

Representation Inclusion And Innovation Multidisciplinary Explorations Synthesis Lectures On Human Centered Informatics

In the United States, some populations suffer from far greater disparities in health than others. Those disparities are caused not only by fundamental differences in health status across segments of the population, but also because of inequities in factors that impact health status, so-called determinants of health. Only part of an individual's health status depends on his or her behavior and choice; community-wide problems like poverty, unemployment, poor education, inadequate housing, poor public transportation, interpersonal violence, and decaying neighborhoods also contribute to health inequities, as well as the historic and ongoing interplay of structures, policies, and norms that shape lives. When these factors are not optimal in a community, it does not mean they are intractable: such inequities can be mitigated by social policies that can shape health in powerful ways.

Communities in Action: Pathways to Health Equity seeks to delineate the causes of and the solutions to health inequities in the United States. This report focuses on what communities can do to promote health equity, what actions are needed

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by the many and varied stakeholders that are part of communities or support them, as well as the root causes and structural barriers that need to be overcome.

This book develops an appropriate common language for truly interdisciplinary teams involved in design. Design now has many meanings. For some, it is the creation of value. For others, it is the conception and creation of artefacts. For still others, it is fitting things to people. These differences reflect disciplinary values that both overlap and diverge. All involve artefacts: we always design things. Each definition considers people and purpose in some way. Each handles evaluation differently, measuring against aesthetics, craft standards, specifications, sales, usage experiences, or usage outcomes. There are both merits and risks in these differences, without an appropriate balance. Poor balance can result from professions claiming the centre of design for their discipline, marginalising others. Process can also cause imbalance when allocating resources to scheduled stages. Balance is promoted by replacing power centres with power sharing, and divisive processes with integrative progressions. A focus on worth guides design towards worthwhile experiences and outcomes that generously exceed expectations. This book places worth focus (Wo-Fo) into the context of design progressions that are balanced,

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integrated, and generous (BIG). BIG and Wo-Fo are symbiotic. Worth provides a focus for generosity. Effective Wo-Fo needs BIG practices. The companion book *Worth-Focused Design, Book 2: Approaches, Contexts, and Case Studies* (Cockton, 2020b) relates the concept of worth to experiences and outcomes based on a number of practical case studies.

In *The Creative University: Contemporary Responses to the Changing Role of the University*, leading authors position the university to inviting exploratory constructions and approaches that respond to past, present and future social and educational tensions and developments.

The texts presented in *Proportion Harmonies and Identities (PHI) - MODERNITY, FRONTIERS AND REVOLUTIONS* were compiled with the intent to establish a multidisciplinary platform for the presentation, interaction and dissemination of research. It also aims to foster awareness of and discussion on the topics of Harmony and Proportion with a focus on different visions relevant to Architecture, Arts and Humanities, Design, Engineering, Social and Natural Sciences, and their importance and benefits for the sense of both individual and community identity. The idea of modernity has been a significant driver of development since the Western Early Modern Age. Its theoretical and practical foundations have become the working tools of scientists, philosophers, and artists, who seek

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strategies and policies to accelerate the development process in different contexts.

Higher education is undergoing radical changes with the arrival of emerging technology that can facilitate better teaching and learning experiences. However, with a lack of technical awareness, technophobia, and security and trust issues, there are several barriers to the uptake of emerging technologies. As a result, many of these new technologies have been overlooked or underutilized. In the information systems and higher education domains, there exists a need to explore underutilized technologies in higher education that can foster communication and learning. *Fostering Communication and Learning With Underutilized Technologies in Higher Education* is a critical reference source that provides contemporary theories in the area of technology-driven communication and learning in higher education. The book offers new knowledge about educational technologies and explores such themes as artificial intelligence, digital learning platforms, gamification tools, and interactive exhibits. The target audience includes researchers, academicians, practitioners, and students who are working or have a keen interest in information systems, learning technologies, and technology-led teaching and learning. Moreover, the book provides an understanding and support to higher education practitioners, faculty,

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educational board members, technology vendors and firms, and the Ministry of Education.

