

Critical Transitions In Nature And Society

Princeton Studies In Complexity

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Quantitative Models for Microscopic to Macroscopic Biological Macromolecules and Tissues - Luis Olivares-Quiroz 2018-02-26
This book presents cutting-edge research on the use of physical and mathematical formalisms to

model and quantitatively analyze biological phenomena ranging from microscopic to macroscopic systems. The systems discussed in this compilation cover protein folding pathways, gene regulation in prostate cancer, quorum

sensing in bacteria to mathematical and physical descriptions to analyze anomalous diffusion in patchy environments and the physical mechanisms that drive active motion in large sets of particles, both fundamental descriptions that can be applied to different phenomena in biology. All chapters are written by well-known experts on their respective research fields with a vast amount of scientific discussion and references in order the interested reader can pursue a further reading. Given these features, we consider Quantitative Models for Microscopic to Macroscopic Biological Macromolecules and Tissues as an excellent and up-to-date resource and reference for advanced undergraduate students, graduate students and junior researchers interested in the latest developments at the intersection of physics, mathematics, molecular biology, and computational sciences. Such research field, without hesitation, is one of the most interesting, challenging and active of this century and the

next.

Personalized Psychiatry - Bernhard Baune
2019-10-16

Personalized Psychiatry presents the first book to explore this novel field of biological psychiatry that covers both basic science research and its translational applications. The book conceptualizes personalized psychiatry and provides state-of-the-art knowledge on biological and neuroscience methodologies, all while integrating clinical phenomenology relevant to personalized psychiatry and discussing important principles and potential models. It is essential reading for advanced students and neuroscience and psychiatry researchers who are investigating the prevention and treatment of mental disorders. Combines neurobiology with basic science methodologies in genomics, epigenomics and transcriptomics Demonstrates how the statistical modeling of interacting biological and clinical information could transform the future of psychiatry Addresses

fundamental questions and requirements for personalized psychiatry from a basic research and translational perspective

Principles for Building Resilience
Bernette Biggs 2015-04-02

As both the societies and the world in which we live face increasingly rapid and turbulent changes, the concept of resilience has become an active and important research area.

Reflecting the very latest research, this book provides a critical review of the ways in which resilience of social-ecological systems, and the ecosystem services they provide, can be enhanced. With contributions from leaders in the field, the chapters are structured around seven key principles for building resilience: maintain diversity and redundancy; manage connectivity; manage slow variables and feedbacks; foster complex adaptive systems thinking; encourage learning; broaden participation; and promote polycentric governance. The authors assess the evidence in support of these principles,

discussing their practical application and outlining further research needs. Intended for researchers, practitioners and graduate students, this is an ideal resource for anyone working in resilience science and for those in the broader fields of sustainability science, environmental management and governance.

Critical Transitions in Nature and Society
Marten Scheffer 2020-11-10

How do we explain the remarkably abrupt changes that sometimes occur in nature and society--and can we predict why and when they happen? This book offers a comprehensive introduction to critical transitions in complex systems--the radical changes that happen at tipping points when thresholds are passed. Marten Scheffer accessibly describes the dynamical systems theory behind critical transitions, covering catastrophe theory, bifurcations, chaos, and more. He gives examples of critical transitions in lakes, oceans, terrestrial ecosystems, climate, evolution, and

human societies. And he demonstrates how to deal with these transitions, offering practical guidance on how to predict tipping points, how to prevent "bad" transitions, and how to promote critical transitions that work for us and not against us. Scheffer shows the time is ripe for understanding and managing critical transitions in the vast and complex systems in which we live. This book can also serve as a textbook and includes a detailed appendix with equations. Provides an accessible introduction to dynamical systems theory Covers critical transitions in lakes, oceans, terrestrial ecosystems, the climate, evolution, and human societies Explains how to predict tipping points Offers strategies for preventing "bad" transitions and triggering "good" ones Features an appendix with equations

Global Environmental Governance, Technology and Politics Victor Galaz 2014-04-25

We live on an increasingly human-dominated planet. Our impact on the Earth has become so

huge that researchers now suggest that it merits its own geological epoch - the 'Anthropocene' - the age of humans. Combining theory development and case s

Handbook on Resilience of Socio-Technical Systems - Matthias Ruth

The goal to improve the resilience of social systems - communities and their economies - is increasingly adopted by decision makers. This unique and comprehensive Handbook focuses on the interdependencies of these social systems and the technologies that support them. Special attention is given to the ways in which resilience is conceptualized by different disciplines, how resilience may be assessed, and how resilience strategies are implemented. Case illustrations are presented throughout to aid understanding.

