

Bounded Rationality The Adaptive Toolbox

A Fast and Frugal Finance Simple Heuristics that Make Us Smart The Theory of the Knowledge Square: The Fuzzy Rational Foundations of the Knowledge-Production Systems Oxford Handbook of Evolutionary Psychology Ecological Rationality Understanding Human Development Heuristics Better Doctors, Better Patients, Better Decisions Systems Intelligence in Leadership and Everyday Life Simply Rational Risk Savvy Behavioral Rationality and Heterogeneous Expectations in Complex Economic Systems Understanding Human Development The Adaptive Decision Maker Adaptive Thinking Bounded Rationality Market, State, and Feminism Taming Uncertainty Handbook of Contemporary Behavioral Economics Cognitive Unconscious and Human Rationality Cognition as Intuitive Statistics Classification in the Wild Blackwell Handbook of Judgment and Decision Making Fuzziness and Foundations of Exact and Inexact Sciences Calculated Risks Evolution and Rationality Simple Heuristics in a Social World Extendable Rationality Bounded Rationality and Industrial Organization Rationality for Mortals Reckoning with Risk Encyclopedia of Organizational Knowledge, Administration, and Technology Bounded Rationality Tectonic Faults Rationality for Mortals Heuristics and the Law Routledge Handbook of Bounded Rationality Sustainability Or Collapse? Adaptive Thinking Making Essential Choices with Scant Information

A Fast and Frugal Finance

K. Warner Schaie I am pleased to write a foreword for this interesting volume, particularly as over many years, I have had the privilege of interacting with the editors and a majority of the contributors in various professional roles as a colleague, mentor, or research collaborator. The editors begin their introduction by asking why one would want to read yet another book on human development. They immediately answer their question by pointing out that many developmentally oriented texts and other treatises neglect the theoretical foundations of human development and fail to embed psychological constructs within the multidisciplinary context so essential to understanding development. This volume provides a positive remedy to past deficiencies in volumes on human development with a well-organized structure that leads the reader from a general introduction through the basic processes to methodological issues and the relation of developmental constructs to social context and biological infrastructure. This approach does not surprise. After all, the editors and most of the contributors at one time or another had a connection to the Max Planck Institute of Human Development in Berlin, whether as students, junior scientists, or senior visitors. That institute, under the leadership of Paul Baltes, has been instrumental in pursuing a systematic lifespan approach to the study of cognition and personality. Over the past two decades, it has influenced the careers of a generation of scientists who have advocated long-term studies of human development in an

interdisciplinary context.

Simple Heuristics that Make Us Smart

"First published in United States of America by Viking Penguin, a member of Penguin Group (USA) LLC, 2014."--Title page verso.

The Theory of the Knowledge Square: The Fuzzy Rational Foundations of the Knowledge-Production Systems

This volume of collected papers brings together applied and theoretical research on risks and decision making in the fields of medicine, psychology, and economics.

Oxford Handbook of Evolutionary Psychology

“How do people make decisions in organizations?” is the question at the core of this book. Do people act rationally? Under what conditions can information and knowledge be shared to improve decision making? Davide Secchi applies concepts and theories from cognitive science, organizational behavior, and social psychology to explore the dynamics of decision making. In particular, he integrates “bounded rationality” (people are only partly rational; they have (a) limited

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computational capabilities and (b) limited access to information) and “distributed cognition” (knowledge is not confined to an individual, but is distributed across the members of a group) to build upon the pioneering work of Herbert Simon (1916-2001) on rational decision making and contribute fresh insights. This book is divided into two parts. The first part (Chapters 2 to 5) explores how recent studies on biases, prospect theory, heuristics, and emotions provide the so-called “map” of bounded rationality. The second part (Chapter 6 to 8) presents the idea of extendable rationality. In this section, Secchi identifies the limitations of bounded rationality and focuses more heavily on socially-based decision processes and the role of “docility” in teaching, managing, and executing decisions in organizations. The practical implications extend broadly to issues relating to change and innovation, as organizations adapt to evolving market conditions, implementing new systems, and effectively managing limited resources. The final chapter outlines an agenda for future research to help understand the decision making characteristics and capabilities of an organization.