Research frequently neglects the important ways that race and gender intersect within the complex structural dynamics of STEM. Diversifying STEM fills this void, bringing together a wide array of perspectives and the voices of a number of multidisciplinary scholars. The essays cover three main areas: the widely-held ideology that science and mathematics are “value-free,” which promotes pedagogies of colorblindness in the classroom as well as an avoidance of discussions around using mathematics and science to promote social justice; how male and female students of color experience the intersection of racist and sexist structures that lead to general underrepresentation and marginalization; and recognizing that although there are no quick fixes, there exists evidence-based research suggesting concrete ways of doing a better job of including individuals of color in STEM. As a whole this volume will allow practitioners, teachers, students, faculty, and professionals to reimagine STEM across a variety of educational paradigms, perspectives, and disciplines, which is critical in finding solutions that broaden the participation of historically underrepresented groups within the STEM disciplines.

Museums have been a domain of study and design intervention for Human-

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Computer Interaction (HCI) for several decades. However, while resources providing overviews on the key issues in the scholarship have been produced in the fields of museum and visitor studies, no such resource as yet existed within HCI. This book fills this gap and covers key issues regarding the study and design of HCIs in museums. Through an on-site focus, the book examines how digital interactive technologies impact and shape galleries, exhibitions, and their visitors. It consolidates the body of work in HCI conducted in the heritage field and integrates it with insights from related fields and from digital heritage practice. Processes of HCI design and evaluation approaches for museums are also discussed. This book draws from the authors' extensive knowledge of case studies as well as from their own work to provide examples, reflections, and illustrations of relevant concepts and problems. This book is designed for students and early career researchers in HCI or Interaction Design, for more seasoned investigators who might approach the museum domain for the first time, and for researchers and practitioners in related fields such as heritage and museum studies or visitor studies. Designers who might wish to understand the HCI perspective on visitor-facing interactive technologies may also find this book useful.

The texts presented in Proportion Harmonies and Identities (PHI) Tradition and

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Innovation were compiled with the intent to establish a multidisciplinary platform for the presentation, interaction, and dissemination of researches. They also aim to foster the awareness and discussion on the topic of Tradition and Innovation, focusing on different visions relevant to Architecture, Arts and Humanities, Design and Social Sciences, and its importance and benefits for the sense of identity, both individual and communal. The idea of Tradition and Innovation has been a significant motor for development since the Western Early Modern Age. Its theoretical and practical foundations have become the working tools of scientists, philosophers, and artists, who seek strategies and policies to accelerate the development process in different contexts.

The huge success of personal computing technologies has brought astonishing benefits to individuals, families, communities, businesses, and government, transforming human life, largely for the better. These democratizing transformations happened because a small group of researchers saw the opportunities to convert sophisticated computational tools into appealing personal devices offering valued services by way of easy-to-use interfaces. Along the way, there were challenges to their agenda of human-centered design by: (1) traditional computer scientists who were focused on computation rather than people-oriented services and (2) those who sought to build anthropomorphic agents or robots based on excessively autonomous scenarios. The easy-to-learn and easy-to-use interfaces based on direct manipulation became the dominant form of interaction for more than six billion people. This

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book gives my personal history of the intellectual arguments and the key personalities I encountered. I believe that the lessons of how the discipline of Human-Computer Interaction (HCI) and the profession of User Experience Design (UXD) were launched can guide others in forming new disciplines and professions. The stories and photos of the 60 HCI pioneers, engaged in discussions and presentations, capture the human drama of collaboration and competition that invigorated the encounters among these bold, creative, generous, and impassioned individuals.

Fascinating and compelling in equal measure this volume presents a critical examination of the multilayered relationships between engineering and business. In so doing the study also stimulates ethical reflection on how these relationships either enhance or inhibit strategies to address vital issues of our time. In the context of geopolitical, economic, and environmental tendencies the authors explore the world that we should want to create and the role of the engineer and the business manager in this endeavor. Throughout this volume the authors identify periods of alignment and periods of tension between engineering and business. They look at focal points of the engineering-business nexus related to the development of capitalism. The book explores past and present movements to reshape, reform, or reject this nexus. The volume is informed by questions of importance for industry as well as for higher education. These are: What kinds of conflict arise for engineers in their attempts to straddle both professional and organizational commitments? How should professionals be managed to avoid a clash of managerial and professional cultures? How do engineers create value in firms and corporations? What kinds of tension exist between higher education and industry? What challenges does the neoliberal entrepreneurial university pose for management, faculty,

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students, society, and industry? Should engineering graduates be ready for work, and can they possibly be? What kinds of business issues are reflected in engineering education curricula, and for what purpose? Is there a limit to the degree of business hybridization in engineering degree programs, and if so, what would be the criterion for its definition? Is there a place in engineering education curricula for reflective critique of assumptions related to business and economic thinking? One ideal of management and control comes to the fore as the Anthropocene - the world transformed into an engineered artefact which includes human existence. The volume raises the question as to how engineering and business together should be considered, given the fact that the current engineering-business nexus remains embedded within an economic model of continual growth. By addressing macro-level issues such as energy policy, sustainable development, globalization, and social justice this study will both help create awareness and stimulate development of self-knowledge among practitioners, educators, and students thereby ultimately addressing the need for better informed citizens to safeguard planet Earth as a human life supporting system.