Resilience Practice - Brian Walker 2012-08-06

In 2006, Resilience Thinking addressed an essential question: As the natural systems that sustain us are subjected to shock after shock, how much can they take and still deliver the

services we need from them? This idea caught the attention of both the scientific community and the general public. In *Resilience Practice*, authors Brian Walker and David Salt take the notion of resilience one step further, applying resilience thinking to real-world situations and exploring how systems can be managed to promote and sustain resilience. The book begins with an overview and introduction to resilience thinking and then takes the reader through the process of describing systems, assessing their resilience, and intervening as appropriate. Following each chapter is a case study of a different type of social-ecological system and how resilience makes a difference to that system in practice. The final chapters explore resilience in other arenas, including on a global scale. *Resilience Practice* will help people with an interest in the “coping capacity” of systems—from farms and catchments to regions and nations—to better understand how resilience thinking can be put into practice. It

offers an easy-to-read but scientifically robust guide through the real-world application of the concept of resilience and is a must read for anyone concerned with the management of systems at any scale.

Global Challenges, Governance, and Complexity
- Victor Galaz 2019-12-27

There is an increased interest in integrating insights from the complexity sciences to studies of governance and policy. While the issue has been debated, and the term of ‘complexity’ has multiple and sometimes contested interpretations, it is also clear the field has spurred a number of interesting theoretical and empirical efforts. The book includes key thinkers in the field, elaborates on different analytical approaches in studying governance, institutions and policy in the face of complexity, and showcases empirical applications and insights.

Handbook on Growth and Sustainability
- Peter A. Victor 2017-06-30

This Handbook assembles original contributions

from influential authors such as Herman Daly, Paul Ekins, Marina Fischer-Kowalski, Jeroen van den Bergh, William E. Rees and Tim Jackson who have helped to define our understanding of growth and sustainability. The Handbook also presents new contributions on topics such as degrowth, the debt-based financial system, cultural change, energy return on investment, shorter working hours and employment, and innovation and technology. Explorations of these issues can deepen our understanding of whether growth is sustainable and, in turn, whether a move away from growth can be sustained. With issues such as climate change looming large, our understanding of growth and sustainability is critical. This Handbook offers a broad range of perspectives that can help the reader to decide: Growth? Sustainability? Both? Or neither?

Complexity Science - Henrik Jeldtoft Jensen

2022-10-31

Ecosystems, the human brain, ant colonies, and economic networks are all complex systems

displaying collective behaviour, or emergence, beyond the sum of their parts. Complexity science is the systematic investigation of these emergent phenomena, and stretches across disciplines, from physics and mathematics, to biological and social sciences. This introductory textbook provides detailed coverage of this rapidly growing field, accommodating readers from a variety of backgrounds, and with varying levels of mathematical skill. Part I presents the underlying principles of complexity science, to ensure students have a solid understanding of the conceptual framework. The second part introduces the key mathematical tools central to complexity science, gradually developing the mathematical formalism, with more advanced material provided in boxes. A broad range of end of chapter problems and extended projects offer opportunities for homework assignments and student research projects, with solutions available to instructors online. Key terms are highlighted in bold and listed in a glossary for

easy reference, while annotated reading lists offer the option for extended reading and research.

Interprofessional Education in Patient-Centered Medical Homes - C. Scott Smith
2015-08-24

This book discusses the application of complex adaptive systems theory to the design and evaluation of patient-centered medical homes (PCMHs). The three defining goals of PCMHs are to spread patient-care roles among healthcare team members, focus on disease prevention and include the patient in the healthcare team. It explains why some PCMH pilots are highly successful while others do not show much benefit, covers specific sub-theories that allow for bracketing of different aspects of the clinic system and highlights strategies by which institutions can engage in this process. Inter professional Education in Patient-Centered Medical Homes is a valuable resource for faculty and managers of health professions teaching

clinics, deans of medical and health professional schools and medical administrators.

