

# Trillions Thriving In The Emerging Information Ecology

## Trillions

We are facing a future of unbounded complexity. Whether that complexity is harnessed to build a world that is safe, pleasant, humane and profitable, or whether it causes us to careen off a cliff into an abyss of mind-numbing junk is an open question. The challenges and opportunities--technical, business, and human--that this technological sea change will bring are without precedent. Entire industries will be born and others will be laid to ruin as our society navigates this journey. There are already many more computing devices in the world than there are people. In a few more years, their number will climb into the trillions. We put microprocessors into nearly every significant thing that we manufacture, and the cost of routine computing and storage is rapidly becoming negligible. We have literally permeated our world with computation. But more significant than mere numbers is the fact we are quickly figuring out how to make those processors communicate with each other, and with us. We are about to be faced, not with a trillion isolated devices, but with a trillion-node network: a network whose scale and complexity will dwarf that of today's Internet. And, unlike the Internet, this will be a network not of computation that we use, but of computation that we live in. Written by the leaders of one of America's leading pervasive computing design firms, this book gives a no-holds-barred insiders' account of both the promise and the risks of the age of Trillions. It is also a cautionary tale of the head-in-the-sand attitude with which many of today's thought-leaders are at present approaching these issues. Trillions is a field guide to the future--designed to help businesses and their customers prepare to prosper, in the information.

## Design Issues

Fabricated tells the story of 3D printers, humble manufacturing machines that are bursting out of the factory and into schools, kitchens, hospitals, even onto the fashion catwalk. Fabricated describes our emerging world of printable products, where people design and 3D print their own creations as easily as they edit an online document. A 3D printer transforms digital information into a physical object by carrying out instructions from an electronic design file, or 'blueprint.' Guided by a design file, a 3D printer lays down layer after layer of a raw material to 'print' out an object. That's not the whole story, however. The magic happens when you plug a 3D printer into today's mind-boggling digital technologies. Add to that the Internet, tiny, low cost electronic circuitry, radical advances in materials science and biotech and voila! The result is an explosion of technological and social innovation. Fabricated takes the reader onto a rich and fulfilling journey that explores how 3D printing is poised to impact nearly every part of our lives. Aimed at people who enjoy books on business strategy, popular science and novel technology, Fabricated will provide readers with practical and imaginative insights to the question 'how will this technology change my life?' Based on hundreds of hours of research and dozens of interviews with experts from a broad range of industries, Fabricated offers readers an informative, engaging and fast-paced introduction to 3D printing now and in the future.

## Prosperity without Growth

"The ongoing COVID-19 pandemic marks the most significant, singular global disruption since World War II, with health, economic, political, and security implications that will ripple for years to come." -Global Trends 2040 (2021) Global Trends 2040-A More Contested World (2021), released by the US National Intelligence Council, is the latest report in its series of reports starting in 1997 about megatrends and the world's future. This report, strongly influenced by the COVID-19 pandemic, paints a bleak picture of the future and describes a contested, fragmented and turbulent world. It specifically discusses the four main trends that will shape tomorrow's world: - Demographics-by 2040, 1.4 billion people will be added mostly in Africa and South Asia. - Economics-increased government debt and concentrated economic power will escalate problems for the poor and middle class. - Climate-a hotter world will increase water, food, and health insecurity. - Technology-the emergence of new technologies could both solve and cause problems for human life. Students of trends, policymakers, entrepreneurs, academics, journalists and anyone eager for a glimpse into the next decades, will find this report, with colored graphs, essential reading.

## Crowd-Powered Mobile Computing and Smart Things

This SpringerBrief provides a synergistic overview of technology trends by emphasizing five linked perspectives: crowd+cloud machines, extreme cooperation with smart things, scalable context-awareness, drone services for mobile crowds and social links in mobile crowds. The authors also highlight issues and challenges at the intersection of these trends. Topics covered include cloud computing, Internet of Things, mobile and wearable computing, crowd computing, the culture of thing sharing, collective computing, and swarm dynamics. The brief is a useful resource and a starting point for researchers, students or anyone interested in the contemporary computing landscape.

## Reimagining our futures together

This title documents the burgeoning eco art movement from A to Z, presenting a panorama of artistic responses to environmental concerns, from Ant Farms anti-consumer antics in the 1970s to Marina Zurkowski's 2007 animation that anticipates the havoc wreaked upon the planet by global warming.

