Emergence

Emergence

In the tradition of Being Digital and The Tipping Point, Steven Johnson, acclaimed as a \"cultural critic with a poet's heart\" (The Village Voice), takes readers on an eye-opening journey through emergence theory and its applications. A NEW YORK TIMES NOTABLE BOOK A VOICE LITERARY SUPPLEMENT TOP 25 FAVORITE BOOKS OF THE YEAR AN ESQUIRE MAGAZINE BEST BOOK OF THE YEAR Explaining why the whole is sometimes smarter than the sum of its parts, Johnson presents surprising examples of feedback, self-organization, and adaptive learning. How does a lively neighborhood evolve out of a disconnected group of shopkeepers, bartenders, and real estate developers? How does a media event take on a life of its own? How will new software programs create an intelligent World Wide Web? In the coming years, the power of self-organization -- coupled with the connective technology of the Internet -- will usher in a revolution every bit as significant as the introduction of electricity. Provocative and engaging, Emergence puts you on the front lines of this exciting upheaval in science and thought.

Emergence

Readings on the idea of emergence in evolution and classical works on emergence found in contemporary philosophy and science. Australian contributor.

Emergence

Can we understand important social issues by studying individual personalities and decisions? Or are societies somehow more than the people in them? Sociologists have long believed that psychology can't explain what happens when people work together in complex modern societies. In contrast, most psychologists and economists believe that if we have an accurate theory of how individuals make choices and act on them, we can explain pretty much everything about social life. Social Emergence takes a new approach to these longstanding questions. Sawyer argues that societies are complex dynamical systems, and that the best way to resolve these debates is by developing the concept of emergence, focusing on multiple levels of analysis - individuals, interactions, and groups - and with a dynamic focus on how social group phenomena emerge from communication processes among individual members. This book makes a unique contribution not only to complex systems research but also to social theory.

Social Emergence

We are everywhere confronted with emergent systems - the Internet, the immune system, the global economy, to name a few - where the behaviour of the whole is much more complex than the behaviour of the parts. Holland shows us how a theory of emergence can predict many complex behaviours, and has much to teach us about life, the mind, and organizations. Throughout, Holland compares the different systems and models that exhibit emergence in the quest for common rules or laws.

Emergence

A standard view of elementary particles and forces is that they determine everything else in the rest of physics, the whole of chemistry, biology, geology, physiology and perhaps even human behavior. This reductive view of physics is popular among some physicists. Yet, there are other physicists who argue this is an oversimplified and that the relationship of elementary particle physics to these other domains is one of

emergence. Several objections have been raised from physics against proposals for emergence (e.g., that genuinely emergent phenomena would violate the standard model of elementary particle physics, or that genuine emergence would disrupt the lawlike order physics has revealed). Many of these objections rightly call into question typical conceptions of emergence found in the philosophy literature. This book explores whether physics points to a reductive or an emergent structure of the world and proposes a physics-motivated conception of emergence that leaves behind many of the problematic intuitions shaping the philosophical conceptions. Examining several detailed case studies reveal that the structure of physics and the practice of physics research are both more interesting than is captured in this reduction/emergence debate. The results point to stability conditions playing a crucial though underappreciated role in the physics of emergence. This contextual emergence has thought-provoking consequences for physics and beyond, and will be of interest to physics students, researchers, as well as those interested in physics.

The Physics of Emergence

Emergence is often described as the idea that the whole is greater than the sum of the parts: interactions among the components of a system lead to distinctive novel properties. It has been invoked to describe the flocking of birds, the phases of matter and human consciousness, along with many other phenomena. Since the nineteenth century, the notion of emergence has been widely applied in philosophy, particularly in contemporary philosophy of mind, philosophy of science and metaphysics. It has more recently become central to scientists' understanding of phenomena across physics, chemistry, complexity and systems theory, biology and the social sciences. The Routledge Handbook of Emergence is an outstanding reference source and exploration of the concept of emergence, and is the first collection of its kind. Thirty-two chapters by an international team of contributors are organised into four parts: Foundations of emergence Emergence and mind Emergence and physics Emergence and the special sciences Within these sections important topics and problems in emergence are explained, including the British Emergentists; weak vs. strong emergence; emergence and downward causation; dependence, complexity and mechanisms; mental causation, consciousness and dualism; quantum mechanics, soft matter and chemistry; and evolution, cognitive science and social sciences. Essential reading for students and researchers in philosophy of mind, philosophy of science and metaphysics, The Routledge Handbook of Emergence will also be of interest to those studying foundational issues in biology, chemistry, physics and psychology.

