
BOOK REVIEWS

A Review of Simple Heuristics That Make Us Smart and Bounded Rationality: The Adaptive Toolbox

Robert A. Olsen

Simple Heuristics That Make Us Smart, Gerd Gigerenger, Peter Todd and the ABC Research Group, 1999, New York: Oxford University Press, 416 pp.

Bounded Rationality: The Adaptive Toolbox, Gerd Gigerenger and Reinhard Selten, ed., 2001, Cambridge, MA: MIT Press, 377 pp.

These complementary books contain essays and empirical studies investigating the hypothesis that human decision behavior can often be best explained as a product of ecological rationality. Ecological rationality is rationality defined by its fit with reality (natural world) and having evolutionary roots. Decision makers are said to make use of an “adaptive toolbox” of fast and frugal rules, which have served the human species well in enhancing reproduction and survival. For the most part, toolbox rules dispense with optimization and the formal calculation of probabilities and utilities. Although the authors do not get involved with a discussion of the genetic origin of toolbox rules, evolutionary psychologists and neuroscientists have sketched out the process. In particular, while genes can not program behavior the way that computer codes do, genes are responsible for building epigenetic programs into organisms. Such epigenetic programs are naturally selected “tendencies” for an organism to act in a particular way. For example, a tendency might be to avoid extreme heat. It is then left up to the organism to decide what to do if it encounters fire. The idea of an “adaptive toolbox” of rules that are selectively employed or triggered is consistent with current research suggesting that the human mind is modular in construction and does not

contain a “general problem solving mechanism,” as once thought.

Simple Heuristics That Make Us Smart, contains sixteen multi-authored articles focusing on descriptions of some proposed fast and frugal rules that comprise the “adaptive toolbox.” Examples include the Recognition Heuristic: If one of two objects is recognized and the other is not, then infer that the recognized object has the higher value. Other heuristics include “Minimalist,” “Take the Last,” and “Take the Best.” In general, toolbox rules are heuristics that can make use of emotions, norms, and social imitation. This stands in strong contrast to more recent normative approaches to rational decision-making which are often axiomatic logic systems emphasizing the importance of behavioral consistency and are focused on the goal of optimization. The adaptive toolbox focuses on the fact that the natural world is, for most practical purposes indeterminate, where consistent predictable behavior leads to extinction, and survival of the species does not require optimization.

Bounded Rationality: The Adaptive Toolbox, contains 19 multi-authored articles, and attempts to provide a more coherent framework to the Bounded Rationality model first proposed by Herbert Simon. The argument is made that bounded rationality should not be viewed as “optimization under constraint” as is so often done. This is because estimation of costs and benefits is usually open to an unknown range of accuracy, and there also exists an implicit regression problem (costs and benefit calculations are themselves costly and demand a meta level analysis).

The books’ authors suggest that there is presently no complete model of Bounded Rationality. However, such a model must specify:

Simple search rules,
Simple stopping rules,
Simple decision rules.

Articles in the book demonstrate how the adaptive toolbox contributes such rules. In particular, arguments and empirical research are presented to demonstrate how emotions, norms, and social imitation serve to establish

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search, stopping, and decision rules. This book also presents discussions of the types of situations in which the fast and frugal toolbox rules work well. In this regard it is noted that these rules work well when there is a systematic lack of knowledge, the environment is informationally noisy but stable, and informational cues tend to be non compensatory and somewhat correlated. The potential economic relevance of this type of situation is demonstrated with an empirical study showing that the use of simple adaptive rules would have allowed the construction of an investment portfolio that equaled, if not outperformed stock market indexes and many managed common stock funds.

Both of these books are well edited and written at a level that makes the material accessible to a non-specialist. The individual articles contain very complete sets of references. This is important, since, although research in this area is very recent, it is spread over many diverse disciplines and professional journals. I advise the novice to first read *Simple Heuristics That Make Us Smart*, since it provides background information for *Bounded Rationality: The Adaptive Toolbox*. “Bounded Rationality” covers more ground than “Heuristics,” and the articles are stylistically more varied, making it a slightly more challenging book to read.

A Review of *Why We Feel: The Science of Human Emotions* and *Feeling and Thinking: The Role of Affect in Social Cognition*

Robert A. Olsen

Why We Feel: The Science of Human Emotions, Victor S. Johnson, 1999, Reading, MA: Perseus Books, 210 pp.