Live Long, Die Short

Local Dollars, Local Sense

Transforming Global Information and Communication Markets

This book provides an overview of the current Internet of Things (IoT) landscape, ranging from the research, innovation and development priorities to enabling technologies in a global context. A successful deployment of IoT technologies requires integration on all layers, be it cognitive and semantic aspects, middleware components, services, edge devices/machines and infrastructures. It is intended to be a standalone book in a series that covers the Internet of Things activities of the IERC - Internet of Things European Research Cluster from research to technological innovation, validation and deployment. The book builds on the ideas put forward by the European Research Cluster and the IoT European Platform Initiative (IoT-EPI) and presents global views and state of the art results on the challenges facing the research, innovation, development and deployment of IoT in the next years. The IoT is bridging the physical world with virtual world and requires sound information processing capabilities for the \"digital shadows\" of these real things. The research and innovation in nanoelectronics, semiconductor, sensors/actuators, communication, analytics technologies, cyber-physical systems, software, swarm intelligent and deep learning systems are essential for the successful deployment of IoT applications. The emergence of IoT platforms with multiple functionalities enables rapid development and lower costs by offering standardised components that can be shared across multiple solutions in many industry verticals. The IoT applications will gradually move from vertical, single purpose solutions to multi-purpose and collaborative applications interacting across industry verticals, organisations and people, being one of the essential paradigms of the digital economy. Many of those applications still have to be identified and involvement of end-users including the creative sector in this innovation is crucial. The IoT applications and deployments as integrated building blocks of the new digital economy are part of the accompanying IoT policy framework to address issues of horizontal nature and common interest (i.e. privacy, end-to-end security, user acceptance, societal, ethical aspects and legal issues) for providing trusted IoT solutions in a coordinated and consolidated manner across the IoT activities and pilots. In this, context IoT ecosystems offer solutions beyond a platform and solve important technical challenges in the different verticals and across verticals. These IoT technology ecosystems are instrumental for the deployment of large pilots and can easily be connected to or build upon the core IoT solutions for different applications in order to expand the system of use and allow new and even unanticipated IoT end uses. Technical topics discussed in the book include: • Introduction• Digitising industry and IoT as key enabler in the new era of Digital Economy• IoT Strategic Research and Innovation Agenda• IoT in the digital industrial context: Digital Single Market• Integration of heterogeneous systems and bridging the virtual, digital and physical worlds• Federated IoT platforms and interoperability• Evolution from intelligent devices to connected systems of systems by adding new layers of cognitive behaviour, artificial intelligence and user interfaces. • Innovation through IoT ecosystems• Trust-based IoT end-to-end security, privacy framework• User acceptance, societal, ethical aspects and legal issues• Internet of Things Applications

Information et communication durables

L’information et la communication durables ne sont pas le produit naturel du passage au numérique et de la responsabilité sociale de l’entreprise. Entre utopie de circonstance, discours d’autolouange et pratiques autoévaluées, une prise de distance analytique s’impose. Information et communication durables offre, à travers une approche transculturelle, un décryptage de la contribution ambiguë des technologies de l’information et de la communication au développement durable. Par une déconstruction des discours utopiques, positivistes et technicistes qui saturent les débats, il analyse également ce que sont des pratiques info-communicationnelles durables et les défis que celles-ci soulèvent. Enfin, il expose les soubassements d’une capacité de maîtrise informationnelle plus susceptible de permettre une approche durable de l’information. Une étude de cas organisationnelle illustre la démarche.

An Architectural Approach to Instructional Design

Winner of the 2014 AECT Design & Development Outstanding Book Award An Architectural Approach to Instructional Design is organized around a groundbreaking new way of conceptualizing instructional design practice. Both practical and theoretically sound, this approach is drawn from current international trends in architectural, digital, and industrial design, and focuses on the structural and functional properties of the artifact being designed rather than the processes used to design it. Harmonious with existing systematic design models, the architectural approach expands the scope of design discourse by introducing new depth into the conversation and merging current knowledge with proven systematic techniques. An architectural approach is the natural result of increasing technological complexity and escalating user expectations. As the complexity of design problems increases, specialties evolve their own design languages, theories, processes, tools, literature, organizations, and standards. An Architectural Approach to Instructional Design describes the implications for theory and practice, providing a powerful and commercially relevant introduction for all students of instructional design.

Transactions on Large-Scale Data- and Knowledge-Centered Systems XLVII

The LNCS journal Transactions on Large-Scale Data- and Knowledge-Centered Systems focuses on data management, knowledge discovery, and knowledge processing, which are core and hot topics in computer science. Since the 1990s, the Internet has become the main driving force behind application development in all domains. An increase in the demand for resource sharing across different sites connected through networks has led to an evolution of data- and

knowledge-management systems from centralized systems to decentralized systems enabling large-scale distributed applications providing high scalability. This, the 47th issue of Transactions on Large-Scale Data- and Knowledge-Centered Systems, constitutes a special issue focusing on Digital Ecosystems and Social Networks. The 9 revised selected papers cover topics that include Social Big Data, Data Analysis, Cloud-Based Feedback, Experience Ecosystems, Pervasive Environments, and Smart Systems.

