Engineering Philosophy

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The Capability Approach, Technology and Design Ilse Oosterlaken 2012-03-30 The capability approach of Martha Nussbaum and Amartya Sen places human capabilities at the centre stage of discussions about justice, equality, development and the quality of life. It rejects too much emphasis on mere preference satisfaction or resource provision and highlights the importance of human agency and freedom. This approach has already significantly influenced different fields of application, such as economics and development studies. Only recently have scholars started to explore its relevance for and application to the area of technology and design, which can be crucial factors in the expansion of human capabilities. How does technology influence human capabilities? What

difference could a capability approach make to policies and practices of applying ICT in development processes in the South? How can we criticize and improve the design of technology from the perspective of the capability approach? The authors of this volume explore the implications of the capability approach for technology & design and together create the first volume on this emerging topic.

The Philosophy of Computer Games John Richard Sageng 2012-07-10 Computer games have become a major cultural and economic force, and a subject of extensive academic interest. Up until now, however, computer games have received relatively little attention from philosophy. Seeking to remedy this, the present collection of newly written papers by philosophers and media researchers addresses a range of philosophical questions related to three issues of crucial importance for understanding the phenomenon of computer games: the nature of gameplay and player experience, the moral evaluability of player and avatar actions, and the reality status of the gaming environment. By doing so, the book aims to establish the philosophy of computer games as an important strand of computer games research, and as a separate field of philosophical inquiry. The book is required reading for anyone with an academic or professional interest in computer games, and will also be of value to readers curious about the philosophical issues raised by contemporary digital culture.

Engineering, Development and Philosophy Steen Hyldgaard Christensen 2012-10-30 This inclusive, cross-cultural study rethinks the nexus between engineering, development, and culture. It offers diverse commentary from a range of disciplinary

perspectives on how the philosophies of today's cultural triumvirate—American, European and Chinese—are shaped and given nuance by the cross-fertilization of engineering and development. Scholars from the humanities and social sciences as well as engineers themselves reflect on key questions that arise in this relational context, such as how international development work affects the professional views, identities, practice and ethics of engineers. The first volume to offer a systematic and collaborative study that cuts across continental boundaries, the book delineates the kinds of skills and competences that tomorrow's engineering success stories will require, and analyzes fascinating aspects of the interplay between engineering and philosophy, such as how traditionally Chinese ways of thinking can influence modern engineering practice in the world's most populous country. China's problematic mix of engineering woes and wonders, from the high-profile crash on its high-profile rail network to its 'bird's nest' Olympic stadium, adds to the urgency for reform, while Europe's Enlightenment-informed legal frameworks are contrasted with Chinese mechanisms in their governance of the field of nanotechnology, a crucial element of future technical evolution. Fascinating and compelling in equal measure, this volume addresses one of the topics at the leading edge of humanity's quest to survive, and to thrive.

Deleuze and Philosophy Keith Ansell-Pearson 2002-03-11 The work of Gilles Deleuze has had an impact far beyond philosophy. He is among Foucault and Derrida as one of the most cited of all contemporary French thinkers. Never a student 'of' philosophy, Deleuze was always philosophical and many influential

poststructuralist and postmodernist texts can be traced to his celebrated resurrection of Nietzsche against Hegel in his Nietzsche and Philosophy, from which this collection draws its title. This searching new collection considers Deleuze's relation to the philosophical tradition and beyond to the future of philosophy, science and technology. In addition to considering Deleuze's imaginative readings of classic figures such as Spinoza and Kant, the essays also point to the meaning of Deleuze on 'monstrous' and machinic thinking, on philosophy and engineering, on philosophy and biology, on modern painting and literature. Deleuze and Philosophy continues the spirit of experimentation and invention that features in Deleuze's work and will appeal to those studying across philosophy, social theory, literature and cultural studies who themselves are seeking new paradigms of thought.

Thinking Through Technology Carl Mitcham 1994-10-15 This introduction to the philosophy of technology discusses its sources and uses. Tracing the changing meaning of "technology" from ancient times to the modern day, it identifies two important traditions of critical analysis of technology: the engineering approach and the humanities approach.