This title explores the issue of innovation engineering, a feature that is essential to the continuation of growth and development in the commercial world. Discussion is divided into three parts: Part I covers the historical basis of innovation, noting that diversity rests upon a duality between concepts in theory and applications put into practice, as well as discussing how innovation has resulted from the interaction of numerous factors, be they societal, human, managerial, organization or technological. Part II focuses on practical applications – the technologies, tools and methods employed in putting theoretical innovation into practice – while Part III looks at what factors underpin success, discussing the social and psychological

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aspects involved in successful innovation engineering. Consideration is also given to recent developments and systems which will assist in ensuring the continuation of this process in the future.

Social media platforms are the latest manifestation in a series of sociotechnical innovations designed to enhance civic engagement, political participation, and global activism. While many researchers started out as optimists about the promise of social media for broadening participation and enhancing civic engagement, recent events have tempered that optimism. As this book goes to press, Facebook is fighting a battle over the massive disclosure of user information during the 2016 U.S. presidential campaign, social analytics company Cambridge Analytica is being revealed as a major player in micro profiling voters in that same election, bots and fake news factories are undermining democratic discourse via social media worldwide, and the president of the United States is unnerving the world as a stream-of-consciousness Twitter user. This book is a foundational review of current research on social media and civic engagement organized in terms of history, theory, practice, and challenges. History reviews how researchers and developers have continuously pushed the envelope to explore technology enhancements for political and social discourse. Theory reveals that the use of globally-networked social technologies touches many fields including political science, sociology, psychology, media studies, network science, and more. Practice is examined through studies of political engagement both in democratic situations and in confrontational situations. Challenges are identified in order to find ways forward. For better or worse, social media for civic engagement has come of age. Citizens, politicians, and activists are utilizing social media in innovative ways, while bad actors are discovering possibilities for spreading

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dissension and undermining trust. We are at a sobering inflection point, and this book is your foundation for understanding how we got here and where we are going.

Data-driven personas are a significant advancement in the fields of human-centered informatics and human-computer interaction. Data-driven personas enhance user understanding by combining the empathy inherent with personas with the rationality inherent in analytics using computational methods. Via the employment of these computational methods, the data-driven persona method permits the use of large-scale user data, which is a novel advancement in persona creation. A common approach for increasing stakeholder engagement about audiences, customers, or users, persona creation remained relatively unchanged for several decades. However, the availability of digital user data, data science algorithms, and easy access to analytics platforms provide avenues and opportunities to enhance personas from often sketchy representations of user segments to precise, actionable, interactive decision-making tools—data-driven personas! Using the data-driven approach, the persona profile can serve as an interface to a fully functional analytics system that can present user representation at various levels of information granularity for more task-aligned user insights. We trace the techniques that have enabled the development of data-driven personas and then conceptually frame how one can leverage data-driven personas as tools for both empathizing with and understanding of users. Presenting a conceptual framework consisting of (a) persona benefits, (b) analytics benefits, and (c) decision-making outcomes, we illustrate applying this framework via practical use cases in areas of system design, digital marketing, and content creation to demonstrate the application of data-driven personas in practical applied situations. We then present an overview of a fully functional data-driven persona

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system as an example of multi-level information aggregation needed for decision making about users. We demonstrate that data-driven personas systems can provide critical, empathetic, and user understanding functionalities for anyone needing such insights.

The theory behind the PDU model is outlined and the key principles underpinning it are identified. The PDU approach is clearly differentiated from the Nursing Development Unit model. Implementation of key principles is explored in depth, with reference to specific work carried out in the PDU. Issues of evaluation, potential future developments and applications of the PDU model are also discussed. The book is for nurses and other practitioners working in PDUs and NDUs, and for health professionals in any setting with an interest in clinical innovation, practice development, research and leadership of multi-professional teams.