## To Life!

What is the secret behind every successful product? Why are people willing to pay more for a BMW than a Chevrolet? How could Apple iPhones represent only 4% of the world's cell phone market in 2011 but take in 50% of the profits? The answer is quality. In this provocative new book, bestselling author James L. Adams provides a brilliant, in-depth look at the powerful but elusive qualities that can make or break a product's success. A must-read for managers, designers, manufacturers, and marketers, this groundbreaking approach will change the way you think about your product—and show you why it's more important than ever to deliver the highest quality possible. In *Good Products, Bad Products*, you'll learn how to: : Maximize your product's performance—and minimize the cost Appeal to your customer's emotions—with elegance and sophistication Make sure your product is a perfect fit—that's human, cultural, and global With competition growing stronger and fiercer every year, product quality has become the number-one factor in a company's success. Adams points out that there will always be a stable demand for a high-quality product. By addressing every aspect of product quality—from the technical to the practical to the aesthetic—you can develop a product that your company will be proud of and your customers will love. Along the way, you'll hear fascinating case studies of famous brands that became victims of their own success—like Kodak, IBM, Zenith, and GM—and struggled to recover lost ground. You'll see how some countries like Japan surged ahead by offering better products than anyone on the globe. You'll learn how some U.S. manufacturers remained successful in spite of the foreign market's lower wages. And you'll discover the top industry secrets for prioritizing quality throughout the company, delivering products that are the best in their class. Now more than ever, quality matters. *Good Products, Bad Products* gives you the edge—so you can give your customers the best product possible. James L. Adams is professor emeritus at Stanford University, where he chaired several programs, taught courses on design and creativity, and participated in many executive programs. Trained as an engineer and artist, he has conducted corporate workshops around the world and has written the bestselling guide to creativity and innovation, *Conceptual Blockbusting*.

## Data-driven Multivalence in the Built Environment

This book sets the stage for understanding how the exponential escalation of digital ubiquity in the contemporary environment is being absorbed, modulated, processed and actively used for enhancing the performance of our built environment. S.M.A.R.T., in this context, is thus used as an acronym for Systems & Materials in Architectural Research and Technology, with a specific focus on interrogating the intricate relationship between information systems and associative material, cultural and socioeconomic formations within the built environment. This interrogation is deeply rooted in exploring inter-disciplinary research and design strategies involving nonlinear processes for developing meta-design systems, evidence based design solutions and methodological frameworks, some of which, are presented in this issue. Urban health and wellbeing, urban mobility and infrastructure, smart manufacturing, Interaction Design, Urban Design & Planning as well as Data Science, as prominent symbiotic domains constituting the Built Environment are represented in this first book in the S.M.A.R.T. series. The spectrum of chapters included in this volume helps in understanding the multivalence of data from a socio-technical perspective and provides insight into the methodological nuances involved in capturing, analysing and improving urban life via data driven technologies.

## The Automated City

The book outlines the concept of the Automated City, in the context of smart city research and development. While there have been many other perspectives on the smart city such as the participatory city and the data-centric city, this book focuses on automation for the smart city based on current and emerging technologies such as the Internet of Things, Artificial Intelligence and Robotics. The book attempts to provide a balanced view, outlining the promises and potential of the Automated City as well as the perils and challenges of widespread automation in the city. The book discusses, at some depth, automated vehicles, urban robots and urban drones as emerging technologies that will automate many aspects of city life and operation, drawing on current work and research literature. The book also considers broader perspectives of the future city, in the context of automation in the smart city, including aspirational visions of cities, transportation, new business models, and socio-technological challenges, from urban edge computing, ethics of the Automated City and smart devices, to large scale cooperating autonomous systems in the city.

## The Privacy Engineer's Manifesto

"It's our thesis that privacy will be an integral part of the next wave in the technology revolution and that innovators who are emphasizing privacy as an integral part of the product life cycle are on the right track." --The authors of *The Privacy Engineer's Manifesto* *The Privacy Engineer's Manifesto: Getting from Policy to Code to QA to Value* is the first book of its kind, offering industry-proven solutions that go beyond mere theory and adding lucid perspectives on the challenges and opportunities raised with the emerging "personal" information economy. The authors, a uniquely skilled team of longtime industry experts, detail how you can build privacy into products, processes, applications, and systems. The book offers insight on translating the guiding light of OECD Privacy Guidelines, the Fair Information Practice Principles (FIPPs), Generally Accepted Privacy Principles (GAPP) and Privacy by Design (PbD) into concrete concepts that

organizations, software/hardware engineers, and system administrators/owners can understand and apply throughout the product or process life cycle—regardless of development methodology—from inception to retirement, including data deletion and destruction. In addition to providing practical methods to applying privacy engineering methodologies, the authors detail how to prepare and organize an enterprise or organization to support and manage products, process, systems, and applications that require personal information. The authors also address how to think about and assign value to the personal information assets being protected. Finally, the team of experts offers thoughts about the information revolution that has only just begun, and how we can live in a world of sensors and trillions of data points without losing our ethics or value(s)...and even have a little fun. The Privacy Engineer's Manifesto is designed to serve multiple stakeholders: Anyone who is involved in designing, developing, deploying and reviewing products, processes, applications, and systems that process personal information, including software/hardware engineers, technical program and product managers, support and sales engineers, system integrators, IT professionals, lawyers, and information privacy and security professionals. This book is a must-read for all practitioners in the personal information economy. Privacy will be an integral part of the next wave in the technology revolution; innovators who emphasize privacy as an integral part of the product life cycle are on the right track. Foreword by Dr. Eric Bonabeau, PhD, Chairman, Icosystem, Inc. & Dean of Computational Sciences, Minerva Schools at KGI.

