

Life Sciences March Paper 2014

The systems in which we work continue to evolve, creating emergent problems and often strengthening intractable issues. In order to remain relevant and impactful, the discipline of ergonomics needs its paradigms to evolve too. The aim of this book is to provide researchers and practitioners with new paradigms in the form of ideas, concepts, theories, methods, practices and values. The chapters take the reader on a journey through underlying theories, new ways to apply those theories and emerging domains in which ergonomics is expected to play a greater role. Readers of this book will be inspired by these new paradigms in ergonomics and seek to push the boundaries even further. The lifeblood of the science depends on continual evolution and developments to take on the challenges we face in the complex sociotechnical systems design and evaluation. Perhaps the most significant take-home message from this book is the demonstration of how theory maps onto practice. As such, the only remaining paradigm shift is for these ideas, concepts, methods and practices to be taken up more widely and the discipline advanced, until the next paradigm shift occurs. The chapters were originally published as a special issue in the journal Ergonomics.

Food Science: Principles and Practice, Fourth Edition, has been updated and extended to include the many developments that have taken place since the third edition was published. The new edition includes an overview of the component subjects in food science and technology, processing stages, important aspects of food industry management not otherwise considered (e.g. financial management, marketing, food laws and food industry regulation), value chains, the global food industry, and over-arching considerations (e.g. environmental issues and sustainability). In addition, there are new chapters on industrial cooking, heat removal, storage, and distribution, along with updates on all the remaining chapters. This updated edition consolidates the position of this foundational book as the best single-volume introduction to food manufacturing technologies available, remaining as the most adopted standard text for many food science and technology courses. Updated edition completely revised with new developments on all the processing stages and aspects of food industry management not otherwise considered (e.g. financial management, marketing, food laws, and food industry regulation), and more. Introduces a range of processing techniques that are used in food manufacturing. Explains the key principles of each process, including the equipment used and the effects of processing on micro-organisms that contaminate foods. Describes post-processing operations, including packaging and distribution logistics. Includes extra textbook elements, such as videos and calculations slides, in addition to summaries of key points in each chapter.

The biomedical industry, which includes biopharmaceuticals, genomics and stem cell therapies, and medical devices, is among the fastest growing worldwide. While it has been an economic development target of many national governments, Asia is currently on track to reach the epicenter of this growth. What accounts for the rapid and sustained economic growth of biomedical in Asia? To answer this question, Kathryn Ibatu-Arens integrates global and national data with original fieldwork to present a conceptual framework that considers how national governments have managed key factors, like innovative capacity, government policy, and firm-level strategies. Taking China, India, Japan, and Singapore in turn, she compares each country’s underlying competitive advantages. What emerges is an argument that countries pursuing networked technoeconomicism (NTN) effectively upgrade their capacity for innovation and encourage entrepreneurial activity in targeted industries. In contrast to countries that engage in classic technoeconomicism(like Japan’s developmental state approach),networked technoeconomicists are global minded to outside markets, while remaining nationalistic within the domestic economy. By bringing together aggregate data at the global and national level with original fieldwork and drawing on rich cases, Ibatu-Arens telegraphs implications for innovation policy and entrepreneurship strategy in Asia and beyond.

Doctors no longer have to cure people. But they still have to care for them. Hardly anyone is happy with American healthcare these days. Patients are getting sicker and going bankrupt from medical bills. Doctors are burning out and making dangerous mistakes. Both parties blame our nation’s outdated and dysfunctional healthcare system. But that’s only part of the problem. In this important and timely book, Dr. Robert Pearl shines a light on the unseen and often toxic culture of medicine. Today’s physicians have a surprising disdain for technology, an unhealthy obsession with status, and an increasingly complicated relationship with their patients. All of this can be traced back to their earliest experiences in medical school, where doctors inherit a set of norms, beliefs, and expectations that shape almost every decision they make, with profound consequences for the rest of us. Uncaring draws an original and revealing portrait of what it’s actually like to be a doctor. It illuminates the complex and intimidating world of medicine for readers, and in the end offers a clear plan to save American healthcare.

The Future of Medicine Is In Your Hands
Economic Competitiveness and U.S. Policy
New Paradigms in Ergonomics
Pharmaceutical Industry and Public Policy in Post-reform India
Sustainable Development in its Embryonic Form

