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Theory of Games and Economic Behavior Von Neumann, Morgenstern, and the Creation of Game Theory Moral Calculations Theory of Games and Economic Behavior (Commemorative Edition) The World as a Mathematical Game Prisoner's Dilemma *The Man from the Future: The Visionary Ideas of John von Neumann* John von Neumann: The Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More The Computer and the Brain Classics in Game Theory *Contributions to the Theory of Games (AM-40), Volume IV* Theory of Games and Economic Behavior The World the Game Theorists Made *John von Neumann and the Origins of Modern Computing* Introduction to Topology and Geometry Economists at War John Von Neumann The Neumann Compendium Game Theory for Political Scientists Production Planning in Production Networks Introduction to the Theory of Games *Game Theory and Strategy Game Theory, Alive* Cooperative Games, Solutions and Applications Game Theory Measuring Utility *Game Theory* John von Neumann: Selected Letters Contributions to the Theory of Games (AM-28), Volume II Toward a History of Game Theory Twenty Lectures on Algorithmic Game Theory Game Theory Imaginary Philosophical Dialogues How Reason Almost Lost Its Mind Introduction to the Theory of Games N-Person Game Theory Mathematical Go *From the Beginnings to 1945* John Von Neumann, 1903-1957 Minimax and Applications

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The World the Game Theorists Made Oct 20 2021 Today, game theory is central to our understanding of capitalist markets, the evolution of social behavior in animals, and much more. Both the social and biological sciences have seemingly fused around the game. Yet the ascendancy of game theory and theories of rational choice more generally remains a rich source of misunderstanding. To gain a better grasp of the widespread dispersion of game theory and the mathematics of rational choice, Paul Erickson uncovers its history during the poorly understood period between the publication of John von Neumann and Oskar Morgenstern s seminal "Theory of Games and Economic Behavior" in 1944 and the theory s revival in economics in the 1980s. "The World the Game Theorists Made "reveals how the mathematics of rational choice was a common, flexible language that could facilitate wide-ranging debate on some of the great issues of the time. Because it so actively persists in the sciences and public life, assessing the significance of game theory for the postwar sciences is especially critical now."
How Reason Almost Lost Its Mind Dec 30 2019 In the United States at the height of the Cold War, roughly between the end of World War II and the early 1980s, a new project of redefining rationality commanded the attention of sharp minds, powerful politicians, wealthy foundations, and top military brass. Its home was the human sciences—psychology, sociology, political science, and economics, among others—and its participants enlisted in an intellectual campaign to figure out what rationality should mean and how it could be deployed. How Reason Almost Lost Its Mind brings to life the people—Herbert Simon, Oskar Morgenstern, Herman Kahn, Anatol Rapoport, Thomas Schelling, and many others—and places, including the RAND Corporation, the Center for Advanced Study in the Behavioral Sciences, the Cowles Commission for Research and Economics, and the Council on Foreign Relations, that played a key role in putting forth a "Cold War rationality." Decision makers harnessed this picture of rationality—optimizing, formal, algorithmic, and mechanical—in their quest to understand phenomena as diverse as economic transactions, biological evolution, political elections, international relations, and military strategy. The authors chronicle and illuminate what it meant to be rational in the age of nuclear brinkmanship.
Theory of Games and Economic Behavior Nov 20 2021 This is the classic work upon which modern-day game theory is based. What began more than sixty years ago as a modest proposal that a mathematician and an economist write a short paper together blossomed, in 1944, when Princeton University Press published Theory of Games and Economic Behavior. In it, John von Neumann and Oskar Morgenstern conceived a groundbreaking mathematical theory of economic and social organization, based on a theory of games of strategy. Not only would this revolutionize economics, but the entirely new field of scientific inquiry it yielded--game theory--has since been widely used to analyze a host of real-world phenomena from arms races to optimal policy choices of presidential candidates, from vaccination policy to major league baseball salary negotiations. And it is today established throughout both the social sciences and a wide range of other sciences.
Classics in Game Theory Jan 23 2022 Classics in Game Theory assembles in one sourcebook the basic contributions to the field that followed on the publication of Theory of Games and Economic Behavior by John von Neumann and Oskar

Morgenstern (Princeton, 1944). The theory of games, first given a rigorous formulation by von Neumann in a in 1928, is a subfield of mathematics and economics that models situations in which individuals compete and cooperate with each other. In the "heroic era" of research that began in the late 1940s, the foundations of the current theory were laid; it is these fundamental contributions that are collected in this volume. In the last fifteen years, game theory has become the dominant model in economic theory and has made significant contributions to political science, biology, and international security studies. The central role of game theory in economic theory was recognized by the award of the Nobel Memorial Prize in Economic Science in 1994 to the pioneering game theorists John C. Harsanyi, John Nash, and Reinhard Selten. The fundamental works for which they were honored are all included in this volume. Harold Kuhn, himself a major contributor to game theory for his reformulation of extensive games, has chosen eighteen essays that constitute the core of game theory as it exists today. Drawn from a variety of sources, they will be an invaluable tool for researchers in game theory and for a broad group of students of economics, political science, and biology.

