

A Third Window Natural Life Beyond Newton And Darwin

A systematic theory of naturalism, bridging metaphysics and the science of complexity and emergence.

Semiotics has ever-changing vistas in consonance with changes in the ever-increasing complexity of life on Planet Earth. This book presents cutting-edge work in semiotics, projecting developments in the future of the field. Authored by leading semioticians, *Semiotics and its Masters, Volume 2* contains essays on learning, transdisciplinarity, science, scaffolding, narrative, selfhood, ecosemiotics, agency, cybersemiotics, pornography, nostalgia, language and money. The volume presents a panorama of semiotics as it will develop in the third decade of the 21st century. This book will furnish the reader with an overview of the challenges that face explorers in the contemporary world of signs.

Once largely ignored, the speculative philosophy of Alfred North Whitehead has assumed a new prominence in contemporary theory across the humanities and social sciences. Philosophers and artists, literary critics and social theorists, anthropologists and computer scientists have all embraced Whitehead's thought, extending it through inquiries into the nature of life, the problem of consciousness, and the ontology of objects, as well as into experiments in education and digital media. *The Lure of Whitehead* offers readers not only a comprehensive introduction to Whitehead's philosophy but also a demonstration of how his work advances our emerging understanding of life in the posthuman epoch. Contributors: Jeffrey A. Bell, Southeastern Louisiana U; Nathan Brown, U of California, Davis; Peter Canning; Didier Debaise, Free U of Brussels; Roland Faber, Claremont Lincoln U; Michael Halewood, U of Essex; Graham Harman, American U in Cairo; Bruno Latour, Sciences Po Paris; Erin Manning, Concordia U, Montreal; Steven Meyer, Washington U; Luciana Parisi, U of

London; Keith Robinson, U of Arkansas at Little Rock; Isabelle Stengers, Free U of Brussels; James Williams, U of Dundee.

The book presents a cross-disciplinary overview of critical issues at the intersections of biology and information science. Based on theories of bioinformationalism, viral modernity, the postdigital condition, and others, this book explores two inter-related questions: Which new knowledge ecologies are emerging? Which philosophies and research approaches do they require? The book argues that the 20th century focus on machinery needs replaced, at least partially, by a focus on a better understanding of living systems and their interactions with technology at all scales -- from viruses, through human beings, to Earth's ecosystem. This change of direction cannot be made by simple relocation of focus and/or funding from one discipline to another. In our age of the Anthropocene, (human and planetary) biology cannot be thought of without (digital) technology. Today 's curious bioinformational mix of blurred and messy relationships between physics and biology, old and new media, humanism and posthumanism, knowledge capitalism and bio-informational capitalism defines the postdigital condition and creates new knowledge ecologies. The book presents scholarly research defining new knowledge ecologies built upon emerging forms of scientific communication, big data deluge, or opacity of algorithmic operations. Many of these developments can be approached using the concept of viral modernity, which applies to viral technologies, codes and ecosystems in information, publishing, education, and emerging knowledge (journal) systems. It is within these overlapping theories and contexts, that this book explores new bioinformational philosophies and postdigital knowledge ecologies. The Routledge Handbook of Research Methods for Social-

Ecological Systems

Complex Ecology

Innovations in Social Finance

Introduction to Anticipation Studies

A Research Companion

Artificial Chemistries

Robert E. Ulanowicz

Tools for navigating today's hyper-connected, rapidly changing, and radically contingent white water world. *Design Unbound* presents a new tool set for having agency in the twenty-first century, in what the authors characterize as a white water world—rapidly changing, hyperconnected, and radically contingent. These are the tools of a new kind of practice that is the offspring of complexity science, which gives us a new lens through which to view the world as entangled and emerging, and architecture, which is about designing contexts. In such a practice, design, unbound from its material thingness, is set free to design contexts as complex systems. In a world where causality is systemic, entangled, in flux, and often elusive, we cannot design for absolute outcomes. Instead, we need to design for emergence. *Design Unbound* not only makes this case through theory but also presents a set of tools to do so. With case studies that range from a new kind of university to organizational, and even societal, transformation, *Design Unbound* draws from a vast array of domains: architecture, science and technology, philosophy, cinema, music, literature and poetry, even the military. It is presented in five books, bound as two volumes. Different books within the larger system of books will resonate with different reading audiences, from architects to people reconceiving higher education to the public policy or defense and intelligence communities. The authors provide different entry points allowing readers to navigate their own pathways through the system of books. Decades of research and discussion have shown that the human population growth and our increased consumption of natural resources cannot continue — there are limits to growth. This volume demonstrates how we might modify and revise our economic systems using nature as a model. The book describes how nature uses three growth forms: biomass, information, and networks, resulting in improved overall ecosystem functioning and co-development. As biomass growth is limited by available resources, nature uses the two other growth forms to achieve higher resource use efficiency. Through

