beliefs about investment diversification.

Professor Dupre concludes the book with a strong case for the existence of causal incompleteness in nature. From this frame of reference he argues that rationality economics and evolutionary psychology mistakenly underweight the influence of social context and group influence on individual decision- making. He observes that human behavior is not an immutable set of phenomena awaiting scientific discovery. At best, what an individual or market will do in a particular circumstance is open to a range of possibilities, the exact probabilities of which cannot be known.

This book is especially important in that it identifies the danger of "scientific imperialism" and the tendency to believe that all questions in nature are susceptible to standard scientific analysis. Even if you are not much concerned with economic rationality or evolutionary psychology, this rather short book has much useful to say about the relevance of the scientific method for the study of human decision- making.

Review of *The Origin of Mind: Evolution of Brain, Cognition and General Intelligence*

Robert A. Olsen

The Origin of Mind: Evolution of Brain, Cognition and General Intelligence, David C. Geary, 2005, Washington DC: American Psychological Association, 459 pp.

Quite a few books dealing with Evolutionary Psychology have recently been published. However, this book is noteworthy for two reasons. First, it presents a "Theory of Personal Control" which serves to integrate conceptual insights from evolutionary psychology with empirical research from neuroscience. Second, it provides an encyclopedic summary of recent research findings relative to brain structure and function and suggests how these findings are consistent with, and explanatory of, many documented decision making behaviors.

Geary proposes that human affective and cognitive systems have evolved to emphasize the processing of social and ecological information that has covaried with survival. More specifically, the author argues that human information processing systems are biased toward focusing on information that enhances the chances of controlling social, biological and physical resources that yield adaptive advantage relative to personal survival and reproduction. The sources of this motivation to control resource access are both conscious and non conscious.

The author hypothesizes two overlapping, but usually complementary decision making systems. The first is structured to respond to information patterns that are invariant across ecological domains. This system is largely unconscious and is visualized as an exoskeleton within which resides a complement of plastic modular systems. These plastic modular systems are altered by personal experience and respond to ecological information that is situation sensitive. The exoskeletal system is largely responsible for the activation of heuristics that are used to deal with recurring decision situations. The exoskeleton is envisioned to constrain the activities of the brain's plastic modular systems. Nevertheless, individuals have some ability to inhibit the activation of the more automatic heuristic processes and to approach a decision from a conscious or explicit perspective.

Conscious decision-making is seen to involve the construction of a mental representation of a problem situation and the manipulation of the representation in order to orient behavior toward a desired state or outcome. The decision goal is not seen as an optimal state, but merely as an acceptable outcome. Necessary for the construction of the problem representation are adequate working memory and the ability to consciously consider oneself across time (autonoetic awareness). Superior conscious problem solving requires an ability to focus on goal relevant tasks and information and inhibit the intrusion of irrelevant previously learned responses. The author hypothesizes that inherent unpredictability in nature is a key reason why the mind does not function according to the tenets of formal axiomatic logic.

In concert with the development of his decision model, the author describes and locates key neural

structures and processes that are consistent with his model. For example, he notes that the brain prefrontal cortex plays a key role in conscious decision- making. He also elaborates upon the evolutionary forces most likely to have been responsible for the type of mind that he has modeled. Contrary to the opinions of some other evolutionary researchers, he suggests that long term climatic changes are not likely to have had much influence on the development of the current human mind. Alternatively, he sees short- term variability related to ecological and social conditions as being far more influential. In particular, he sees survival related activities, such as food acquisition and social coalition formation, as especially influential in brain architecture and mind function.

Professor Geary ends the book with a general discussion of the many dimensions of human intelligence. For example, he notes how increasing technological and social complexity have increased the need for learning environments that enhance "fluid intelligence"; the ability to learn to solve complex and unique problems.

This book is a tour de force of current thinking and research in evolutionary psychology, neuroscience and decision science. It is an excellent resource for those interested in exploring the potential connections between the mind and brain.

Review of *Bull! A History of Boom and Bust 1982–2004*

Robert A. Olsen

Bull! A History of the Boom and Bust, 1982–2004, Maggie Mahar, 2004, New York, NY: Harper Collins, 505 pp.

If you are interested in the market bubble of the 90s and enjoy the novel genre, this book is probably your "cup of tea". Like a good novel, this book contains a varied and richly developed cast of characters involved in an emotionally engaging set of sub plots all swirling about a financial tragedy of epic proportions. For example, we have the greedy corporate executive cooking the books to pump up the value of his stock options. We have the young portfolio manager vainly trying to look competent by engaging in a momentum strategy in order to keep up with the competition. Last but not least, we have the vulnerable "green as grass" novice investor trying to find a profitable and safe place for her 401k retirement funds.

In this well researched and engagingly written book the author takes you backstage and introduces you to the menagerie of characters that inhabited the U.S. stock market in the decades of the 80s and 90s. In addition you are treated to an expose of the economic and psychological forces that allowed stock prices to be bid up to absurd levels. Be advised however that this is not a book that presents arcane theories of investment value or provides specific advice about how to avoid getting fleeced by your investment advisor. Above all it is a cautionary tale of misplaced trust, greed and incompetence writ large! The moral of the story: investment risk is as much a function of professional competence and integrity as it is of unpredictable revenue and expenses. In particular, beware of the "financial expert" telling tales of stock market efficiency!

This book is not intended to be a formal scholarly treatment of the 90s bubble. However, it does a superb job of emphasizing the extreme influence of poor decision making and human weakness on financial market performance. Too often, scientists forget that people are not machines that are able to function without fear, passion and hubris. This book reminds us that human emotion, not logic or science, is quite capable of carrying the day in the financial marketplace.