Artificial Economics Agent Based Methods In Finance Game Theory And Their Applications Lecture Notes In Economics And Mathematical Systems

This book constitutes the thoroughly refereed post-proceedings of the 4th International Workshop on Multi-Agent-Based Simulation, MABS 2003, held in Melbourne, Australia as part of AAMAS 2003. The 11 revised full papers presented together with 3 invited papers were carefully selected during two rounds of reviewing and improvement. The papers are organized in topical sections on MABS techniques for MAS; economics, exchange, and influence in virtual worlds; MABS techniques for real-world modelling, and understanding and classifying MABS.

The book focuses on smart computing for crowdfunding usage, looking at the crowdfunding landscape, e.g., reward-, donation-, equity-, P2P-based and the crowdfunding ecosystem, e.g., regulator, asker, backer, investor, and operator. The increased complexity of fund raising scenario, driven by the broad economic environment as well as the need for using alternative funding sources, has sparked research in smart computing techniques.

Covering a wide range of detailed topics, the authors of this book offer an outstanding overview of the current state of the art; providing deep insights into smart computing methods, tools, and their applications in crowdfunding; exploring the importance of smart analysis, prediction, and decision-making within the fintech industry. This book is intended to be an authoritative and valuable resource for professional practitioners and researchers alike, as well as finance engineering, and computer science students who are interested in crowdfunding and other emerging fintech topics. Agent-based simulation has become increasingly popular as a modeling approach in the social sciences because it enables researchers to build models where individual entities and their interactions are directly represented. The Second Edition of Nigel Gilbert?s Agent-Based Models introduces this technique; considers a range of methodological and theoretical issues; shows how to design an agent-based model, with a simple example; offers some practical advice about developing, verifying and validating agent-based models; and finally discusses how to plan an agent-based modelling project, publish the results and apply agent-based modeling to formulate and evaluate social and economic policies. An accompanying simulation using NetLogo and commentary on the program can be downloaded on

the book?s website: https://study.sagepub.com/researchmethods/qass/gilbert-agent-based-models-2e

Conflict is a major facet of many environmental challenges of our time. However, growing conflict complexity makes it more difficult to identify win-win strategies for sustainable conflict resolution. Innovative methods are needed to help predict, understand, and resolve conflicts in cooperative ways. Agent-Based Modeling of Environmental Conflict and Cooperation examines computer modeling techniques as an important set of tools for assessing environmental and resource-based conflicts and, ultimately, for finding pathways to conflict resolution and cooperation. This book has two major goals. First, it argues that complexity science can be a unifying framework for professions engaged in conflict studies and resolution, including anthropology, law, management, peace studies, urban planning, and geography. Second, this book presents an innovative framework for approaching conflicts as complex adaptive systems by using many forms of environmental analysis, including system dynamics modeling, agent-based modeling, evolutionary game theory, viability theory, and network analysis. Known as VIABLE (Values and Investments from Agent-Based interaction and Learning in Environmental systems), this framework allows users to model advanced facets of conflicts—including institution building, coalition

formation, adaptive learning, and the potential for future conflict—and conflict resolution based on the long-term viability of the actors' strategies. Written for scholars, students, practitioners, and policy makers alike, this book offers readers an extensive introduction to environmental conflict research and resolution techniques. As the result of decades of research, the text presents a strong argument for conflict modeling and reviews the most popular and advanced techniques, including system dynamics modeling, agent-based modeling, and participatory modeling methods. This indispensable guide uses NetLogo, a widely used and free modeling software package, to implement the VIABLE modeling approach in three case study applications around the world. Readers are invited to explore, adapt, modify, and expand these models to conflicts they hope to better understand and resolve.

What is the contribution of General System Theory to the macro-level understanding of economic, social and technological changes in our epoch from a multidimensional perspective? What is the contribution of Social Action Theory on a micro-scale? Can complex scenario analyses, although based upon uncertainty and unpredictability, offer a viable toolkit for managing these transformations? This book contains twelve chapters, dealing with these questions from various points of view. It brings together essays in sociology, economics, law and

humanities to provide as complete a representation as possible of the current global situation. The theoretical framework adopted here is that the systemic approach provides the most effective tool both for understanding social phenomena and elaborating policy-modelling strategies for decision makers that are supposed to tackle social criticalities.

This handbook contains surveys of state-of-the-art concepts, systems, applications, best practices as well as contemporary research in the intersection between IT and finance. Included are recent trends and challenges, IT systems and architectures in finance, essential developments and case studies on management information systems, and service oriented architecture modeling. The book shows a broad range of applications, e.g. in banking, insurance, trading and in non-financial companies. Essentially, all aspects of IT in finance are covered.