Ecological Rationality

Scientists examine tectonic faulting on all scales--from seismic fault slip to the formation of mountain ranges--and discuss its connection to a wide range of global phenomena, including long-term climate change and evolution. Tectonic faults are sites of localized motion, both at the Earth's surface and within its dynamic

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interior. Faulting is directly linked to a wide range of global phenomena, including long-term climate change and the evolution of hominids, the opening and closure of oceans, and the rise and fall of mountain ranges. In *Tectonic Faults*, scientists from a variety of disciplines explore the connections between faulting and the processes of the Earth's atmosphere, surface, and interior. They consider faults and faulting from many different vantage points--including those of surface analysts, geochemists, material scientists, and physicists--and in all scales, from seismic fault slip to moving tectonic plates. They address basic issues, including the imaging of faults from Earth's surface to the base of the lithosphere and deeper, the structure and rheology of fault rocks, and the role of fluids and melt on the physical properties of deforming rock. They suggest strategies for understanding the interaction of faulting with topography and climate, predicting fault behavior, and interpreting the impacts on the rock record and the human environment. Using an Earth Systems approach, *Tectonic Faults* provides a new understanding of feedback between faulting and Earth's atmospheric, surface, and interior processes, and recommends new approaches for advancing knowledge of tectonic faults as an integral part of our dynamic planet.

Understanding Human Development

Originally published in 1987, this title is about theory construction in psychology. Where theories come from, as opposed to how they become established, was

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almost a no-man's land in the history and philosophy of science at the time. The authors argue that in the science of mind, theories are particularly likely to come from tools, and they are especially concerned with the emergence of the metaphor of the mind as an intuitive statistician. In the first chapter, the authors discuss the rise of the inference revolution, which institutionalized those statistical tools that later became theories of cognitive processes. In each of the four following chapters they treat one major topic of cognitive psychology and show to what degree statistical concepts transformed their understanding of those topics.

Heuristics

Gerd Gigerenzer's influential work examines the rationality of individuals not from the perspective of logic or probability, but from the point of view of adaptation to the real world of human behavior and interaction with the environment. Seen from this perspective, human behavior is more rational than it might otherwise appear. This work is extremely influential and has spawned an entire research program. This volume (which follows on a previous collection, *Adaptive Thinking*, also published by OUP) collects his most recent articles, looking at how people use "fast and frugal heuristics" to calculate probability and risk and make decisions. It includes a newly written, substantial introduction, and the articles have been revised and updated where appropriate. This volume should appeal, like the earlier volumes, to a broad mixture of cognitive psychologists, philosophers, economists,

and others who study decision making.

Better Doctors, Better Patients, Better Decisions

Systems Intelligence in Leadership and Everyday Life

The monograph is an examination of the fuzzy rational foundations of the structure of exact and inexact sciences over the epistemological space which is distinguished from the ontological space. It is thus concerned with the demarcation problem. It examines exact science and its critique of inexact science. The role of fuzzy rationality in these examinations is presented. The driving force of the discussions is the nature of the information that connects the cognitive relational structure of the epistemological space to the ontological space for knowing. The knowing action is undertaken by decision-choice agents who must process information to derive exact-inexact or true-false conclusions. The information processing is done with a paradigm and laws of thought that constitute the input-output machine. The nature of the paradigm selected depends on the nature of the information structure that is taken as input of the thought processing. Generally, the information structure received from the ontological space is defective from the simple principles of acquaintances and the limitations of cognitive agents

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operating in the epistemological space. How then do we arrive and claim exactness in our knowledge-production system? The general conclusion of this book is that the conditions of the fuzzy paradigm with its laws of thought and mathematics present a methodological unity of exact and inexact sciences where every zone of thought has fuzzy covering.

Simply Rational

This book promotes bounded rationality as the key to understanding how real people make decisions.

Risk Savvy

"More information is always better, and full information is best. More computation is always better, and optimization is best." More-is-better ideals such as these have long shaped our vision of rationality. Yet humans and other animals typically rely on simple heuristics to solve adaptive problems, focusing on one or a few important cues and ignoring the rest, and shortcutting computation rather than striving for as much as possible. In this book, we argue that in an uncertain world, more information and computation are not always better, and we ask when, and why, less can be more. The answers to these questions constitute the idea of

ecological rationality: how we are able to achieve intelligence in the world by using simple heuristics matched to the environments we face, exploiting the structures inherent in our physical, biological, social, and cultural surroundings.