a universal application of the three ‘ R ’ s: reduce, reuse, and recycle, nature thus shows us a way forward towards better solutions. However, our current approach, dominated by short-term economic thinking, inhibits full utilization of the three ‘ R ’ s and other successful approaches from nature. Building on ecological principles, the authors present a global model and futures scenario analyses which show that implementation of the proposed changes will lead to a win-win situation. In other words, we can learn from nature how to develop a society that can flourish within the limits to growth with better conditions for prosperity and well-being.

In October 2014, a group of mathematicians, physicists, ecologists, philosophers, and theologians gathered at a special conference in Berkeley, California to present the results of a two-year research program dubbed “ Project SATURN ” . This program explored many of the rich avenues of thought found at the intersection of modern science and Christian theology. Chief among them is the possibility that certain processes in nature might be so complex that they do not have sufficient physical causes. Known as “ ontological indeterminism ” , this idea has profound implications for theology. Specifically, it allows God to be thought of as acting providentially within nature without violating the laws and processes of nature. Such a momentous insight could influence how we understand free will, natural evil, suffering in nature, and the relation between divine providence and human evolution. The essays collected here discuss each of these topics and were originally presented at the 2014 conference. Part I establishes the scientific basis for conceptualizing certain process in the universe as inherently random and possibly indeterministic. Part II discusses the philosophical and theological issues that spring from this understanding. Together they represent the cutting edge of thought in the increasingly productive dialogue between science and theology. Short for the “ Scientific and Theological Understandings of Randomness in Nature ” , Project SATURN was created by the Center for Theology and the Natural Sciences, a Program of the Graduate Theological Union, Berkeley. It

was funded with a grant administered by Calvin College and provided by the John Templeton Foundation.

The Routledge Handbook of Research Methods for Social-Ecological Systems provides a synthetic guide to the range of methods that can be employed in social-ecological systems (SES) research. The book is primarily targeted at graduate students, lecturers and researchers working on SES, and has been written in a style that is accessible to readers entering the field from a variety of different disciplinary backgrounds. Each chapter discusses the types of SES questions to which the particular methods are suited and the potential resources and skills required for their implementation, and provides practical examples of the application of the methods. In addition, the book contains a conceptual and practical introduction to SES research, a discussion of key gaps and frontiers in SES research methods, and a glossary of key terms in SES research. Contributions from 97 different authors, situated at SES research hubs in 16 countries around the world, including South Africa, Sweden, Germany and Australia, bring a wealth of expertise and experience to this book. The first book to provide a guide and introduction specifically focused on methods for studying SES, this book will be of great interest to students and scholars of sustainability science, environmental management, global environmental change studies and environmental governance. The book will also be of interest to upper-level undergraduates and professionals working at the science – policy interface in the environmental arena.

Towards a Semiotic Biology

God's Providence and Randomness in Nature

Revisiting its Explanatory Role in Evolutionary Biology

The Lure of Whitehead

A Third Window

A Politics of Crisis

Technosignatures for Detecting Intelligent Life in Our Universe

The third edition of a standard textbook in Religion and Science - already a classic!

Can Christian sin-talk be retrieved within the public sphere? In this contribution to ecotheology, Ernst M. Conradie argues that, amid ecological destruction, discourse on sin can contribute to a multidisciplinary depth diagnosis of what has gone wrong in the world. He confronts some major obstacles related to the plausibility of sin-talk in conversation with evolutionary biology, the cognitive sciences, and animal ethology. He defends an Augustinian insistence that social evil, rather than natural evil, is our primary predicament. If the root cause of social evil is sin, then a Christian confession of sin may yet yield good news for the whole earth.