Game Theory, Alive Dec 10 2020 We live in a highly connected world with multiple self-interested agents interacting and myriad opportunities for conflict and cooperation. The goal of game theory is to understand these opportunities. This book presents a rigorous introduction to the mathematics of game theory without losing sight of the joy of the subject. This is done by focusing on theoretical highlights (e.g., at least six Nobel Prize winning results are developed from scratch) and by presenting exciting connections of game theory to other fields such as computer science (algorithmic game theory), economics (auctions and matching markets), social choice (voting theory), biology (signaling and evolutionary stability), and learning theory. Both classical topics, such as zero-sum games, and modern topics, such as sponsored search auctions, are covered. Along the way, beautiful mathematical tools used in game theory are introduced, including convexity, fixed-point theorems, and probabilistic arguments. The book is appropriate for a first course in game theory at either the undergraduate or graduate level, whether in mathematics, economics, computer science, or statistics. The importance of game-theoretic thinking transcends the academic setting—for every action we take, we must consider not only its direct effects, but also how it influences the incentives of others.

Toward a History of Game Theory May 03 2020 During the 1940s "game theory" emerged from the fields of mathematics and economics to provide a revolutionary new method of analysis. Today game theory provides a language for discussing conflict and cooperation not only for economists, but also for business analysts, sociologists, war planners, international relations theorists, and evolutionary biologists. Toward a History of Game Theory offers the first history of the development, reception, and dissemination of this crucial theory. Drawing on interviews with original members of the game theory community and on the Morgenstern diaries, the first section of the book examines early work in game theory. It focuses on the groundbreaking role of the von Neumann-Morgenstern collaborative work, The Theory of Games and Economic Behavior (1944). The second section recounts the reception of this new theory, revealing just how game theory made its way into the literatures of the time and thus became known among relevant communities of scholars. The contributors explore how game theory became a wedge in opening up the social sciences to mathematical tools and use the personal recollections of scholars who taught at Michigan and Princeton in the late 1940s to show why the theory captivated those practitioners now considered to be "giants" in the field. The final section traces the flow of the ideas of game theory into political science, operations research, and experimental economics. Contributors. Mary Ann Dimand, Robert W. Dimand, Robert J. Leonard, Philip Mirowski, Angela M. O'Rand, Howard Raiffa, Urs Rellstab, Robin E. Rider, William H. Riker, Andrew Schotter, Martin Shubik, Vernon L. Smith

The Computer and the Brain Feb 21 2022 This book represents the views of one of the greatest mathematicians of the twentieth century on the analogies between computing machines and the living human brain. John von Neumann concludes that the brain operates in part digitally, in part analogically, but uses a peculiar statistical language unlike that employed in the operation of man-made computers. This edition includes a new foreword by two eminent figures in the fields of philosophy, neuroscience, and consciousness.

N-Person Game Theory Oct 27 2019 DIV Sequel to Two-Person Game Theory introduces necessary mathematical notation (mainly set theory), presents basic concepts and models, and provides applications to social situations. /div

Moral Calculations Aug 30 2022 What does game theory tell us about rational behavior? Is there such a thing as rational behavior, and if so, is it of any use to us? In this fascinating book, renowned Hungarian economist Laszlo Mero shows how game theory provides insight into such aspects of human psychology as altruism, competition, and politics, as well as its relevance to disparate fields such as physics and evolutionary biology. This ideal guide shows us how mathematics can illuminate the human condition.

Game Theory Mar 01 2020 This fascinating, newly revised edition offers an overview of game theory, plus lucid coverage of two-person zero-sum game with equilibrium points; general, two-person zero-sum game; utility theory; and other topics.