Enabling Technologies for Space Exploration

The American economy faces two deep problems: expanding innovation and raising the rate of quality job creation. Both have roots in a neglected problem: the resistance of Legacy economic sectors to innovation. While the U.S. has focused its policies on breakthrough innovations to create new economic frontiers like information technology and biotechnology, most of its economy is locked into Legacy sectors defended by technological/ economic/ political/ social paradigms that block competition from disruptive innovations that could challenge their models. Americans like to build technology "covered wagons" and take them "out west" to open new innovation frontiers; we don't head our wagons "back east" to bring innovation to our Legacy sectors. By failing to do so, the economy misses a major opportunity for innovation, which is the bedrock of U.S. competitiveness and its standard of living. Technological Innovation in Legacy Sectors uses a new, unifying conceptual framework to identify the shared features underlying structural obstacles to innovation in major Legacy sectors: energy, air and auto transport, the electric power grid, buildings, manufacturing, agriculture, health care delivery and higher education, and develops approaches to understand and transform them. It finds both strengths and obstacles to innovation in the national innovation environments - a new concept that combines the innovation system and the broader innovation context - for a group of Asian and European economies. Manufacturing is a major Legacy sector that presents a particular challenge because it is a critical stage in the innovation process. By increasingly offshoring production, the U.S. is losing important parts of its innovation capacity. "Innovate here, produce here," where the U.S. took all the gains of its strong innovation system at every stage, is being replaced by "innovate here, produce there," which threatens to lead to "produce there, innovate there." To bring innovation to Legacy sectors, authors William Bonvillian and Charles Weiss recommend that policymakers focus on all stages of innovation from research through implementation. They should fill institutional gaps in the innovation system and take measures to address structural obstacles to needed disruptive innovations. In the specific case of advanced manufacturing, the production ecosystem can be recreated to reverse "jobless innovation" and add manufacturing-led innovation to the U.S.'s still-strong, research-oriented innovation system.

American leadership in the world is built on the foundation of its economic strength. Yet the United States faces enormous economic competition abroad and threats to its economy at home. In How America Stacks Up: Economic Competitiveness and U.S. Policy, Edward Alden, Bernard L. Schwartz senior fellow at the Council on Foreign Relations and director of the Renewing America initiative, and Rebecca Strauss, associate director of Renewing America, focus on those areas of economic policy that are the most important for reinforcing America's competitive strengths. Covering education, transportation, trade and investment, corporate tax, worker retraining, regulation, debt and deficits, and innovation, How America Stacks Up shows how, in a highly competitive global economy, these seemingly domestic issues are all crucial to U.S. success in the global economy. The line between domestic economic policy and foreign economic policy is now almost invisible, and getting these policies right matters for more than just U.S. living standards. The United States' ability to influence world events rests on a robust, competitive economy. But without further investment in education, infrastructure, and innovation, Alden and Strauss show, the United States runs the risk of endangering its greatest competitive advantage. Through insightful analysis and engaging graphics, How America Stacks Up outlines the challenges faced by the United States and prescribes solutions that will ensure a healthy, competitive U.S. economy for years to come.

This step-by-step guide to medical technology innovation, now in full color, has been rewritten to reflect recent trends of industry globalization and value-conscious healthcare. Written by a team of medical, engineering, and business experts, the authors provide a comprehensive resource that leads students, researchers, and entrepreneurs through a proven process for the identification, invention, and implementation of new solutions. Case studies on innovative products from around the world, successes and failures, practical advice, and end-of-chapter "Getting Started" sections encourage readers to learn from real projects and apply important lessons to their own work. A wealth of additional material supports the book, including a collection of nearly one hundred videos created for the second edition, active links to external websites, supplementary appendices, and timely updates on the companion website at ebiodesign.org. Readers can access this material quickly, easily, and at the most relevant point in the text from within the ebook.

Pharmaceuticals constitute a relatively small share of the total healthcare expenditure in most developed economies, and yet they play a critical role in the ongoing debate over how best to advance, improve, and afford healthcare. Despite this, the industry has had, for many years, an outsized claim to fame and controversy, praise and criticism, support and condemnation. Unfortunately, many participants in the debate do not fully understand the complexities of the industry and its role in the overall healthcare system. The analytical tools of economics provide a strong foundation for a better understanding of the dynamics of the pharmaceutical industry, its contribution to health and healthcare, its dual and often conflicting priorities of affordability and innovation, as well as the various private and public policy initiatives directed at the sector. This third edition of a uniquely comprehensive and balanced examination of the industry includes several new chapters on important topics such as the full-fledged generics sector, the arrival of biosimilars or generic biological drugs, the global consolidation of manufacturers, the evolving reimbursement landscape, and the emergence of the world's most populous nations, such as China, India, and Brazil, as both suppliers and consumers of pharmaceutical products. Other chapters have been fully rewritten or extensively updated, covering such important topics as the cost efficiency of research and development, pace of new innovations, economic evaluation and value-based pricing of drugs, and public and private interventions in the industry.

Appearance in Reality
Critical Role of Animal Science Research in Food Security and Sustainability
Biodesign

Perspectives, Promises, and Problems

Uncaring

Evolving Ourselves

Biomedical Innovation and Entrepreneurship in Asia

In Appearance in Reality, John Hell addresses a question at the heart of metaphysics: how are the appearances related to reality, how does what we find in the sciences comport with what we encounter in everyday experience and in the laboratory? Objects, for instance, appear to be colourful, noisy, self-contained, and massively interactive. Physics tells us they are dynamic swarms of colourless particles, or disturbances in fields, or something equally strange. Is what we experience illusory, present only in our minds? But then what are minds? Do minds elude physics? Or are the physicist's depictions mere constructs with no claim to reality? Perhaps reality is hierarchical: physics encompasses the fundamental things, the less than fundamental things are dependent on, but distinct from these. Hell's investigation advances a fourth possibility: the scientific image (what we have in physics) affords our best guide to the nature of what the appearances are appearances of.