This book presents programmatic texts on biosemiotics, written collectively by world leading scholars in the field (Deacon, Emmeche, Favareau, Hoffmeyer, Kull, Markoš, Pattee, Stjernfelt). In addition, the book includes chapters which focus closely on semiotic case studies (Bruni, Kotov, Maran, Neuman, Turovski). According to the central thesis of biosemiotics, sign processes characterise all living systems and the very nature of life, and their diverse phenomena can be best explained via the dynamics and typology of sign relations. The authors are therefore presenting a deeper view on biological evolution, intentionality of organisms, the role of communication in the living world and the nature of sign systems — all topics which are described in this volume. This has important consequences on the methodology and epistemology of biology and study of life phenomena in general, which the authors aim to help the reader better understand. Contents: Why Biosemiotics? An Introduction to Our View on the Biology of Life Itself (Kalevi Kull, Claus Emmeche & Jesper Hoffmeyer) Biosemiotic Approach: General Principles: Theses on Biosemiotics: Prolegomena to a Theoretical Biology (Kalevi Kull, Terrence Deacon, Claus Emmeche, Jesper Hoffmeyer & Frederik Stjernfelt) Biology is Immature Biosemiotics (Jesper Hoffmeyer) Biosemiotic

Research Questions (Kalevi Kull, Claus Emmeche & Donald Favareau) Organism and Body: The Semiotics of Emergent Levels of Life (Claus Emmeche) Life is Many, and Sign is Essentially Plural: On the Methodology of Biosemiotics (Kalevi Kull) Applications: The Need for Impression in the Semiotics of Animal Freedom: A Zoologist's Attempt to Perceive the Semiotic Aim of H Hediger (Aleksi Turovski) The Multitrophic Plant-Herbivore-Parasitoid-Pathogen System: A Biosemiotic Perspective (Luis Emilio Bruni) Structure and Semiosis in Biological Mimicry (Timo Maran) Semiosphere is the Relational Biosphere (Kaie Kotov & Kalevi Kull) Why Do We Need Signs in Biology? (Yair Neuman) Conversations: Between Physics and Semiotics (Howard H Pattee & Kalevi Kull) A Roundtable on (Mis)Understanding of Biosemiotics (Claus Emmeche, Jesper Hoffmeyer, Kalevi Kull, Anton Markoš, Frederik Stjernfelt & Donald Favareau) Theories of Signs and Meaning: Views from Copenhagen and Tartu (Jesper Hoffmeyer & Kalevi Kull) Readership: Semioticians, biologists and those interested in the philosophy of science. Keywords: Biosemiotics; Theoretical Biology; Semiosis; Biocommunication; Semiotics; Philosophy of Biology; Ethology Key Features: This is a unique collection of the major recent contributions by the leading scientists in the field of biosemiotics This volume will for the first time present a collective view of the group of scholars who have built the current understanding of biosemiotics (i.e. the community of researchers emanating from the major biosemiotic centers of Copenhagen and Tartu into other places worldwide) Examines the emergent processes that bridge the gap between organisms that think and have consciousness and those that do not and discusses the origins of life, information, and free will. Growth and Development Ecology, the Ascendent Perspective

Peace Ethology

Rereading Darwin's Origin of Species

Contemporary Natural Philosophy and Philosophies - Part 1

Towards a 'Lingua Democratica' for the Public Debate on Genomics

God, Humanity and the Cosmos - 3rd edition

Our world is experiencing increasingly complex social and environmental challenges. The prevailing business models and, to some extent, capitalism per se, are frequently blamed for these problems due to their neglect of social and environmental values in favour of financial returns. Within this context, social finance has attracted the attention of governments, organizations, entrepreneurs, and researchers as a means of mobilizing resources and innovation with the goal of establishing effective long-term solutions. This edited collection summarizes, discusses, and analyzes new innovative trends in social finance. It features contributions that aim to highlight emerging trends (products, tools, and processes) in social finance, present a series of case studies related to the development, deployment, and scaling of social finance innovations, offer an understanding of how non-economic externalities are being incorporated, managed, and assessed in recent innovations, reveal the disruptive potential of social finance innovations by analyzing how they are redefining mainstream finance, analyze the scales – of operation and impact – of different innovations, and explore the complex relationship between social finance and social innovation. Featuring contributions from both the research and practitioner community as well as policy actors, the book provides more than a snapshot of the current social finance field by specifically highlighting the major challenges and difficulties that require the urgent attention of policymakers and social entrepreneurs.