The Routledge Handbook of Emergence

In his bestselling book Emergence, Derek Rydall helps you throw aside the self-help books and recognize one simple, radical truth: the answer is already in you. The harder we try to change, the deeper in the hole we get. We find a new partner but have the same old fights. We strive for an ever-bigger paycheck but end up broke at a higher income bracket. This is what happens when the basic principle of life—the Law of Emergence—is disrupted, stopping you from knowing that you are the perfect you. Like an acorn is a perfect acorn that becomes a perfect oak tree, there is not a part of you from beginning to end that isn't exactly what you should be. The Law of Emergence provides the foundation to re-engage with this ancient principle. In this seven-stage framework, spiritual life coach Derek Rydall shows that we aren't lacking anything; everything we need to fulfill our full potential is already inside us. Backed by an ancient truth that has largely been lost, Rydall changes the conversation around how to achieve your potential by showing you how to activate the genius already in you and empower your purpose in life. If you are struggling to improve something about yourself—your health, your mindset, your relationships, then Emergence is the book and Derek is the teacher you have been waiting for.

Emergence

In 2142, a new movement promises freedom and inclusion to humans and machines. The sweeping persecution of its followers by governments will lead to the unraveling of a worldwide system of surveillance and control. Who is responsible? Is it an AI, terrorist group, or spiritual movement? As the leader of the new

movement is about to be revealed, groups of followers, pursuing authorities, and kindred robots converge in one place. When the leader identifies herself as a woman, at a time when human women have already been decimated by two Gender Wars and supplanted by robots-what does it all mean? Will this new movement free humans and machines to think for themselves and defeat an old system that has kept them divided in a legacy of oppression? It will take their deepest strength, a profound love for each other, and deep faith, just to find out.

The Emergence

Change is everywhere these days—at times it seems like barely controlled chaos. Yet within this turmoil are the seeds of a higher order. When a new system arises from the ashes of the old, science calls the process “emergence.” By engaging it, you can help yourself and your organization or community to successfully face disruption and emerge stronger than ever. In this profound book, Peggy Holman offers principles, practices, and real-world stories to help you work with compassion, creativity, and wisdom through the entire arc of change—from disruption to coherence. You'll learn what to notice, what to explore, what to try, and what mindset opens new possibilities. This work can be challenging but also tremendously rewarding. It enables new and unlikely partnerships and develops breakthrough projects. You become part of a process that transforms the culture itself.

Engaging Emergence

A philosopher offers a non-physicalist theory of mind, revisiting and defending a key doctrine of emergentism. The presence of sentience in a basically material reality is among the mysteries of existence. Many philosophers of mind argue that conscious states and properties are nothing beyond the matter that brings them about. Finding these arguments less than satisfactory, Gerald Vision offers a nonphysicalist theory of mind. Revisiting and defending a key doctrine of the once widely accepted school of philosophy known as emergentism, Vision proposes that conscious states are emergents, although they depend for their existence on their material bases. Although many previous emergentist theories have been decisively undermined, Vision argues that emergent options are still viable on some issues. In Re-Emergence he explores the question of conscious properties arising from brute, unthinking matter, making the case that there is no equally plausible non-emergent alternative. Vision defends emergentism even while conceding that conscious properties and states are realized by or strongly supervene on the physical. He argues, however, that conscious properties cannot be reduced to, identified with, or given the right kind of materialist explanation in terms of the physical reality on which they depend. Rather than use emergentism simply to assail the current physicalist orthodoxy, Vision views emergentism as a contribution to understanding conscious aspects. After describing and defending his version of emergentism, Vision reviews several varieties of physicalism and near-physicalism, finding that his emergent theory does a better job of coming to grips with these phenomena.