Agent technology with the methods of modeling and simulation (ABMS) has recently become a platform for research in a broad range of applied economic disciplines. The use of ABMS techniques is possible due to the availability of sufficient computing performance under current information technology progress. Multi-agent systems allow the simulation to work with some degree of local intelligence, causality, probability, and market failures. The subject of this book is the use of ABMS in financial

markets. Trading with financial assets is widely used in developed economies. As a result of the interaction of a supply and a demand, the prices of these assets (bonds, cash, shares, etc.) change relatively quickly. Price volatility is caused by a large number of factors affecting the demand and supply of financial assets. The book is divided into three parts. Part One characterizes modeling and simulation methods. Part Two introduces financial market structure, trading behavior, and financial market simulation approaches. Applied research of the financial markets and the determination of a proper taxation is demonstrated in the Case study, which forms Part Three of this book.

Agent-based Computational Economics (ACE) is a new discipline of economics, largely grounded on concepts like evolution, auto-organisation and emergence: it intensively uses computer simulations as well as artificial intelligence, mostly based on multi-agents systems. The purpose of this book is to give an up-to date view of the scientific production in the fields of Agent-based Computational Economics (mainly in Market Finance and Game Theory). Based on communications given at AE'2005 (Lille, USTL, France), this book offers a wide panorama of recent advances in ACE (both theoretical and methodological) that will interest academics as well as practitioners.

Swarm-based multi-agent simulation leads to better

modeling of tasks in biology, engineering, economics, art, and many other areas. It also facilitates an understanding of complicated phenomena that cannot be solved analytically. Agent-Based Modeling and Simulation with Swarm provides the methodology for a multi-agent-based modeling approach that integrates computational techniques such as artificial life, cellular automata, and bio-inspired optimization. Each chapter gives an overview of the problem, explores state-of-the-art technology in the field, and discusses multi-agent frameworks. The author describes step by step how to assemble algorithms for generating a simulation model, program, method for visualization, and further research tasks. While the book employs the commonly used Swarm system, readers can model and develop the simulations with their own simulator. To encourage hands-on exploration of emergent systems, Swarm-based software and source codes are available for download from the author's website. A thorough overview of multi-agent simulation and supporting tools, this book shows how this type of simulation is used to acquire an understanding of complex systems and artificial life. It carefully explains how to construct a simulation program for various applications.

Agent-based Computational Economics using NetLogo explores how researchers can create, use and implement multi-agent computational models in

Economics by using NetLogo software platform. Problems of economic science can be solved using multi-agent modelling (MAM). This technique uses a computer model to simulate the actions and interactions of autonomous entities in a network, in order to analyze the effects on the entire economic system. MAM combines elements of game theory, complex systems, emergence and evolutionary programming. The Monte Carlo method is also used in this e-book to introduce random elements. The 11 models presented in this text simulate the simultaneous operations of several agents in an attempt to recreate and predict complex economic phenomena. This e-book explains the topic in a systematic manner, starting with an introduction for readers followed subsequently by methodology and implementation using NetLogo. The volume ends with conclusions based on the results of the experiments presented. The e-book is intended as a concise and vital resource for economists, applied mathematicians, social sciences scientists, systems analysts, operations researchers and numerical analysts

This book aims to answer two questions that are fundamental to the study of agent-based economic models: what is agent-based computational economics and why do we need agent-based economic modelling of economy? This book provides a review of the development of agent-

based computational economics (ACE) from a perspective on how artificial economic agents are designed under the influences of complex sciences, experimental economics, artificial intelligence, evolutionary biology, psychology, anthropology and neuroscience. This book begins with a historical review of ACE by tracing its origins. From a modelling viewpoint, ACE brings truly decentralized procedures into market analysis, from a single market to the whole economy. This book also reviews how experimental economics and artificial intelligence have shaped the development of ACE. For the former, the book discusses how ACE models can be used to analyse the economic consequences of cognitive capacity, personality and cultural inheritance. For the latter, the book covers the various tools used to construct artificial adaptive agents, including reinforcement learning, fuzzy decision rules, neural networks, and evolutionary computation. This book will be of interest to graduate students researching computational economics, experimental economics, behavioural economics, and research methodology.