Modern information communication technology eradicates barriers of geographic distances, making the world globally interdependent, but this spatial globalization has not eliminated cultural

fragmentation. The Two Cultures of C.P. Snow (that of science–technology and that of humanities) are drifting apart even faster than before, and they themselves crumble into increasingly specialized domains. Disintegrated knowledge has become subservient to the competition in technological and economic race leading in the direction chosen not by the reason, intellect, and shared value-based judgement, but rather by the whims of autocratic leaders or fashion controlled by marketers for the purposes of political or economic dominance. If we want to restore the authority of our best available knowledge and democratic values in guiding humanity, first we have to reintegrate scattered domains of human knowledge and values and offer an evolving and diverse vision of common reality unified by sound methodology. This collection of articles responds to the call from the journal *Philosophies* to build a new, networked world of knowledge with domain specialists from different disciplines interacting and connecting with other knowledge-and-values-producing and knowledge-and-values-consuming communities in an inclusive, extended, contemporary natural–philosophic manner. In this process of synthesis, scientific and philosophical investigations enrich each other—with sciences informing philosophies about the best current knowledge of the world, both natural and human-made—while philosophies scrutinize the ontological, epistemological, and methodological foundations of sciences, providing scientists with questions and conceptual analyses. This is all directed at extending and deepening our existing comprehension of the world, including ourselves, both as humans and as societies, and humankind.

This book is a journey which can be a life-changing experience. Its an investigation into core concepts of life. These concepts are explained through experiences; practical examples and the most accepted scientific theories. The most significant resolution offered by this book is for ‘pain’ and the elements of pain. The book not only provides clarification of life concepts but also complete and practical direction for knowing one’s life objectives. The book

covers concepts like awareness; god; experience; purpose; money and love in life. The book is an excellent read for people looking to resolve life; or looking for conceptual clarity of life concepts and get a real direction in Life.

In this fascinating journey to the edge of science, Vidal takes on big philosophical questions: Does our universe have a beginning and an end or is it cyclic? Are we alone in the universe? What is the role of intelligent life, if any, in cosmic evolution? Grounded in science and committed to philosophical rigor, this book presents an evolutionary worldview where the rise of intelligent life is not an accident, but may well be the key to unlocking the universe's deepest mysteries. Vidal shows how the fine-tuning controversy can be advanced with computer simulations. He also explores whether natural or artificial selection could hold on a cosmic scale. In perhaps his boldest hypothesis, he argues that signs of advanced extraterrestrial civilizations are already present in our astrophysical data. His conclusions invite us to see the meaning of life, evolution and intelligence from a novel cosmological framework that should stir debate for years to come.

Putting Life Back Into Biology

Nature and Experience in the Culture of Delusion

Design Unbound: Designing for Emergence in a White Water World, Volume 1

Metaphor, Sustainability, Transformation

Nature

Life is the Action of Signs

Behavioral Processes and Systems of Peace

This book is a thought-provoking assessment of assumptions inhibiting progress in comparative biology. The volume is inspired by a list generated years earlier by Donn Rosen, one of the most influential, innovative and productive comparative biologists of the latter 20th century. His list has

assumed almost legendary status among comparative evolutionary biologists. Surprisingly many of the obstructing assumptions implicated by Rosen remain relevant today. Any comparative biologist hoping to avoid such assumptions in their own research will benefit from this introspective volume.