Want to take the financial journey to a new investing philosophy that might very well affect the rest of your moneymaking life? No one can guarantee the yellow brick road, but Michael Covel promises the red pill will leave you wide freaking awake. Trend Following reveals the truth about a trading strategy that makes money in up, down and surprise markets. By applying straightforward and repeatable rules, anyone can learn to make money in the markets whether bull, bear, or black swan—by following the trend to the end when it bends. In this timely reboot of his bestselling classic, Michael Covel dives headfirst into trend following strategy to examine the risks, benefits, people, and systems. You'll hear from traders who have made millions by following trends, and learn from their successes and mistakes—insights only here. You'll learn the trend philosophy, and how it has performed in booms, bubbles, panics and crashes. Using incontrovertible data and overwhelming supporting evidence, with a direct connection to the foundations of behavioral finance, Covel takes you inside the core principles of trend following and shows everyone, from brand new trader to professional, how alpha gets pulled from the market. Covel's newest edition has been revised and extended, with 7 brand new interviews and research proof from his one of kind network. This is trend following for today's generation. If you're looking to go beyond passive index funds and trusting the Fed, this cutting edge classic holds the keys to a weatherproof portfolio. Meet great trend followers learning their rules and philosophy of the game Examine data to see how trend following excels when the you-know-what hits the fan Understand trend trading, from behavioral economics to rules based decision-making to its lambasting of the efficient markets theory Compare trend trading systems to do it yourself or invest with a trend fund Trend following is not prediction, passive index investing, buy and hope or any form of fundamental analysis. It utilizes concrete rules, or heuristics, to profit from a behavioral perspective. Trend Following is clear-cut, straightforward and evidence-based and will secure your financial future in bull, bear and black swan markets. If you're finally ready to profit in the markets, Trend Following is the definitive treatise for a complex world in constant chaos.

This book explores how African countries can convert their natural resources, particularly oil and gas, into sustainable development assets. Using Ghana, one of the continent's newest oil-producing countries, as a lens, it examines the "resource curse" faced by other producers - such as Nigeria, Angola, and Equatorial Guinea - and demonstrates how mismanagement in those countries can provide valuable lessons for new oil producers in Africa and elsewhere. Relying on a broad range of fieldwork and policymaking experience, Panford suggests practical measures for resource-rich developing countries to transform natural resources into valuable assets that can help create jobs, boost human resources, and improve living and working conditions in Ghana in particular. He suggests fiscal, legal, and environmental antidotes to resource mismanagement, which he identifies as the major obstacle to socioeconomic development in countries that have historically relied on natural resources.

This revised publication serves as a handy and current reference for professionals engaged in planning, designing, building, validating and maintaining modern cGMP pharmaceutical manufacturing facilities in the U.S. and internationally. The new edition expands on facility planning, with a focus on the ever-growing need to modify existing legacy facilities, and on current trends in pharmaceutical manufacturing which include strategies for sustainability and LEED building ratings. All chapters have been re-examined with a fresh outlook on current good design practices.

A Multidisciplinary Analysis

A Global Resource

America's Moment: Creating Opportunity in the Connected Age

Artificial Intelligence and Machine Learning for Business for Non-Engineers

Corporate Social Responsibility in Sub-Saharan Africa

towards 2030

Britain's Struggle to Succeed in Biotechnology

Development largely depends on how given places participate in global economic processes.The contributions to this book address various features of the integration of sub-Saharan Africa into the world economy via value chains, so as to explain corresponding challenges and opportunities. The book deals with five issues that have not been covered adequately in scientific debates: first, policies are essential to promote value chains and increase their impact on development; second, value chains are diverse, and the variance between them has major economic and political implications; third, regional value chains appear to constitute a viable alternative to global ones (or, at least, are complementary to them), promising better developmental outcomes for the Global South; fourth, political and socio-economic factors are important considerations for a complete assessment of value chains; fifth, cities and city regions are also crucial objects of study in seeking to achieve a comprehensive assessment of value chains.

As an introduction to programming for the Digital Humanities (DH), this book presents six key assignments oriented on DH topics. The topics include Computing Change Over Time (calculating burials at a historic cemetery), Visualizing Change Over Time (visualizing the burials at the historic cemetery), Textual Analysis (finding word frequencies and "stop words" in public domain texts), XML Transformation (transforming a simplified version of XML into HTML styled with CSS), Styliometry (comparing the measured features of graphic images), and Social Network Analysis (analyzing extended relationships in historic circles). The book focuses on the practical application of these assignments in the classroom, providing a range of variations for each assignment, which can be selected on the basis of students' specific programming background and skills; "atomic" assignments, which can be used to give students the experience they need to successfully complete the main assignments; and some common pitfalls and gotchas to manage in the classroom. The book's chief goals are to introduce novice computer science (CS) students to programming for DH, and to offer them valuable hands-on experience with core programming concepts.