Global Resources and the Environment -
Chadwick Dearing Oliver 2018-05-31

In the past few decades, sustainability of natural resources and the social and environmental issues that surround them have become increasingly topical. This multidisciplinary book discusses the complex relationships between society, natural resources and the environment. Major resources including water, agriculture, energy, minerals and forests are considered, as well as different facets of the environment including climate, landforms and biodiversity. Each resource is discussed in the context of both environmental and socio-economic factors affecting their present and future distribution and demand. Presenting a balanced, comprehensive overview of the issues surrounding natural resources and sustainability, this accessible volume will be of interest to policy makers, resource managers,

graduate students and researchers in the natural and social sciences.

Complex Ecology - Charles G. Curtin

2018-05-31

From climate change to species extinction, humanity is confronted with an increasing array of societal and environmental challenges that defy simple quantifiable solutions. Complexity-based ecology provides a new paradigm for ecologists and conservationists keen to embrace the uncertainty that is pressed upon us. This book presents key research papers chosen by some sixty scholars from various continents, across a diverse span of sub-disciplines. The papers are set alongside first person commentary from many of the seminal voices involved, offering unprecedented access to experts' viewpoints. The works assembled also shed light on the process of science in general, showing how the shifting of wider perspectives allows for new ideas to take hold. Ideal for undergraduate and advanced students of

ecology and conservation, their educators and those working across allied fields, this is the first book of its kind to focus on complexity-based approaches and provides a benchmark for future collected volumes.

Spatial Resilience in Social-Ecological

Systems - Graeme S. Cumming 2011-02-09

Spatial Resilience is a new and exciting area of interdisciplinary research. It focuses on the influence of spatial variation - including such things as spatial location, context, connectivity, and dispersal - on the resilience of complex systems, and on the roles that resilience and self-organization play in generating spatial variation. Prof. Cumming provides a readable introduction and a first comprehensive synthesis covering the core concepts and applications of spatial resilience to the study of social-ecological systems. The book follows a trajectory from concepts through models, methods, and case study analysis before revisiting the central problems in the further conceptual development

of the field. In the process, the author ranges from the movements of lions in northern Zimbabwe to the urban jungles of Europe, and from the collapse of past societies to the social impacts of modern conflict. The many case studies and examples discussed in the book show how the concept of spatial resilience can generate valuable insights into the spatial dynamics of social-ecological systems and contribute to solving some of the most pressing problems of our time. Although it has been written primarily for students, this book will provide fascinating reading for interdisciplinary scientists at all career stages as well as for the interested public. "Graeme Cumming, central in the development of resilience thinking and theory, has produced a wonderful book on spatial resilience, the first ever on this topic. The book will become a shining star, a classic in the explosion of new ideas and approaches to studying and understanding social-ecological systems." Carl Folke, Stockholm Resilience

Centre, Sweden

Metropolitan Sustainability Zeman

2012-09-11

Global populations have grown rapidly in recent decades, leading to ever increasing demands for shelter, resources, energy and utilities. Coupled with the worldwide need to achieve lower impact buildings and conservation of resources, the need to achieve sustainability in urban environments has never been more acute. This book critically reviews the fundamental issues and applied science, engineering and technology that will enable all cities to achieve a greater level of metropolitan sustainability, and assist nations in meeting the needs of their growing urban populations. Part one introduces key issues related to metropolitan sustainability, including the use of both urban metabolism and benefit cost analysis. Part two focuses on urban land use and the environmental impact of the built environment. The urban heat island effect, redevelopment of brownfield sites and urban

agriculture are discussed in depth, before part three goes on to explore urban air pollution and emissions control. Urban water resources, reuse and management are explored in part four, followed by a study of urban energy supply and management in part five. Solar, wind and bioenergy, the role of waste-to-energy systems in the urban infrastructure, and smart energy for cities are investigated. Finally, part six considers sustainable urban development, transport and planning. With its distinguished editor and international team of expert contributors, Metropolitan sustainability is an essential resource for low-impact building engineers, sustainability consultants and architects, town and city planners, local/municipal authorities, and national and non-governmental bodies, and provides a thorough overview for academics of all levels in this field. Critically reviews the fundamental issues and applied science, engineering and technology that will enable all cities to achieve a greater level of metropolitan

sustainability Will assist nations in meeting the needs of their growing urban populations Chapters discuss urban land use, the environmental impact of the build environment, the urban heat island effect, urban air pollution and emissions control, among other topics Sustainable Diets - Pamela Mason 2017-03-27 How can huge populations be fed healthily, equitably and affordably while maintaining the ecosystems on which life depends? The evidence of diet's impact on public health and the environment has grown in recent decades, yet changing food supply, consumer habits and economic aspirations proves hard. This book explores what is meant by sustainable diets and why this has to be the goal for the Anthropocene, the current era in which human activities are driving the mismatch of humans and the planet. Food production and consumption are key drivers of transitions already underway, yet policy makers hesitate to reshape public eating habits and tackle the