The field of artificial economics (AE) embraces a broad range of methodologies relying on computer simulations in order to model and study the complexity of economic and social phenomena. The overarching principle of AE is the analysis of aggregate properties of artificial economies

populated by adaptive agents that are equipped with behavioural rules and specific individual targets. These aggregate properties are neither foreseen nor intended by the artificial agents; conversely they are emerging characteristics of such artificially simulated systems. The book presents a peer-reviewed collection of papers addressing a variety of issues related to macroeconomics, industrial organization, networks, management and finance, as well as purely methodological issues.

Developments in the use of game theory have impacted multiple fields and created opportunities for new applications. With the ubiquity of these developments, there is an increase in the overall utilization of this approach. Game Theory: Breakthroughs in Research and Practice contains a compendium of the latest academic material on the usage, strategies, and applications for implementing game theory across a variety of industries and fields. Including innovative studies on economics, military strategy, and political science, this multi-volume book is an ideal source for professionals, practitioners, graduate students, academics, and researchers interested in the applications of game theory.

This second book on financial and economic simulations in Swarm marks the continued progress by a group of researchers to incorporate agent-based computer models as an important tool within

their disci pline. It is encouraging to see such a clear example of Swarm helping to foster a community of users who rely on the Swarm framework for their own analyses. Swarm aims at legitimizing agent-based computer models as a tool for the study of complex systems. A further goal is that a common base framework will lead to the growth of user communities in specific areas of application. By providing an organizing framework to guide the development of more problem-specific structures, and by dealing with a whole range of issues that affect their fundamental correctness and their ability to be developed and reused, Swarm has sought to make the use of agent-based models a legitimate tool of scientific investigation that also meets the practical needs of investigators within a community. This volume constitutes the proceedings of the Third International Workshop on Hybrid Artificial Intelligence Systems, HAIS 2008, held in Burgos, Spain, during September 24-26, 2008. The 93 papers presented, together with 4 invited talks, were carefully reviewed and selected from 280 submissions. The topics covered are agents and multi-agent systems; evolutionary computation; connectionist models; optimization sysetms; fuzzy logic systems; classification and classifiers; cluster analysis; video and image analysis; learning systems, algorithms and applications; hybrid systems based on negotiation and social network

modelling; real world applications of HAIS under uncertainty; hybrid intelligent systems for multi-robot and multi-agent systems; applications of hybrid artificial intelligence in bioinformatics; and novel approaches to genetic fuzzy systems.

The chapters of this book are the selected papers from those presented at the Third International Workshop on Agent-Based Approaches in Economic and Social Complex Systems held in Tokyo, Japan in 2005. Articles cover methodological issues, computational model/software, combination with gaming simulation, and real-world applications to economic, management/organizational and social issues.

This book constitutes the refereed proceedings of the nine workshops co-located with the 15th International Conference on Practical Applications of Agents and Multi-Agent Systems, PAAMS 2017, held in Porto, Portugal, in June 2017.The 41 full papers presented were carefully reviewed and selected from 80 submissions. The volume presents the papers that have been accepted for the following workshops: Workshop on Agent based Applications for Air Transport and Application of Agents to Passenger Transport; Workshop on Agent-based Artificial Markets Computational Economics; Workshop on Agents and Multi-agent Systems for AAL and e-HEALTH; Workshop on Agent-Based Solutions for Manufacturing and Supply Chain;

Workshop on MAS for Complex Networks and Social Computation; Workshop on Decision Making in Dynamic Information Environments; Workshop on Multi-agent based Applications for Smart Grids and Sustainable Energy Systems; Workshop on Multiagent System based Learning Environments; Workshop on Smart Cities and Intelligent Agents.

Social simulation can be a difficult discipline to encompass fully. There are many methods, models, directions, and theories that can be discussed and applied to various social sciences. Anthropology, sociology, political science, economy, government, and management can all benefit from social simulation. Interdisciplinary Applications of Agent-Based Social Simulation and Modeling aims to bring a different perspective to this interdisciplinary topic. This book presents current discussions and new insights on social simulation as a whole, focusing on its dangers, pitfalls, deceits, and challenges. This book is an essential reference for researchers in this field, professionals using social simulation, and even students studying this discipline.