The process of innovation in life science is capital intensive, associated with a high risk as well as highly regulated and is therefore distinct from other types of innovation. This book closes the educational gap in life science entrepreneurship and fills a market niche. It allows you to understand, manage and successfully lead the innovation process in life science. Learn how to develop and successful market biomedical technology Increase the return of your investments in biomedical innovation Get ready for a new career in a life science start-up Discover how to transfer a bio- or medtech project from academia to industry Obtain a comprehensive overview of the innovation process in life science

It is time for a new conversation. Amid the biggest economic transformation in a century, the challenge of our time is to make sure that all Americans benefit from the wave of digital revolutions around the world that have permeated and upended modern life. Yet today's economic arguments seem stuck. We need a new vision of a hopeful future and a new action agenda. So many Americans are uncertain about the future. How can there be so many paths to opportunity with so few people traveling them? As a nation, we have to understand what is required to help Americans succeed now, and how to prepare our country for what comes next. We have been here before. A hundred years ago, America experienced the greatest economic transformation and technological revolution in its history. The transformation of the past twenty years—as the world has moved through the information era into the digital age—has turned our life and work upside down once again. It is a time of tremendous change but also of tremendous possibility. Rework America is a group of American leaders who know from experience the challenges we face—and the potential solutions. In America's Moment they suggest a practical agenda for an exciting future. It is illustrated by people who are already showing the way and includes actions Americans can take today in their own communities: preparing people to succeed, using the reach of the Internet and data to innovate jobs and to reach new markets all over the world, using technology to match employers and workers, and transitioning to a "no-collar" working world— neither blue collar nor white collar. Set against the history of how Americans succeeded once before in remaking their country, America's Moment is about the future. It describes how the same forces of change—technology and a networked world—can become tools that can open opportunity to everyone.

The Role of Functional Food Security in Global Health

UNESCO science report

Principles and Practice

Integrating Nutrition into Practice

How America Stacks Up

Africa's Natural Resources and Underdevelopment

Innovative Research in Life Sciences

By 2050 the world's population is projected to grow by one-third, reaching between 9 and 10 billion. With globalization and expected growth in global affluence, a substantial increase in per capita meat, dairy, and fish consumption is also anticipated. The demand for calories from animal products will nearly double, highlighting the critical importance of the world's animal agriculture system. Meeting the nutritional needs of this population and its demand for animal products will require a significant investment of resources as well as policy changes that are supportive of agricultural production. Ensuring sustainable agricultural growth will be essential to addressing this global challenge to food security. Critical Role of Animal Science Research in Food Security and Sustainability identifies areas of research and development, technology, and resource needs for research in the field of animal agriculture, both nationally and internationally. This report assesses the global demand for products of animal origin in 2050 within the framework of ensuring global food security; evaluates how climate change and natural resource constraints may impact the ability to meet future global demand for animal products in sustainable production systems; and identifies factors that may impact the ability of the United States to meet demand for animal products, including the need for trained human capital, product safety and quality, and effective communication and adoption of new knowledge, information, and technologies. The agricultural sector worldwide faces numerous daunting challenges that will require innovations, new technologies, and new ways of approaching agriculture if the food, feed, and fiber needs of the global population are to be met. The recommendations of Critical Role of Animal Science Research in Food Security and Sustainability will inform a new roadmap for animal science research to meet the challenges of sustainable animal production in the 21st century.

A bold challenge to our obsession with efficiency—and a new understanding of how to benefit from the powerful potential of serendipity. Algorithms, multitasking, the sharing economy, life hacks: our culture can't get enough of efficiency. One of the great promises of the Internet and big data revolutions is the idea that we can improve the processes and routines of our work and personal lives to get more done in less time than we ever have before. There is no doubt that we're performing at higher levels and moving at unprecedented speed, but what if we're headed in the wrong direction? Melding the long-term history of technology with the latest headlines and findings of computer science and social science, The Efficiency Paradox questions our ingrained assumptions about efficiency, persuasively showing how relying on the algorithms of digital platforms can in fact lead to wasted efforts, missed opportunities, and, above all, an inability to break out of established patterns. Edward Tenner offers a smarter way of thinking about efficiency, revealing what we and our institutions, when equipped with an astute combination of artificial intelligence and trained intuition, can learn from the random and unexpected.

The essential guide by one of America's leading doctors to how digital technology enables all of us to take charge of our health A trip to the doctor is almost a guarantee of misery. You'll make an appointment months in advance. You'll probably wait for several hours until you hear "the doctor will see you now"—but only for fifteen minutes! Then you'll wait even longer for lab tests, the results of which you'll likely never see, unless they indicate further (and more invasive) tests, most of which will probably prove unnecessary (much like physicals themselves). And your bill will be astronomical. In The Patient Will See You Now, Eric Topol, one of the nation's top physicians, shows why medicine does not have to be that way. Instead, you could use your smartphone to get rapid test results from one drop of blood, monitor your vital signs both day and night, and use an artificially intelligent algorithm to receive a diagnosis without having to see a doctor, all at a small fraction of the cost imposed by our modern healthcare system. The change is powered by what Topol calls medicine's "Gutenberg moment." Much as the printing press took learning out of the hands of a priestly class, the mobile internet is doing the same for medicine, giving us unprecedented control over our healthcare. With smartphones in hand, we are no longer beholden to an impersonal and paternalistic system in which "doctor knows best." Medicine has been digitized, Topol argues; now it will be democratized. Computers will replace physicians for many diagnostic tasks, and enormous data sets will give us new means to attack conditions that have long been incurable. Massive, open, online medicine, where diagnostics are done by Facebook-like comparisons of medical profiles, will enable real-time, real-world research on massive populations. There's no doubt the path forward will be complicated: the medical establishment will resist these changes, and digitized medicine inevitably raises serious issues surrounding privacy. Nevertheless, the result—better, cheaper, and more human health care—will be worth it. Provocative and engrossing, The Patient Will See You Now is essential reading for anyone who thinks they deserve better health care. That is, if you're not already there.