unsustainability of the global food system. The authors propose a multi-criteria approach to sustainable diets, giving equal weight to nutrition and public health, the environment, socio-cultural issues, food quality, economics and governance. This six-pronged approach to sustainable diets brings order and rationality to what either is seen as too complex to handle or is addressed simplistically and ineffectually. The book provides a major overview of this vibrant issue of interdisciplinary and public interest. It outlines the reasons for concern and how actors throughout the food system (governments, producers, civil society and consumers) must engage with (un)sustainable diets.

Bal ance - Paul Thagard 2022-07-05

Living is a balancing act. Ordinary activities like walking, running, or riding a bike require the brain to keep the body in balance. A dancer's poised elegance and a tightrope walker's breathtaking performance are feats of balance. Language abounds with expressions and figures

of speech that invoke balance. People fret over work-life balance or try to eat a balanced diet. The concept crops up from politics—checks and balances, the balance of power, balanced budgets—to science, in which ideas of equilibrium are crucial. Why is balance so fundamental, and how do physical and metaphorical balance shed light on each other? Paul Thagard explores the physiological workings and metaphorical resonance of balance in the brain, the body, and society. He describes the neural mechanisms that keep bodies balanced and explains why their failures can result in nausea, falls, or vertigo. Thagard connects bodily balance with leading ideas in neuroscience, including the nature of consciousness. He analyzes balance metaphors across science, medicine, economics, the arts, and philosophy, showing why some aid understanding but others are misleading or harmful. Thagard contends that balance is ultimately a matter of making sense of the

world. In both literal and metaphorical senses, balance is what enables people to solve the puzzles of life by turning sensory signals or an incongruous comparison into a coherent whole. Bridging philosophy, psychology, and neuroscience, Balance shows how an unheralded concept's many meanings illuminate the human condition.

Crossing Boundaries for Collaboration - Stephen G. Perz 2016-08-30

Societal problems that require collaboration across boundaries are growing, but the issues, tasks, challenges, and strategic practices of partnering across divides often fall outside the technical skill sets of would-be collaborators. This book brings together knowledge from many disciplines and firsthand experience from conservation and development projects in the Amazon to elucidate the travails but also the advantages of collaborating across boundaries.

Bots and Beasts - Paul Thagard 2021-10-19
An expert on mind considers how animals and

smart machines measure up to human intelligence. Octopuses can open jars to get food, and chimpanzees can plan for the future. An IBM computer named Watson won on Jeopardy! and Alexa knows our favorite songs. But do animals and smart machines really have intelligence comparable to that of humans? In *Bots and Beasts*, Paul Thagard looks at how computers ("bots") and animals measure up to the minds of people, offering the first systematic comparison of intelligence across machines, animals, and humans. Thagard explains that human intelligence is more than IQ and encompasses such features as problem solving, decision making, and creativity. He uses a checklist of twenty characteristics of human intelligence to evaluate the smartest machines--including Watson, AlphaZero, virtual assistants, and self-driving cars--and the most intelligent animals--including octopuses, dogs, dolphins, bees, and chimpanzees. Neither a romantic enthusiast for nonhuman intelligence nor a

skeptical killjoy, Thagard offers a clear assessment. He discusses hotly debated issues about animal intelligence concerning bacterial consciousness, fish pain, and dog jealousy. He evaluates the plausibility of achieving human-level artificial intelligence and considers ethical and policy issues. A full appreciation of human minds reveals that current bots and beasts fall far short of human capabilities.

Addressing Tipping Points for a Precarious Future - Timothy O'Riordan 2013-08-22

Tipping points are zones or thresholds of profound changes in natural or social conditions with very considerable and largely unforecastable consequences. Tipping points may be dangerous for societies and economies, especially if the prevailing governing arrangements are not designed either to anticipate them or adapt to their arrival. Tipping points can also be transformational of cultures and behaviours so that societies can learn to adapt and to alter their outlooks and mores in

favour of accommodating to more sustainable ways of living. This volume examines scientific, economic and social analyses of tipping points, and the spiritual and creative approaches to identifying and anticipating them. The authors focus on climate change, ice melt, tropical forest drying and alterations in oceanic and atmospheric circulations. They also look closely at various aspects of human use of the planet, especially food production, and at the loss of biodiversity, where alterations to natural cycles may be creating convulsive couplings of tipping points. They survey the various institutional aspects of politics, economics, culture and religion to see why such dangers persist.