Pairing scientists and philosophers together, this book is an exploration of some of the new frontiers in biology (e.g., Emergence, Complex Systems, Biosemiotics, Symbiogenesis, Organic Selection, Epigenetics, Niche Construction, Teleodynamics, etc.). The chapters in this volume challenge the mechanistic metaphysic that is implicit in the reigning neo-Darwinist paradigm, point to more inclusive modes of thinking in relation to the nature of life, and contribute to the novel synthesis that is presently “ in the air. ”

Featuring essays by some of the most prominent names in contemporary political and cultural theory, *Sovereignty in Ruins* presents a form of critique grounded in the conviction that political thought is itself an agent of crisis. Aiming to develop a political vocabulary capable of critiquing and transforming contemporary political frameworks, the contributors advance a politics of crisis that collapses the false dichotomies between sovereignty and governmentality and between critique and crisis. Their essays address a wide range of topics, such as the role history plays in the development of a politics of crisis; Arendt's

controversial judgment of Adolf Eichmann;
Strauss's and Badiou's readings of Plato's Laws;
the acceptance of the unacceptable; the human and
nonhuman; and flesh as a biopolitical category
representative of the ongoing crisis of modernity.
Altering the terms through which political action
may take place, the contributors think through new
notions of the political that advance countermodels
of biopolitics, radical democracy, and humanity.
Contributors. Judith Butler, George Edmondson,
Roberto Esposito, Carlo Galli, Klaus Mladek,
Alberto Moreiras, Andrew Norris, Eric L. Santner,
Adam Sitze, Carsten Strathausen, Rei Terada, Cary
Wolfe

"The majority of the papers herein originated at
the workshop 'Process Philosophy of Biology' ...
held in Exeter in November 2014."--Page vii.

Ecosystems Phenomenology

Beyond Mechanism

Social Diagnostics amid Ecological Destruction

Biological Classification

The Humanist Imperative in South Africa

Incomplete Nature: How Mind Emerged from
Matter

The Future of Engineering

This book presents the theory of anticipation,
and establishes anticipation of the future as a
legitimate topic of research. It examines
anticipatory behavior, i.e. a behavior that
' uses ' the future in its actual decisional

process. The book shows that anticipation violates neither the ontological order of time nor causation. It explores the question of how different kinds of systems anticipate, and examines the risks and uses of such anticipatory practices. The book first summarizes the research on anticipation conducted within a range of different disciplines, and describes the connection between the anticipatory point of view and futures studies. Following that, its chapters on Wholes, Time and Emergence, make explicit the ontological framework within which anticipation finds its place. It then goes on to discuss Systems, Complexity, and the Modeling Relation, and provides the scientific background supporting anticipation. It restricts formal technicalities to one chapter, and presents those technicalities twice, in formal and plain words to advance understanding. The final chapter shows that all the threads presented in the previous chapters naturally converge toward what has come to be called “ Discipline of Anticipation ”

A challenge to existing Newtonian and Darwinian paradigms, Ecology, the Ascendent Perspective demonstrates that a theoretically reshaped science of ecology, better suited to portraying the dynamics of the natural world,

can be a more effective means of ensuring its health.

In a world permeated by digital technology, engineering is involved in every aspect of human life. Engineers address a wider range of design problems than ever before, raising new questions and challenges regarding their work, as boundaries between engineering, management, politics, education and art disappear in the face of comprehensive socio-technical systems. It is therefore necessary to review our understanding of engineering practice, expertise and responsibility. This book advances the idea that the future of engineering will not be driven by a static view of a closed discipline, but rather will result from a continuous dialogue between different stakeholders involved in the design and application of technical artefacts. Based on papers presented at the 2016 conference of the forum for Philosophy, Engineering and Technology (fPET) in Nuremberg, Germany, the book features contributions by philosophers, engineers and managers from academia and industry, who discuss current and upcoming issues in engineering from a wide variety of different perspectives. They cover topics such as problem solving strategies and value-sensitive design, experimentation and

simulation, engineering knowledge and education, interdisciplinary collaboration, sustainability, risk and privacy. The different contributions in combination draw a comprehensive picture of efforts worldwide to come to terms with engineering, its foundations in philosophy, the ethical problems it causes, and its effect on the ongoing development of society.