Re-emergence

The concept of emergence has seen a significant resurgence in philosophy and the sciences, yet debates regarding emergentist and reductionist visions of the natural world continue to be hampered by imprecision or ambiguity. Emergent phenomena are said to arise out of and be sustained by more basic phenomena, while at the same time exerting a \"top-down\" control upon those very sustaining processes. To some critics, this has the air of magic, as it seems to suggest a kind of circular causality. Other critics deem the concept of emergence to be objectionably anti-naturalistic. Objections such as these have led many thinkers to construe emergent phenomena instead as coarse-grained patterns in the world that, while calling for distinctive concepts, do not \"disrupt\" the ordinary dynamics of the finer-grained (more fundamental) levels. Yet, reconciling emergence with a (presumed) pervasive causal continuity at the fundamental level can seem to deflate emergence of its initially profound significance. This basic problematic is mirrored by similar controversy over how best to characterize the opposite systematizing impulse, most commonly given an

equally evocative but vague term, \"reductionism.\" The original essays in this volume help to clarify the alternatives: inadequacies in some older formulations and arguments are exposed and new lines of argument on behalf the two visions are advanced.

Emergence in Science and Philosophy

BRILLIANTLY EXPLORING TODAY'S CUTTING-EDGE BRAIN RESEARCH, MIND WIDE OPEN IS AN UNPRECEDENTED JOURNEY INTO THE ESSENCE OF HUMAN PERSONALITY, ALLOWING READERS TO UNDERSTAND THEMSELVES AND THE PEOPLE IN THEIR LIVES AS NEVER BEFORE. Using a mix of experiential reportage, personal storytelling, and fresh scientific discovery, Steven Johnson describes how the brain works -- its chemicals, structures, and subroutines -- and how these systems connect to the day-to-day realities of individual lives. For a hundred years, he says, many of us have assumed that the most powerful route to self-knowledge took the form of lying on a couch, talking about our childhoods. The possibility entertained in this book is that you can follow another path, in which learning about the brain's mechanics can widen one's self-awareness as powerfully as any therapy or meditation or drug. In Mind Wide Open, Johnson embarks on this path as his own test subject, participating in a battery of attention tests, learning to control video games by altering his brain waves, scanning his own brain with a $2 million fMRI machine, all in search of a modern answer to the oldest of questions: who am I? Along the way, Johnson explores how we \"read\" other people, how the brain processes frightening events (and how we might rid ourselves of the scars those memories leave), what the neurochemistry is behind love and sex, what it means that our brains are teeming with powerful chemicals closely related to recreational drugs, why music moves us to tears, and where our breakthrough ideas come from. Johnson's clear, engaging explanation of the physical functions of the brain reveals not only the broad strokes of our aptitudes and fears, our skills and weaknesses and desires, but also the momentary brain phenomena that a whole human life comprises. Why, when hearing a tale of woe, do we sometimes smile inappropriately, even if we don't want to? Why are some of us so bad at remembering phone numbers but brilliant at recognizing faces? Why does depression make us feel stupid? To read Mind Wide Open is to rethink family histories, individual fates, and the very nature of the self, and to see that brain science is now personally transformative -- a valuable tool for better relationships and better living.

Mind Wide Open

This book examines the nature of emergence in context of man-made (i.e. engineered) systems, in general, and system of systems engineering applications, specifically. It investigates emergence to interrogate or explore the domain space from a modeling and simulation perspective to facilitate understanding, detection, classification, prediction, control, and visualization of the phenomenon. Written by leading international experts, the text is the first to address emergence from an engineering perspective. \"System engineering has a long and proud tradition of establishing the integrative view of systems. The field, however, has not always embraced and assimilated well the lessons and implications from research on complex adaptive systems. As the editors’ note, there have been no texts on Engineering Emergence: Principles and Applications. It is therefore especially useful to have this new, edited book that pulls together so many of the key elements, ranging from the theoretical to the practical, and tapping into advances in methods, tools, and ways to study system complexity. Drs. Rainey and Jamshidi are to be congratulated both for their vision of the book and their success in recruiting contributors with so much to say. Most notable, however, is that this is a book with engineering at its core. It uses modeling and simulation as the language in which to express principles and insights in ways that include tight thinking and rigor despite dealing with notably untidy and often surprising phenomena.\" — Paul K. Davis, RAND and Frederick S. Pardee RAND Graduate School The first chapter is an introduction and overview to the text. The book provides 12 chapters that have a theoretical foundation for this subject. Includes 7 specific example chapters of how various modeling and simulation paradigms/techniques can be used to investigate emergence in an engineering context to facilitate understanding, detection, classification, prediction, control and visualization of emergent behavior. The final chapter offers lessons learned and the proposed way-ahead for this discipline.