YOUMARES 8 - Oceans Across Boundaries: Learning from each other - Simon Jungblut 2018-08-29

This open access book presents the proceedings volume of the YOUMARES 8 conference, which took place in Kiel, Germany, in September 2017, supported by the German Association for Marine

Sciences (DGM). The YOUMARES conference series is entirely bottom-up organized by and for YOUNg MARine RESEARCHers. Qualified early career scientists moderated the scientific sessions during the conference and provided literature reviews on aspects of their research field. These reviews and the presenters' conference abstracts are compiled here. Thus, this book discusses highly topical fields of marine research and aims to act as a source of knowledge and inspiration for further reading and research.

Disasters and History Bas van Bavel
2020-10-31

Disasters and History offers the first comprehensive historical overview of hazards and disasters. Drawing on a range of case studies, including the Black Death, the Lisbon earthquake of 1755 and the Fukushima disaster, the authors examine how societies dealt with shocks and hazards and their potentially disastrous outcomes. They reveal the ways in

which the consequences and outcomes of these disasters varied widely not only between societies but also within the same societies according to social groups, ethnicity and gender. They also demonstrate how studying past disasters, including earthquakes, droughts, floods and epidemics, can provide a lens through which to understand the social, economic and political functioning of past societies and reveal features of a society which may otherwise remain hidden from view. This title is also available as Open Access on Cambridge Core.

The Adaptive Challenge of Climate Change -
Karen O'Brien 2015-08-07

This book presents a new perspective on adaptation to climate change. It considers climate change as more than a problem that can be addressed solely through technical expertise. Instead, it approaches climate change as an adaptive challenge that is fundamentally linked to beliefs, values and worldviews, as well as to power, politics, identities and interests. Drawing

on case studies from high-income countries, the book argues that it is time to consider adaptation to climate change as a challenge of social, personal and political transformations. The authors represent a variety of fields and perspectives, illustrating the importance of interdisciplinary approaches to the problem. The book will be of interest to researchers, policymakers and advanced students in the environmental sciences, social sciences and humanities, as well as to decision makers and practitioners interested in new ideas about adapting to climate change.

Aging Research - Methodological Issues -

Carmen García-Peña 2018-09-25

This is the second edition of a well received book that reviews classical epidemiological and clinical research designs, with a specific focus on aging. Chapters cover basic topics like the scientific method, ethics, and the consequences of certain exclusion criteria. The work also includes a look at clinical concepts like

multimorbidity, frailty and functionality. New material includes chapters such as geroscience, health systems research, big data and data mining, financing and future of aging research. The authors reveal the issues and challenges for researchers of age and aging, and also consider, from basic to clinical, and from clinical to public policies of social and health care. The focus on aging is what gives this book its valuable perspective on research methodology. All authors have considerable experience in aging, geriatrics or gerontology, and each chapter includes both a theoretical framework and practical examples of studies in aging. Readers will discover study designs that are reviewed for basic structure, main flaws and advantages, and are analyzed for specific conditions and variables regarding aging. This text is suited to both health care professionals caring for older adults, and researchers who are new to research in aging. It is relevant across the disciplines, including medicine, psychology, social sciences

and dentistry, and it supports learning with graphs and figures.

The Fate of the Species - Fred Guterl 2013-05-21
"A beautifully written book that will make you think and worry."--Fareed Zakaria

Ecological Complexity and Agroecology - John Vandermeer 2017-10-24

This text reflects the immense current growth in interest in agroecology and changing approaches to it. While it is acknowledged that the science of ecology should be the basis of agroecological planning, many analysts have out-of-date ideas about contemporary ecology. Ecology has come a long way since the old days of "the balance of nature" and other romantic notions of how ecological systems function. In this context, the new science of complexity has become extremely important in the modern science of ecology. The problem is that it tends to be too mathematical and technical and thus off-putting for the average student of agroecology, especially those new to the subject.

Therefore this book seeks to present ideas about ecological complexity with a minimum of formal mathematics. The book's organization consists of an introductory chapter, and a second chapter providing some of the background to basic ecological topics as they are relevant to agroecosystems (e.g., soil biology and pest control). The core of the book consists of seven chapters on key intersecting themes of ecological complexity, including issues such as spatial patterns, network theory and tipping points, illustrated by examples from agroecology and agricultural systems from around the world.