## Reinventing Fire

Innovation in information and communication technology (ICT) fuels the growth of the global economy. How ICT markets evolve depends on politics and policy, and since the 1950s periodic overhauls of ICT policy have transformed competition and innovation. For example, in the 1980s and the 1990s a revolution in communication policy (the introduction of sweeping competition) also transformed the information market. Today, the diffusion of Internet, wireless, and broadband technology, growing modularity in the design of technologies, distributed computing infrastructures, and rapidly changing business models signal another shift. This pathbreaking examination of ICT from a political economy perspective argues that continued rapid innovation and economic growth require new approaches in global governance that will reconcile diverse interests and enable competition to flourish. The authors (two of whom were architects of international ICT policy reforms in the 1990s) discuss this crucial turning point in both theoretical and practical terms.

## Smart cities

Local Dollars, Local Sense is a guide to creating Community Resilience. Americans' long-term savings in stocks, bonds, mutual funds, pension funds, and life insurance funds total about \$30 trillion. But not even 1 percent of these savings touch local small business—even though roughly half the jobs and the output in the private economy come from them. So, how can people increasingly concerned with the poor returns from Wall Street and the devastating impact of global companies on their communities invest in Main Street? In Local Dollars, Local Sense, local economy pioneer Michael Shuman shows investors, including the nearly 99% who are unaccredited, how to put their money into building local businesses and resilient regional economies—and profit in the process. A revolutionary toolbox for social change, written with compelling personal stories, the book delivers the most thorough overview available of local investment options, explains the obstacles, and profiles investors who have paved the way. Shuman demystifies the growing realm of local investment choices—from institutional lending to investment clubs and networks, local investment funds, community ownership, direct public offerings, local stock exchanges, crowdfunding, and more. He also guides readers through the lucrative opportunities to invest locally in their homes, energy efficiency, and themselves. A rich resource for both investors and the entrepreneurs they want to support, Local Dollars, Local Sense eloquently shows how to truly protect your financial future—and your community's.

## The Oxford Handbook of the Science of Science Communication

The proposal to vaccinate adolescent girls against the human papilloma virus ignited political controversy, as did the advent of fracking and a host of other emerging technologies. These disputes attest to the persistent gap between expert and public perceptions. Complicating the communication of sound science and the debates that surround the societal applications of that science is a changing media environment in which misinformation can elicit belief without corrective context and likeminded individuals are prone to seek ideologically comforting information within their own self-constructed media enclaves. Drawing on the expertise of leading science communication scholars from six countries, The Oxford Handbook of the Science of Science Communication not only charts the media landscape - from news and entertainment to blogs and films - but also examines the powers and perils of human biases - from the disposition to seek confirming evidence to the inclination to overweight endpoints in a trend line. In the process, it draws together the best available social science on ways to communicate science while also minimizing the pernicious effects of human bias. The Handbook adds case studies exploring instances in which communication undercut or facilitated the access to scientific evidence. The range of topics addressed is wide, from genetically engineered organisms and nanotechnology to vaccination controversies and climate change. Also unique to this book is a focus on the complexities of involving the public in decision making about the uses of science, the regulations that should govern its application, and the ethical boundaries within which science should operate. The Handbook is an invaluable resource for researchers in the communication fields, particularly in science and health communication, as well as to scholars involved in research on scientific topics susceptible to distortion in partisan debate.

## Non-Bullshit Innovation

\*updated with new material\* 'Digital transformation' and 'disruptive innovation' used to be empty buzzwords serving to

justify pointless box-ticking and absurd corporate posturing. And then a global pandemic suddenly forced every kind of organization to embrace genuine, urgent innovation as a matter of survival. But how can we ensure that the non-bullshit version of innovation delivers economic recovery at this crucial moment? Are there strategies we can all adapt from the world's most creative leaders to innovate effectively in our own lives? David Rowan, founding editor-in-chief of WIRED UK, embarked on a twenty country quest to find out. Packed full of tips for anyone looking for radical ways to adapt and thrive in the digital age, this carefully curated selection of stories will prepare you for whatever the future may bring - because the world will never move this slowly again. \_\_\_\_\_ 'In this remarkable book, David Rowan tells a story of transformation: how an organisation has found a new way of doing things through innovation driven by ruthless entrepreneurial imagination. What is especially useful is that he does not just stick with small startups, let alone dreamy \"inventors\". He finds innovation in big companies and even within governments.' - Matt Ridley, The Times

## Bottleneck : Humanity's Impending Impasse

Oil and coal have built our civilisation, created our wealth and enriched the lives of billions. Yet their rising costs to our security, economy, health and environment are starting to outweigh their benefits. Moreover, the tipping point where alternatives work better and compete purely on cost is not decades in the future - it is here and now. And that tipping point has become the fulcrum of economic transformation. In Reinventing Fire, Amory Lovins and the Rocky Mountain Institute offer a new vision to revitalise business models and win the clean energy race - not forced by public policy but led by business for long-term advantage. This independent and rigorous account offers market-based solutions integrating transportation, buildings, industry and electricity. It maps pathways for running a 158%-bigger US economy in 2050 but needing no oil, no coal, no nuclear energy, one-third less natural gas and no new inventions. This transition would cost \$5 trillion less than business-as-usual - without counting fossil fuels' huge hidden costs. Whether you care most about profits and jobs, or national security, or environmental stewardship, climate, and health, Reinventing Fire makes sense. It's a story of astounding opportunities for creating the new energy era. -- Publisher description.