A representation is a thing that can be interpreted as providing information about something: a map, or a graph, for example. This book is about the expanding world of computational representations, representations that use the power of computation to provide information in new forms, and in new ways. Unlike printed maps or graphs, computational representations can be dynamic, and even interactive, so that what is represented, and how, can be shaped by user actions. Exploring these new possibilities can be guided by an emerging theory of representation, that clarifies what characteristics representations must have to express the meaning being represented, and to enable users to discern that meaning easily and accurately. The theory also shows the way to inclusive design, for example using sounds to represent information commonly presented visually, so that people who cannot see can understand what is being presented. Because representations must be shaped by the abilities of their users, and by the nature of the meanings they convey, creating them requires

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perspectives from multiple disciplines, including psychology, as well as computer science, and the sciences appropriate to the content being expressed. The book presents a series of explorations of this large and complicated space, as invitations to further study, and to innovation.

With spatial technologies ranging from mapping software to the use of location-based services, spatial knowledge is often acquired and communicated through geographic information technologies. This book describes the interplay between spatial cognition research and use of spatial interfaces. It begins by reviewing what is known about how humans process spatial concepts and then moves on to discuss how interfaces can be improved to take advantage of those capabilities by disambiguating cognitive aspects, conceptual aspects, computational aspects, and communications aspects. Special attention is given to a variety of innovative geographical platforms that provide users with an intuitive understanding and support the further acquisition of spatial knowledge. Alternatives to shortest-path algorithms to explore more scenic routes, as well as individual user differences that can emerge from previous experiences with virtual spaces, are also discussed. The book concludes with a discussion of the number of outstanding issues, including the changing nature of maps as the primary spatial interface, concerns about privacy for spatial information, and looks at the future of user-centered spatial information systems.

Information systems are part and parcel of organizations. Yet, organizations often struggle to realize the benefits that motivate their introduction of these systems. To derive benefit from a new information system, it must be integrated into the structures

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and processes of the organization. That is, the system must be organizationally implemented. This book is about organizational implementation, which requires thorough preparations but also continues long after the system has gone live: (1) During the preparations, the implementation is planned. This phase includes specifying the effects pursued with the system, adapting the system and organization to each other, and obtaining buy-in for the planned change. (2) At go-live, the system is put to operational use and the associated organizational changes take effect. This phase is about insisting on the planned change even though go-live is normally hectic and accompanied by a productivity dip. (3) During continued use after go-live, implementation continues as design in use. This phase is long and improvisational. It includes following up on effects realization, but it is just as much about embracing the opportunities that emerge from using the system. Apart from covering the three phases of organizational implementation, the book inserts implementation in an organizational-change context and discusses barriers to implementation as well as boosters of implementation. The book concludes with an outlook to larger-scale issues beyond the implementation of one system in one organization and with an overview of the competences needed in the implementation team, which runs the organizational implementation.

Representation, Inclusion, and Innovation Multidisciplinary Explorations Morgan & Claypool Publishers

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OECD's Innovation Strategy calls upon all sectors in the economy and society to innovate in order to foster productivity, growth and well-being. Education systems are critically important for innovation through the development of skills that nurture new ideas and technologies.

It is all too common for products, such as consumer appliances, information systems, mobile apps, and websites, to cause trouble and frustration. For example, products are often difficult or dull to use, make tasks less flexible or more tedious, shift attention away from important or gratifying activities, and simply fail to deliver expected benefits or experiences. By identifying such trouble and frustration in the lab prior to widespread use, usability tests have proven a valuable method for informing redesign efforts. A usability test consists of having test users exercise a product and think aloud about their experience using it, while an evaluator observes the users and listens in on their thoughts. On this basis, the evaluator identifies usability problems and assesses the user experience. This book describes how to conduct usability tests. After providing context about concepts and testing, the main chapters of the book cover the steps involved in preparing for a usability test, executing the test sessions, and analyzing the test data. Throughout the chapters, concrete guidance is balanced against more complex issues with an impact on the robustness, validity, completeness, impact, and cost of a usability test. The book concludes with an outlook to variations of usability testing and alternatives to it.

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Many people find statistics confusing, and perhaps even more confusing given recent publicity about problems with traditional p-values and alternative statistical techniques including confidence intervals and Bayesian statistics. This book aims to help readers navigate this morass: to understand the debates, to be able to read and assess other people's statistical reports, and make appropriate choices when designing and analysing their own experiments, empirical studies, and other forms of quantitative data gathering.

