Engineering Philosophy

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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

Philosophy and Engineering: Reflections on Practice, Principles and Process Diane P Michelfelder 2016-09-17 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.

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.

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.

Technen: Elements of Recent History of Information Technologies with Epistemological Conclusions Andrzej Piotr Wierzbicki 2014-07-25 The book expresses the conviction that the art of creating tools – Greek techne – changes its character together with the change of civilization epochs and co-determines such changes. This does not mean that tools typical for a civilization epoch determine it completely, but they change our way of perceiving and interpreting the world. There might have been many such epochs in the history of human civilization (much more than the three waves of agricultural, industrial and information civilization). This is expressed by the title Technen of the book, where n denotes a subsequent civilization epoch. During last fifty years we observed a decomposition of the old episteme (understood as a way of creating and interpreting knowledge characteristic for a given civilization epoch) of modernism, which was an episteme typical for industrial civilization. Today, the world is differently understood by the representatives of three different cultural spheres: of strict and natural sciences; of human and social sciences (especially by their part inclined towards postmodernism) and technical sciences that have a different episteme than even that of strict and natural sciences. Thus, we observe today not two cultures, but three different episteme. The book consists of four parts. First contains basic epistemological observations, second is devoted to selected elements of recent history of information technologies, third contains more detailed epistemological and general discussions, fourth specifies conclusions. The book is written from the cognitive perspective of technical sciences, with a full awareness – and discussion – of its differences from the cognitive perspective of strict sciences or human and social sciences. The main thesis of the book is that informational revolution will probably lead to a formation of a new episteme. The book includes discussions of many issues related to such general perspective, such as what is technology proper; what is intuition from a perspective of technology and of evolutionary naturalism; what are the reasons for and how large are the delays between a fundamental invention and its broad social utilization; what is the fundamental logical error (using paradoxes that are not real, only apparent) of the tradition of sceptical philosophy; what are rational foundations and examples of emergence of order out of chaos; whether civilization development based on two positive feedbacks between science, technology and the market might lead inevitably to a self-destruction of human civilization; etc.

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.

Philosophical, Logical and Scientific Perspectives in Engineering Zekâi Şen 2013-09-14 This book highlights and explains the significance of philosophical, logical, and scientific principles for engineering education/training and engineering works. In so doing, it aims to help to rectify the neglect of philosophy and logic in current education and training programs, which emphasize analytical and numerical methods at the expense of the innovative practical and creative abilities so important for engineering in the past. Individual chapters examine the relation of philosophy, logic, and science to engineering, drawing attention to, for example, the significance of ethics, the relevance of the philosophy of science, and the increasing importance of application of fuzzy logic to engineering. Modeling principles and philosophy in engineering are discussed, and the impact of different education systems, examined. Too often engineers have become reliant on readily available formulations and software; this book offers an antidote, promoting the recognition of artistic and humanitarian aspects and their integration in engineering works.

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.

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

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.

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.

Technology and Responsibility P.T. Durbin 2013-03-09 Since it may seem strange for a new series to begin with volume 3, a word of explanation is in order. The series, Philosophy and Technology, inaugurated in this form with this volume, is the official publication of the Society for Philosophy & Technology. Approximately one volume each year is tobe published, alternating between proceedings volumes - taken from contributions to biennial international conferences of the Society - and miscellaneous volumes, with roughly the character of a professional society journal. The forerunners of the series in its present form were two proceedings volumes: Philosophy and Technology (1983), edited by Paul T. Durbin and Friedrich Rapp, and Philosophy and Technology //: Information Technology and Computers in Theory and Practice (1986), edited by Carl Mitcham and Alois Huning - both published (as volumes 80 and 90, respectively) in the series, Boston Studies in the Philosophy of Science. The Society for Philosophy & Technology, now more than ten years old, is devoted to the promotion of philosophical schalarship that deals in one way or another with technology and technological society. "Philosophical scholarship" is interpreted broadly as including contribu tions from any and all perspectives; the one requirement is that the schalarship be sound, and all contributions to the series are subject to rigorous blind refereeing. "Technology," the other half of the philos ophy-and-technology pairing, is also construed broadly.