## Digital Resilience

In the Digital Age of the twenty-first century, the question is not if you will be targeted, but when. Are you prepared? If not, where does one begin? For an enterprise to be fully prepared for the immanent attack, it must be actively monitoring networks, taking proactive steps to understand and contain attacks, enabling continued operation during an incident, and have a full recovery plan already in place. Cybersecurity expert Ray Rothrock has provided for businesses large and small a must-have resource that highlights: the tactics used by today's hackers, vulnerabilities lurking in networks, and strategies not just for surviving attacks, but thriving while under assault. Businesses and individuals will understand better the threats they face, be able to identify and address weaknesses, and respond to exploits swiftly and effectively. From data theft to downed servers, from malware to human error, cyber events can be triggered anytime from anywhere around the globe. Digital Resilience provides the resilience-building strategies your business needs to prevail--no matter what strikes.

## The Praxis of Product Design in Collaboration with Engineering

This book reveals how a generative design process capitalizes on understanding humans in context to deliver appropriate innovation. A repertoire of design actions and output allows designers to work dynamically in order to create a cascade of new ideas and insights. The Design Matrix, a visual team tool, provides a prescriptive and descriptive guide enabling a range of users to work through a problem and also reflect on past decisions. Several case studies from prior industry collaborative projects show the complexities and tensions that can be tackled through the design process and matrix. Case studies include design and engineering development and production of an 8 Tesla MRI, biomedical projects, medical devices, and consumer products. Other cases with Ford Motor Company and Cognizant Technologies illustrate how using a human-centered design process can shift the business paradigm for new products, services, systems, and social innovations. Each story shows different and distinct aspects that span classic design and engineering problem solving to generative contextual processes which lead to innovative solutions. Describes a studio-based product development pedagogy so readers can understand through past examples how to operationalize their own design, engineering, and innovation processes; Provides specific stories that showcase details of the project work, the contextual insights, and proposed solutions as a result of applying tangible visualizations, collaborative work methods, and framing and reframing of the problem; Uses case studies to demonstrate how to use divergent and convergent design thinking and actions from multiple stages of the design process so this can lead to critical team integration and new contextual insights.

## Quality in the 21st Century

This book is a compilation of perspectives provided by several winners of the ASQ Feigenbaum Medal, which is awarded each year to an individual under the age of 35 who has made a significant contribution to the field of Quality. As such, it serves as a valuable reference book in this area. It is primarily based on the medalists' vision to \"refresh\" and \"re-think\" the quality concepts that have been used over the past century and the future development of the topic. Maximizing readers' understanding of the ways in which Quality is created, it provides insights from pioneers in this field from around the globe and anticipates how and what Quality will be in the future, as well as how people and organizations can benefit from it today.

## Tomorrow's Economy

Provides a rigorous analysis of sustainable development that includes practical, policy-relevant, global case studies, explained concisely and clearly.

## The Internet of Things

As the number of digital devices used in daily life grows, it comes as no surprise that the next step in technological evolution is to conveniently interconnect these devices. This is where the Internet of Things fits in. The Internet of Things refers to all devices that are connected to the internet and share data on it, but there are numerous applications for this technology, ranging from smartphones to driverless cars. Despite the convenience smart devices offer, they also raise significant concerns about data privacy and security. Readers will encounter contrasting viewpoints on this timely and evolving issue.

## Automated Ecologies: Towards an Adaptive Ecology of Mind, Material and Intelligent Machines in Architecture?

Popular notions of sustainability in architecture and urbanism idealizes nature as primary over the mediated complexity that is inevitable in a modern city's functioning. More specifically, contemporary ecological debates and models have failed to sufficiently account for the convergence of computers, automation and machine intelligence with the physical and social environments that is gradually emerging in the post-digital condition. The following publication takes an ecological view to interpret critically the micro-ecology of Amazon's automated warehouses which rely on adaptive machine intelligence which is further examined critically within the framework of cybernetic systems. Paradoxically, it also happens to thrive within the logic of the dominant global mode of consumption and production which is capitalism. Most importantly, this relational ecology lies at the intersection of the mediated complexity where the digital and physical worlds meet.