While the historical development of symbolic power has benefitted humanity enormously, there is an insidious and seldom recognised price that goes beyond environmental degradation and cultural disintegration. With insights from both social and natural sciences, this book explores the changing character of subjectivity in contemporary life.

Genomics and Democracy

Transdisciplinary Perspectives on Transitions to Sustainability

Transitioning Beyond Economic Value

Semiotics and its Masters

Natural Selection

Is A Journey That Will Change Your Life

A Textbook in Science and Religion

This book addresses the ethical and political questions flowing from the vastly increased possibilities to manipulate the genetic properties of organisms, including human beings. Due to the

great complexity of the scientific fields involved, these questions are framed and answered mostly by scientific experts. But the new technological possibilities and social practices connected with genetic manipulation intrude into domains that for a long time have been the provenance of religious and secular worldviews and touch upon deep-seated convictions and emotions. Moreover they are strongly influenced by economic and political interests. As a consequence, questions of scientific truth and technical control are getting more and more mixed up with questions regarding values and interests. Against this background, this book starts from the premise that neither clinging to the idea of value-neutral, disinterested science, nor the complete abandonment of this idea in favour of postmodern relativism will be of much help here. Instead the different contributions to this book explore the idea of a 'lingua democratica' for the life sciences and sketch the contours of this notion by focusing on a broad range of conceptual and practical issues in the field of genomics. Research papers from the end of twentieth-century have been assembled, alongside expert commentary, for the first collected volume on complexity-based ecology. This book offers an eclectic range of transdisciplinary insights into the role of metaphor, myth and fable in shaping our understanding of the world and how we interact with it and with each other. Drawing on innovative perspectives from

widely different fields, this book explores how metaphor might facilitate and underpin transformative change towards environmental, ecological and societal sustainability. It illustrates the ways in which contemporary metaphors lock us into patterns of thinking, modes of behaviour, and styles of living that reproduce and accentuate our current socio-environmental problems. It sets itself the task of finding new metaphors and myths that might help move us towards sustainability as societal flourishing. By examining the use of metaphor in diverse fields such as energy use, the food system, health care, arts and the humanities, it invites the reader to reflect on the deep-seated influence of language in general, and metaphor in particular, in shaping how we understand and act upon the world. Re-imagining the use of language in framing both the problems we face and the solutions we devise, this novel contribution is a vital source of ideas for those aiming to change how we think and act in pursuit of more sustainable futures.

Widely seen as evolution's founding figure, Charles Darwin is taken by many evolutionists to be the first to propose a truly modern theory of evolution. Darwin's greatness, however, has obscured the man and his work, at times even to the point of distortion. Accessibly written, this book presents a more nuanced picture and invites us to discover some neglected ambiguities and contradictions in Darwin's masterwork. Delisle and Tierney show

Darwin to be a man who struggled to reconcile the received wisdom of an unchanging natural world with his new ideas about evolution. Arguing that Darwin was unable to break free entirely from his contemporaries' more traditional outlook, they show his theory to be a fascinating compromise between old and new. Rediscovering this other Darwin – and this other side of *On the Origin of Species* – helps shed new light on the immensity of the task that lay before 19th century scholars, as well as their ultimate achievements.

Everything Flows

Transdisciplinary Perspectives

Foundational Perspectives on Dynamic Approaches to Ecology and Conservation

Future Information Society, The: Social And Technological Problems

Towards a Processual Philosophy of Biology

Redeeming Sin?

Assumptions Inhibiting Progress in Comparative Biology

A scholarly collection of timely essays on the behavioral science of peace With contributions from experts representing a wide variety of scholarly fields (behavioral and social sciences, philosophy, environmental science, anthropology and economics), *Peace Ethology* offers original essays on the most recent research and findings on the topic of the behavioral science of peace. This much-needed volume includes writings that examine four main areas of study: the proximate

causation of peace, the developmental aspects of peace, the function and systems of peace and the evolution of peace. The popular belief persists that, by nature, humans are not pre-disposed to peace. However, archeological and paleontological evidence reveals that the vast majority of our time as a species has been spent in small hunter-gatherer bands that are basically peaceful and egalitarian in nature. The text also reveals that most of the earth ' s people are living in more peaceful societies than in centuries past. This hopeful compendium of essays: Contains writings from noted experts from a variety of academic studies Offers a social-psychological perspective on the causation of peaceful behavior Includes information on children ' s peacekeeping and peacemaking Presents ideas for overcoming social tension between police and civilians Provides the most recent thinking on the behavioral science of peace Written for students and academics of the behavioral and social sciences, Peace Ethology offers scholarly essays on the development, nature, and current state of peace.