Cooperative Games, Solutions and Applications Nov 08 2020 The study of the theory of games was started in Von Neumann (1928), but the development of the theory of games was accelerated after the publication of the classical book "Theory of games and economic behavior" by Von Neumann and Morgenstern (1944). As an initial step, the theory of games aims to put situations of conflict and cooperation into mathematical models. In the second and final step, the resulting models are analysed on the basis of equitable and mathematical reasonings. The conflict and/or cooperative situation in question is generally due to the interaction between two or more individuals (players). Their interaction may lead up to several potential payoffs over which each player has his own preferences. Any player attempts to achieve his largest possible payoff, but the other players may also exert their influence on the realization of some potential payoff. As already mentioned, the theory of games consists of two parts, a modelling part and a solution part. Concerning the modelling part, the mathematical models of conflict and cooperative situations are described. The description of the models includes the rules, the strategy space of any

player, potential payoffs to the players, the preferences of each player over the set of all potential payoffs, etc. According to the rules, it is either permitted or forbidden that the players communicate with one another in order to make binding agreements regarding their mutual actions.

Minimax and Applications Jun 23 2019 Techniques and principles of minimax theory play a key role in many areas of research, including game theory, optimization, and computational complexity. In general, a minimax problem can be formulated as min max f(x, y) (1) ",EX !IEY where f(x, y) is a function defined on the product of X and Y spaces. There are two basic issues regarding minimax problems: The first issue concerns the establishment of sufficient and necessary conditions for equality minmaxf(x,y) = maxminf(x,y). (2) "'EX !IEY !IEY "'EX The classical minimax theorem of von Neumann is a result of this type. Duality theory in linear and convex quadratic programming interprets minimax theory in a different way. The second issue concerns the establishment of sufficient and necessary conditions for values of the variables x and y that achieve the global minimax function value f(x*, y*) = minmaxf(x, y). (3) "'EX !IEY There are two developments in minimax theory that we would like to mention.

Game Theory Oct 08 2020 Eminently suited to classroom use as well as individual study, Roger Myerson's introductory text provides a clear and thorough examination of the models, solution concepts, results, and methodological principles of noncooperative and cooperative game theory. Myerson introduces, clarifies, and synthesizes the extraordinary advances made in the subject over the past fifteen years, presents an overview of decision theory, and comprehensively reviews the development of the fundamental models: games in extensive form and strategic form, and Bayesian games with incomplete information.

Introduction to the Theory of Games Nov 28 2019 Approach your problems from the right It isn't that they can't see the solution. end and begin with the answers. Then It is that they can't see the problem. one day, perhaps you will find the final question. G. K. Chesterton. The Scandal of Father Brown 'The Point of a Pin'. 'The Hermit Clad in Crane Feathers' in R. van Gulik's The Chinese Maze Murders. Growing specialization and diversification have brought a host of monographs and textbooks on increasingly specialized topics. However, the "tree" of knowledge of mathematics and related fields does not grow only by putting forth new branches. It also happens, quite often in fact, that branches which were thought to be completely disparate are suddenly seen to be related. Further, the kind and level of sophistication of mathematics applied in various sciences has changed drastically in recent years: measure theory is used (non-trivially) in regional and theoretical economics; algebraic geometry interacts with physics; the Min kowsky lemma, coding theory and the structure of water meet one another in packing and covering theory: quantum fields, crystal defects and mathematical programming profit from homotopy theory; Lie algebras are relevant to filtering; and prediction and electrical engineering can use Stein spaces.

John von Neumann: Selected Letters Jul 05 2020 John von Neuman was perhaps the most influential mathematician of the twentieth century, especially if his broad influence outside mathematics is included. Not only did he contribute to almost all branches of mathematics and created new fields, but he also changed post-World War II history with his work on the design of computers and with being a sought-after technical advisor to many figures in the U.S. military-political establishment in the 1940s and 1950s. The present volume is the first substantial collection of (previously mainly unpublished) letters written by von Neumann to colleagues, friends, government officials, and others. The letters give us a glimpse of the thinking of John von Neumann about mathematics, physics, computer science, science management, education, consulting, politics, and war. Readers of quite diverse backgrounds will find much of interest in this fascinating first-hand look at one of the towering figures of twentieth century science.