The explosive growth in computational power over the past several decades offers new tools and opportunities for economists. This handbook volume surveys recent research on Agent-based Computational Economics (ACE), the computational study of economic processes modeled as dynamic systems of interacting agents. Empirical referents for

"agents" in ACE models can range from individuals or social groups with learning capabilities to physical world features with no cognitive function. Topics covered include: learning; empirical validation; network economics; social dynamics; financial markets; innovation and technological change; organizations; market design; automated markets and trading agents; political economy; social-ecological systems; computational laboratory development; and general methodological issues. *Every volume contains contributions from leading researchers *Each Handbook presents an accurate, self-contained survey of a particular topic *The series provides comprehensive and accessible surveys

In contrast to mainstream economics, complexity theory conceives the economy as a complex system of heterogeneous interacting agents characterised by limited information and bounded rationality. Agent Based Models (ABMs) are the analytical and computational tools developed by the proponents of this emerging methodology. Aimed at students and scholars of contemporary economics, this book includes a comprehensive toolkit for agent-based computational economics, now quickly becoming the new way to study evolving economic systems. Leading scholars in the field explain how ABMs can be applied fruitfully to many real-world economic examples and represent a great advancement over

mainstream approaches. The essays discuss the methodological bases of agent-based approaches and demonstrate step-by-step how to build, simulate and analyse ABMs and how to validate their outputs empirically using the data. They also present a wide set of applications of these models to key economic topics, including the business cycle, labour markets, and economic growth.

This book presents recent research on probabilistic methods in economics, from machine learning to statistical analysis. Economics is a very important – and at the same a very difficult discipline. It is not easy to predict how an economy will evolve or to identify the measures needed to make an economy prosper. One of the main reasons for this is the high level of uncertainty: different difficult-to-predict events can influence the future economic behavior. To make good predictions and reasonable recommendations, this uncertainty has to be taken into account. In the past, most related research results were based on using traditional techniques from probability and statistics, such as p-value-based hypothesis testing. These techniques led to numerous successful applications, but in the last decades, several examples have emerged showing that these techniques often lead to unreliable and inaccurate predictions. It is therefore necessary to come up with new techniques for processing the corresponding uncertainty that go beyond the

traditional probabilistic techniques. This book focuses on such techniques, their economic applications and the remaining challenges, presenting both related theoretical developments and their practical applications.

Artificial economics aims to provide a generative approach to understanding problems in economics and social sciences. It is based on the consistent use of agent-based models and computational techniques. It encompasses a rich variety of techniques that generalize numerical analysis, mathematical programming, and micro-simulations. The peer-reviewed contributions in this volume address applications of artificial economics to markets and trading, auctions, networks, management, industry sectors, macroeconomics, and demographics and culture.

This volume examines all aspects of using agent or individual-based simulation. This approach represents systems as individual elements having their own set of differing states and internal processes. The interactions between elements in the simulation represent interactions in the target systems. What makes this "social" is that it can represent an observed society. Social systems include all those systems where the components have individual agency but also interact with each other. This includes human societies and groups, but also increasingly socio-technical systems where the

internet-based devices form the substrate for interaction. These systems are central to our lives, but are among the most complex known. This poses particular problems for those who wish to understand them. The complexity often makes analytic approaches infeasible but, on the other hand, natural language approaches are also inadequate for relating intricate cause and effect. This is why individual and agent-based computational approaches hold out the possibility of new and deeper understanding of such systems. This handbook marks the maturation of this new field. It brings together summaries of the best thinking and practices in this area from leading researchers in the field and constitutes a reference point for standards against which future methodological advances can be judged. This second edition adds new chapters on different modelling purposes and applying software engineering methods to simulation development. Revised existing content will keep the book up-to-date with recent developments. This volume will help those new to the field avoid "reinventing the wheel" each time, and give them a solid and wide grounding in the essential issues. It will also help those already in the field by providing accessible overviews of current thought. The material is divided into four sections: Introduction, Methodology, Mechanisms, and Applications. Each chapter starts with a very brief section called ‘Why

read this chapter?' followed by an abstract, which summarizes the content of the chapter. Each chapter also ends with a section on 'Further Reading'. Whilst sometimes covering technical aspects, this second edition of Simulating Social Complexity is designed to be accessible to a wide range of researchers, including both those from the social sciences as well as those with a more formal background. It will be of use as a standard reference text in the field and also be suitable for graduate level courses.