Feeling and Thinking: The Role of Affect in Social Cognition, Joseph P. Forgas, ed., 2000, Cambridge, England: Cambridge University Press, 421 pp.

Do you believe that emotion and reason are independent mental processes and that good decision-making necessitates minimal emotional influence? If so, these two books need to be on your reading list.

Not much more than a decade ago, the study of emotion (affect) was viewed with disdain by psychologists and decision scientists. Psychologists generally felt it unscientific to study something that appeared ephemeral and was difficult to measure. Decision scientists felt no need to study the influence of emotion since it was “obvious” that “emotional behavior” led to bad decisions. Only recently have an increasing number of cognitive and evolutionary psychologists and neuroscientists begun to present evidence that not only are emotions an indispensable human attribute, but that emotion is vital to good decision-making. They note

that hedonic tone (good or bad), the central core of all emotion provides the common mental currency required for multidimensional decision-making. Decisions are made within the brain and no attribute other than hedonic tone exists which is capable of combining values associated with many decision factors. In this regard, much empirical evidence suggests that lack of appropriate emotion leads the fully informed and traditionally logical decision maker to behave in ways similar to an idiot savant. Specifically, the decision maker is in full possession of all relevant facts and methods of analysis, but is unable to operationalize them to make good decisions.

Why We Feel: The Science of Emotions provides a concise overview of the origin, nature and general functions of emotions from biological and evolutionary perspectives. Emotions are said to be emergent properties of brains and have come into existence because they have the adaptive value of enhancing biological survival. The author discusses a number of primary emotions such as fear, anger, disgust, and sadness and describes the process of how experienced events become emotionally tagged and how this emotional tag comes to provide an internal context which is stored away and re-used in future similar situations. It is noted that what often appears to be situationally inappropriate over or under emotional reaction is the biological consequence of a mechanism not designed to react to the world as it is, but as it is desirable to be perceived.

The author also reviews a large neuroscience literature discussing the physical structure of the brain and how and why it is that cognitive processes elicit emotional reactions and emotion influences cognitive processes. In this regard, it is noted that emotions of neces-

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sity not only influence what we think about, but also how we evaluate the output of those thoughts.

Feeling and Thinking: The Role of Affect in Social Cognition contains sixteen multi-authored articles, which review and integrate what is currently known about the influence of emotion (affect) in decision making. The book is divided into four sections. These are: The Interplay of Affect and Cognition, The Informational Role of Affect, Affect and Information Processing, and Affect and Social Knowledge Structures. Some important conclusions drawn from empirical studies are as follows. First, how people select, store and retrieve information is under affective influence. For example, more negative information is recalled when a decision maker is in a bad mood, and vice versa. Also, negative information tends to be given greater weight when the decision maker is in a negative frame of mind.

Second, affect influences the processing of information. For example, positive mood tends to produce a more open, creative and inclusive style of processing, than does negative mood. Also, positive mood tends to

be associated with a more top down style of reasoning and the greater use of heuristics, stereotypes, and scripts.

Third, affect tends to have a greater influence in decision situations that are more complex, open, and uncertain. In particular, affective tone, or how one feels, plays a much more important role in decisions that are unique or atypical.

In summary, both of these books are well written, well edited, and full of valuable references to the literature. I would advise readers, who are new to this topic, to begin with "Why We Feel," as it lays important groundwork for "Feeling and Thinking." "Feeling And Thinking" is a more challenging book because it goes into greater detail about specific theories of affect and cognition and contains more diverse writing styles. However, it contains a well-balanced summary chapter which puts the individual articles into perspective. These books provide an excellent vehicle for obtaining a good overview of the emotion/decision-making literature.

A Review of Psychology: An Evolutionary Approach, Evolutionary Psychology: A Critical Introduction and Evolutionary Psychology: The New Science of the Mind

Robert A. Olsen

Psychology: An Evolutionary Approach, Steven Gaulin and Donald McBurney, 2001, Upper Saddle River, NJ: Prentice-Hall, 396 pp.

Evolutionary Psychology: A Critical Introduction, Christopher Badcock, 2000, Cambridge, England: Polity Press, 296 pp.

Evolutionary Psychology: The New Science of the Mind, David Buss, 1999, Boston, MA: Allyn and Bacon, 442 pp.