Philosophy and Engineering: Reflections on Practice, Principles and Process Diane P Michelfelder 2014-01-13 Building on the breakthrough text Philosophy and Engineering: An Emerging Agenda, this book offers 30 chapters covering conceptual and substantive developments in the philosophy of engineering, along with a series of critical reflections by engineering practitioners. The volume demonstrates how reflective engineering

can contribute to a better understanding of engineering identity and explores how integrating engineering and philosophy could lead to innovation in engineering methods, design and education. The volume is divided into reflections on practice, principles and process, each of which challenges prevalent assumptions and commitments within engineering and philosophy. The volume explores the ontological and epistemological dimensions of engineering and exposes the falsity of the commonly held belief that the field is simply the application of science knowledge to problem solving. Above all, the perspectives collected here demonstrate the value of a constructive dialogue between engineering and philosophy and show how collaboration between the disciplines casts light on longstanding problems from both sides. The chapters in this volume are from a diverse and international body of authors, including philosophers and engineers, and represent a highly select group of papers originally presented in three different conferences. These are the 2008 Workshop on Philosophy and Engineering (WPE-2008) held at the Royal Academy of Engineering; the 2009 meeting of the Society for Philosophy and Technology (SPT-2009) at the University of Twente in the Netherlands; and the Forum on Philosophy, Engineering, and Technology (fPET-2010), held in Golden, Colorado at the Colorado School of Mines.

A Philosophy of Technology Pieter E. Vermaas 2011 In A Philosophy of Technology: From Technical Artefacts to Sociotechnical Systems, technology is analysed from a series of different perspectives. The analysis starts by focussing on the most tangible products of technology, called

technical artefacts, and then builds step-wise towards considering those artefacts within their context of use, and ultimately as embedded in encompassing sociotechnical systems that also include humans as operators and social rules like legislation. Philosophical characterisations are given of technical artefacts, their context of use and of sociotechnical systems. Analyses are presented of how technical artefacts are designed in engineering and what types of technological knowledge is involved in engineering. And the issue is considered how engineers and others can or cannot influence the development of technology. These characterisations are complemented by ethical analyses of the moral status of technical artefacts and the possibilities and impossibilities for engineers to influence this status when designing artefacts and the sociotechnical systems in which artefacts are embedded. The running example in the book is aviation, where aeroplanes are examples of technical artefacts and the world aviation system is an example of a sociotechnical system. Issues related to the design of quiet aeroplane engines and the causes of aviation accidents are analysed for illustrating the moral status of designing, and the role of engineers therein. Table of Contents: Technical Artefacts / Technical Designing / Ethics and Designing / Technological Knowledge / Sociotechnical Systems / The Role of Social Factors in Technological Development / Ethics and Unintended Consequences of Technology

A Guide to Field Philosophy Evelyn Brister 2020-01-23 Philosophers increasingly engage in practical work with other disciplines and the world at large. This volume draws together the lessons learned from

this work—including philosophers' contributions to scientific research projects, consultations on matters of policy, and expertise provided to government agencies and non-profits—on how to effectively practice philosophy. Its 22 case studies are organized into five sections: I Collaboration and Communication II Policymaking and the Public Sphere III Fieldwork in the Academy IV Fieldwork in the Professions V Changing Philosophical Practice Together, these essays provide a practical, how-to guide for doing philosophy in the field—how to find problems that can benefit from philosophical contributions, effectively collaborate with other professionals and community members, make fieldwork a positive part of a philosophical career, and anticipate and negotiate the sorts of unanticipated problems that crop up in direct public engagement. Key features: Gives specific advice on how to integrate philosophy with outside groups. Offers examples from working with the public and private sectors, community organizations, and academic groups. Provides lessons learned, often summarized at the end of chapters, for how to practice philosophy in the field.

Transhumanism - Engineering the Human Condition Roberto Manzocco 2019-03-11 This book is designed to offer a comprehensive high-level introduction to transhumanism, an international political and cultural movement that aims to produce a "paradigm shift" in our ethical and political understanding of human evolution. Transhumanist thinkers want the human species to take the course of evolution into its own hands, using advanced technologies currently under development - such as robotics, artificial intelligence

biotechnology, cognitive neurosciences, and nanotechnology – to overcome our present physical and mental limitations, improve our intelligence beyond the current maximum achievable level, acquire skills that are currently the preserve of other species, abolish involuntary aging and death, and ultimately achieve a post-human level of existence. The book covers transhumanism from a historical, philosophical, and scientific viewpoint, tracing its cultural roots, discussing the main philosophical, epistemological, and ethical issues, and reviewing the state of the art in scientific research on the topics of most interest to transhumanists. The writing style is clear and accessible for the general reader, but the book will also appeal to graduate and undergraduate students.