John Von Neumann Jun 15 2021 This volume is the reprinted edition of the first full-scale biography of the man widely regarded as the greatest scientist of the century after Einstein. Born in Budapest in 1903, John von Neumann grew up in one of the most extraordinary of scientific communities. From his arrival in America in the mid-1930s--with bases in Boston, Princeton, Washington, and Los Alamos--von Neumann pioneered and participated in the major scientific and political dramas of the next three decades, leaving his mark on more fields of scientific endeavor than any other scientist. Von Neumann's work in areas such as game theory, mathematics, physics, and meteorology formed the building blocks for the most important discoveries of the century: the modern computer, game theory, the atom bomb, radar, and artificial intelligence, to name just a few. From the laboratory to the highest levels of government, this definitive biography gives us a behind-the-scenes look at the politics and personalities involved in these world-changing discoveries. Written more than 30 years after von Neumann's untimely death at age 54, it was prepared with the cooperation of his family and includes information gained from interviewing countless sources across Europe and America. Norman Macrae paints a highly readable, humanizing portrait of a man whose legacy still influences and shapes modern science and knowledge. -- Amazon.com

Contributions to the Theory of Games (AM-28), Volume II Jun 03 2020 These two new collections, numbers 28 and 29 respectively in the Annals of Mathematics Studies, continue the high standard set by the earlier Annals Studies 20 and 24 by bringing together important contributions to the theories of games and of nonlinear differential equations.

Introduction to Topology and Geometry Aug 18 2021 An easily accessible introduction to over three centuries of innovations in geometry Praise for the First Edition ". . . a welcome alternative to compartmentalized treatments bound to the old thinking. This clearly written, well-illustrated book supplies sufficient background to be self-contained." —CHOICE This fully revised new edition offers the most comprehensive coverage of modern geometry currently available at an introductory level. The book strikes a welcome balance between academic rigor and accessibility, providing a complete and cohesive picture of the science with an unparalleled range of topics. Illustrating modern mathematical topics, Introduction to Topology and Geometry, Second Edition discusses introductory topology, algebraic topology, knot theory, the geometry of surfaces, Riemann geometries, fundamental groups, and differential geometry, which opens the doors to a wealth of applications. With its logical, yet flexible,

organization, the Second Edition: •   Explores historical notes interspersed throughout the exposition to provide readers with a feel for how the mathematical disciplines and theorems came into being •   Provides exercises ranging from routine to challenging, allowing readers at varying levels of study to master the concepts and methods •   Bridges seemingly disparate topics by creating thoughtful and logical connections •   Contains coverage on the elements of polytope theory, which acquaints readers with an exposition of modern theory Introduction to Topology and Geometry, Second Edition is an excellent introductory text for topology and geometry courses at the upper-undergraduate level. In addition, the book serves as an ideal reference for professionals interested in gaining a deeper understanding of the topic.

Game Theory Aug 06 2020 The definitive introduction to game theory This comprehensive textbook introduces readers to the principal ideas and applications of game theory, in a style that combines rigor with accessibility. Steven Tadelis begins with a concise description of rational decision making, and goes on to discuss strategic and extensive form games with complete information, Bayesian games, and extensive form games with imperfect information. He covers a host of topics, including multistage and repeated games, bargaining theory, auctions, rent-seeking games, mechanism design, signaling games, reputation building, and information transmission games. Unlike other books on game theory, this one begins with the idea of rationality and explores its implications for multiperson decision problems through concepts like dominated strategies and rationalizability. Only then does it present the subject of Nash equilibrium and its derivatives. Game Theory is the ideal textbook for advanced undergraduate and beginning graduate students. Throughout, concepts and methods are explained using real-world examples backed by precise analytic material. The book features many important applications to economics and political science, as well as numerous exercises that focus on how to formalize informal situations and then analyze them. Introduces the core ideas and applications of game theory Covers static and dynamic games, with complete and incomplete information Features a variety of examples, applications, and exercises Topics include repeated games, bargaining, auctions, signaling, reputation, and information transmission Ideal for advanced undergraduate and beginning graduate students Complete solutions available to teachers and selected solutions available to students