This book explores the exciting new field of Artificial Intelligence. It features in-depth coverage of important theoretical areas, including computational organization, computational economics, computational approaches in social science, and game theory. The concepton of the multi-agent system is particularly attractive, as it promises autonomy based on the conceptual speciality of a rational agent as well as collective behavior through interactions. The book draws out themes, especially the ideas of connectivity and natural computation, that reveal deep, underlying similarities between phenomena that have formerly been treated as completely distinct. The idea of agent-based approach is particularly rich in fresh approaches applicable to many fields such as artificial intelligence, computational organization, computational economics, and computational game

theory.
This introductory overview explores the methods, models and interdisciplinary links of artificial economics, a new way of doing economics in which the interactions of artificial economic agents are computationally simulated to study their individual and group behavior patterns. Conceptually and intuitively, and with simple examples, Mercado addresses the differences between the basic assumptions and methods of artificial economics and those of mainstream economics. He goes on to explore various disciplines from which the concepts and methods of artificial economics originate; for example cognitive science, neuroscience, artificial intelligence, evolutionary science and complexity science. Introductory discussions on several controversial issues are offered, such as the application of the concepts of evolution and complexity in economics and the relationship between artificial intelligence and the philosophies of mind. This is one of the first books to fully address artificial economics, emphasizing its interdisciplinary links and presenting in a balanced way its occasionally controversial aspects.
"This book is the first book to provide opportunities for millions working in economics, accounting, finance and other business areas education on HONNs, the ease of their usage, and directions on how to obtain more accurate application results. It

provides significant, informative advancements in the subject and introduces the HONN group models and adaptive HONNs"--Provided by publisher.

In recent years, agent-based simulation has become a widely accepted tool when dealing with complexity in economics and other social sciences. The contributions presented in this book apply agent-based methods to derive results from complex models related to market mechanisms, evolution, decision making, and information economics. In addition, the applicability of agent-based methods to complex problems in economics is discussed from a methodological perspective. The papers presented in this collection combine approaches from economics, finance, computer science, natural sciences, philosophy, and cognitive sciences.

This volume presents recent advances in the dynamic field of Artificial Economics and its various applications. Artificial Economics provides a structured approach to model and investigate economic and social systems. In particular, this approach is based on the use of agent-based simulations and further computational techniques. The main aim is to analyze the outcomes at the overall systems' level as results from the agents' behavior at the micro-level. These emergent characteristics of complex economic and social systems can neither be foreseen nor are they intended. The emergence rather makes these

systems function. Artificial Economics especially facilitates the investigation of this emergent systems' behavior. ?

This book reconciles the existence of technical trading with the Efficient Market Hypothesis. By analyzing a well-known agent-based model, the Santa Fe Institute Artificial Stock Market (SFI-ASM), it finds that when selective forces are weak, financial evolution cannot guarantee that only the fittest trading rules will survive. Its main contribution lies in the application of standard results from population genetics which have widely been neglected in the agent-based community.

Agent–based modelling in economics Lynne Hamill and Nigel Gilbert, Centre for Research in Social Simulation (CRESS), University of Surrey, UK New methods of economic modelling have been sought as a result of the global economic downturn in 2008.This unique book highlights the benefits of an agent–based modelling (ABM) approach. It demonstrates how ABM can easily handle complexity: heterogeneous people, households and firms interacting dynamically. Unlike traditional methods, ABM does not require people or firms to optimise or economic systems to reach equilibrium. ABM offers a way to link micro foundations directly to the macro situation. Key features: Introduces the concept of agent–based modelling and shows how it differs from existing approaches. Provides a

theoretical and methodological rationale for using ABM in economics, along with practical advice on how to design and create the models. Each chapter starts with a short summary of the relevant economic theory and then shows how to apply ABM. Explores both topics covered in basic economics textbooks and current important policy themes; unemployment, exchange rates, banking and environmental issues. Describes the models in pseudocode, enabling the reader to develop programs in their chosen language. Supported by a website featuring the NetLogo models described in the book. Agent–based Modelling in Economics provides students and researchers with the skills to design, implement, and analyze agent–based models. Third year undergraduate, master and doctoral students, faculty and professional economists will find this book an invaluable resource.

Simulation is used in economics to solve large econometric models, for large-scale micro simulations, and to obtain numerical solutions for policy design in top-down established models. But these applications fail to take advantage of the methods offered by artificial economics (AE) through artificial intelligence and distributed computing. AE is a bottom-up and generative approach of agent-based modelling developed to get a deeper insight into the complexity of economics. AE can be viewed as a very elegant and general class of modelling

techniques that generalize numerical economics, mathematical programming and micro simulation approaches. The papers presented in this book address methodological questions and applications of AE to macroeconomics, industrial organization, information and learning, market dynamics, finance and financial markets.