## Fabricated

What can prosperity possibly mean in a world of environmental and social limits? The publication of Prosperity without Growth was a landmark in the sustainability debate. Tim Jackson's piercing challenge to conventional economics openly questioned the most highly prized goal of politicians and economists alike: the continued pursuit of exponential economic growth. Its findings provoked controversy, inspired debate and led to a new wave of research building on its arguments and conclusions. This substantially revised and re-written edition updates those arguments and considerably expands upon them. Jackson demonstrates that building a 'post-growth' economy is a precise, definable and meaningful task. Starting from clear first principles, he sets out the dimensions of that task: the nature of enterprise; the quality of our working lives; the structure of investment; and the role of the money supply. He shows how the economy of tomorrow may be transformed in ways that protect employment, facilitate social investment, reduce inequality and deliver both ecological and financial stability. Seven years after it was first published, Prosperity without Growth is no longer a radical narrative whispered by a marginal fringe, but an essential vision of social progress in a post-crisis world. Fulfilling that vision is simply the most urgent task of our times.

## Global Trends 2040

The interwoven futures of humanity and our planet are under threat. Urgent action, taken together, is needed to change course and reimagine our futures.

## Digital Disciplines

Leverage digital technologies to achieve competitive advantage through market-leading processes, products and services, customer relationships, and innovation How does Information Technology enable competitive advantage? Digital Disciplines details four strategies that exploit today's digital technologies to create unparalleled customer value. Using non-technical language, this book describes the blueprints that any company, large or small, can use to gain or retain market leadership, based on insights derived from examining modern digital giants such as Amazon, Netflix, and Uber, established firms such as Burberry, GE, Nike, and Procter & Gamble, and lesser-known innovators such as Alvio, Fruition Sciences, Opower, and Quirky. Companies can develop a competitive edge through four digital disciplines—information excellence, solution leadership, collective intimacy, and accelerated innovation—that exploit cloud computing, big data and analytics, mobile and wireline networks, social media, and the Internet of Things. These four disciplines extend and update the value disciplines of operational excellence, product leadership, and customer intimacy originally defined by Michael Treacy and Fred Wiersema in their bestselling business classic The Discipline of Market Leaders. Operational excellence must now be complemented by information excellence—leveraging automation, information, analytics, and sophisticated algorithms to make processes faster, better, and more cost-effective, seamlessly fuse digital and physical worlds, and generate new revenue through techniques such as exhaust data monetization Product leadership must be extended to solution leadership—smart digital products and services ranging from wind turbines and wearables to connected healthcare, linked to each other, cloud services, social networks, and partner ecosystems, focused on customer outcomes and creating experiences and transformations Customer intimacy is evolving to collective intimacy—as face-to-face relationships not only go online, but are collectively analyzed to provide individually targeted recommendations and personalized services ranging from books and movies to patient-specific therapies Traditional innovation is no longer enough—accelerated innovation goes beyond open innovation to exploit

crowdsourcing, idea markets, innovation networks, challenges, and contest economics to dramatically improve processes, products, and relationships This book provides a strategy framework, empirical data, case studies, deep insights, and pragmatic steps for any enterprise to follow and attain market leadership in today's digital era. It addresses improved execution through techniques such as gamification, and pitfalls to beware, including cybersecurity, privacy, and unintended consequences. Digital Disciplines can be exploited by existing firms or start-ups to disrupt established ways of doing business through innovative, digitally enabled value propositions to win in competitive markets in today's digital era.

## Thinking in Systems

How we can achieve healthy growth--more regenerative than destructive, restoring equity rather than exacerbating inequalities. In Tomorrow's Economy, Per Espen Stoknes reframes the hot-button issue of economic growth. Going beyond the usual dialectic of pro-growth versus anti-growth, Stoknes calls for healthy growth. Healthy economic growth is more regenerative than destructive, repairs problems rather than greenwashing them, and restores equity rather than exacerbating global inequalities. Stoknes--a psychologist, economist, climate strategy researcher, and green-tech entrepreneur--argues that we have the tools to achieve healthy growth, but our success depends on transformations in government practices and individual behavior. Stoknes provides a compass to guide us toward the mindset, mechanisms, and possibilities of healthy growth.

## Sustainability in the Twenty-First Century

Ecological roots of our troubled time are deeper than its economic manifestations. Anguished posterity will look back on this 21st century as the bottleneck century. Bottleneck: Humanity's Impending Impasse was written to show how and why three converging trends have put humankind in much deeper peril than is generally acknowledged. First, there are many more of us inhabiting this planet than it can sustain. Second, technological advances of recent centuries have made gigantic and prodigal our per capita resource appetites and our per capita environmental impacts. Third, even though, as the symbol-using species, we humans conceivably could do better at anticipating future circumstances and planning ahead, our evolutionary heritage together with unanticipated dysfunctions of modern division of labor have kept us too preoccupied with short-term concerns. People today are dependent upon a fantastically intricate web of exchange relations (the market). Even when functioning normally and not in a collapsed condition, as currently this system of relations has a serious and pervasive dehumanizing effect not adequately discerned by economists nor sociologists. Recognition of and adequate adaptation to the deteriorating ecological context of human life has been impeded. Human societies (even our own) are almost certainly going to act in ways that will make an inevitably difficult future unnecessarily worse. Factors analyzed in this book have made people seriously averse to the kind and extent of cooperation our difficult future will require. Together with the basic trio of disturbing trends humans having become so numerous, so ravenous, and so short-sighted this has made the nature of today's human prospect far more dire than most policymakers dare admit. It tempts even the wisest and most civic-minded to seek or promote remedial policies that will worsen the real predicament.