The objective of the new field of Evolutionary Psychology is to investigate the origin and adaptive function of the human mind. Because Behavioral Finance focuses on decision-making from a natural as opposed

to an axiomatic point of view, Evolutionary Psychology is relevant to the study of financial market behavior.

Evolutionary Psychology is based on three principal assumptions. First, variations in the human mind result from genetic selection based on local conditions. Second, just as other bodily organs adapt, so does the mind. Third, given the generally slow rate of biological adaptation, human minds, as well as bodies, are most adapted to a physical and social environment that in many respects was quite different from that of today.

The relevance of these assumptions for financial decision-making lays in such observed behavior as herding, overconfidence, loss aversion and the strong attraction to the use of concrete, personal, and affective information. More specifically, these types of behaviors are encouraged by mental processes which are more unconscious and most likely of evolutionary origin. For example, herding can be traced to the need for safety and group acceptance. Overconfidence arises from the need to control and be able to maintain a positive outlook in the face of uncertainty and adversity. Loss aversion results from a physical environment wherein not obtaining what is needed generally leads to extinction. Finally, the preference to favor concrete,

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personal and affective information appears related to the fact that throughout most human history information came from family or close friends, thru the physical senses. In addition, affective feelings are associated with fast automatic reaction that would have increased the chance of survival.

While Evolutionary Psychology does not deal directly with financial practice, it does provide a possibly fruitful alternative way of explaining behavior that does not seem rational in today's world. Come to think of it, why are Bulls associated with good and Bears with bad?

The books listed above are the first complete surveys of Evolutionary Psychology. Although they all

cover the same basic territory, they have slightly different emphases. *Evolutionary Psychology* by Badcock gives greater emphasis to the biology of the evolutionary process underlying the mind and to the process of adaptation. David Buss provides greater emphasis on the role of mental evolution in solving major life tasks such as mate selection, physical survival, and kinship relations. Gaulin and McBurney's book is perhaps the most far ranging in that they recast Psychology in the mold of a life science.

All of these books are well written and don't require any background knowledge. Also, they are well referenced. An interested student of financial behavior could not go wrong by reading any one of these books.

A Review of Economists and the Stock Market: Speculative Theories of Stock Fluctuations

Robert A. Olsen

Economists and the Stock Market: Speculative Theories of Stock Fluctuations, J. Patrick Raines and Charles Leathers, 2000, Cheltenham, UK: Edward Elgar, 169 pp.

This brief book presents the stock speculation and bubble theories of the few well known Economists who have developed such theories. The authors point out that behaviorally focused stock market theories are rare among Economists. First, stock markets were rare until the 1800's and of not much interest to economic writers. Second, most Economists have tended to treat decision making from a normative rationalist perspective wherein negative feedback is dominant and stock speculation is desirable because it insures a more rapid approach to market equilibrium. Being seen as theoretically good, speculation thus does not warrant further analysis.

Veblen, Keynes, Galbraith, and more recently, Shiller, are representative of a minority among Economists who do not subscribe to the sanguine majority view of stock market speculation and market gyrations. Not only do they argue that stock market speculation

can have large negative influence on real output and employment, but they also suggest that the source of such behavior is in part psychological in origin. In this last respect, these writers anticipated the new field of Behavioral Finance with its emphasis on real human decision making processes.

The authors do a good job of summarizing the standard neo classical efficient markets approach to stock pricing as well as the models of Veblen, Keynes, Galbraith, and Shiller. Veblen is seen to propose that speculation arises out of overly enthusiastic profit forecasts. Keynes adds the insights that massive forecasting uncertainty, as well as "animal spirits," lead to herding and overreaction. Galbraith contributes insight into the role of institutional market attributes, such as credit arrangements, which exacerbate market gyrations. Finally, Shiller provides a Social Psychology perspective to stock market decision making. The book concludes with a tight summary containing a partial integration of the speculative theories of the selected Economists.

Given the authors objective, the book is on target. Unfortunately, it makes no mention of the need and current interest in modeling security markets as dynamic systems instead of static models. Also, it makes no reference to the new field of Behavioral Finance. Nevertheless, the book is an interesting history of speculative models and at times awe inspiring as the authors present the tortuous logic and often absurd implicit behavioral assumptions needed to explain stock market behavior with the standard neo classical economic model.

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