Behavioral Rationality and Heterogeneous Expectations in Complex Economic Systems

Are ordinary people able to reason with risk? Detailing case histories and examples, this text presents readers with tools for understanding statistics. In so doing, it encourages us to overcome our innumeracy and empowers us to take responsibility for our own choices.

Understanding Human Development

At the beginning of the twentieth century, H. G. Wells predicted that statistical thinking would be as necessary for citizenship in a technological world as the ability to read and write. But in the twenty-first century, we are often overwhelmed by a baffling array of percentages and probabilities as we try to navigate in a world dominated by statistics. Cognitive scientist Gerd Gigerenzer says that because we haven't learned statistical thinking, we don't understand risk and uncertainty. In order to assess risk -- everything from the risk of an automobile accident to the

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certainty or uncertainty of some common medical screening tests -- we need a basic understanding of statistics. Astonishingly, doctors and lawyers don't understand risk any better than anyone else. Gigerenzer reports a study in which doctors were told the results of breast cancer screenings and then were asked to explain the risks of contracting breast cancer to a woman who received a positive result from a screening. The actual risk was small because the test gives many false positives. But nearly every physician in the study overstated the risk. Yet many people will have to make important health decisions based on such information and the interpretation of that information by their doctors. Gigerenzer explains that a major obstacle to our understanding of numbers is that we live with an illusion of certainty. Many of us believe that HIV tests, DNA fingerprinting, and the growing number of genetic tests are absolutely certain. But even DNA evidence can produce spurious matches. We cling to our illusion of certainty because the medical industry, insurance companies, investment advisers, and election campaigns have become purveyors of certainty, marketing it like a commodity. To avoid confusion, says Gigerenzer, we should rely on more understandable representations of risk, such as absolute risks. For example, it is said that a mammography screening reduces the risk of breast cancer by 25 percent. But in absolute risks, that means that out of every 1,000 women who do not participate in screening, 4 will die; while out of 1,000 women who do, 3 will die. A 25 percent risk reduction sounds much more significant than a benefit that 1 out of 1,000 women will reap. This eye-opening book explains how we can overcome our ignorance of

numbers and better understand the risks we may be taking with our money, our health, and our lives.

The Adaptive Decision Maker

Adaptive Thinking

Where do new ideas come from? What is social intelligence? Why do social scientists perform mindless statistical rituals? This vital book is about rethinking rationality as adaptive thinking: to understand how minds cope with their environments, both ecological and social. Gerd Gigerenzer proposes and illustrates a bold new research program that investigates the psychology of rationality, introducing the concepts of ecological, bounded, and social rationality. His path-breaking collection takes research on thinking, social intelligence, creativity, and decision-making out of an ethereal world where the laws of logic and probability reign, and places it into our real world of human behavior and interaction. Adaptive Thinking is accessibly written for general readers with an interest in psychology, cognitive science, economics, sociology, philosophy, artificial intelligence, and animal behavior. It also teaches a practical audience, such as physicians, AIDS counselors, and experts in criminal law, how to understand and communicate

uncertainties and risks.

Bounded Rationality

A Fast and Frugal Finance: Bridging Contemporary Behavioral Finance and Ecological Rationality adds psychological reality to classical financial reasoning. It shows how financial professionals can reach better and quicker decisions using the 'fast and frugal' framework for decision-making, adding dramatically to time and outcome efficiency, while also retaining accuracy. The book provides the reader with an adaptive toolbox of heuristic tools and classification systems to aid real-world decisions. Throughout, financial applications are presented alongside real-world examples to help readers solve established problems in finance, including stock buying and selling decisions, even in situations of considerable uncertainty and risk. The book concludes by describing potential solutions to financial problems, including discussions on high frequency trading and machine learning algorithms. Demonstrates how well-constructed 'fast and frugal' models can outperform standard models in time and outcome efficiency Focuses on how financial decisions are made in reality rather than how they should be made Discusses how cognition and the decision-making context interact in producing 'fast and frugal' choices Explores the development of decision-making trees in finance to aid in decision-making

Market, State, and Feminism

What is the nature of human wisdom? For many, the ideal image of sapiens is a heavenly one: an omniscient God, a Laplacean demon, a supercomputer, or a fully consistent logical system. Gerd Gigerenzer argues, in contrast, that there are more efficient tools than logic in our minds, which he calls fast and frugal heuristics. These adaptive tools work in a world where the present is only partially known and the future is uncertain. Here, rationality is not logical but ecological, and this volume shows how this insight can help remedy even the widespread problem of statistical innumeracy. RATIONALITY FOR MORTALS (which follows on a previous collection, ADAPTIVE THINKING, also published by OUP) presents Gigerenzer's most recent articles, revised and updated where appropriate, together with a newly written introduction.