The updated and expanded third edition of this book focuses on the multi-disciplinary coupling between flight-vehicle hardware alternatives and enabling propulsion systems. It discusses how to match near-term and far-term aerospace vehicles to missions and provides a comprehensive overview of the subject, directly contributing to the next-generation space infrastructure, from space tourism to space exploration. This holistic treatment defines a mission portfolio addressing near-term to long-term space transportation needs covering sub-orbital, orbital and escape flight profiles. In this context, a vehicle configuration classification is introduced covering alternatives starting from the dawn of space access. A best-practice parametric sizing approach is introduced to correctly design the flight vehicle for the mission. This technique balances required mission with the available vehicle solution space and is an essential capability sought after by technology forecasters and strategic planners alike.

Technological Innovation in Legacy Sectors

Lessons for Introductory Python

Food Processing Technology

What Big Data Can't Do

How to Make a Fortune in Bull, Bear, and Black Swan Markets

Economic Transformation and Business Opportunities in Asia

The Process of Innovating Medical Technologies

The Handbook constitutes a global resource for the fast growing interdisciplinary research and policy communities addressing the challenge of driving innovation towards socially desirable outcomes. This book brings together well-known authors from the US, Europe and Asia who bring conceptual and regional perspectives on responsible innovation as well as exploring the prospects for further implementation of responsible innovation in emerging technological practices ranging from agriculture and medicine, to nanotechnology and robotics. The emphasis is on the socio-economic and normative dimensions of innovation including issues of social risk and sustainability.

This book examines the impact of economic reforms in India on the pharmaceutical industry and access to medicines. It traces the changing production and trade pattern of the industry, research and development (R&D) preferences and strategies of Indian pharmaceutical firms, patent system alongside pricing policy measures and their shortcomings. It also analyses the public health financing system in India driven largely by out-of-pocket expenditure — about 60 per cent — and characterised by very high share of medicines in total health expenditure. A masterful insight into a topical area, the work will be indispensable to those working on pharmaceutical industry and public policy. It will be of interest to researchers, scholars, students, and policy-makers of economics, industrial policy, public policy, intellectual property rights and health financing.

A clear and concise update and fundamental is the single best resource for students and professionals looking to brush up on how these technologies have developed, grown, and converged, as well as what "s" is store for the future. It begins by developing the communication technology framework—the history, ecosystem, and structure—then delves into each type of technology, including everything from mass media, to computers and consumer electronics, to networking technologies. Each chapter is written by faculty and industry experts who provide snapshots of the state of each individual field, altogether providing a broad overview of the role communication technologies play in our everyday lives. Key features: Gives students and professionals the latest information in all areas of communication technology The companion website offers updated information and useful links to related industry resources, and an instructor site provides a sample syllabus and a test bank This edition features new chapters on automotive telematics, digital health, and telepresence, as well as expanded coverage of tablets/phablets and 4K (ultra high definition television)

Intellectual property (IP) is a key component of the life sciences, one of the most dynamic and innovative fields of technology today. At the same time, the relationship between IP and the life sciences raises new public policy dilemmas. The Research Handbook on Intellectual Property and the Life Sciences comprises contributions by leading experts from academia and industry to provide in-depth analyses of key topics including pharmaceuticals, diagnostics and genes, plant innovations, stem cells, the role of competition law and access to medicines. The Research Handbook focuses on the relationship between IP and the life sciences in Europe and the United States, complemented by country-specific case studies on Australia, Brazil, China, India, Japan, Kenya, South Africa and Thailand to provide a truly international perspective.

Value Chains in Sub-Saharan Africa

Proliferation of Weapons- and Dual-Use Technologies

Pathways to Scientific Impact, Public Health Improvement, and Economic Progress

Dual-use life science research and biosecurity in the 21st Century: Social, Technical, Policy, and Ethical Challenges

Ethics and Integrity in Health and Life Sciences Research

Future Spacecraft Propulsion Systems and Integration

Pharmaceutical Economics and Policy

An eye-opening, mind-bending exploration of how mankind is reshaping its genetic future, based on the viral TED Talk series “Will Our Kids Be a Different Species?” and “The Next Species of Human.” Are you willing to engineer the DNA of your unborn children and grand-children to be healthier? Better looking? More intelligent? Why are rates of autism, asthma, and allergies exploding at an unprecedented pace? Why are humans living longer and having far fewer kids? Futurist Juan Enriquez and scientist Steve Gullans conduct a sweeping tour of how humans are changing the course of evolution for all species—sometimes intentionally, sometimes not. For example: • What if life forms are limited only by the bounds of our imagination? Are designer babies and pets, de-extinction, even entirely newspecies fair game? • As humans, animals, and plants become ever more resistant to disease and aging, what will become the leading causes of death? • Man-machine interfaces may allow humans to live much longer. What will happen when we transfer parts of our “selves” into clones, into stored cells and machines? Though these harbingers of change are deeply unsettling, the authors argue we are also in an epoch of tremendous opportunity. Future humans, perhaps a more diverse, resilient, gentler, and intelligent species, may become better caretakers of the planet—but only if we make the right choices now. Intelligent, provocative, and optimistic, Evolving Ourselves is the ultimate guide to the next phase of life on Earth. Chosen by Nature magazine as a Fall 2016 season highlight.