## The Essential Manager

This book discusses the evolution of management as a profession over the past two decades and how it continues to evolve. It goes on to describe the new style of management and makes recommendations for what today's and tomorrow's managers must know and how to work. Offers ways to think about your role as a manager in order to optimize your effectiveness toward uncertain and turbulent changes Discusses current realities in which management currently operates Provides a historical background of managerial practices and how they've evolved in the present workplace

## Does America Need More Innovators?

A critical exploration of today's global imperative to innovate, by champions, critics, and reformers of innovation. Corporate executives, politicians, and school board leaders agree—Americans must innovate. Innovation experts fuel this demand with books and services that instruct aspiring innovators in best practices, personal habits, and workplace cultures for fostering innovation. But critics have begun to question the unceasing promotion of innovation, pointing out its gadget-centric shallowness, the lack of diversity among innovators, and the unequal distribution of innovation's burdens and rewards. Meanwhile, reformers work to make the training of innovators more inclusive and the outcomes of innovation more responsible. This book offers an overdue critical exploration of today's global imperative to innovate by bringing together innovation's champions, critics, and reformers in conversation. The book presents an overview of innovator training, exploring the history, motivations, and philosophies of programs in private industry, universities, and government; offers a primer on critical innovation studies, with essays that historicize, contextualize, and problematize the drive to create innovators; and considers initiatives that seek to reform and reshape what it means to be an innovator. Contributors Errol Arkilic, Catherine Ashcraft, Leticia Britos Cavagnaro, W. Bernard Carlson, Lisa D. Cook, Humera Fasihuddin, Maryann Feldman, Erik Fisher, Benoît Godin, Jenn Gustetic, David Guston, Eric S. Hintz, Marie Stettler Kleine, Dutch MacDonald, Mickey McManus, Sebastian Pfotenhauer, Natalie Rusk, Andrew L. Russell, Lucinda M. Sanders, Brenda Trinidad, Lee Vinsel, Matthew Wisnioski

## Adding Value to Libraries, Archives, and Museums



This book explains the concept of adding value and shows staff at libraries and other organizations why they need to take steps now to ensure they are adding new value to their communities—whether it be a local town or neighborhood, a faculty and student body, or a school. Value is at the core of every organization's purpose. Without value, organizations die. Libraries—as well as museums, archives, and galleries—have traditionally added value to their communities through their collections and services, but yesterday's collections and services are no longer enough. In order to remain sustainable, today's libraries, archives, museums, and galleries must explore new ways to add value that resonate in the lives of their customers. This unique book explains how addressing the "5 C's" of adding value—content, context, connection, collaboration, and community—enables organizations to find new ways to invigorate their services, better serve their communities, and thrive today and tomorrow. It addresses adding value in the context of other key topics, such as crowdsourcing, embedded librarianship, makerspaces, self publishing, and repurposing spaces. Filled with charts, tables, screenshots, and other visual representation, this is a useful and provocative guide that anyone interested in vesting in the successful future of libraries, archives, and museums needs to read.

**Digitising the Industry Internet of Things Connecting the Physical, Digital and Virtual Worlds**

Over a decade ago, a landmark ten-year study by the MacArthur Foundation shattered the stereotypes of aging as a process of slow, genetically determined decline. Researchers found that that 70 percent of physical aging, and about 50 percent of mental aging, is determined by lifestyle, the choices we make every day. That means that if we optimize our lifestyles, we can live longer and “die shorter”—compress the decline period into the very end of a fulfilling, active old age. Dr. Roger Landry and his colleagues have spent years bringing the MacArthur Study’s findings to life with a program called Masterpiece Living. In Live Long, Die Short, Landry shares the incredible story of that program and lays out a path for anyone, at any point in life, who wants to achieve authentic health and empower themselves to age in a better way. Writing in a friendly, conversational tone, Dr. Landry encourages you to take a “Lifestyle Inventory” to assess where your health stands now and then leads you through his “Ten Tips,” for successful aging, each of which is backed by the latest research, real-life stories, and the insights Landry—a former Air Force surgeon and current preventive medicine physician—has gained in his years of experience. The result is a guide that will reshape your conception of what it means to grow old and equip you with the tools you need to lead a long, healthy, happy life.