Philosophy and Engineering Education

John Heywood 2022-01-05

All educators bring to their work preconceived ideas of what the curriculum should be and how students learn. Seldom are they thought through. Since without an adequate philosophical base it is difficult to bring about desirable changes in policy and practice, it is necessary that educators have defensible philosophies of engineering education. This point is illustrated by recent debates on educational outcomes which can be analysed in terms of competing curriculum ideologies. While these ideologies inform the development of a philosophy of engineering education they do so in light of a philosophy of engineering for such a philosophy focuses on what engineering is, and in particular how it differs from science. This is addressed in this study through consideration of the differences in the modes of abstraction required for the pursuit of

science on the one hand, and the pursuit of engineering design, on the other hand. It is shown that a philosophy of engineering is not a philosophy of science or a philosophy of engineering education, but it is from a philosophy of engineering that a philosophy of engineering education is drawn. Uncertainty is shown to be a key characteristic of engineering practice. A way of formulating a philosophy of engineering is to consider it through the classical prism that splits the subject into five divisions, namely epistemology, metaphysics, logic, ethics aesthetics. Additionally, “behaviour” also characterizes the practice of engineering.

Luciano Floridi’s Philosophy of Technology Hilmi Demir 2012-06-15 Information and communication technologies of the 20th century have had a significant impact on our daily lives. They have brought new opportunities as well as new challenges for human development. The Philosopher: Luciano Floridi claims that these new technologies have led to a revolutionary shift in our understanding of humanity’s nature and its role in the universe. Florodi’s philosophical analysis of new technologies leads to a novel metaphysical framework in which our understanding of the ultimate nature of reality shifts from a materialist one to an informational one. In this world, all entities, be they natural or artificial, are analyzed as informational entities. This book provides critical reflection to this idea, in four different areas: Information Ethics and The Method of Levels of Abstraction The Information Revolution and Alternative Categorizations of Technological

Advancements Applications: Education, Internet and Information Science Epistemic and Ontic Aspects of the Philosophy of Information

Philosophy of Technology Maarten J Verkerk 2015-09-16 Philosophy of Technology: An introduction for technology and business students is an accessible guide to technology's changes , their ubiquitousness, and the many questions these raise. Designed for those with no philosophical background in mind, it is ideal for technology and engineering students or specialists who want to learn to think critically about how their work influences society and our daily lives. The technological, business environment and daily experiences are the starting point of the book and the authors' reflect upon these practices from a philosophical point of view. The text goes on to present a critical analysis of the subject including development, manufacturing, sales and marketing and the use of technological products and services. The abstract ideas are made easier to grasp with a story-telling approach: a vivid history of the discipline and colourful portraits of the core thinkers in this domain, as well as four case studies drawing from various engineering disciplines to demonstrate how philosophy can and should influence technology in practice. The first comprehensive introduction to this vibrant young sub-discipline in over 20 years, this is an ideal textbook for students of technology and engineering beginning a course or project in the philosophy of their subject.

Engineering Ethics for a Globalized World Colleen Murphy 2015-06-22 This volume identifies, discusses and addresses the wide array of ethical issues that have emerged for engineers

due to the rise of a global economy. To date, there has been no systematic treatment of the particular challenges globalization poses for engineering ethics standards and education. This volume concentrates on precisely this challenge. Scholars and practitioners from diverse national and professional backgrounds discuss the ethical issues emerging from the inherent symbiotic relationship between the engineering profession and globalization. Through their discussions a deeper and more complete understanding of the precise ways in which globalization impacts the formulation and justification of ethical standards in engineering as well as the curriculum and pedagogy of engineering ethics education emerges. The world today is witnessing an unprecedented demand for engineers and other science and technology professionals with advanced degrees due to both the off-shoring of western jobs and the rapid development of non-Western countries. The current flow of technology and professionals is from the West to the rest of the world. Professional practices followed by Western (or Western-trained) engineers are often based on presuppositions which can be in fundamental disagreement with the viewpoints of non-Westerners. A successful engineering solution cannot be simply technically sound, but also must account for cultural, social and religious constraints. For these reasons, existing Western standards cannot simply be exported to other countries. Divided into two parts, Part I of the volume provides an overview of particular dimensions of globalization and the criteria that an adequate engineering ethics framework must satisfy in a globalized world. Part II of the

volume considers pedagogical challenges and aims in engineering ethics education that is global in character. *An Introduction to the Philosophy of Engineering* Bocong Li 2021-11-20 This book is the first academic work on the philosophy of engineering in China that reflects two decades of research. It puts forward a new thesis, namely that the core maxim in the philosophy of engineering is “I create, therefore I am,” which is radically different from the Cartesian maxim: “I think, therefore I am.” In addition, the book offers the first detailed portrait of the roots and evolution of the philosophy of engineering in China. The book begins by discussing the triptych thesis of science, technology and engineering, which argues that there are a number of important distinctions between the three, e.g. scientific activities are chiefly based on discovery, while technological activities center on invention, and engineering activities focus on creation. Considering the latest developments in the philosophy of engineering, the author also analyzes engineering communities, engineering practice and a micro-meso-macro framework. In subsequent chapters, the author separately analyzes the three stages of engineering activities: planning, operating and using artifacts. In the closing chapter, two views on the philosophy of engineering (as a new subdiscipline of philosophy and as a philosophy in its own right) are briefly explained. Philosophy and Engineering: An Emerging Agenda Ibo van de Poel 2010-03-11 Whereas science, technology, and medicine have all called forth dedicated philosophical investigations, a fourth major contributor to the technoscientific world