This Special Issue presents selected papers from the 8th Symposium on Micro-Nano Science and Technology on Micromachining, 31 October–2 November, 2017, in Hiroshima, Japan. We encouraged contributions of significant and original works in order to deeply understand physical, chemical, and biological phenomena at the micro/nano scale and to develop applied technologies. The conference covered the following main topics: 1: Precision machinery lubrication design 2: Material dynamics strength 3: Hydrodynamics 4: Thermal engineering 5: Production processing mechanical materials 6: Robotics mechatronics 7: Medical biotechnology 8: Micro/nano system The papers that attracted the most interest at the conference, or that provided novel contributions, were selected for publication in Micromachines. These papers were peer-reviewed for validation of the research results, developments and applications.

“I thoroughly enjoyed reading this book as it has taken me on a journey through time, across the globe and through multiple disciplines. Indeed, we need to be thinking about these concepts and applying them every day to do our jobs better.” Farah Magrabi, Macquarie University, Australia “The reader will find intriguing not only the title but also the content of the book. I’m also pleased that public health, and even more specifically epidemiology has an important place in this ambitious discussion.” Elena Anderson, Oregon Health & Science University, USA “This book is very well written and addresses an important topic. It presents many reasons why basic scientists/researchers should establish collaborations and access information outside traditional means and not limit thinking but rather expand such and perhaps develop more innovative and translational research with the life science and not move it laterally.” Gerald Pepe, Eastern Virginia Medical School, USA “This book gathers logically and presents interestingly (with many examples) the qualities and attitudes a researcher must possess in order to become successful. On the long run, the deep and carefully reexamined research will be the one that lasts.” Zoltán Nédai, Babeş-Bolyai University, Romania “I really liked the five parts delineating the components of humanism in research. This book has made a major contribution to the research ethics literature.” David Fleming, University of Missouri, USA A comprehensive review of the research phase of life sciences from design to discovery with suggestions to improve innovation This vital resource explores the creative processes leading to biomedical innovation, identifies the obstacles and best practices of innovative laboratories, and supports the production of effective science. Innovative Research in Life Sciences draws on lessons from 400 award-winning scientists and research from leading universities. The book explores the innovative process in life sciences and puts the focus on how great ideas are born and become landmark scientific discoveries. The text provides a unique resource for developing professional competencies and applied skills of life sciences researchers. The book examines what happens before the scientific paper is submitted for publication or the innovation becomes legally protected. This phase is the most neglected but most exciting in the process of scientific creativity and innovation. The author identifies twelve competencies of innovative biomedical researchers that described and analyzed. This important resource: Highlights the research phase from design to discovery that precedes innovation disclosure Offers a step by step explanation of how to improve innovation Offers solutions for improving research and innovation productivity in the life sciences Contains a variety of statistical databases and a vast number of stories about individual discoveries Includes a process of published studies and national statistics of biomedical research and reviews the performance of research labs and academic institutions Written for academics and researchers in biomedicine, pharmaceutical science, life sciences, drug discovery, pharmacology, Innovative Research in Life Sciences offers a guide to the creative processes leading to biomedical innovation and identifies the best practices of innovative scientists and laboratories.

Integrative medicine is an approach to wellness that makes use of both conventional and alternative therapies to achieve optimal health and healing. Nutrition-based therapies are consistently among the highest used alternative therapies to treat a wide variety of illnesses. This book provides consumers and health care professionals with practical guidance on integrating nutrition therapies into disease prevention and management. It provides reliable and accurate information from experts in the nutrition field including dietitians, nutritionists, physicians, researchers, and academic professionals. Integrative Nutrition Therapy includes up-to-date information on dietary supplements, popular diets, physical activity, and food allergies. The book covers disease prevention for cancer, cardiovascular disease, diabetes, and obesity. Additional topics include liver/pancreatic conditions and musculoskeletal disorders as well as nutrigenomics, epigenetics, and metabolomics. The book provides evidence-based recommendations for which therapies might be appropriate for various conditions and discusses the possible adverse effects that may develop. It also includes guidelines and suggestions for creating individualized, integrative care plans. Integrative Nutrition Therapy is organized in a systematic manner that presents the scientific data using an evidence-based, how-to approach. An overview of integrative medicine is written by Dr. Roberta Lee, a leading authority in the field. Award-winning nutrition experts provide practical knowledge for the integrative practitioner, covering topics such as: Nutrition screening and assessment Search for the optimum diet Functional foods and nutritional supplements Nutritional recommendations for

women's health Health benefits of physical activity Diet and mental health Although unanswered questions still exist, this resource gives you a much-needed guide to the information currently available on nutrition and lifestyle-based therapies.