**The Data Revolution**

"Carefully distinguishing between big data and open data, and exploring various data infrastructures, Kitchin vividly illustrates how the data landscape is rapidly changing and calls for a revolution in how we think about data." - Evelyn Ruppert, Goldsmiths, University of London "Deconstructs the hype around the 'data revolution' to carefully guide us through the histories and the futures of 'big data.' The book skilfully engages with debates from across the humanities, social sciences, and sciences in order to produce a critical account of how data are enmeshed into enormous social, economic, and political changes that are taking place." - Mark Graham, University of Oxford Traditionally, data has been a scarce commodity which, given its value, has been either jealously guarded or expensively traded. In recent years, technological developments and political lobbying have turned this position on its head. Data now flow as a deep and wide torrent, are low in cost and supported by robust infrastructures, and are increasingly open and accessible. A data revolution is underway, one that is already reshaping how knowledge is produced, business conducted, and governance enacted, as well as raising many questions concerning surveillance, privacy, security, profiling, social sorting, and intellectual property rights. In contrast to the hype and hubris of much media and business coverage, The Data Revolution provides a synoptic and critical analysis of the emerging data landscape. Accessible in style, the book provides: A synoptic overview of big data, open data and data infrastructures An introduction to thinking conceptually about data, data infrastructures, data analytics and data markets A critical discussion of the technical shortcomings and the social, political and ethical consequences of the data revolution An analysis of the implications of the data revolution to academic, business and government practices

**The Future of Business**

The classic book on systems thinking—with more than half a million copies sold worldwide! "This is a fabulous book... This book opened my mind and reshaped the way I think about investing."—Forbes "Thinking in Systems is required reading for anyone hoping to run a successful company, community, or country. Learning how to think in systems is now part of change-agent literacy. And this is the best book of its kind."—Hunter Lovins In the years following her role as the lead author of the international bestseller, Limits to Growth—the first book to show the consequences of unchecked growth on a finite planet—Donella Meadows remained a pioneer of environmental and social analysis until her untimely death in 2001. Thinking in Systems is a concise and crucial book offering insight for problem solving on scales ranging from the personal to the global. Edited by the Sustainability Institute's Diana Wright, this essential primer brings systems thinking out of the realm of computers and equations and into the tangible world, showing readers how to develop the systems-thinking skills that thought leaders across the globe consider critical for 21st-century life. Some of the biggest problems facing the world—war, hunger, poverty, and environmental degradation—are essentially system failures. They cannot be solved by fixing one piece in isolation from the others, because even seemingly minor details have enormous power to undermine the best efforts of too-narrow thinking. While readers will learn the conceptual tools and methods of systems thinking, the heart of the book is grander than methodology. Donella Meadows was known as much for nurturing positive outcomes as she was for delving into the science behind global dilemmas. She reminds readers to pay attention to what is important, not just what is quantifiable, to stay humble, and to stay a learner. In a world growing ever more complicated, crowded, and interdependent, Thinking in Systems helps readers avoid confusion and helplessness, the first step toward finding proactive and effective solutions.



**The Software Society**

Software is driving most technology today, from PCs to mobile phones to thermostats. Software can evolve quickly, and that factor is driving an accelerating pace of change in technology. Software is also becoming more tightly connected to humans through advances in dealing with speech and human language, as well as being always available through mobile devices. As our connection to technology tightens, it drives rapid cultural evolution, in effect changing what it means to be human. Technological change driven by software also impacts our economy in basic ways, as computer technology drives more aspects of production, marketing, services, and sales. Software advances allow technology to do more tasks formerly requiring humans, creating efficienciesproductivity enhancementsthat can grow the economy. On the other hand, the rapid changes are affecting the economy at a pace that is overcoming human abilities to adapt to the job opportunities available and companies ability to adapt to rapid market changes. We are seeing today the impact of that fundamental economic change in persistent unemployment and in stress on some major companies that have historically been solid performers. The Software Society digs into these fundamental trends of softwares impact on our culture and our economy. It explains the trend to use computer intelligence to enhance our human intelligence and discusses its potential and limitations. The book digs into the economic risk caused by automation moving faster than peoples ability to adapt to the change, and suggests solutions to address this danger.

**Good Products, Bad Products: Essential Elements to Achieving Superior Quality**

The Future of Business explores how the commercial world is being transformed by the complex interplay between social, economic and political shifts, disruptive ideas, bold strategies and breakthroughs in science and technology. Over 60 contributors from 21 countries explore how the business landscape will be reshaped by factors as diverse as the modification of the human brain and body, 3D printing, alternative energy sources, the reinvention of government, new business models, artificial intelligence, blockchain technology, and the potential emergence of the Star Trek economy.

**Reimagining Alternative Technology for Design in the 21st Century**

Reimagining Alternative Technology for Design in the 21st Century presents a new approach to design that harnesses still-valuable alternative, traditional and abandoned technologies alongside the creation of new ones to address contemporary global problems. It focuses on design opportunities that reduce energy and material consumption to tackle issues such as climate change and pollution in industrialized economies. The book takes the reader on a journey surveying different facets of human activity to identify underused and discarded technologies that could be indispensable today. It critically addresses newer approaches to design and technology by comparing them to existing alternatives, unpacking examples including air conditioning with smart thermostats, electric lighting, durable reusable products, domestic maintenance tools and methods of transportation. Written for practicing designers and students in industrial design, architecture, sustainable design and human-centered design, this book provides new ideas and tools for creating more useful, energy-and-resource-efficient product designs and systems.

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