Engineering Emergence

This book investigates the remarkable growth of the 'third sector', focusing on social enterprises, their characteristics, their contribution and their future prospects.

The Emergence of Social Enterprise

The Emergence of Everything is a study of complexity which highlights 28 moments of , what the the author feels are, the most important emergences. The author also seeks out the nature of God in an emergent universe, agruing that we can know God through a study of the laws of nature.

The Emergence of Everything

The book surveys mathematical relations between classical and quantum mechanics, gravity, time and thermodynamics from various points of view and many sources (with appropriate attribution). The emergence theme is developed with an emphasis on the meaning via mathematics. A background theme of Bohemian mechanics and connections to the quantum equivalence principle of Matone et al. is also developed in great detail. Some original work relating the quantum potential and Ricci flow is also included.

On the Emergence Theme of Physics

Interest in emergence amongst philosophers and scientists has grown in recent years, yet the concept continues to be viewed with skepticism by many. In this book, Paul Humphreys argues that many of the problems arise from a long philosophical tradition that is overly committed to synchronic reduction and has been overly focused on problems in philosophy of mind. He develops a novel account of diachronic ontological emergence called transformational emergence, shows that it is free of the problems raised against synchronic accounts, shows that there are plausible examples of transformational emergence within physics and chemistry, and argues that the central ideas fit into a well established historical tradition of emergence that includes John Stuart Mill, G.E. Moore, and C.D. Broad. The book also provides a comprehensive assessment of current theories of emergence and so can be used as a way into what is by now a very large literature on the topic. It places theories of emergence within a plausible classification, provides criteria for emergence, and argues that there is no single unifying account of emergence. Reevaluations of related topics in metaphysics are provided, including fundamentality, physicalism, holism, methodological individualism, and multiple realizability, among others. The relations between scientific and philosophical conceptions of emergence are assessed, with examples such as self-organization, ferromagnetism, cellular automata, and nonlinear systems being discussed. Although the book is written for professional philosophers, simple and intuitively accessible examples are used to illustrate the new concepts.

Emergence

Both the special sciences and ordinary experience suggest that there are metaphysically emergent entities and features: macroscopic goings-on (including mountains, trees, humans, and sculptures, and their characteristic properties) which depend on, yet are distinct from and distinctively efficacious with respect to, lower-level physical configurations and features. These appearances give rise to two key questions. First, what is metaphysical emergence, more precisely? Second, is there any metaphysical emergence, in principle and moreover in fact? Metaphysical Emergence provides clear and systematic answers to these questions. Wilson argues that there are two, and only two, forms of metaphysical emergence of the sort seemingly at issue in the target cases: 'Weak' emergence, whereby a dependent feature has a proper subset of the powers of the feature upon which it depends, and 'Strong' emergence, whereby a dependent feature has a power not had by the feature upon which it depends. Weak emergence unifies and illuminates seemingly diverse accounts of non-reductive physicalism; Strong emergence does the same as regards seemingly diverse anti-physicalist

views positing fundamental novelty at higher levels of compositional complexity. After defending the in-principle viability of each form of emergence, Wilson considers whether complex systems, ordinary objects, consciousness, and free will are actually metaphysically emergent. She argues that Weak emergence is quite common, and that there is Strong emergence in the important case of free will.

Metaphysical Emergence

Emergence and complexity refer to the appearance of higher-level properties and behaviours of a system that obviously comes from the collective dynamics of that system's components. These properties are not directly deducible from the lower-level motion of that system. Emergent properties are properties of the \"whole" that are not possessed by any of the individual parts making up that whole. Such phenomena exist in various domains and can be described, using complexity concepts and thematic knowledges. This book highlights complexity modelling through dynamical or behavioral systems. The pluridisciplinary purposes, developed along the chapters, are able to design links between a wide-range of fundamental and applicative Sciences. Developing such links - instead of focusing on specific and narrow researches - is characteristic of the Science of Complexity that we try to promote by this contribution.