in which we all live – that is, engineering – has been accorded almost none of the philosophical attention it deserves. This volume thus offers a first characterisation of this important new field, by some of the primary philosophers and ethicists interested in engineering and leading engineers interested in philosophical reflections. The volume deals with such questions as: What is engineering? In what respect does engineering differ from science? What ethical problems does engineering raise? By what ethical principles are engineers guided? How do engineers themselves conceive of their profession? What do they see as the main philosophical challenges confronting them in the 21st century? The authors respond to these and other questions from philosophical and engineering view points and so illustrate how together they can meet the challenges and realize the opportunities present in the necessary encounters between philosophy and engineering – encounters that are ever more important in an increasingly engineered world and its problematic futures. *Engineering and Philosophy* Zachary Pirtle 2021-05-14 Engineers love to build “things” and have an innate sense of wanting to help society. However, these desires are often not connected or developed through reflections on the complexities of philosophy, biology, economics, politics, environment, and culture. To guide future efforts and to best bring about human flourishment and a just world, Engineering and Philosophy: Reimagining Technology and Progress brings together practitioners and scholars to inspire deeper conversations on the nature and varieties of engineering. The perspectives in this book are an act of reimagination: how does

engineering serve society, and in a vital sense, how should it. Italian Philosophy of Technology Simona Chiodo 2020-12-20 This is the first volume about the Italian philosophy of technology written in English and including novel and translated contributions. The volume presents original research on emerging topics in the field, as well as an overview of the most distinguished Italian approaches to the philosophy of technology. While offering both historical and political perspectives and the contributions of the philosophy of law, philosophy of science, and aesthetics, Italian Philosophy of Technology promotes a novel view on the intersection between continental and analytic traditions in the philosophy of technology.
Steps toward a Philosophy of Engineering Carl Mitcham 2019-12-06 The rise of classic Euro-American philosophy of technology in the 1950s originally emphasized the importance of technologies as material entities and their mediating influence within human experience. Recent decades, however, have witnessed a subtle shift toward reflection on the activity from which these distinctly modern artifacts emerge and through which they are engaged and managed, that is, on engineering. What is engineering? What is the meaning of engineering? How is engineering related to other aspects of human existence? Such basic questions readily engage all major branches of philosophy --- ontology, epistemology, ethics, political philosophy, and aesthetics --- although not always to the same degree. The historico-philosophical and critical reflections collected here record a series of halting steps to think through engineering and the engineered way of life that we all increasingly live in what has been called the Anthropocene.

The aim is not to promote an ideology for engineering but to stimulate deeper reflection among engineers and non-engineers alike about some basic challenges of our engineered and engineering lifeworld.

The Routledge Handbook of the Philosophy of Engineering Diane P Michelfelder 2020-12-30 Engineering has always been a part of human life but only recently become the subject matter of systematic philosophical inquiry. The Routledge Handbook of Philosophy of Engineering presents the state-of-the-art of this field and lays a foundation for shaping future conversations within it. With a broad scholarly scope and 55 chapters contributed by both established experts and fresh voices in the field, the Handbook provides valuable insights into this dynamic and fast-growing field. The volume focuses on central issues and debates, established themes and new developments in: Foundational perspectives Engineering reasoning Ontology Engineering design processes Engineering activities and methods Values in engineering Responsibilities in engineering practice Reimagining engineering The Routledge Handbook of Philosophy of Engineering will be of value for both students and active researchers in philosophy of engineering and in cognate fields (philosophy of technology, philosophy of design). It is also intended for engineers working both inside and outside of academia who would like to gain a more fundamental understanding of their particular professional field. The increasing development of new technologies, such as autonomous vehicles, and new interdisciplinary fields, such as human-computer interaction, not only calls for philosophical inquiry but also for engineers and philosophers to work

in collaboration with one another. At the same time, the demands on engineers to respond to the challenges of world health, climate change, poverty, and other so-called "wicked problems" have also been on the rise. These factors, together with the fact that a host of questions concerning the processes by which technologies are developed have arisen, make the current Handbook a timely and valuable publication.