Risk Intelligent Supply Chains - Çağrı Haksöz 2018-10-08

The Turkish economy is very dynamic and growing at phenomenal speeds. For instance, Turkey's first quarter GDP growth rate was 11 percent in 2011. This growth brings its own risks and benefits. The lessons learned from surviving and thriving in such an environment can be applied to supply chains in any country. Packed

with interesting and timely examples from industries such as automotive, airline, and manufacturing, *Risk Intelligent Supply Chains: How Leading Turkish Companies Thrive in the Age of Fragility* presents strategic insights from various leading Turkish companies regarding their management of supply chain risks. Çağrı Haksöz brings the risk intelligent supply chain (RISC) concept to life for the first time. It answers the question of how to become a risk intelligent supply chain. He proposes the I-Quartet Model with four essential roles "Integrator, Inquirer, Improviser, and Ingenious," that any supply chain network must play to become risk intelligent. The book also presents never-before-published cases and practices of leading Turkish companies that thrive globally in the age of fragility with their supply chain risk intelligence. While providing real-life examples, the book also shares insights obtained in various scientific disciplines. It provides not only an industry focus but also

details numerous industry approaches, analyzing their similarities and differences in a manner that allows each industry to learn from the other.

Perturbation, Behavioural Feedbacks, and Population Dynamics in Social Animals -

Daniel Oro 2020-03-26

This novel, transdisciplinary work explains how perturbations (defined as strong disturbances or deviations to a system) can affect the population dynamics of social animals, including ourselves. Social responses to perturbations, especially dispersal processes, can also generate non-linear population dynamics, including the potential appearance of tipping points and critical population transitions, which can in turn lead to catastrophic shifts and collapses. The book describes the links between social behaviour (mainly the use of social information and social copying), and non-linear population dynamics at different spatial scales (local dynamics and meta-population dynamics), and

their ecological and evolutionary consequences. Examples from the natural world illustrate each of the main themes (prospecting, habitat suitability, collective dispersal, and cultural evolution). Human warfare and conflict, referred to in several chapters together with quantitative and qualitative examples, is also viewed as a form of perturbation and represents a paradigmatic example of the rationale behind this book. This applicability to our own species is particularly timely, given increased interest in both ecosystem change, human migration, and the global refugee crisis. Perturbation, Behavioural Feedbacks, and Population Dynamics in Social Animals will appeal to applied, theoretical, and evolutionary ecologists, particularly those working on the population and behavioural ecology of any social animal including humans. Its overlap with the study of complexity will also ensure its relevance and use to scientists from other disciplines such as sociology, anthropology, physics, computational

science, economics, and mathematics.

Grand Challenges of Planetary Governance

Young, Oran R. 2021-08-27

In this timely book, leading scholar Oran Young reflects on the future of the global order.

Developing new lenses through which to consider needs for governance arising on a global scale, Young investigates the grand challenges of the 21st century requiring the most urgent and sustained planetary responses: protecting the Earth's climate system; controlling the eruption of pandemics; suppressing disruptive uses of cyberspace; and guiding the biotechnology revolution.

Clinical Staging in Psychiatry - Patrick D.

McGorry 2019-08-29

Clinical staging is a solution to transform psychiatric diagnosis and improve mental health outcomes.

Rethinking Nature - Aur?elie Chon?e 2017-05-18

Contemporary ideas of nature were largely shaped by schools of thought from Western

cultural history and philosophy until the present-day concerns with environmental change and biodiversity conservation. There are many different ways of conceptualising nature in epistemological terms, reflecting the tensions between the polarities of humans as masters or protectors of nature and as part of or outside of nature. The book shows how nature is today the focus of numerous debates, calling for an approach which goes beyond the merely technical or scientific. It adopts a threefold - critical, historical and cross-disciplinary - approach in order to summarise the current state of knowledge. It includes contributions informed by the humanities (especially history, literature and philosophy) and social sciences, concerned with the production and circulation of knowledge about "nature" across disciplines and across national and cultural spaces. The volume also demonstrates the ongoing reconfiguration of subject disciplines, as seen in the recent emergence of new interdisciplinary approaches

and the popularity of the prefix "eco-" (e.g. ecocriticism, ecospirituality, ecosophy and ecofeminism, as well as subdivisions of ecology, including urban ecology, industrial ecology and ecosystem services). Each chapter provides a concise overview of its topic which will serve as a helpful introduction to students and a source of easy reference. This text is also valuable reading for researchers interested in philosophy, sociology, anthropology, geography, ecology, politics and all their respective environmentalist strands.