From System Complexity to Emergent Properties

Over the last several decades, the theories of emergence and downward causation have become arguably the most popular conceptual tools in scientific and philosophical attempts to explain the nature and character of global organization observed in various biological phenomena, from individual cell organization to ecological systems. The theory of emergence acknowledges the reality of layered strata or levels of systems, which are consequences of the appearance of an interacting range of novel qualities. A closer analysis of emergentism, however, reveals a number of philosophical problems facing this theory. In Emergence, Mariusz Tabaczek offers a thorough analysis of these problems and a constructive proposal of a new metaphysical foundation for both the classic downward causation-based and the new dynamical depth accounts of emergence theory, developed by Terrence Deacon. Tabaczek suggests ways in which both theoretical models of emergentism can be grounded in the classical and the new (dispositionalist) versions of Aristotelianism. This book will have an eager audience in metaphysicians working both in the analytic and the Thomistic traditions, as well as philosophers of science and biology interested in emergence theory and causation.

Emergence

Systemics of Emergence: Research and Development is a volume devoted to exploring the core theoretical and disciplinary research problems of emergence processes from which systems are established. It focuses on emergence as the key point of any systemic process. This topic is dealt with within different disciplinary approaches, indicated by the organization in sections: 1) Applications; 2) Biology and human care; 3) Cognitive Science; 4) Emergence; 5) General Systems; 6) Learning; 7) Management; 8) Social Systems; 9) Systemic Approach and Information Science; 10) Theoretical issues in Systemics. The Editors and contributing authors have produced this volume to help, encourage and widen the work in this area of General Systems Research.

Systemics of Emergence

Current Work and Open Problems: A Road-Map for Research into the Emergence of Communication and Language Chrystopher L. Nehaniv, Caroline Lyon, and Angelo Cangelosi 1.1. Introduction This book brings together work on the emergence of communication and language from researchers working in a broad array of scientific paradigms in North America, Europe, Japan and Africa. We hope that its multi-disciplinary approach will encourage cross-fertilization and promote further advances in this active research field. The volume draws on diverse disciplines, including linguistics, psychology, neuroscience, ethology,

anthropology, robotics, and computer science. Computational simulations of the emergence of phenomena associated with communication and language play a key role in illuminating some of the most significant issues, and the renewed scientific interest in language emergence has benefited greatly from research in Artificial Intelligence and Cognitive Science. The book starts with this road map chapter by the editors, pointing to the ways in which disparate disciplines can inform and stimulate each other. It examines the role of simulations as a novel way to express theories in science, and their contribution to the development of a new approach to the study of the emergence of communication and language. We will also discuss and collect the most promising directions and grand challenge problems for future research. The present volume, is organized into three parts: I. Empirical Investi- tions on Human Language, II. Synthesis and Simulation of Communication and Language in Artificial Systems, and III. Insights from Animal Communication.

Emergence of Communication and Language

Empires have usually been founded by charismatic, egoistic warriors or power-hungry states and peoples, sometimes spurred on by a sense of religious mission. So how was it that the nineteenth-century British Indian Raj was so different? Arising, initially, from the militant policies and actions of a bunch of London merchants chartered as the English East India Company by Queen Elizabeth in 1600, for one hundred and fifty years they had generally pursued a peaceful and thereby profitable trade in the India, recognized by local Indian princes as mutually beneficial. Yet from the 1740s, Company men began to leave the counting house for the parade ground, fighting against the French and the Indian princes over the next forty years until they stood upon the threshold of succeeding the declining Mughul Empire as the next hegamon of India. This book roots its explanation of this phenomenon in the evidence of the words and thoughts of the major, and not-so major, players, as revealed in the rich archives of the early Raj. Public dispatches from the Company's servants in India to their masters in London contain elaborate justifications and records of debates in its councils for the policies (grand strategies) adopted to deal with the challenges created by the unstable political developments of the time. Thousands of surviving private letters between Britons in India and the homeland reveal powerful underlying currents of ambition, cupidity and jealousy and how they impacted on political manoeuvring and the development of policy at both ends. This book shows why the Company became involved in the military and political penetration of India and provides a political and military narrative of the Company's involvement in the wars with France and with several Indian powers. G. J. Bryant, who has a Ph.D. from King's College London, has written extensively on the British military experience in eighteenth-century India.