Continental Philosophy of Technoscience Hub Zwart 2021-11-18 The key objective of this volume is to allow philosophy students and early-stage researchers to become practicing philosophers in technoscientific settings. Zwart focuses on the methodological issue of how to practice continental philosophy of technoscience today. This text draws upon continental authors such as Hegel, Engels, Heidegger, Bachelard and Lacan (and their fields of dialectics, phenomenology and psychoanalysis) in developing a coherent message around the technicity of science or rather, “technoscience”. Within technoscience, the focus will be on recent developments in life sciences research, such as genomics, post-genomics, synthetic biology and global ecology. This book uniquely presents continental perspectives that tend to be underrepresented in mainstream philosophy of science, yet entail crucial insights for coming to terms with technoscience as it is evolving on a global scale today. This is an open access book.

Philosophy and Engineering Diane P. Michelfelder 2016-11-26 This volume, the result of an ongoing bridge building effort among engineers and humanists, addresses a variety of philosophical, ethical, and policy issues emanating from engineering and technology. Interwoven through its chapters are two themes, often held in tension with one

another: “Exploring Boundaries” and “Expanding Connections.” “Expanding Connections” highlights contributions that look to philosophy for insight into some of the challenges engineers face in working with policy makers, lay designers, and other members of the public. It also speaks to reflections included in this volume on the connections between fact and value, reason and emotion, engineering practice and the social good, and, of course, between engineering and philosophy. “Exploring Boundaries” highlights contributions that focus on some type of demarcation. Public policy sets a boundary between what is regulated from what is not, academic disciplines delimit themselves by their subjects and methods of inquiry, and professions approach problems with unique goals and by using concepts and language in particular ways that create potential obstacles to collaboration with other fields. These and other forms of boundary setting are also addressed in this volume. Contributors explore these two themes in a variety of specific contexts, including engineering epistemology, engineers’ social responsibilities, engineering and public policy-making, engineering innovation, and the affective dimensions of engineering work. The book also includes analyses of social and ethical issues with emerging technologies such as 3-D printing and its use in medical applications, as well as social robots. Initial versions of the invited papers included in this book were first presented at the 2014 meeting of the Forum on Philosophy, Engineering, and Technology (fPET), held at Virginia Tech in Blacksburg, Virginia, USA. The volume furthers fPET’s intent of extending and developing the philosophy of engineering as an

academic field, and encouraging conversation, promoting a sense of shared enterprise, and building community among philosophers and engineers across a diversity of cultural backgrounds and approaches to inquiry.

A History and Philosophy of Fluid Mechanics G. A. Tokaty 2013-02-20 Summary and general methods of constructing static and dynamic equations, dealing with the laws of mechanics for heated elastic solids, forms of aerodynamic operators, structural operators, much more. 1962 edition.

Science, Philosophy and Sustainability Angela Guimaraes Pereira 2015-02-27 For science to remain a legitimate and trustworthy source of knowledge, society will have to engage in the collective processes of knowledge co-production, which not only includes science, but also other types of knowledge. This process of change has to include a new commitment to knowledge creation and transmission and its role in a plural society. This book proposes to consider new ways in which science can be used to sustain our planet and enrich our lives. It helps to release and reactivate social responsibility within contemporary science and technology. It reviews critically relevant cases of contemporary scientific practice within the Cartesian paradigm, relabelled as 'innovation research', promoted as essential for the progress and well-being of humanity, and characterised by high capital investment, centralised control of funding and quality, exclusive expertise, and a reductionism that is philosophical as well as methodological. This is an accessible and relevant book for scholars in Science and Technology Studies, History and Philosophy of Science, and Science, Engineering and Technology Ethics. Providing an array of

concrete examples, it supports scientists, engineers and technical experts, as well as policy-makers and other non-technical professionals working with science and technology to re-direct their approach to global problems, in a more integrative, self-reflective and humble direction.

The Role of Technology in Science: Philosophical Perspectives Sven Ove Hansson 2015-05-05 This edited volume explores the interplay between philosophies in a wide-ranging analysis of how technological applications in science inform our systems of thought. Beginning with a historical background, the volume moves on to explore a host of topics, such as the uses of technology in scientific observations and experiments, the salient relationship between technology and mechanistic notions in science and the ways in which today's vast and increasing computing power helps scientists achieve results that were previously unattainable. Technology allows today's researchers to gather, in a matter of hours, data that would previously have taken weeks or months to assemble. It also acts as a kind of metaphor bank, providing biologists in particular with analogies (the heart as a 'pump', the nervous system as a 'computer network') that have become common linguistic currency. This book also examines the fundamental epistemological distinctions between technology and science and assesses their continued relevance. Given the increasing amalgamation of the philosophies of science and technology, this fresh addition to the literature features pioneering work in a promising new field that will appeal both to philosophers and scientific historiographers.