John von Neumann: The Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More Mar 25 2022 John von Neumann was a Jewish refugee from Hungary — considered a "genius" like fellow Hungarians Leo Szilard, Eugene Wigner and Edward Teller — who played key roles developing the A-bomb at Los Alamos during World War II. As a mathematician at Princeton's Institute for Advanced Study (where Einstein was also a professor), von Neumann was a leader in the development of early computers. Later, he developed the new field of game theory in economics and became a top nuclear arms policy adviser to the Truman and Eisenhower administrations. "I always thought [von Neumann's] brain indicated that he belonged to a new species, an evolution beyond man. Macrae shows us in a lively way how this brain was nurtured and then left its great imprint on the world." — Hans A. Bethe, Cornell University "The book makes for utterly captivating reading. Von Neumann was, of course, one of this century's geniuses, and it is surprising that we have had to wait so long... for a fully fleshed and sympathetic biography of the man. But now, happily, we have one. Macrae nicely delineates the cultural, familial, and educational environment from which von Neumann sprang and sketches the mathematical and scientific environment in which he flourished. It's no small task to render a genius like von Neumann in ordinary language, yet Macrae manages the trick, providing more than a glimpse of what von Neumann accomplished intellectually without expecting the reader to have a Ph.D. in mathematics. Beyond that, he captures von Neumann's qualities of temperament, mind, and personality, including his effortless wit and humor. And [Macrae] frames and accounts for von Neumann's politics in ways that even critics of them, among whom I include myself, will find provocative and illuminating." — Daniel J. Kevles, California Institute of Technology "A lively portrait of the hugely consequential nonmathematician-physicist-et al., whose genius has left an enduring impress on our thought, technology, society, and culture. A double salute to Steve White, who started this grand book designed for us avid, nonmathematical readers, and to Norman Macrae, who brought it to a triumphant conclusion." — Robert K. Merton, Columbia University "The first full-scale biography of this polymath, who was born Jewish in Hungary in 1903 and died Roman Catholic in the United States at the age of 53. And Mr. Macrae has some great stories to tell... Mr. Macrae's biography has rescued a lot of good science gossip from probable extinction, and has introduced many of us to the life story of a man we ought to know better." — Ed Regis, The New York Times "A nice and fascinating picture of a genius who was active in so many domains." —Zentralblatt MATH "Biographer Macrae takes a 'viewspaperman' approach which stresses the context and personalities associated with von Neumann's remarkable life, rather than attempting to give a detailed scholarly analysis of von Neumann's papers. The resulting book is a highly entertaining account that is difficult to put down." — Journal of Mathematical Psychology "A full and intimate biography of 'the man who consciously and deliberately set mankind moving along the road that led us into the Age of Computers.'" — Freeman Dyson, Princeton, NJ "It is good to have a biography of one of the most important mathematicians of the twentieth century, even if it is a biography that focuses much more on the man than on the mathematics." — Fernando Q. Gouvêa, Mathematical Association of America "Based on much research, his own and that of others (especially of Stephen White), Macrae has written a valuable biography of this remarkable genius of our century, without the opacity of technical (mathematical) dimensions that are part of the hero's intellectual contributions to humanity. Interesting, informative, illuminating, and insightful." — Choice Review "Macrae paints a highly readable, humanizing portrait of a man whose legacy still influences and shapes modern science and knowledge." — Resonance, Journal of Science Education "In this affectionate, humanizing biography, former Economist editor Macrae limns a prescient pragmatist who actively fought against fascism and who advocated a policy of nuclear deterrence because he foresaw that Stalin's Soviet Union would rapidly acquire the bomb and develop rocketry... Macrae makes [von Neumann's] contributions accessible to the lay reader, and also discusses von Neumann's relationships with two long-suffering wives, his political differences with Einstein and the cancer that killed him." —

Publishers Weekly "Macrae's life of the great mathematician shows dramatically what proper care and feeding can do for an unusually capacious mind." — John Wilkes, Los Angeles Times

Prisoner's Dilemma May 27 2022 Should you watch public television without pledging?...Exceed the posted speed limit?...Hop a subway turnstile without paying? These questions illustrate the so-called "prisoner's dilemma", a social puzzle that we all face every day. Though the answers may seem simple, their profound implications make the prisoner's dilemma one of the great unifying concepts of science. Watching players bluff in a poker game inspired John von Neumann—father of the modern computer and one of the sharpest minds of the century—to construct game theory, a mathematical study of conflict and deception. Game theory was readily embraced at the RAND Corporation, the archetypical think tank charged with formulating military strategy for the atomic age, and in 1950 two RAND scientists made a momentous discovery. Called the "prisoner's dilemma," it is a disturbing and mind-bending game where two or more people may betray the common good for individual gain. Introduced shortly after the Soviet Union acquired the atomic bomb, the prisoner's dilemma quickly became a popular allegory of the nuclear arms race. Intellectuals such as von Neumann and Bertrand Russell joined military and political leaders in rallying to the "preventive war" movement, which advocated a nuclear first strike against the Soviet Union. Though the Truman administration rejected preventive war the United States entered into an arms race with the Soviets and game theory developed into a controversial tool of public policy—alternately accused of justifying arms races and touted as the only hope of preventing them. A masterful work of science writing, Prisoner's Dilemma weaves together a biography of the brilliant and tragic von Neumann, a history of pivotal phases of the cold war, and an investigation of game theory's far-reaching influence on public policy today. Most important, Prisoner's Dilemma is the incisive story of a revolutionary idea that has been hailed as a landmark of twentieth-century thought.