Peer-to-peer exchange is a type of sharing that involves the transfer of valued resources, such as goods and services, among members of a local community and/or between parties who have not met before the exchange encounter. It involves online systems that allow strangers to exchange in ways that were previously confined to the realm of kinship and friendship. Through the examples in this book, we encounter attempts to foster the sharing of goods and services in local communities and consider the intricacies of sharing homes temporarily with strangers (also referred to as hospitality exchange or network hospitality). Some of the exchange arrangements discussed involve money while others explicitly ban participants from using it. All rely on digital technologies, but the trickiest challenges have more to do with social interaction than technical features. This book explores what makes peer-to-peer exchange challenging, with an emphasis on reciprocity, closeness, and participation: How should we reciprocate? How might we manage interactions with those we encounter to attain

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some closeness but not too much? What keeps people from getting involved or draws them into exchange activities that they would rather avoid? This book adds to the growing body of research on exchange platforms and the sharing economy. It provides empirical examples and conceptual grounding for thinking about interpersonal challenges in peer-to-peer exchange and the efforts that are required for exchange arrangements to flourish. It offers inspiration for how we might think and design differently to better understand and support the efforts of those involved in peer-to-peer exchange. While the issues cannot be simply “solved” by technology, it matters which digital tools an exchange arrangement relies on, and even seemingly small design decisions can have a significant impact on what it is like to participate in exchange processes. The technologies that support exchange arrangements—often platforms of some sort—can be driven by differing sets of values and commitments. This book invites students and scholars in the Human–Computer Interaction community, and beyond, to envision and design alternative exchange arrangements and future economies. On January 26, 2017, the National Academy of Engineering (NAE), with support from the National Science Foundation (NSF), held a workshop in Washington, DC, on the engagement of engineering societies in undergraduate engineering education. Since then, the NAE has held a series of follow-up regional workshops to investigate specific issues identified in the January 2017 workshop as deserving of further discussion and evaluation. The second in this series of supplemental workshops was held on February

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12, 2018. It brought together about 45 representatives of professional societies, academic institutions, and businesses to explore the role of engineering societies in enhancing understanding of faculty impact on the engineering profession as part of the reappointment, promotion, and tenure (RPT) process. This publication summarizes the presentations and discussions from the workshop.

This volume reviews the evolution of ten years' learning and discovery about water scarcity, livelihoods, and food security within the CGIAR Challenge Program on Water and Food. It draws on the experiences of over 100 projects conducted in ten river basins in the developing world. The book describes how the program's design evolved from an emphasis on water scarcity, water productivity, and water access to an emphasis on using water innovations to improve livelihoods and address development challenges in specific river basins. It shows how the research was used to foster change in stakeholder behavior, linking it to improved knowledge, attitudes, and skills, which were fostered by stakeholder participation, innovation, dialogue, and negotiation. The authors describe development challenges, their drivers and their political context, how to address them through technical, institutional, and policy innovations; and the consequences of change at different scales, time frames on equity, resilience, and ecosystem services. Overall, the work represents a major synthesis and landmark publication for all concerned with water resource management and sustainable development.

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Undergraduate and first-year graduate students engaging in engineering research need more than technical skills and tools to be successful. From finding a research position and funding, to getting the mentoring needed to be successful while conducting research responsibly, to learning how to do the other aspects of research associated with project management and communication, this book provides novice researchers with the guidance they need to begin developing mastery. Awareness and deeper understanding of the broader context of research reduces barriers to success, increases capacity to contribute to a research team, and enhances ability to work both independently and collaboratively. Being prepared for what's to come and knowing the questions to ask along the way allows those entering researcher to become more comfortable engaging with not only the research itself but also their colleagues and mentors.