The Emergence of British Power in India, 1600-1784

“Offers a useful reminder of the role of modern science in fundamentally transforming all of our lives.” —President Barack Obama (on Twitter) “An important book.” —Steven Pinker, The New York Times Book Review The surprising and important story of how humans gained what amounts to an extra life, from the bestselling author of How We Got to Now and Where Good Ideas Come From In 1920, at the end of the last major pandemic, global life expectancy was just over forty years. Today, in many parts of the world, human beings can expect to live more than eighty years. As a species we have doubled our life expectancy in just one century. There are few measures of human progress more astonishing than this increased longevity. Extra Life is Steven Johnson’s attempt to understand where that progress came from, telling the epic story of one of humanity’s greatest achievements. How many of those extra years came from vaccines, or the decrease in famines, or seatbelts? What are the forces that now keep us alive longer? Behind each breakthrough lies an inspiring story of cooperative innovation, of brilliant thinkers bolstered by strong systems of public support and collaborative networks, and of dedicated activists fighting for meaningful reform. But for all its focus on positive change, this book is also a reminder that meaningful gaps in life expectancy still exist, and that new threats loom on the horizon, as the COVID-19 pandemic has made clear. How do we avoid decreases in life expectancy as our public health systems face unprecedented challenges? What current technologies or interventions that could reduce the impact of future crises are we somehow ignoring? A study in how meaningful change happens in society, Extra Life celebrates the enduring power of common goals and public

resources, and the heroes of public health and medicine too often ignored in popular accounts of our history. This is the sweeping story of a revolution with immense public and personal consequences: the doubling of the human life span.

Extra Life

This book centres on a broadened view of complexity that will enrich engagement with complexity in the social sciences. The key idea is to employ complexity theory to develop a holistic account of practice, agency and expertise. In doing so, the book acknowledges and builds upon the relational character of reductive accounts. It draws upon recent theoretical work on complexity, emergence and relationality to develop a novel account of practice, agency and expertise in and for workplaces. Biological, psychological and social aspects of these are integrated. This novel account overcomes problems in current views of practice, agency and expertise, which suffer from reductive, or fragmented, analyses, based upon individuals, groups, or networks. In retrieving the experiential richness of human activity – often esteemed as the basis of generative and creative life – this book shows how complexity both emerges from, and is, a non-reductive feature of, human experience, especially in daily work. “...an ambitiously wide-ranging volume, questioning the key tenets of respected approaches ..... and offering ..... ‘novel accounts’, which draw on features of complexity thinking.... ...But they go further than any of us in their argument that: ‘whatever reductive moves are made, they ‘flow’ from holistic accounts of relationality which have already affectively engaged the purposes of a co-present group.’ This is the intellectual contribution that is built consistently and persuasively across the chapters.” Professor Emerita Anne Edwards, Oxford University \"Hager and Beckett have written a book that will challenge more commonly held notions of agency, practice, skills, and learning. Centering their argument on complexity theory or, as they prefer, complexity thinking, Hager and Beckett argue that it is through relations that we raise questions about, gather data from, and make working sense of the complexity that surrounds us. Groups then, particularly small groups, hold and implement agentive power. And what the authors call co-present groups—ones in which holistic relationality occurs socially, and affectively in distinctive places—“draw us closer to each other, and harness our normativity by enabling negotiability and reason-giving.” If your field of study involves anything remotely sociocultural in nature or if you are just interested in the complex ways we engage as humans with our worlds, you should find a place for this book in your library.\" Bob Fecho, Teachers College, Columbia University, New York NY, USA

The Emergence of Complexity

Two problems continually arise in the sciences and humanities, according to Mario Bunge: parts and wholes and the origin of novelty. In Emergence and Convergence, he works to address these problems, as well as that of systems and their emergent properties, as exemplified by the synthesis of molecules, the creation of ideas, and social inventions. Along the way, Bunge examines further topical problems, such as the search for the mechanisms underlying observable facts, the limitations of both individualism and holism, the reach of reduction, the abuses of Darwinism, the rational choice-hermeneutics feud, the modularity of the brain vs. the unity of the mind, the cluster of concepts around 'maybe,' the uselessness of many-worlds metaphysics and semantics, the hazards posed by Bayesianism, the nature of partial truth, the obstacles to correct medical diagnosis, and the formal conditions for the emergence of a cross-discipline. Bunge is not interested in idle fantasies, but about many of the problems that occur in any discipline that studies reality or ways to control it. His work is about the merger of initially independent lines of inquiry, such as developmental evolutionary biology, cognitive neuroscience, and socio-economics. Bunge proposes a clear definition of the concept of emergence to replace that of supervenience and clarifies the notions of system, real possibility, inverse problem, interdiscipline, and partial truth that occur in all fields.