Introduction to the Theory of Games Feb 09 2021 This comprehensive overview of the mathematical theory of games illustrates applications to situations involving conflicts of interest, including economic, social, political, and military contexts. Advanced calculus a prerequisite. Includes 51 figures and 8 tables. 1952 edition.

Game Theory and Strategy Jan 11 2021 This book deals with applications of game theory in a wide variety of disciplines.

The World as a Mathematical Game Jun 27 2022 Galileo and Newton's work towards the mathematisation of the physical world; Leibniz's universal logical calculus; the Enlightenment's mathé matique sociale. John von Neumann inherited all these aims and philosophical intuitions, together with an idea that grew up around the Vienna Circle of an ethics in the form of an exact science capable of guiding individuals to make correct decisions. With the help of his boundless mathematical capacity, von Neumann developed a conception of the world as a mathematical game, a world globally governed by a universal logic in which individual consciousness moved following different strategies: his vision guided him from set theory to quantum mechanics, to economics and to his theory of automata (anticipating artificial intelligence and cognitive science). This book provides the first comprehensive scientific and intellectual biography of John von Neumann, a man who perhaps more than any other is representative of twentieth century science.

Imaginary Philosophical Dialogues Jan 29 2020 How would Plato have responded if his student Aristotle had ever challenged his idea that our senses perceive nothing more than the shadows cast upon a wall by a true world of perfect ideals? What would Charles Darwin have said to Karl Marx about his claim that dialectical materialism is a scientific theory of evolution? How would Jean-Paul Sartre have reacted to Simone de Beauvoir's claim that the Marquis de Sade was a philosopher worthy of serious attention? This light-hearted book proposes answers to such questions by imagining dialogues between thirty-three pairs of philosophical sages who were alive at the same time. Sometime famous sages get a much rougher handling than usual, as when Adam Smith beards Immanuel Kant in his Konigsberg den. Sometimes neglected or maligned sages get a chance to say what they really believed, as when Epicurus explains that he wasn't epicurean. Sometimes the dialogues are about the origins of modern concepts, as when Blaise Pascal and Pierre de Fermat discuss their invention of probability, or when John Nash and John von Neumann discuss the creation of game theory. Even in these scientific cases, the intention is that the protagonists come across as fallible human beings like the rest of us, rather than the intellectual paragons of philosophical textbooks.

John von Neumann and the Origins of Modern Computing Sep 18 2021 William Aspray provides the first broad and detailed account of von Neumann's many different contributions to computing. John von Neumann (1903-1957) was unquestionably one of the most brilliant scientists of the twentieth century. He made major contributions to quantum mechanics and mathematical physics and in 1943 began a new and all-too-short career in computer science. William Aspray provides the first broad and detailed account of von Neumann's many different contributions to computing. These, Aspray reveals, extended far beyond his well-known work in the design and construction of computer systems to include important scientific applications, the revival of numerical analysis, and the creation of a theory of computing. Aspray points out that from the beginning von Neumann took a wider and more theoretical view than other computer pioneers. In the now famous EDVAC report of 1945, von Neumann clearly stated the idea of a stored program that resides in the computer's memory along with the data it was to operate on. This stored program computer was described in terms of idealized neurons, highlighting the analogy between the digital computer and the human brain. Aspray describes von Neumann's development during the next decade, and almost entirely alone, of a theory of complicated information processing systems, or automata, and the introduction of themes such as learning, reliability of systems with unreliable components, self-replication, and the importance of memory and storage capacity in biological nervous systems; many of these themes remain at the heart of current investigations in parallel or neurocomputing. Aspray allows the record to speak for itself. He unravels an intricate sequence of stories generated by von Neumann's work and brings into focus the interplay of personalities centered about von Neumann. He documents the complex interactions of science, the military, and business and shows how progress in applied mathematics was intertwined with that in

computers. William Aspray is Director of the Center for the History of Electrical Engineering at The Institute of Electrical and Electronics Engineers.