Taming Uncertainty

It then rigorously analyses each model in the tradition of microeconomic theory, leading to a richer, more realistic picture of consumer behavior. Ran Spiegler analyses phenomena such as exploitative price plans in the credit market, complexity of financial products and other obfuscation practices, consumer antagonism to unexpected price increases, and the role of default options in

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consumer decision making. Spiegler unifies the relevant literature into three main strands: limited ability to anticipate and control future choices, limited ability to understand complex market environments, and sensitivity to reference points. Although the challenge of enriching the psychology of decision makers in economic models has been at the frontier of theoretical research in the last decade, there has been no graduate-level, theory-oriented textbook to cover developments in the last 10-15 years.

Handbook of Contemporary Behavioral Economics

Simple Heuristics That Make Us Smart invites readers to embark on a new journey into a land of rationality that differs from the familiar territory of cognitive science and economics. Traditional views of rationality tend to see decision makers as possessing superhuman powers of reason, limitless knowledge, and all of eternity in which to ponder choices. To understand decisions in the real world, we need a different, more psychologically plausible notion of rationality, and this book provides it. It is about fast and frugal heuristics--simple rules for making decisions when time is pressing and deep thought an unaffordable luxury. These heuristics can enable both living organisms and artificial systems to make smart choices, classifications, and predictions by employing bounded rationality. But when and how can such fast and frugal heuristics work? Can judgments based simply on one good reason be as accurate as those based on many reasons? Could less

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knowledge even lead to systematically better predictions than more knowledge? Simple Heuristics explores these questions, developing computational models of heuristics and testing them through experiments and analyses. It shows how fast and frugal heuristics can produce adaptive decisions in situations as varied as choosing a mate, dividing resources among offspring, predicting high school drop out rates, and playing the stock market. As an interdisciplinary work that is both useful and engaging, this book will appeal to a wide audience. It is ideal for researchers in cognitive psychology, evolutionary psychology, and cognitive science, as well as in economics and artificial intelligence. It will also inspire anyone interested in simply making good decisions.

Cognitive Unconscious and Human Rationality

An interdisciplinary critique of the "free-market backlash," the belief that free-market economics can improve the position, status, and well-being of women. The authors question the philosophical basis of free-market economics, challenging its masculine assumptions about rationality and individualism. They examine the theoretical validity of dichotomizing the market vs. the state and draw attention to the interdependence of markets and state institutions. With empirical and case-study material from the UK, European Union, and US, the essays highlight issues of equal employment opportunities and pay, girls' educational performance, business attitudes toward women, lobbying by women's groups, and equal-opportunity

legislation. Annotation copyrighted by Book News Inc., Portland, OR

Cognition as Intuitive Statistics

This is a collection of Gigerenzer's most important papers on rationality, heuristics, and rituals. Although the papers were originally addressed to distinct scientific communities, they have since been rewritten, updated, and shortened to convey the impressive contiguity and range of work. This volume affords readers the first opportunity to see how his different scholarly endeavours combine to demonstrate a coherent and unified theoretical structure.

Classification in the Wild

This volume explores from multiple perspectives the subtle and interesting relationship between the theory of rational choice and Darwinian evolution. In rational choice theory, agents are assumed to make choices that maximize their utility; in evolution, natural selection 'chooses' between phenotypes according to the criterion of fitness maximization. So there is a parallel between utility in rational choice theory and fitness in Darwinian theory. This conceptual link between fitness and utility is mirrored by the interesting parallels between formal models of evolution and rational choice. The essays in this volume, by leading

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philosophers, economists, biologists and psychologists, explore the connection between evolution and rational choice in a number of different contexts, including choice under uncertainty, strategic decision making and pro-social behaviour. They will be of interest to students and researchers in philosophy of science, evolutionary biology, economics and psychology.