An introduction to the fundamental concepts of the emerging field of Artificial Chemistries, covering both theory and practical applications. The field of Artificial Life (ALife) is now firmly established in the scientific world, but it has yet to achieve one of its original goals: an understanding of the emergence of life on Earth. The new field of Artificial Chemistries draws from chemistry,

biology, computer science, mathematics, and other disciplines to work toward that goal. For if, as it has been argued, life emerged from primitive, prebiotic forms of self-organization, then studying models of chemical reaction systems could bring ALife closer to understanding the origins of life. In Artificial Chemistries (ACs), the emphasis is on creating new interactions rather than new materials. The results can be found both in the virtual world, in certain multiagent systems, and in the physical world, in new (artificial) reaction systems. This book offers an introduction to the fundamental concepts of ACs, covering both theory and practical applications. After a general overview of the field and its methodology, the book reviews important aspects of biology, including basic mechanisms of evolution; discusses examples of ACs drawn from the literature; considers fundamental questions of how order can emerge, emphasizing the concept of chemical organization (a closed and self-maintaining set of chemicals); and surveys a range of applications, which include computing, systems modeling in biology, and synthetic life. An appendix provides a Python toolkit for implementing ACs.

Written by a highly accredited scientist, this book offers a compelling and original alternative to outdated approaches to the life sciences. It presents a metaphysical basis for living systems that significantly mitigates several purported conflicts between science and religion.

This book contests the general view that natural selection constitutes the explanatory core of evolutionary biology. It invites the reader to consider an alternative view which favors a more complete and multidimensional interpretation. It is common to present the 1930-1960 period as characterized by the rise of the Modern Synthesis, an event structured around two main explanatory commitments: (1) Gradual evolution is explained by small genetic changes (variations) oriented by natural selection, a process leading to adaptation; (2) Evolutionary trends and speciation events are macroevolutionary phenomena that can be accounted for solely in terms of the extension of processes and mechanisms occurring at the previous microevolutionary level. On this view, natural selection holds a central explanatory role in evolutionary theory - one that presumably reaches back to Charles Darwin's *Origin of Species* - a view also accompanied by the belief that the field of evolutionary biology is organized around a profound divide: theories relying on strong selective factors and those appealing only to weak ones. If one reads the new analyses presented in this volume by biologists, historians and philosophers, this divide seems to be collapsing at a rapid pace, opening an era dedicated to the search for a new paradigm for the development of evolutionary biology. Contrary to popular belief, scholars' position on natural selection is not in itself a significant discriminatory factor between

most evolutionists. In fact, the intellectual space is quite limited, if not non-existent, between, on the one hand, "Darwinists", who play down the central role of natural selection in evolutionary explanations, and, on the other hand, "non-Darwinists", who use it in a list of other evolutionary mechanisms. The "mechanism-centered" approach to evolutionary biology is too incomplete to fully make sense of its development. In this book the labels created under the traditional historiography - "Darwinian Revolution", "Eclipse of Darwinism", "Modern Synthesis", "Post-Synthetic Developments" - are thus re-evaluated. This book will not only appeal to researchers working in evolutionary biology, but also to historians and philosophers."

Bioinformational Philosophy and Postdigital
Knowledge Ecologies

The Orders of Nature

Volume 2

Scientific and Theological Perspectives

Life

Natural Life Beyond Newton and Darwin

The Hesitations of an Evolutionist

"What in the ever-loving blue-eyed world do these [U1ano wicz's] innocuous comments on thermodynamics have to do with ecology!"