Navigating Digital Health Landscapes

Trend Following

Guide to Programming for the Digital Humanities

Good Design Practices for GMP Pharmaceutical Facilities

International GAAP 2017

Frontiers in Data Science

Communication Technology Update and Fundamentals

The Role of Functional Food Security in Global Health presents a collective approach to food security through the use of functional foods as a strategy to prevent under nutrition and related diseases. This approach reflects the views of the Food and Agriculture Organization of the United Nations, the World Health Organization, the World Heart Federation and the American Heart Association who advise Mediterranean, Paleolithic, plant food based diets, and European vegetarian diets for the prevention of cardiovascular disease. In addition, the book also emphasizes the inclusion of spices, herbs and millets, as well as animal foods. This book will be a great resource to the food industry as it presents the most efficient ways to use technology to manufacture slowly absorbed, micronutrient rich functional foods by blending foods that are rich in healthy nutrients. Provides greater knowledge on functional food security Highlights the necessary changes to the western diet that are needed to achieve food security Explains the utility and necessity of functional food security in the prevention of noncommunicable diseases Presents policy changes in food production for farmers and the larger food industry Offers suggestions on what can be done to enhance functional food production while simultaneously decreasing production costs

There are fewer grounds today than in the past to deplore a North-South divide in research and innovation. This is one of the key findings of the UNESCO Science Report: towards 2030. A large number of countries are now incorporating science, technology and innovation in their national development agenda, in order to make their economies less reliant on raw materials and more rooted in knowledge. Most research and development (R&D) is taking place in high-income countries, but innovation of some kind is now occurring across the full spectrum of income levels according to the first survey of manufacturing companies in 65 countries conducted by the UNESCO Institute for Statistics and summarized in this report. For many lower-income countries, sustainable development has become an integral part of their national development plans for the next 10-20 years. Among higher-income countries, a firm commitment to sustainable development is often coupled with the desire to maintain competitiveness in global markets that are increasingly leaning towards 'green' technologies. The quest for clean energy and greater energy efficiency now figures among the research priorities of numerous countries. Written by more than 50 experts who are each covering the country or region from which they hail, the UNESCO Science Report: towards 2030 provides more country-level information than ever before. The trends and developments in science, technology and innovation policy and governance between 2009 and mid-2015 described here provide essential baseline information on the concerns and priorities of countries that could orient the implementation and drive the assessment of the 2030 Agenda for Sustainable Development in the years to come.

Navigating Digital Health Landscapes explores how users navigate the internet when searching for health information. It is the first book to conceptualise the internet as a landscape and the ways in which people navigate this digital world, including the complex entanglements between on and offline domains. It does so through a range of disciplinary perspectives from expert contributors across STS (science and technology studies), social anthropology, biomedicine, ethics and law, linguistics, social policy and computer scientists working in more technical aspects of tracking and visualising data and information on the internet. The book provides a unique and valuable contribution for those wishing to understand how digital technologies are affecting the design, implementation and use of digital systems to manage health information in different contexts.

This book examines the uneven economy in Asia, showing how the pace of economic transformation affects prosperity and the emerging middle class. Using the Lewis turning point and the long run cycle of the rise and fall of nations as a framework, it demonstrates how demographic trends, digitization rates and consumer preferences creates business opportunities in a disruptive and uncertain world. This includes moves toward promoting Eurasian integration, restructuring of state-owned enterprises, green economy, and the digital economies - e-commerce, fintech and sharing economy. Vanity capital, longevity and leisure economies are also discussed. The author explains what drives creative disruption, technical innovation and their effect on manufacturing, consumers, businesses, and sustainability. It is essential reading for students, academics, executives, and business persons wanting in-depth coverage of the economic landscape in Asia.

Selected Papers from the 8th Symposium on Micro-Nano Science and Technology on Micromachines

How the Culture of Medicine Kills Doctors and Patients

Beyond Technonationalism

Generally Accepted Accounting Practice under International Financial Reporting Standards

Challenges of Integration into the Global Economy

Bio- and MedTech Entrepreneurship

The Patient Will See You Now

In September 2011, scientists announced new experimental findings that would not only threaten the conduct and publication of influenza research, but would have significant policy and intelligence implications. The findings presented a modified variant of the H5N1 avian influenza virus (hereafter referred to as the H5N1 virus) that was transmissible via aerosol between ferrets. These results suggested a worrisome possibility: the existence of a new airborne and highly lethal H5N1 virus that could cause a deadly global pandemic. In response, a series of international discussions on the nature of dual-use life science arose. These discussions addressed the complex social, technical, political, security, and ethical issues related to dual-use research. This Research Topic will be devoted to contributions that explore this matrix of issues from a variety of case study and international perspectives.

This book provides a comprehensive overview of corporate social responsibility and its development in Africa. It provides in-depth studies on 11 sub-Saharan countries, demonstrating that corporate social responsibility is forming and going through different stages of metamorphosis in the continent. Though corporate and individual attitudes towards sustainability in Africa still leave a lot to be desired, this book showcases how things are rapidly changing for the better in this regard. It demonstrates and provides evidence for the fact that corporate social responsibility contributes significantly to the way sub-Saharan African economies are being transformed, with service sectors expanding, commercial activities diversifying and industrial bases growing through the initiatives of small, medium and large organizations and innovators supported by widespread higher-education program rollouts. The book highlights how progressive and wide-ranging CSR approaches have emerged, and how much they differ from the obsolete approaches of the past, which promulgated negative stereotypes, marginalized communities and positioned them as victims or beneficiaries of development.