The Routledge Handbook

of Social and Political Philosophy of Language Justin Khoo 2021-04-21 This Handbook brings together philosophical work on how language shapes, and is shaped by, social and political factors. Its 24 chapters were written exclusively for this volume by an international team of leading researchers, and together they provide a broad expert introduction to the major issues currently under discussion in this area. The volume is divided into four parts: Part I: Methodological and Foundational Issues Part II: Non-ideal Semantics and Pragmatics Part III: Linguistic Harms Part IV: Applications The parts, and chapters in each part, are introduced in the volume's General Introduction. A list of Works Cited concludes each chapter, pointing readers to further areas of study. The Handbook is the first major, multi-authored reference work in this growing area and essential reading for anyone interested in the nature of language and its relationship to social and political reality.

The Moral Status of Technical Artefacts Peter Kroes 2014-01-08 This book considers the question: to what extent does it make sense to qualify technical artefacts as moral entities? The authors' contributions trace recent proposals and topics including instrumental and non-instrumental values of artefacts, agency and artefactual agency, values in and around technologies, and the moral significance of technology. The editors' introduction explains that as 'agents' rather than simply passive instruments, technical artefacts may actively influence their users, changing the way they perceive the world, the way they act in the world and the way they interact with each other. This volume features the work of various experts from around the world, representing a variety

of positions on the topic. Contributions explore the contested discourse on agency in humans and artefacts, defend the Value Neutrality Thesis by arguing that technological artefacts do not contain, have or exhibit values, or argue that moral agency involves both human and non-human elements. The book also investigates technological fields that are subject to negative moral valuations due to the harmful effects of some of their products. It includes an analysis of some difficulties arising in Artificial Intelligence and an exploration of values in Chemistry and in Engineering. The Moral Status of Technical Artefacts is an advanced exploration of the various dimensions of the relations between technology and morality

Engineering Philosophy Louis L. Bucciarelli 2003 In Engineering Philosophy, the author explores how the concerns of philosophers are relevant to engineering thought and practice in negotiating tradeoffs in diagnosing failure, in constructing adequate models and simulations, and in teaching.

Technical Artefacts: Creations of Mind and Matter Peter Kroes 2012-05-24 This book presents an attempt to understand the nature of technical artefacts and the way they come into being. Its primary focus is the kind of technical artefacts designed and produced by modern engineering. In spite of their pervasive influence on human thinking and doing, and therefore on the modern human condition, a philosophical analysis of technical artefacts and engineering design is lacking. Among the questions addressed are: How do technical artefacts fit into the furniture of the universe? In what sense are they different from objects from the natural world, or from the social world? What kind of activity is

engineering design and what does it mean to say that technical artefacts are the embodiment of a design? Does it make sense to consider technical artefacts to be morally good or bad by themselves because of the way they influence human life? The book advances the thesis that technical artefacts, conceived of as physical constructions with a technical function, have a dual nature; they are hybrid objects combining physical and intentional features. It proposes a theory of technical functions and technical artefact kinds that does justice to this dual nature, analyses engineering design from the dual nature point of view, and argues that technical artefacts, because of their dual nature, have inherent moral significance. Philosophy of Engineering, East and West Carl Mitcham 2018-02-06 This co-edited volume compares Chinese and Western experiences of engineering, technology, and development. In doing so, it builds a bridge between the East and West and advances a dialogue in the philosophy of engineering. Divided into three parts, the book starts with studies on epistemological and ontological issues, with a special focus on engineering design, creativity, management, feasibility, and sustainability. Part II considers relationships between the history and philosophy of engineering, and includes a general argument for the necessity of dialogue between history and philosophy. It continues with a general introduction to traditional Chinese attitudes toward engineering and technology, and philosophical case studies of the Chinese steel industry, railroads, and cybernetics in the Soviet Union. Part III focuses on engineering, ethics, and society, with chapters on

engineering education and practice in China and the West. The book's analyses of the interactions of science, engineering, ethics, politics, and policy in different societal contexts are of special interest. The volume as a whole marks a new stage in the emergence of the philosophy of engineering as a new regionalization of philosophy. This carefully edited interdisciplinary volume grew out of an international conference on the philosophy of engineering hosted by the University of the Chinese Academy of Sciences in Beijing. It includes 30 contributions by leading philosophers, social scientists, and engineers from Australia, China, Europe, and the United States.