Coffee Agroecology - Ivette Perfecto 2015-02-11
Based on principles of the conservation and optimization of biodiversity and of equity and sustainability, this book focuses on the ecology of the coffee agroecosystem as a model for a sustainable agricultural ecosystem. It draws on the authors' own research conducted over the last twenty years as well as incorporating the vast literature that has been generated on coffee agroecosystems from around the world. The

book uses an integrated approach that weaves together various lines of research to understand the ecology of a very diverse tropical agroforestry system. Key concepts explored include biodiversity patterns, metapopulation dynamics and ecological networks. These are all set in a socioeconomic and political framework which relates them to the realities of farmers' livelihoods. The authors provide a novel synthesis that will generate new understanding and can be applied to other examples of sustainable agriculture and food production. This synthesis also explains the ecosystem services provided by the approach, including the economic, fair trade and political aspects surrounding this all-important global commodity. Environment and Development Economics - Scott Barrett 2014-04

This book honours Partha Dasgupta, and the field he helped establish; environment and development economics. It concerns the relationship between social systems and natural

systems. Above all, it concerns the poverty-environment nexus: the complex pathways by which people become or remain poor, and resources become or remain overexploited.

Ecosystem Collapse and Recovery - Adrian C. Newton 2021-03-31

There is a growing concern that many important ecosystems, such as coral reefs and tropical rain forests, might be at risk of sudden collapse as a result of human disturbance. At the same time, efforts to support the recovery of degraded ecosystems are increasing, through approaches such as ecological restoration and rewilding. Given the dependence of human livelihoods on the multiple benefits provided by ecosystems, there is an urgent need to understand the situations under which ecosystem collapse can occur, and how ecosystem recovery can best be supported. To help develop this understanding, this volume provides the first scientific account of the ecological mechanisms associated with the collapse of ecosystems and their subsequent

recovery. After providing an overview of relevant theory, the text evaluates these ideas in the light of available empirical evidence, by profiling case studies drawn from both contemporary and prehistoric ecosystems. Implications for conservation policy and practice are then examined.

The Web of Meaning - Jeremy Lent 2021-07-12
A compelling foundation for a new story of interconnectedness, showing how, as our civilization unravels, another world is possible. Award-winning author, Jeremy Lent, investigates humanity's age-old questions—Who am I? Why am I? How should I live?—from a fresh perspective, weaving together findings from modern systems thinking, evolutionary biology, and cognitive neuroscience with insights from Buddhism, Taoism, and Indigenous wisdom. The result is a breathtaking accomplishment: a rich, coherent worldview based on a deep recognition of connectedness within ourselves, between each other, and with the entire natural world. As

our civilization careens toward a precipice of climate breakdown, ecological destruction, and gaping inequality, people are losing their existential moorings. Our dominant worldview of disconnection—which tells us we are split between mind and body, separate from each other, and at odds with the natural world—has passed its expiration date. Yet another world is possible. *The Web of Meaning* offers a compelling foundation for the new story that could enable humanity to thrive sustainably on a flourishing Earth. It's a book for everyone looking for deep and coherent answers to the crisis of civilization.

The Science of Hormesis in Health and Longevity - Suresh I. S. Rattan 2018-10-23

The Science of Hormesis in Health and Longevity provides a comprehensive review of mild stress-induced physiological hormesis and its role in the maintenance and promotion of health. Coverage includes the underlying mechanisms of hormesis, including details of

stress-response signaling, an enriched environment, positive challenges and dose-response mechanisms, amongst others. Research from top experts is presented to provide suggestions for developing novel therapeutic strategies, along with lifestyle interventions to promote health and homeostasis. Researchers in aging and physiology, gerontologists, clinicians and medical students will find this a valuable addition for their work. Provides a comprehensive, scholarly review of the current state of hormesis in physiology, health, disease and aging Includes multiple perspectives and in-depth analysis by top experts involved in cutting-edge research to provide developing, novel therapeutic strategies, as well as lifestyle interventions Offers a clear understanding of hormesis' underlying mechanisms, including details of stress-response signaling, an enriched environment, positive challenges, dose-response mechanisms, and more