Frontiers in Data Science deals with philosophical and practical results in Data Science. A broad definition of Data Science describes the process of analyzing data to transform data into insights. This also involves asking philosophical, legal and social questions in the context of data generation and analysis. In fact, Big Data also belongs to this universe as it comprises data gathering, data fusion and analysis when it comes to manage big data sets. A major goal of this book is to understand data science as a new scientific discipline rather than the practical aspects of data analysis alone.

IFRSs, the standards set by the International Accounting Standards Board (IASB), are complex and sometimes obscure. Understanding their implications and applying them appropriately requires something special; and that is why International GAAP® 2017 is the essential tool for anyone applying, auditing, interpreting, regulating, studying and teaching international financial reporting. It provides expert interpretation and practical guidance for busy professionals, and includes, in every chapter, detailed analysis of how complex financial reporting problems can be resolved appropriately and effectively. The International Financial Reporting Group of Ernst & Young includes financial reporting specialists from throughout the world. Complex technical accounting issues are explained clearly in a practical working context that enables immediate understanding of the point at issue. International GAAP® 2017 is the only globally focused work on IFRSs. It is not constrained by any individual country's legislation or financial reporting regulations, and it ensures an international consistency of approach unavailable elsewhere. It shows how difficult practical issues should be approached in the complex, global world of international financial reporting, where IFRSs have become the accepted financial reporting system in more than 190 countries. This integrated approach provides a unique level of authoritative material for anyone involved in preparing, interpreting or auditing company accounts, for regulators, academic researchers and for all students of accountancy. All aspects of the detailed requirements of IFRS are dealt with on a topic-by-topic basis. Each chapter of International GAAP® 2017 deals with a key area of IFRS and has a common structure for ease of use: an introduction to the background issues; an explanation of relevant principles; a clear exposition of the requirements of IFRS; a discussion of the implications in practice and possible alternative solutions available; worked examples; extracts from real company accounts; a full listing of the required disclosures. "... an important part to play in the process of promoting consistent, comparable and high quality financial reporting under IFRSs ... a book that not only provides an analysis of the requirements of the standards and the principles that they espound, but also presents a unique explanation of how the standards should be interpreted and applied in practice." - the Chairman of Trustees of the IASC Foundation "A standard reference work" - Financial Times "The definitive guide to financial reporting" - The Times

Research Handbook on Intellectual Property and the Life Sciences

The Efficiency Paradox

How Ghana's Petroleum Can Create Sustainable Economic Prosperity

Redesigning the Future of Humanity—One Gene at a Time

International Handbook on Responsible Innovation

Science, the State and the City

From start-up to exit

The book examines the evolution of one of the most important technologies that has emerged in the last fifty years: biotechnology - the use of living organisms, or parts thereof to create useful products and services. The most important application of biotechnology has been in medicine, in the development of new drugs. The central purpose of the book is to explain how firms based in the US took the lead in commercialising the technology, and why it has been so difficult for firms in other countries to match what underpinned US success in biotechnology. This is the US innovation "ecosystem," and it is made up of several interlocking elements which constitute a powerful competitive advantage for US biotechnology firms. These include, a higher education system which has close links with industry, massive support from the Federal government for biomedical research, and a financial system which is well equipped to support young entrepreneurial firms in a science-based industry. In the light of US experience the book examines the UK's first dedicated biotech firm, Celltech, in 1980. The book shows how the UK made a promising start in the 1980s and 1990s but failed to build on it. Several leading firms failed, and after an initial burst of enthusiasm investors lost confidence in the British biotech sector. It is only the last few years that the sector has staged a revival, attracting fresh investment from the US as well from the UK. The story told in this book, based on extensive interviews with industry participants, investors, and policy makers in the advanced industrial countries - how to create and sustain new science-based industries.

This book explores and analyzes the rapid pace of technological evolution in diplomatic, information, military, and economic sectors, which has contributed to a dynamic international policy environment. Global political stability is greatly influenced by innovations originating from numerous sources, including university labs, the technology sector, and military research. Collectively, these innovations guide the movement of people, ideas, and technology that in turn affect the international balance of power. The objective of this book is to explore how these innovations have shaped the current international security landscape. Innovative and dual-use technologies can be used for beneficial purposes or defensive purposes. Alternatively they may be appropriated or employed for nefarious purposes by hostile military powers and non-state actors alike. Such actions can threaten global security and stability. As the complexity of technological innovations continues to increase, existing control mechanisms such as international regulations and security arrangements present policy solutions to curtail the threat to global stability posed by the proliferation of weapons and dual-use technology.

The next big area within the information and communication technology field is Artificial Intelligence (AI). The industry is moving to automate networks, cloud-based systems (e.g. Salesforce), databases (e.g. Oracle), AWS machine learning (e.g. Amazon Lex), and creating infrastructure that has the ability to adapt in real-time to changes and learn what to anticipate in the future. It is an area of technology that is coming faster and penetrating more areas of business than any other in our history. AI will be used from knowledge of AI's current and future capabilities and the impact it will have on every business. It covers everything from healthcare to warehousing, banking, finance and education. It is essential reading for anyone involved in industry.

This important volume covers ethics and integrity in health and life sciences research. It addresses concerns in gene editing, dual use and misuse of biotechnologies, big data and nutritional science in health and medicine, and covers attempts at ensuring ethical practices in such fields are shared internationally.

Diplomatic, Information, Military, and Economic Approaches