Blackwell Handbook of Judgment and Decision Making

An in-depth look at how to improve decisions on major projects at the concept stage, when there is scant information available. This book describes how to evaluate judgemental information. It looks at how scant information can actually be a strength, and can help establish a broad overall perspective.

Fuzziness and Foundations of Exact and Inexact Sciences

The Blackwell Handbook of Judgment and Decision Making is a state-of-the art overview of current topics and research in the study of how people make evaluations, draw inferences, and make decisions under conditions of uncertainty and conflict. Contains contributions by experts from various disciplines that reflect current trends and controversies on judgment and decision making. Provides a glimpse at the many approaches that have been taken in the study of judgment

and decision making and portrays the major findings in the field. Presents examinations of the broader roles of social, emotional, and cultural influences on decision making. Explores applications of judgment and decision making research to important problems in a variety of professional contexts, including finance, accounting, medicine, public policy, and the law.

Calculated Risks

Evolution and Rationality

The monograph is about a meta-theory of knowledge-production process and the logical pathway that connects the epistemic possibility to the epistemic reality. It examines the general conditions of paradigms for information processing and isolates the classical and fuzzy paradigms for comparative analysis. The sets of conditions that give rise to them are defined, stated and analyzed to abstract the corresponding sets of laws of thought. The fuzzy paradigm with its corresponding logic and mathematics is related to inexact symbolism for the defective information structure where the results of the knowledge production must satisfy the epistemic conditionality, composed of fuzzy conditionality and fuzzy-stochastic conditionality under the principle of logical duality with continuum. The classical

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paradigm with its corresponding logic and mathematics is related to exact symbolism for exact information structure where the vagueness component of the defectiveness is assumed away, and where the results of the knowledge production must satisfy no epistemic conditionality or at the maximum only the stochastic conditionality under the principle of logical dualism with excluded middle. It is argued that the epistemic path that links ontological space to the epistemological space is information. The ontological space is taken as the primary category of reality while the epistemological space is shown to be a derivative. Such information is universally defective and together with assumptions imposed guides the development of paradigms with their laws of thought, logic of reasoning, mathematics and computational techniques. The relational structure is seen in terms of logical trinity with a given example as matter-information-energy transformational trinity which is supported by the time trinity of past-present-future relationality. The book is written for professionals, researchers and students working in philosophy of science, decision-choice theories, economics, sciences, computer science, engineering, cognitive psychology and researchers working on, or interested in fuzzy paradigm, fuzzy logic, fuzzy decisions, and phenomena of vagueness and ambiguities, fuzzy mathematics, fuzzy-stochastic processes and theory of knowledge. It is further aimed at research institutions and libraries. The subject matter belongs to extensive research and development taking place on fuzzy phenomena and the debate between the fuzzy paradigm and the classical paradigm relative to informatics, synergetic science and complexity theory. The

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book will have a global appeal and across disciplines. Its strength, besides the contents, is the special effort that is undertaken to make it relevant and accessible to different areas of sciences and knowledge production.

Simple Heuristics in a Social World

Demonstrates how decision makers balance effort and accuracy considerations and predict the particular choice of strategy.

Extendable Rationality

For any organization to be successful, it must operate in such a manner that knowledge and information, human resources, and technology are continually taken into consideration and managed effectively. Business concepts are always present regardless of the field or industry – in education, government, healthcare, not-for-profit, engineering, hospitality/tourism, among others. Maintaining organizational awareness and a strategic frame of mind is critical to meeting goals, gaining competitive advantage, and ultimately ensuring sustainability. The Encyclopedia of Organizational Knowledge, Administration, and Technology is an inaugural five-volume publication that offers 193 completely new and previously unpublished articles authored by leading experts on the latest concepts, issues,

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challenges, innovations, and opportunities covering all aspects of modern organizations. Moreover, it is comprised of content that highlights major breakthroughs, discoveries, and authoritative research results as they pertain to all aspects of organizational growth and development including methodologies that can help companies thrive and analytical tools that assess an organization's internal health and performance. Insights are offered in key topics such as organizational structure, strategic leadership, information technology management, and business analytics, among others. The knowledge compiled in this publication is designed for entrepreneurs, managers, executives, investors, economic analysts, computer engineers, software programmers, human resource departments, and other industry professionals seeking to understand the latest tools to emerge from this field and who are looking to incorporate them in their practice. Additionally, academicians, researchers, and students in fields that include but are not limited to business, management science, organizational development, entrepreneurship, sociology, corporate psychology, computer science, and information technology will benefit from the research compiled within this publication.