Computer simulations of economic systems are slowly gaining ground within the economic profession. However, such a process is hindered by a lack of communication among researchers who do not share a common language. For its object-oriented structure and its versatility, Swarm has the necessary characteristics to become a credible universal language of agent-based simulations. Economic Simulations in Swarm collects a series of original articles in such domains as macro and micro economics, industrial organization, monetary theory, and finance, all linked by a common denominator: the use of the Swarm simulation platform. Swarm, a standard set of program libraries, allows users to construct simulations where a collection of heterogeneous independent agents or elements interact through discrete events. This volume offers the first extensive tutorial to the use of these software libraries developed at the Santa Fe Institute as part of the ongoing research into complexity. The editors conceived the idea of this book while visiting the Santa Fe Institute as members of the `Working

Group on Adaptive and Computable Economics'. Francesco Luna is a specialist in Computable Economics, and Benedikt Stefansson is an active contributor to the Swarm community.

Whether preparing us for economic recovery after the zombie apocalypse, analyzing vampire investment strategies, or illuminating the market forces that affect vampire-human romances, Economics of the Undead: Zombies, Vampires, and the Dismal Science gives both seasoned economists and layman readers something to sink their teeth into. Undead characters have terrified popular audiences for centuries, but when analyzed closely, their behaviors and stories—however farfetched—mirror our own in surprising ways. The essays collected in this book are as humorous as they are thoughtful, as culturally relevant as they are economically sound, and provide an accessible link between a popular culture phenomenon and the key concepts necessary to building one's understanding of economic systems big and small. It is the first book to apply and combine economics and our society's fascination with the undead, and is an invaluable resource for those looking to learn economic fundamentals in a fun and innovative way. Contributions by: Kyle William Bishop, Eleanor Brown, Ian Chadd, Darwynn Deyo, Steven Horwitz, Daniel Farhat, Jean-Baptiste Fleury, Enrique Guerra-Pujol, Brian Hollar, Sebastien Lecou, Joseph Mandarino, Alain Marciano, Fabien Medvecky, David T. Mitchell, Michael O'Hara, M. Christine Phillips, A. Lynn Phillips, G. Michael Phillips, Lorna Piatti-Farnell, Robert Prga, Hollis Robbins, Sarah Skwire, Ilya Somin, David Tufte, Mary Jo Tufte, and Charlotte Weil

Artificial EconomicsAgent-Based Methods in Finance, Game Theory and Their ApplicationsSpringer Science & Business Media

This volume features contributions to agent-based computational modeling from the social sciences and computer sciences. It presents applications of methodologies and tools, focusing on the uses, requirements, and constraints of agent-based models used by social scientists. Topics include agent-based macroeconomics, the emergence of norms and conventions, the dynamics of social and economic networks, and behavioral models in financial markets.

Finance, Econometrics and System Dynamics presents an overview of the concepts and tools for analyzing complex systems in a wide range of fields. The text integrates complexity with deterministic equations and concepts from real world examples, and appeals to a broad audience.

This second volume is the work of more than 55 authors from 15 different disciplines and includes complex systems science which studies the viability of components, and also the study of empirical situations. As readers will discover, the coviability of social and ecological systems is based on the contradiction between humanity, which adopts finalized objectives, and the biosphere, which refers to a ecological functions. We see how concrete situations shed light on the coviability's determinants, and in this book the very nature of the coviability, presented as a concept-paradigm, is defined in a transversal and ontological ways. By adopting a systemic approach, without advocating any economic dogma (such as development) or dichotomizing between humans and nature, while emphasizing what is relevant to humans and what is not, this work neutrally contextualizes man's place in the biosphere. It offers a new mode of thinking and positioning of the ecological imperative, and will appeal to all those working with social and ecological systems.

?The book presents a peer-reviewed collection of papers presented during the 10th issue of the Artificial Economics

conference, addressing a variety of issues related to macroeconomics, industrial organization, networks, management and finance, as well as purely methodological issues. The field of artificial economics covers a broad range of methodologies relying on computer simulations in order to model and study the complexity of economic and social phenomena. The grounding principle of artificial economics is the analysis of aggregate properties of simulated systems populated by interacting adaptive agents that are equipped with heterogeneous individual behavioral rules. These macroscopic properties are neither foreseen nor intended by the artificial agents but generated collectively by them. They are emerging characteristics of such artificially simulated systems.

This book is based on presentations at AE'2006 (Aalborg, Denmark) – the second symposium on Artificial Economics. As a new constructive simulation method, Agent-Based Computational Economics (ACE) has in recent years proven its strength and applicability. Coverage in this volume extends to well known questions of economics, like the existence of market efficiency, and to questions raised by new analytical tools, for example networks of social interaction.

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