Technical Functions Wybo Houkes 2010-03-19 This book is about the functions of technical artefacts, material objects made to serve practical purposes; objects ranging from tablets of Aspirin to Concorde, from wooden clogs to nuclear submarines. More precisely, the book is about usinganddesigningartefacts, aboutwhatitmeanstoascribefunctionstothem, and about the relations between using, designing and ascribing functions. In the following pages, we present a detailed account that shows how strong these relations are. Technical functions cannot be properly analysed without taking into regard the beliefs and actions of human beings, we contend. This account stays deceptively close to common sense. After all, who would deny that artefacts are for whatever purpose they are designed or used? As we shall show, however, such intentionalist accounts face staunch opposition from other accounts, such as those that focus on long-term reproduction of artefacts. These accounts are partly

right and mostly wrong — and although we do take a common-sense position in the end, it is only after sophisticated analysis. F- thermore, the results of this analysis reveal that technical functions depend on a larger and more structured set of beliefs and actions than is typically s- posed. Much work in the succeeding pages goes into developing an appropriate action-theoretical account, and forging a connection with function ascriptions.

Philosophy of Technology and Engineering Sciences 2009-11-27 The Handbook Philosophy of Technology and Engineering Sciences addresses numerous issues in the emerging field of the philosophy of those sciences that are involved in the technological process of designing, developing and making of new technical artifacts and systems. These issues include the nature of design, of technological knowledge, and of technical artifacts, as well as the toolbox of engineers. Most of these have thus far not been analyzed in general philosophy of science, which has traditionally but inadequately regarded technology as mere applied science and focused on physics, biology, mathematics and the social sciences. • First comprehensive philosophical handbook on technology and the engineering sciences • Unparalleled in scope including explorative articles • In depth discussion of technical artifacts and their ontology • Provides extensive analysis of the nature of engineering design • Focuses in detail on the role of models in technology

Philosophical Engineering Harry Halpin 2013-11-20 This is the first interdisciplinary exploration of the philosophical foundations of the Web, a new area of inquiry that has important implications across a range of domains. Contains twelve essays

that bridge the fields of philosophy, cognitive science, and phenomenology Tackles questions such as the impact of Google on intelligence and epistemology, the philosophical status of digital objects, ethics on the Web, semantic and ontological changes caused by the Web, and the potential of the Web to serve as a genuine cognitive extension Brings together insightful new scholarship from well-known analytic and continental philosophers, such as Andy Clark and Bernard Stiegler, as well as rising scholars in “digital native” philosophy and engineering Includes an interview with Tim Berners-Lee, the inventor of the Web

Re-Engineering Philosophy for Limited Beings William C. Wimsatt 2007-06-30 Analytic philosophers once pantomimed physics, trying to understand the world by breaking it down. Thinkers from the Darwinian sciences now pose alternatives to such reductionism. Wimsatt argues that today's scientists seek to atomize phenomena only to understand how entities, events, and processes articulate at different levels.

The Future of Engineering Albrecht Fritzsche 2019-07-26 In a world permeated by digital technology, engineering is involved in every aspect of human life. Engineers address a wider range of design problems than ever before, raising new questions and challenges regarding their work, as boundaries between engineering, management, politics, education and art disappear in the face of comprehensive socio-technical systems. It is therefore necessary to review our understanding of engineering practice, expertise and responsibility. This book advances the idea that the future of engineering will not be driven by a static view of a closed discipline.

but rather will result from a continuous dialogue between different stakeholders involved in the design and application of technical artefacts. Based on papers presented at the 2016 conference of the forum for Philosophy, Engineering and Technology (fPET) in Nuremberg, Germany, the book features contributions by philosophers, engineers and managers from academia and industry, who discuss current and upcoming issues in engineering from a wide variety of different perspectives. They cover topics such as problem solving strategies and value-sensitive design, experimentation and simulation, engineering knowledge and education, interdisciplinary collaboration, sustainability, risk and privacy. The different contributions in combination draw a comprehensive picture of efforts worldwide to come to terms with engineering, its foundations in philosophy, the ethical problems it causes, and its effect on the ongoing development of society.

French Philosophy of Technology Sacha Loeve 2018-05-28 Offering an overall insight into the French tradition of philosophy of technology, this volume is meant to make French-speaking contributions more accessible to the international philosophical community. The first section, “Negotiating a Cultural Heritage,” presents a number of leading 20th century philosophical figures (from Bergson and Canguilhem to Simondon, Dagognet or Ellul) and intellectual movements (from Personalism to French Cybernetics and political ecology) that help shape philosophy of technology in the Francophone area, and feed into contemporary debates (ecology of technology, politics of technology, game studies). The second section, “Coining and

Reconfiguring Technoscience," traces the genealogy of this controversial concept and discusses its meanings and relevance. A third section, "Revisiting Anthropological Categories," focuses on the relationships of technology with the natural and the human worlds from various perspectives that include anthropotechnology, Anthropocene, technological and vital norms and temporalities. The final section, "Innovating in Ethics, Design and Aesthetics," brings together contributions that draw on various French traditions to afford fresh insights on ethics of technology, philosophy of design, techno-aesthetics and digital studies. The contributions in this volume are vivid and rich in original approaches that can spur exchanges and debates with other philosophical traditions.