Bounded Rationality and Industrial Organization

Rules for building formal models that use fast-and-frugal heuristics, extending the psychological study of classification to the real world of uncertainty. This book

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focuses on classification--allocating objects into categories--"in the wild," in real-world situations and far from the certainty of the lab. In the wild, unlike in typical psychological experiments, the future is not knowable and uncertainty cannot be meaningfully reduced to probability. Connecting the science of heuristics with machine learning, the book shows how to create formal models using classification rules that are simple, fast, and transparent and that can be as accurate as mathematically sophisticated algorithms developed for machine learning.

Rationality for Mortals

With contributions from over 50 experts in the field, this book provides an overview of the latest developments in evolutionary psychology. In addition to well studied areas of investigation, it also includes chapters on the philosophical underpinnings of evolutionary psychology, comparative perspectives from other species, and more.

Reckoning with Risk

Herbert Simon's renowned theory of bounded rationality is principally interested in cognitive constraints and environmental factors and influences which prevent people from thinking or behaving according to formal rationality. Simon's theory

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has been expanded in numerous directions and taken up by various disciplines with an interest in how humans think and behave. This includes philosophy, psychology, neurocognitive sciences, economics, political science, sociology, management, and organization studies. The Routledge Handbook of Bounded Rationality draws together an international team of leading experts to survey the recent literature and the latest developments in these related fields. The chapters feature entries on key behavioural phenomena, including reasoning, judgement, decision making, uncertainty, risk, heuristics and biases, and fast and frugal heuristics. The text also examines current ideas such as fast and slow thinking, nudge, ecological rationality, evolutionary psychology, embodied cognition, and neurophilosophy. Overall, the volume serves to provide the most complete state-of-the-art collection on bounded rationality available. This book is essential reading for students and scholars of economics, psychology, neurocognitive sciences, political sciences, and philosophy.

Encyclopedia of Organizational Knowledge, Administration, and Technology

"Contrary to popular opinion, one of the main problems in providing uniformly excellent health care is not lack of money but lack of knowledge - on the part of both doctors and patients. The studies in this book show that many doctors and

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most patients do not understand the available medical evidence. Both patients and doctors are 'risk illiterate' - frequently unable to tell the difference between actual risk and relative risk. Doctors often cannot interpret test results; patients cannot make informed decisions if they are given bad information. Surprisingly, treatments vary widely from one region to another. For example, in one referral region in Iowa, sixty percent of prostate patients had surgery, while in another region only fifteen percent had the same surgery. This unwarranted disparity in treatment decisions is the rule rather than the exception in the United States and Europe. All of this contributes to much wasted spending in health care.

Bounded Rationality

This title invites readers to discover the simple heuristics that people use to navigate the complexities and surprises of environments populated with others.

Tectonic Faults

"Report of the 94th Dahlem Workshop on Heuristics and the Law, Berlin, June 6-11, 2004"--Page ii.

Rationality for Mortals

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Understanding developmental processes in the individual as well as in aggregates of individuals is an important aim of many of the social and behavioral sciences. This book presents a theoretical framework for this endeavor - an architecture for the study of human development across different disciplines. This architecture describes two major sources of human development (biology and culture) and posits three central developmental mechanisms (selection, optimization, and compensation).

Heuristics and the Law

Human history, as written traditionally, leaves out the important ecological and climate context of historical events. But the capability to integrate the history of human beings with the natural history of the Earth now exists, and we are finding that human-environmental systems are intimately linked in ways we are only beginning to appreciate. In *Sustainability or Collapse?*, researchers from a range of scholarly disciplines develop an integrated human and environmental history over millennial, centennial, and decadal time scales and make projections for the future. The contributors focus on the human-environment interactions that have shaped historical forces since ancient times and discuss such key methodological issues as data quality. Topics highlighted include the political ecology of the Mayans; the effect of climate on the Roman Empire; the "revolutionary weather" of El Niño from 1788 to 1795; twentieth-century social, economic, and political forces in

environmental change; scenarios for the future; and the accuracy of such past forecasts as *The Limits to Growth*.