Mechatronics represents a unifying interdisciplinary and intelligent engineering science paradigm that features an interdisciplinary knowledge area and interactions in terms of the ways of work and thinking, practical experiences, and theoretical knowledge. Mechatronics successfully fuses (but is not limited to) mechanics, electrical, electronics, informatics and intelligent systems, intelligent control systems and advanced modeling, intelligent and autonomous robotic systems, optics, smart materials, actuators and biomedical and biomechanics, energy and sustainable development, systems engineering, artificial intelligence, intelligent computer control, computational intelligence, precision engineering and virtual modeling into a unified framework that enhances the design of products and manufacturing processes. Interdisciplinary Mechatronics concerns mastering a multitude of disciplines, technologies, and their interaction, whereas the science of mechatronics concerns

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the invention and development of new theories, models, concepts and tools in response to new needs evolving from interacting scientific disciplines. The book includes two sections, the first section includes chapters introducing research advances in mechatronics engineering, and the second section includes chapters that reflects the teaching approaches (theoretical, projects, and laboratories) and curriculum development for under- and postgraduate studies.

Mechatronics engineering education focuses on producing engineers who can work in a high-technology environment, emphasize real-world hands-on experience, and engage in challenging problems and complex tasks with initiative, innovation and enthusiasm. Contents:

1. Interdisciplinary Mechatronics Engineering Science and the Evolution of Human Friendly and Adaptive Mechatronics, Maki K. Habib.
2. Micro-Nanomechatronics for Biological Cell Analysis and Assembly, Toshio Fukuda, Masahiro Nakajima, Masaru Takeuchi, Tao Yue and Hiroataka Tajima.
3. Biologically Inspired CPG-Based Locomotion Control System of a Biped Robot Using Nonlinear Oscillators with Phase Resetting, Shinya Aoi.
4. Modeling a Human's Learning Processes toward Continuous Learning Support System, Tomohiro Yamaguchi, Kouki Takemori and Keiki Takadama.
5. PWM Waveform Generation Using Pulse-Type Hardware Neural Networks, Ken Saito, Minami Takato, Yoshifumi Sekine and Fumio Uchikoba.
6. Parallel Wrists: Limb Types, Singularities and New Perspectives, Raffaele Di Gregorio.
7. A Robot-Assisted Rehabilitation System – RehabRoby, Duygun Erol Barkana and Fatih Özkul.
8. MIMO Actuator Force Control of a Parallel Robot for Ankle Rehabilitation, Andrew Mcdaid, Yun Ho Tsoi and Shengquan Xie.
9. Performance Evaluation of a Probe Climber for Maintaining Wire Rope, Akihisa Tabata, Emiko Hara and Yoshio Aoki.
10. Fundamentals on the Use of Shape Memory Alloys in Soft Robotics, Matteo Cianchetti.
11. Tuned Modified Transpose

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Jacobian Control of Robotic Systems, S. A. A. Moosavian and M. Karimi. 12. Derivative-Free Nonlinear Kalman Filtering for PMSG Sensorless Control, Gerasimos Rigatos, Pierluigi Siano and Nikolaos Zervos. 13. Construction and Control of Parallel Robots, Moharam Habibnejad Korayem, Soleiman Manteghi and Hami Tourajizadeh. 14. A Localization System for Mobile Robot Using Scanning Laser and Ultrasonic Measurement, Kai Liu, Hongbo Li and Zengqi Sun. 15. Building of Open-Structure Wheel-Based Mobile Robotic Platform, Aleksandar Rodic and Ivan Stojkovic. 16. Design and Physical Implementation of Holonomous Mobile Robot–Holbos, Jasmin Velagic, Admir Kaknjo, Faruk Dautovic, Muhidin Hujdur and Nedim Osmic. 17. Advanced Artificial Vision and Mobile Devices for New Applications in Learning, Entertainment and Cultural Heritage Do

Wealth is no longer just an ability to live well in a world shaped by human activities. It is also an ability to push back or defer the limits of a world in biological and climatic closure. This book examines the theoretical conflicts and the power plays which often oppose the socio-political and technical-financial practices of recognition of what intervenes in the production of this wealth – i.e. of what has value. It lays down the principles of a contributory modeling method, allowing debates around the concept of development; the building of scenarios; the negotiation of their implementation; and a cross-sectoral reading of their social, ecological and economic costs. This method, called Dynamic Modeling of Cost Systems, is based on a territorial communication device which articulates political, contractual and accounting innovations using deliberative and normative digital tools. It combines different local representations of value, in order to approach wealth through an integrated analysis of micro-, meso- and macro- issues. The concept of concurrent engineering (CE) was first developed in the 1980s. Now often