Philosophy and Design

Pieter E. Vermaas 2007-12-05 This volume provides the reader with an integrated overview of state-of-the-art research in philosophy and ethics of design in engineering and architecture. It contains twenty-five essays that focus on engineering designing in its traditional sense, on designing in novel engineering domains, and on architectural and environmental designing. This volume enables the reader to overcome the traditional separation between engineering designing and architectural designing.

Technology and the City

Michael Nagenborg 2021-01-25 The contributions in this volume map out how technologies are used and designed to plan, maintain, govern, demolish, and destroy the city. The chapters demonstrate how urban technologies shape, and are shaped, by fundamental concepts and principles such as citizenship, publicness, democracy, and nature.

The many authors herein explore how to think of technologically mediated urban space as part of the human condition. The volume will thus contribute to the much-needed discussion on technology-enabled urban futures from the perspective of the philosophy of technology. This perspective also contributes to the discussion and process of making cities 'smart' and just. This collection appeals to students, researchers, and professionals within the fields of philosophy of technology, urban planning, and engineering.

Philosophy and Engineering Education Korte Russell 2022-05-31 Pragmatism attends to the practical outcomes of what we think and do, the social community in which we practice, and the bases of experience to inform our ideas and practices. Practice theories help explain what we do as complex systems of activity. Together, pragmatism and practice theories help broaden our understanding of the nature of engineering work as a social practice having important consequences for individuals and society. The practical nature of engineering embedded in our complex social and community systems is emphasized. Of all the pragmatists John Dewey's influence on education has been the most profound.He promoted social democracy in education. Although he founded experimental schools with this as their goal of major interest, to engineering educators his promotion of problem solving through a form of inquiry is his major attraction. Its modern embodiment is problem-based learning. It requires teachers to become facilitators of learning rather than transmitters of knowledge. How, within the framework of a traditionally oriented curriculum Dewey's epistemology of inquiry-based learning might be

introduced is discussed. Lonergan's basic method of the human mind underlying specialized methods offers a basis for a unified theory and pedagogy of engineering. It also provides for a conception of engineering that gives due recognition to its ethical character and to the need for engineering virtues. This knowing-based view of engineering, focused on "engineering insight," provides the basis for a core, discipline-neutral approach to engineering.It proposes an engineering education centered on norms inherent to the knowing process, specifically attentiveness and intentionality. These norms in turn provide a source for defining and developing engineering virtues and character.

Philosophy for Engineering Priyan Dias 2019-11-12 This book highlights the unique need for philosophy among engineers, which stems from issues regarding their knowledge (epistemology), role or being (ontology) and influence (ethics). It discusses practice, context, ethics, models and failure as key aspects of engineering, and provides an easy but essential introduction to philosophy for engineers by presenting four key philosophers and linking them to these aspects: Karl Popper (failure), Thomas Kuhn (models), Michael Polanyi (practice & ethics) and Martin Heidegger (context & ethics). Popper, Kuhn and Polanyi are philosophers of science (epistemologists) who have challenged the view that science is a ‘cool, detached’ discipline, since it also depends on human imagination (Popper), consensus (Kuhn) and judgment plus artistry (Polanyi); factors that are central to engineering. Heidegger (an ontologist) critiqued technology on the one hand (ethics), but also stressed the importance of ‘doing’ over ‘knowing,’ thus,

‘authenticating’ the highly pragmatic engineering profession. Science is the ‘core’ component of engineering, which is overlaid by a variety of heuristics . Practice-based knowledge can be formalized, with artificial intelligence (AI) offering a valuable tool for engineering, just as mathematics has done for science. The book also examines systems thinking in engineering. Featuring numerous diagrams, tables and examples throughout, the book is easily accessible to engineers.

Philosophy of Chemistry Andrea Woody 2012 Philosophy of Chemistry investigates the foundational concepts and methods of chemistry, the science of the nature of substances and their transformations. This groundbreaking collection, the most thorough treatment of the philosophy of chemistry ever published, brings together philosophers, scientists and historians to map out the central topics in the field. The 33 articles address the history of the philosophy of chemistry and the philosophical importance of some central figures in the history of chemistry; the nature of chemical substances; central chemical concepts and methods, including the chemical bond, the periodic table and reaction mechanisms; and chemistry's relationship to other disciplines such as physics, molecular biology, pharmacy and chemical engineering. This volume serves as a detailed introduction for those new to the field as well as a rich source of new insights and potential research agendas for those already engaged with the philosophy of chemistry. Provides a bridge between philosophy and current scientific findings Encourages multi-disciplinary dialogue Covers theory and applications