Emergence and Convergence

The origin of life from inanimate matter has been the focus of much research for decades, both experimentally and philosophically. Luisi takes the reader through the consecutive stages from prebiotic

chemistry to synthetic biology, uniquely combining both approaches. This book presents a systematic course discussing the successive stages of self-organisation, emergence, self-replication, autopoiesis, synthetic compartments and construction of cellular models, in order to demonstrate the spontaneous increase in complexity from inanimate matter to the first cellular life forms. A chapter is dedicated to each of these steps, using a number of synthetic and biological examples. With end-of-chapter review questions to aid reader comprehension, this book will appeal to graduate students and academics researching the origin of life and related areas such as evolutionary biology, biochemistry, molecular biology, biophysics and natural sciences.

The Emergence of Life

In recent years, the idea of emergence, which suggests that observed patterns in behavior and events are not fully reductive and stem from complex lower-level interactions, has begun to take hold in the social sciences. Criminologists have started to use this framework to improve our general understanding of the etiology of crime and criminal behavior. When Crime Appears: The Role of Emergence is concerned with our ability to make sense of the complex underpinnings of the end-stage patterns and events that we see in studying crime and offers an early narrative on the concept of emergence as it pertains to criminological research. Collectively, the chapters in this volume provide a sense of why the emergence framework could be useful, outlines its core conceptual properties, provides some examples of its potential application, and presents some discussion of methodological and analytic issues related to its adoption.

When Crime Appears

Russia's emergence as a Great Power in the eighteenth century is usually attributed to Peter I's radical programme of 'Westernising' reforms. But the Russian military did not simply copy European armies. Adapting the tactics of its neighbours on both sides, Russia created a powerful strategy of its own, integrating steppe defence with European concerns. In Russia's Wars of Emergence, Carol Belkin Stevens examines the social and political factors underpinning Muscovite military history, the eventual success of the Russian Empire and the sacrifices made for power.

Russia's Wars of Emergence 1460-1730

The future direction of game development is towards more flexible, realistic, and interactive game worlds. However, current methods of game design do not allow for anything other than pre-scripted player exchanges and static objects and environments. An emergent approach to game development involves the creation of a globally designed game system that provides rules and boundaries for player interactions, rather than prescribed paths. Emergence in Games provides a detailed foundation for applying the theory and practice of emergence in games to game design. Emergent narrative, characters and agents, and game worlds are covered and a hands-on tutorial and case study allow the reader to the put the skills and ideas presented into practice.

Emergence in Games

The book presents the best contributions from the international scientific conference “Growth Poles of the Global Economy: Emergence, Changes and Future,” which was organized by the Institute of Scientific Communications (Volgograd, Russia) together with the universities of Kyrgyzstan and various other cities in Russia. The 143 papers selected, focus on spatial and sectorial structures of the modern global economy according to the theory of growth poles. It is intended for representatives of the academic community: university and college staff developing study guides on socio-humanitarian disciplines in connection with the theory of growth poles, researchers, and undergraduates, masters, and postgraduates who are interested in the recent inventions and developments in the field. It is also a valuable resource for expert practitioners managing entrepreneurial structures in the existing and prospective growth poles of the global economy as well as those at international institutes that regulate growth poles. The first part of the book investigates the factors and conditions affecting the emergence of the growth poles of the modern global economy. The

second part then discusses transformation processes in the traditional growth poles of the global economy under the influence of the technological progress. The third part examines how social factors affect the formation of new growth poles of the modern global economy. Lastly, the fourth part offers perspectives on the future growth of the global economy on the basis of the digital economy and Industry 4.0.