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referred to as transdisciplinary engineering, it is based on the idea that different phases of a product life cycle should be conducted concurrently and initiated as early as possible within the Product Creation Process (PCP). The main goal of CE is to increase the efficiency and effectiveness of the PCP and reduce errors in later phases, as well as incorporating considerations – including environmental implications – for the full lifecycle of the product. It has become a substantive methodology in many industries, and has also been adopted in the development of new services and service support. This book presents the proceedings of the 25th ISPE Inc. International Conference on Transdisciplinary Engineering, held in Modena, Italy, in July 2018. This international conference attracts researchers, industry experts, students, and government representatives interested in recent transdisciplinary engineering research, advancements and applications. The book contains 120 peer-reviewed papers, selected from 259 submissions from all continents of the world, ranging from the theoretical and conceptual to papers addressing industrial best practice, and is divided into 11 sections reflecting the themes addressed in the conference program and addressing topics as diverse as industry 4.0 and smart manufacturing; human-centered design; modeling, simulation and virtual design; and knowledge and data management among others. With an overview of the latest research results, product creation processes and related methodologies, this book will be of interest to researchers, design practitioners and educators alike.

The field of historic preservation is becoming more socially and culturally inclusive, through more diversity in the profession and enhanced community engagement. Bringing together a broad range of practitioners, this book documents historic preservation's progress toward inclusivity and explores further steps to be taken.

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"This book provides relevant theoretical frameworks and the latest empirical research findings on game-based learning to help readers who want to improve their understanding of the important roles and applications of educational games in terms of teaching strategies, instructional design, educational psychology and game design"--Provided by publisher.

What can Human-Computer Interaction (HCI) learn from art? How can the HCI research agenda be advanced by looking at art research? How can we improve creativity support and the amplification of that important human capability? This book aims to answer these questions. Interactive art has become a common part of life as a result of the many ways in which the computer and the Internet have facilitated it. HCI is as important to interactive art as mixing the colours of paint are to painting. This book reviews recent work that looks at these issues through art research. In interactive digital art, the artist is concerned with how the artwork behaves, how the audience interacts with it, and, ultimately, how participants experience art as well as their degree of engagement. The values of art are deeply human and increasingly relevant to HCI as its focus moves from product design towards social benefits and the support of human creativity. The book examines these issues and brings together a collection of research results from art practice that illuminates this significant new and expanding area. In particular, this work points towards a much-needed critical language that can be used to describe, compare and frame research in HCI support for creativity.

This book is an account of how I addressed the need for a smartphone app that would allow someone with Type 1 diabetes to self-manage their condition. Its presentation highlights the major features of the app's interface design. They include the selection of metaphors appropriate to a user's need to form a mental model of the app; the importance of visible

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context; the benefits of consistency; and considerations of a user's cognitive and perceptual abilities. The latter is a key feature of the book. But the book is also about the design process, and especially about the valuable contributions made by the many focus group meetings in which design ideas were first presented to people with Type 1 diabetes. Their critique, and sometimes their rejection, of interface ideas were crucial to the development of the app. I hope this book will prove useful for teaching and design guidance.

This book introduces the concept of worth for design teams, relates it to experiences and outcomes, and describes how to focus on worth when researching and expressing design opportunities for generous worth. Truly interdisciplinary teams also need an appropriate common language, which was developed in the companion book *Worth-Focused Design, Book 1: Balance, Integration, and Generosity*. Its new lexicon for design progressions enables a framework for design and evaluation that works well with a worth focus. Design now has different meanings based upon the approach of different disciplinary practices. For some, it is the creation of value. For others, it is the conception and creation of artefacts. For still others, it is fitting things to people. While each of these design foci has merits, there are risks in not having an appropriate balance across professions that claim the centre of design for their discipline and marginalise others. Generosity is key to the best creative design—delivering

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unexpected worth beyond documented needs, wants, or pain points. Truly interdisciplinary design must also balance and integrate approaches across several communities of practice, which is made easier by common ground. Worth provides a productive focus for this common ground and is symbiotic with balanced, integrated, and generous (BIG) practices. Practices associated with balance and integration for worth-focused generosity are illustrated in several case studies that have used approaches in this book, complemented them with additional practices.