Anonymous manuscript reviewer *The American Naturalist*, 1979 "The germ of the idea grows very slowly into something recognizable. It may all start with the mere desire to have an idea in the first

place. " Walt Kelly Ten Ever-Lovin' Blue-Eyed Years with Pogo, 1959 "It all seems extremely interesting, but for the life of me it sounds as if you pulled it out of the air," my good friend Ray Lassiter exclaimed to me after enduring about 20 minutes of my enthusiasm for the newly formulated concept of "ascendency" in ecosystems. "It wasn't," I replied, "but it would take a book to show you where it came from. " If such was the reaction of someone usually sympathetic to my manner of thinking, what could I expect from those who viewed biological development in the traditional way? After all, I was suggesting that it is possible to quantify the growth and development of an entire ecosystem. Furthermore, I was maintaining that this development was not entirely determined by events and entities at smaller scales, and yet could influence these component processes and structures. To be sure, mine was only the latest of many challenges to straight reductionism, but, like everyone else with a new idea, I thought mine was special.

TECHNOSIGNATURES FOR DETECTING INTELLIGENT LIFE IN OUR UNIVERSE This book shows the current state of the research in the field of technosignatures, presenting novel ideas from economics, forecasting, and data sciences, making it an ideal research compendium for scientists. The book summarizes the multiple interdisciplinary efforts that have contributed to the field of technosignatures. The technosignatures represent

any signals that can be collected from the Universe, such as radio wavelengths, optical signals, and many more, that can be potential candidates as signals emitted intentionally from another part of the Universe that is not Earth. It shows how current advances in science, technology, and social sciences can support this effort and can be used as both a resource for the scientists in the field and as a reference for the public at large interested in the topic. It includes novel research work from economics, forecasting, and data sciences fields, as well as a deeper understanding of the role mass media and popular fiction has played in the evolution of this field. Audience The book will interest both natural scientists (astronomers and astrophysicists) and social scientists (economists), as well as the new emerging data scientists. Amateur astronomers will be attracted to the book as well.

Demonstrating how a university can, in a very practical and pragmatic way, be re-envisioned through a transdisciplinary informed frame, this book shows how through an open and collegiate spirit of inquiry the most pressing and multifaceted issue of contemporary societal (un)sustainability can be addressed and understood in a way that transcends narrow disciplinary work. It also provides a practical exemplar of how far more meaningful deliberation, understandings and options for action in relation to contemporary sustainability-related crises can emerge than could

otherwise be achieved. Indeed it helps demonstrate how only through a transdisciplinary ethos and approach can real progress be achieved. The fact that this can be done in parallel to (or perhaps underneath) the day-to-day business of the university serves to highlight how even micro seed initiatives can further the process of breaking down silos and reuniting C.P. Snow 's ' two cultures ' after some four centuries of the relentless project of modernity. While much has been written and talked about with respect to both sustainability and transdisciplinarity, this book offers a pragmatic example which hopefully will signpost the ways others can, will and indeed must follow in our common quest for real progress.

This book is an outcome of the conversation that occurred during the five days of intense discussion at two symposia initiated by the New Humanism Project. The struggle for a more humane society is both local and universal, and increasingly these are connected in our time. So while the conversation focused specifically on South Africa, the discussion was neither parochial nor insular in its scope and character. Hopefully, then, people beyond South Africa will find the contents of this book of value for them in terms of their own contexts.

Sovereignty in Ruins

How Industrial Society Lost Touch with Reality

Following nature's way

The Meaning of Life in a Cosmological Perspective

Philosophical Foundations, Ethical Problems and

Application Cases

Designing for Emergence

Flourishing Within Limits to Growth

This book is the first volume of a two-volume edition based on the International Society for Information Studies Summit Vienna 2015 on "The Information Society at the Crossroads. Response and Responsibility of the Sciences of Information" (see summit.is4is.org). The book represents a trans-disciplinary endeavor of the leading experts in the field of information studies posing the question for a better society, in which social and technological innovations help make information key to the flourishing of humanity and dispense with the bleak view of the dark side of information society. It is aimed at readers that conduct research into any aspect of information, information society and information technology, who develop or implement social or technological applications. It is also for those who have an interest in participating in setting the goals for sciences of information and social applications of technological achievements and scientific results.

The Beginning and the End