Growth Poles of the Global Economy: Emergence, Changes and Future Perspectives

This book introduces the reader to the concept of functional synchronization and how it operates on very different levels in psychological and social systems – from the emergence of thought to the formation of social relations and the structure of societies. For years, psychologists have investigated phenomena such as self-concept, social judgment, social relations, group dynamics, and cooperation and conflict, but have discussed these phenomena seoarately.This book shows how synchronization provides a foundational approach to these otherwise distinct and diverse psychological processes.This work shows that there is a basic tendency with many processes to become coordinated and progressively integrated into increasingly larger units through well-defined processes. For these larger units, new and largely adaptive functions emerge. Although synchronization affords progressive integration of system elements to enable correspondingly higher-order functions, the trajectory of synchronization is often characterized by periods of assembly and disassembly of system elements. This occurs when a task is completed and synchronization is no longer essential so that the elements once again operate in an independent fashion. It is argued that the disassembly-resynchronization scenario occurs at all levels of psychological and social reality. The implications of this approach for important issues in interpersonal relations and societal processes are discussed.

In Sync

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.

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

Explore an ecological strength-based framework for the treatment of gender-variant clients This comprehensive book provides you with a clinical and theoretical overview of the issues facing transgendered/transsexual people and their families. Transgender Emergence: Therapeutic Guidelines for Working with Gender-Variant People and Their Families views assessment and treatment through a nonpathologizing lens that honors human diversity and acknowledges the role of oppression in the developmental process of gender identity formation. Specific sections of Transgender Emergence: Therapeutic Guidelines for Working with Gender-Variant People and Their Families address the needs of gender-variant people as well as transgender children and youth. The issues facing gender-variant populations who have not been the focus of clinical care, such as intersexed people, female-to-male

transgendered people, and those who identify as bigendered, are also addressed. The book examines: the six stages of transgender emergence coming out transgendered as a normative process of gender identity development thinking \"outside the box\" in the deconstruction of sex and gender the difference between sexual orientation and gender identity, as well as the convergence, overlap, and integration of these parts of the self the power of personal narrative in gender identity development etiology and typographies of transgenderism treatment models that emerge from various clinical perspectives alternative treatment modalities based on gender variance as a normative lifecycle developmental process Complete with fascinating case studies, a critique of diagnostic processes, treatment recommendations, and a helpful glossary of relevant terms, this book is an essential reference for anyone who works with gender-variant people. Handy tables and figures make the information easier to access and understand. Visit the author's Web site at http://www.choicesconsulting.com

Transgender Emergence

Drawing on his own expertise in the humanities and on the Web, Steven Johnson not only demonstrates how interfaces - those buttons, graphics, and words on the computer screen through which we control information - influence our daily lives, but also tracks their roots back to Victorian novels, early cinema, and even medieval urban planning. The result is a lush cultural and historical tableau in which today's interfaces take their rightful place in the lineage of artistic innovation. With a distinctively accessible style, Interface Culture brings new intellectual depth to the vital discussion of how technology has transformed society, and is sure to provoke wide debate in both literary and technological circles.

Interface Culture

Recent neuroscience research makes it clear that human biology is cultural biology - we develop and live our lives in socially constructed worlds that vary widely in their structure values, and institutions. This integrative volume brings together interdisciplinary perspectives from the human, social, and biological sciences to explore culture, mind, and brain interactions and their impact on personal and societal issues. Contributors provide a fresh look at emerging concepts, models, and applications of the co-constitution of culture, mind, and brain. Chapters survey the latest theoretical and methodological insights alongside the challenges in this area, and describe how these new ideas are being applied in the sciences, humanities, arts, mental health, and everyday life. Readers will gain new appreciation of the ways in which our unique biology and cultural diversity shape behavior and experience, and our ongoing adaptation to a constantly changing world.

Culture, Mind, and Brain

This condition of adaption and evolution is called emergence.

Emergence in Landscape Architecture

This book discusses the notion that quantum gravity may represent the \"breakdown\" of spacetime at extremely high energy scales. If spacetime does not exist at the fundamental level, then it has to be considered \"emergent\

Effective Spacetime

This book develops a novel industry emergence framework to explain the features, interaction, and synchronization of key elements for the birth and growth of new industries. Organized around seven elements-firm strategy, technology, investment, supply networks, production, markets, and government-Theyel's framework provides inventors, managers, investors, scholars, and policymakers with a

comprehensive understanding of how industries emerge, helping them to be more successful at influencing the birth and growth of new industries. Understanding industry emergence is important because new industries can offer the advancement of technology, improvements in human health and the environment, growth of firms, creation of jobs, and economic development. With learning objectives, theory, tools, case studies, and end-of-chapter questions, Industry Emergence will be a useful resource for students and professionals in engineering, science, business, and policy.

Industry Emergence