Innovation is about change, and media products and services are changing. The processes of production and distribution of media are changing. The ownership and financing of media are changing. The roles of users are changing. And our ideas about media are changing. This book argues that innovation theory provides better tools for media researchers who wish to understand and explain current developments in the media landscape ? tools that not only allow them to see completely new things, but also to investigate aspects of new media that would otherwise not be as accessible. The various chapters of the book present selected studies that together illustrate how a more explicit focus on innovation and innovation theory can provide new insights into and generates knowledge about how media innovations develop, the sociocultural conditions of such

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innovations, the role of technology, and power relations in media developments. How can local experiences and the social transformation generated by modernity help to enrich our understanding of the international? What might a version of the much-discussed "non-Western International Relations (IR)" look like? What continuities and discontinuities from the Philippine experience in particular can be useful for understanding other post-colonial polities? The Philippines makes a fascinating case study of a medium-sized, developing, post-colonial, multi-ethnic and multi-cultural state in Southeast Asia. Cruz, Adiong and their contributors map horizons of non-Western approaches in Philippine experiences of IR, rooted in the Global South, and in local customs and practice. Examining both theory and praxis, they explore issues as diverse as pre-colonial history, diplomacy, religion, agrarian reform and the Philippines' relationship with key regions in the Global South. The book will appeal to researchers interested in Southeast Asian Studies and alternative perspectives on IR.

Covering key areas of evaluation and methodology, client-side applications, specialist and novel technologies, along with initial appraisals of disabilities, this important book provides comprehensive coverage of web accessibility. Written by leading experts in the field, it provides an overview of existing research and also looks at future developments, providing a much deeper insight than can be

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obtained through existing research libraries, aggregations, or search engines. The relational complexity of urban and rural landscapes in space and in time The development of historical geographical information systems (HGIS) and other methods from the digital humanities have revolutionised historical research on cultural landscapes. Additionally, the opening up of increasingly diverse collections of source material, often incomplete and difficult to interpret, has led to methodologically innovative experiments. One of today's major challenges, however, concerns the concepts and tools to be deployed for mapping processes of transformation—that is, interpreting and imagining the relational complexity of urban and rural landscapes, both in space and in time, at micro- and macro-scale. Mapping Landscapes in Transformation gathers experts from different disciplines, active in the fields of historical geography, urban and landscape history, archaeology and heritage conservation. They are specialised in a wide variety of space-time contexts, including regions within Europe, Asia, and the Americas, and periods from antiquity to the 21st century. Contributors: Karl Beelen (Karlsruhe IT), John Bintliff (Leiden University / Edinburgh University), Bieke Cattoor (TU Delft), Jill Desimini (Harvard University), Cecilia Furlan (TU Delft / KU Leuven), Ian Gregory and Christopher Donaldson (Lancaster University), Joanna Taylor (University of Manchester), Piraye Hacıgüzeller, Frank

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Vermeulen and Devi Taelman (Ghent University), Ralf Vandam and Jeroen Poblome (KU Leuven), Reinout Klaarenbeek (KU Leuven), Sanne Maekelberg (KU Leuven), Steffen Nijhuis (TU Delft), Cristina Purcar (TU Cluj-Napoca), Changxue Shu (KU Leuven, FWO), Bram Vannieuwenhuyze (University of Amsterdam), May Yuan and Arlo McKee (University of Texas, Dallas) Ebook available in Open Access. This publication is GPRC-labeled (Guaranteed Peer-Reviewed Content).

Even as the U.S. population becomes steadily more diverse, minorities and women remain underrepresented in clinical trials to develop new drugs and medical devices. Although progress in increasing minority participation in clinical trials has occurred, participation rates do not fully represent the overall population of minorities in the United States. This underrepresentation threatens the health of both these populations and the general population, since greater minority representation could reveal factors that affect health in all populations. Federal legislation has sought to increase the representation of minorities and women in clinical trials, but legislation by itself has not been sufficient to overcome the many barriers to greater participation. Only much broader changes will bring about the meaningful participation of all population groups in the clinical research needed to improve health. To examine the barriers to participation in clinical trials

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and ways of overcoming those barriers, the National Academies of Sciences, Engineering, and Medicine held a workshop in April 2015. This publication summarizes the presentations and discussions from the workshop.

The Global Innovation Index 2020 provides detailed metrics about the innovation performance of 131 countries and economies around the world. Its 80 indicators explore a broad vision of innovation, including political environment, education, infrastructure and business sophistication. The 2020 edition sheds light on the state of innovation financing by investigating the evolution of financing mechanisms for entrepreneurs and other innovators, and by pointing to progress and remaining challenges – including in the context of the economic slowdown induced by the coronavirus disease (COVID-19) crisis.

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