An Integrated Approach to Environmental

Management - Dibyendu Sarkar 2015-09-30
Covers the most recent topics in the field of environmental management and provides a broad focus on the theoretical and methodological underpinnings of environmental management Provides an up-to-date survey of the field from the perspective of different disciplines Covers the topic of environmental management from multiple perspectives, namely, natural sciences, engineering, business, social sciences, and methods and tools perspectives Combines both academic rigor and practical approach through literature reviews and theories and examples and case studies from diverse geographic areas and policy domains Explores local and global issues of environmental management and analyzes the role of various contributors in the environmental management process Chapter contents are appropriately demonstrated with numerous pictures, charts, graphs, and tables, and accompanied by a detailed reference list for

further readings

Complex Systems and Population Health -

Yorghos Apostolopoulos 2020-05-29

Currently, population health science is an integral part of global academic curricula. For over a century, the principles of the reductionist paradigm have guided population health curricula, training, research, and action. Researchers continue to draw upon these principles when theorizing, conceptualizing, designing studies, analyzing, and devising interventions to tackle complex population health problems. However, unresolved impasses in addressing pressing population health challenges have catalyzed calls for the integration of complex-systems-science-grounded approaches into population health science. Mounting evidence denotes that a complex systems paradigm can bring about dramatic, multipronged changes for education and training, and lead to innovative research, interventions, and policies. Despite the large and

untapped promise of complex systems, the haphazard knowledge base from which academics, researchers, students, policymakers, and practitioners can draw has slowed their integration into the population health sciences. This volume fulfils this growing need by providing the knowledge base necessary to introduce a holistic complex systems paradigm in population health science. As such, it is the first comprehensive book in population health science that meaningfully integrates complex systems theory, methodology, modeling, computational simulation, and real-world applications, while incorporating current population health theoretical, methodological and analytical perspectives. It is intended as a programmatic primer across a broad spectrum of population health stakeholders: from university professors and graduate students, to researchers, policymakers, and practitioners. *Evolutionary Theory* Niles Eldredge 2016-09-23
The natural world is infinitely complex and

hierarchically structured, with smaller units forming the components of larger systems: genes are components genomes, cells are building blocks of tissues and organs, individuals are members of populations, which, in turn, are parts of species. In the face of such awe inspiring complexity, scientists need tools like the hierarchy theory of evolution, which provides a theoretical framework and an interdisciplinary research program that aims to understand the way complex biological systems work and evolve. The multidisciplinary approach looks at the structure of the myriad intricate interactions across levels of organization that range from molecules to the biosphere. Evolutionary Theory: A Hierarchical Perspective provides an introduction to the theory, which is currently driving a great deal of research in bioinformatics and evolutionary theory. Written by a diverse and renowned group of contributors, and edited by the founder of Hierarchy Theory Niles Eldredge, this work will help make transparent

the fundamental patterns driving living systems.
Ecosystem Services and Poverty Alleviation (OPEN ACCESS) - Kate Schreckenber
2018-04-27

Understanding how to sustain the services that ecosystems provide in support of human wellbeing is an active and growing research area. This book provides a state-of-the-art review of current thinking on the links between ecosystem services and poverty alleviation. In part it showcases the key findings of the Ecosystem Services for Poverty Alleviation (ESPA) programme, which has funded over 120 research projects in more than 50 countries since 2010. ESPA's goal is to ensure that ecosystems are being sustainably managed in a way that contributes to poverty alleviation as well as to inclusive and sustainable growth. As governments across the world map how they will achieve the 17 ambitious Sustainable Development Goals, most of which have poverty alleviation, wellbeing and sustainable

environmental management at their heart, ESPA's findings have never been more timely and relevant. The book synthesises the headline messages and compelling evidence to address the questions at the heart of ecosystems and wellbeing research. The authors, all leading specialists, address the evolving framings and contexts for the work, review the impacts of ongoing drivers of change, present new ways to achieve sustainable wellbeing, equity, diversity, and resilience, and evaluate the potential contributions from conservation projects, payment schemes, and novel governance approaches across scales from local to national

and international. The cross-cutting, thematic chapters challenge conventional wisdom in some areas, and validate new methods and approaches for sustainable development in others. The book will provide a rich and important reference source for advanced students, researchers and policy-makers in ecology, environmental studies, ecological economics and sustainable development. The Open Access version of this book, available at <https://www.taylorfrancis.com/books/e/9780429016295>, has been made available under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 license.