Measuring Utility Sep 06 2020 Utility is a key concept in the economics of individual decision-making. However, utility is not measurable in a straightforward way. As a result, from the very beginning there has been debates about the meaning of utility as well as how to measure it. This book is an innovative investigation of how these arguments changed over time. Measuring Utility reconstructs economists' ideas and discussions about utility measurement from 1870 to 1985, as well as their attempts to measure utility empirically. The book brings into focus the interplay between the evolution of utility analysis, economists' ideas about utility measurement, and their conception of what measurement in general means. It also explores the relationships between the history of utility measurement in economics, the history of the measurement of sensations in psychology, and the history of measurement theory in general. Finally, the book discusses some methodological problems related to utility measurement, such as the epistemological status of the utility concept and its measures. The first part covers the period 1870-1910, and discusses the issue of utility measurement in the theories of Jevons, Menger, Walras and other early utility theorists. Part II deals with the emergence of the notions of ordinal and cardinal utility during the period 1900-1945, and discusses two early attempts to give an empirical content to the notion of utility. Part III focuses on the 1945-1955 debate on utility measurement that was originated by von Neumann and Morgenstern's expected utility theory (EUT). Part IV reconstructs the experimental attempts to measure the utility of money between 1950 and 1985 within the framework provided by EUT. This historical and epistemological overview provides keen insights into current debates about rational choice theory and behavioral economics in the theory of individual decision-making and the philosophy of economics.

From the Beginnings to 1945 Aug 25 2019

Game Theory for Political Scientists Apr 13 2021 Game theory is the mathematical analysis of strategic interaction. In the fifty years since the appearance of von Neumann and Morgenstern's classic Theory of Games and Economic Behavior (Princeton, 1944), game theory has been widely applied to problems in economics. Until recently, however, its usefulness in political science has been underappreciated, in part because of the technical difficulty of the methods developed by economists. James Morrow's book is the first to provide a standard text adapting contemporary game theory to political analysis. It uses a minimum of mathematics to teach the essentials of game theory and contains problems and their solutions suitable for advanced undergraduate and graduate students in all branches of political science. Morrow begins with classical utility and game theory and ends with current research on repeated games and games of incomplete information. The book focuses on noncooperative game theory and its application to international relations, political economy, and American and comparative politics. Special attention is given to models of four topics: bargaining, legislative voting rules, voting in mass elections, and deterrence. An appendix reviews relevant mathematical techniques. Brief bibliographic essays at the end of each chapter suggest further readings, graded according to difficulty. This rigorous but accessible introduction to game theory will be of use not only to political scientists but also to psychologists, sociologists, and others in the social sciences.

Twenty Lectures on Algorithmic Game Theory Apr 01 2020 Computer science and economics have engaged in a lively interaction over the past fifteen years, resulting in the new field of algorithmic game theory. Many problems that are central to modern computer science, ranging from resource allocation in large networks to online advertising, involve interactions between multiple self-interested parties. Economics and game theory offer a host of useful models and definitions to reason about such problems. The flow of ideas also travels in the other direction, and concepts from computer science are increasingly important in economics. This book grew out of the author's Stanford University course on algorithmic game theory, and aims to give students and other newcomers a quick and accessible introduction to many of the most important concepts in the field. The book also includes case studies on online advertising, wireless spectrum auctions, kidney exchange, and network management.

Production Planning in Production Networks Mar 13 2021 No other book has been published giving a single-volume introduction and survey to production planning in distributed manufacturing networks. The published literature so far includes conference proceedings only.

Von Neumann, Morgenstern, and the Creation of Game Theory Sep 30 2022 A reconstruction of the creation of game theory in the twentieth century by John von Neumann and Oskar Morgenstern.

Mathematical Go Sep 26 2019 The ancient game of Go is one of the less obvious candidates for mathematical analysis. With the development of new concepts in combinatorial game theory, the authors have been able to analyze Go games and find solutions to real endgame problems that have stumped professional Go players. Go players with an interest in mathematics and mathematicians

The Neumann Compendium May 15 2021 After three decades since the first nearly complete edition of John von Neumann's papers, this book is a valuable selection of those papers and excerpts of his books that are most characteristic of his activity, and reveal that of his continuous influence. The results receiving the 1994 Nobel Prizes in economy deeply rooted in Neumann's game theory are only minor traces of his exceptionally broad spectrum of creativity and stimulation. The book is organized by the specific subjects-quantum mechanics, ergodic theory, operator algebra, hydrodynamics, economics, computers, science and society. In addition, one paper which was written in German will be translated and published in English for the first time. The sections are introduced by short explanatory notes with an emphasis on recent developments based on von Neumann's contributions. An overall picture is provided by Ulam's, one of his most intimate partners in thinking, 1958 memorial lecture. Facsimilae and translations of some of his personal letters and a newly completed bibliography based on von Neumann's own careful compilation are added. Contents:Quantum Mechanics:Mathematical Foundations of Quantum MechanicsThe Logic of Quantum Mechanics (with G Birkhoff)Ergodic Theory:Proof of the Quasi-Ergodic HypothesisOperator