Routledge Handbook of Bounded Rationality

How do people make decisions when time is limited, information unreliable, and the future uncertain? Based on the work of Nobel laureate Herbert Simon and with the help of colleagues around the world, the Adaptive Behavior and Cognition (ABC) Group at the Max Planck Institute for Human Development in Berlin has developed a research program on simple heuristics, also known as fast and frugal heuristics. In the social sciences, heuristics have been believed to be generally inferior to complex methods for inference, or even irrational. Although this may be true in "small worlds" where everything is known for certain, we show that in the actual world in which we live, full of uncertainties and surprises, heuristics are indispensable and often more accurate than complex methods. Contrary to a deeply entrenched belief, complex problems do not necessitate complex computations. Less can be more. Simple heuristics exploit the information structure of the environment, and thus embody ecological rather than logical rationality. Simon (1999) applauded this new program as a "revolution in cognitive science, striking a great blow for sanity in the approach to human rationality." By providing a fresh look at how the mind works as well as the nature of rationality, the simple heuristics program has stimulated a large body of research, led to

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fascinating applications in diverse fields from law to medicine to business to sports, and instigated controversial debates in psychology, philosophy, and economics. In a single volume, the present reader compiles key articles that have been published in journals across many disciplines. These articles present theory, real-world applications, and a sample of the large number of existing experimental studies that provide evidence for people's adaptive use of heuristics.

Sustainability Or Collapse?

Examining the role of implicit, unconscious thinking on reasoning, decision making, problem solving, creativity, and its neurocognitive basis, for a genuinely psychological conception of rationality. This volume contributes to a current debate within the psychology of thought that has wide implications for our ideas about creativity, decision making, and economic behavior. The essays focus on the role of implicit, unconscious thinking in creativity and problem solving, the interaction of intuition and analytic thinking, and the relationship between communicative heuristics and thought. The analyses move beyond the conventional conception of mind informed by extra-psychological theoretical models toward a genuinely psychological conception of rationality—a rationality no longer limited to conscious, explicit thought, but able to exploit the intentional implicit level. The contributors consider a new conception of human rationality that must cope with the uncertainty of the real world; the implications of abandoning the normative model

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of classic logic and adopting a probabilistic approach instead; the argumentative and linguistic aspects of reasoning; and the role of implicit thought in reasoning, creativity, and its neurological base. Contributors Maria Bagassi, Linden J. Ball, Jean Baratgin, Aron K. Barbey, Tilmann Betsch, Eric Billaut, Jean-François Bonnefon, Pierre Bonnier, Shira Elqayam, Keith Frankish, Gerd Gigerenzer, Ken Gilhooly, Denis Hilton, Anna Lang, Stefanie Lindow, Laura Macchi, Hugo Mercier, Giuseppe Mosconi, Ian R. Newman, Mike Oaksford, David Over, Guy Politzer, Johannes Ritter, Steven A. Sloman, Edward J. N. Stupple, Ron Sun, Nicole H. Theriault, Valerie A. Thompson, Emmanuel Trouche-Raymond, Riccardo Viale

Adaptive Thinking

An examination of the cognitive tools that the mind uses to grapple with uncertainty in the real world. How do humans navigate uncertainty, continuously making near-effortless decisions and predictions even under conditions of imperfect knowledge, high complexity, and extreme time pressure? *Taming Uncertainty* argues that the human mind has developed tools to grapple with uncertainty. Unlike much previous scholarship in psychology and economics, this approach is rooted in what is known about what real minds can do. Rather than reducing the human response to uncertainty to an act of juggling probabilities, the authors propose that the human cognitive system has specific tools for dealing with different forms of uncertainty. They identify three types of tools: simple

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heuristics, tools for information search, and tools for harnessing the wisdom of others. This set of strategies for making predictions, inferences, and decisions constitute the mind's adaptive toolbox. The authors show how these three dimensions of human decision making are integrated and they argue that the toolbox, its cognitive foundation, and the environment are in constant flux and subject to developmental change. They demonstrate that each cognitive tool can be analyzed through the concept of ecological rationality—that is, the fit between specific tools and specific environments. Chapters deal with such specific instances of decision making as food choice architecture, intertemporal choice, financial uncertainty, pedestrian navigation, and adolescent behavior.

Making Essential Choices with Scant Information

Recognising that the economy is a complex system with boundedly rational interacting agents, applies complexity modelling to economics and finance.

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