Methods in Classical Mechanics, II (with P R Halmos)Operator Algebra:Algebra of Functional Operations and Theory of Normal OperatorsOn Rings of Operators I– IVUse of Variational Methods in HydrodynamicsEconomics:Theory of Games and Economic Behavior (with O Morgenstern)Computers:On the Principles of Large Scale Computing Machines (with H H Goldstine)Science and Society:The MathematicianMethod in the Physical SciencesThe Role of Mathematics in the Sciences and in Societyand other papers Readership: Mathematicians. keywords:Mathematics;Science History;Computer Science;J V Neumann;Science and Society;Game Theory;Quantum Mechanics;Operator Algebra;Hydrodynamics;Ergodic Theory"The collection bears testimony to the lasting influence of John von Neumann's work on the course of modern mathematics."R Siegmund-Schultze Mathematical Abstracts "This collection is a fascinating introduction to the work of John von Neumann ... it has much to offer even to the casual browser and will also be relevant and interesting to those working today in the fields on which von Neumann had such enormous influence."Mathematical Reviews

Contributions to the Theory of Games (AM-40), Volume IV Dec 22 2021 The description for this book, Contributions to the Theory of Games (AM-40), Volume IV, will be forthcoming.

Economists at War Jul 17 2021 Wartime is not just about military success. Economists at War tells a different story - about a group of remarkable economists who used their skills to help their countries fight their battles during the Chinese-Japanese War, Second World War, and the Cold War. 1935-55 was a time of conflict, confrontation, and destruction. It was also a time when the skills of economists were called upon to finance the military, to identify economic vulnerabilities, and to help reconstruction. Economists at War: How a Handful of Economists Helped Win and Lose the World Wars focuses on the achievements of seven finance ministers, advisors, and central bankers from Japan, China, Germany, the UK, the USSR, and the US. It is a story of good and bad economic thinking, good and bad policy, and good and bad moral positions. The economists suffered threats, imprisonment, trial, and assassination. They all believed in the power of economics to make a difference, and their contributions had a significant impact on political outcomes and military ends. Economists at War shows the history of this turbulent period through a unique lens. It details the tension between civilian resources and military requirements; the desperate attempts to control economies wracked with inflation, depression, political argument, and fighting; and the clever schemes used to evade sanctions, develop barter trade, and use economic espionage. Politicians and generals cannot win wars if they do not have the resources. This book tells the human stories behind the economics of wartime.

Theory of Games and Economic Behavior Nov 01 2022

The Man from the Future: The Visionary Ideas of John von Neumann Apr 25 2022 An electrifying biography of one of the most extraordinary scientists of the twentieth century and the world he made. The smartphones in our pockets and computers like brains. The vagaries of game theory and evolutionary biology. Nuclear weapons and self-replicating spacecrafts. All bear the fingerprints of one remarkable, yet largely overlooked, man: John von Neumann. Born in Budapest at the turn of the century, von Neumann is one of the most influential scientists to have ever lived. A child prodigy, he mastered calculus by the age of eight, and in high school made lasting contributions to mathematics. In Germany, where he helped lay the foundations of quantum mechanics, and later at Princeton, von Neumann's colleagues believed he had the fastest brain on the planet—bar none. He was instrumental in the Manhattan Project and the design of the atom bomb; he helped formulate the bedrock of Cold War geopolitics and modern economic theory; he created the first ever programmable digital computer; he prophesized the potential of nanotechnology; and, from his deathbed, he expounded on the limits of brains and computers—and how they might be overcome. Taking us on an astonishing journey, Ananyo Bhattacharya explores how a combination of genius and unique historical circumstance allowed a single man to sweep through a stunningly diverse array of fields, sparking revolutions wherever he went. The Man from the Future is an insightful and thrilling intellectual biography of the visionary thinker who shaped our century.

Theory of Games and Economic Behavior (Commemorative Edition) Jul 29 2022 First published in 1944, this book, co-written by an economist & a mathematician, conceived a groundbreaking theory of economic & social organisation based on a theory of games of strategy. The result was a revolution in economics & game theory has since emerged as a major tool of analysis in many other fields.

John Von Neumann, 1903-1957 Jul 25 2019 This is Bulletin , Volume 64, Number 3, Part II, May 1958. A memorial to the late John von Neumann edited by J. C. Oxtoby, B. J. Pettis and E. B. Price.