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.

Developing a Philosophy for Engineering R. K. Penny 1986

Interdisciplinary and Social Nature of Engineering Practices Antonio Carlos Zambroni de Souza 2022-01-15 This book covers practical and philosophical aspects of Engineering, paying special attention to the social impacts of emerging technologies. Some fundamentals of philosophy of technology are introduced followed by social, economic, and environmental discussion and implications in different disciplines. Each chapter provides insights on the responsibilities involved in the design of

engineering projects. The examples presented combine concepts about the impacts of Engineering in society at the same time that incorporates new technological models, yielding an innovative approach about the topics.

How an Engineering Professor Becomes a Spiritual Philosopher Tommy S. W. Wong 2016-07-01 Have you met an engineering professor? Have you met an engineering professor who is deep into spirituality and writes spiritual books? I have, and he is me. I had worked as an engineering professor in a university in Singapore. I now write philosophical, self-help and spiritual books. For an engineering professor to become a spiritual author is unusual to say the least. Indeed, it is this unusualness that prompted me to write this book. Engineering and spirituality are often perceived as two ends of a spectrum, and it is. As engineering deals with the physical, and spirituality deals with the non-physical, there is actually tremendous synergy once they are combined. In this book, there are ten chapters in which I share my physical and spiritual journey. They are: (1) Study years, (2) Working years, (3) Academic years, (4) From an engineering professor to a spiritual author, (5) Care for the dying, (6) Being unemployed, (7) Return as consultant, (8) Into politics and socio-political writings, (9) Becoming a spiritual philosopher, and (10) Epilogue. You are invited to join me on this journey. I hope this sharing is beneficial to you. May your life be filled with peace, love, joy and harmony!

Philosophy and Engineering Education John Heywood 2022-05-31 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.

Innovation Research in Technology and Engineering Management Marc J. de Vries 2021-03-02 Philosophy may not seem to be an obvious source to discover methods for successful product innovation management. However, this book shows that systematic reflection on the nature of product innovation management, supported by insights from the philosophy of technology, can illuminate the innovation process in technology and engineering. Presenting methodological guidelines and philosophical reflections, this book guides readers through each phase of product innovation. At each step, ideas from the philosophy of technology are translated into practical guidelines for managing these processes. The book works through the philosophical perspectives on innovation, methods in innovation design and research, and the value and ethical implications of innovation. Bridging the gap between philosophical context and practical methodologies, this book will be highly valuable for postgraduate students and academics researching and teaching innovation and philosophy of technology.

The Nature of Engineering G F C Rogers 2013-12-31

An Introduction to the Philosophy of Engineering Bocong Li 2021-11-15 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.

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.

On Design Ron Britton 2017-07-31 While many engineering books speak to “doing” engineering, precious few focus on the concept of “being” an engineer. Hence, this book, which is a reflection on the human side of engineering. The contents are drawn from two different, but parallel, columns Ron Britton wrote for the Keystone Professional, the official magazine of Engineers Geoscientists Manitoba (formerly the Association of Professional Engineers and Geoscientists of Manitoba). The Thoughts on Design column started in 2001 as an explanation of the opportunities provided by the award of one of the first Natural Sciences and Engineering Research Council of Canada Chairs in Design Engineering. The Engineering Philosophy 101 column came about in 2006, following a discussion relating to the philosophical foundations of engineering ethics. Consequently, this is a book about how one engineer has reacted to circumstances that involve engineers, either directly or peripherally, including engineering successes and failures. It reflects on how engineers should—and hopefully do—fit into and contribute to our ever-changing world, speaks to the privileges and responsibilities society has provided the profession in exchange for the right to self-government within that profession, and reflects on the constraints of professional practice and the creative possibilities that parallel those limitations.

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.

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 and Engineering Education Russell Korte 2022-02-23 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.

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Becoming a Human Engineer Alan Cheville 2022-01-31 Despite the importance of engineering and technology in economic, social, and other aspects of our lives what it means to develop as an engineer, and how this is to occur, is not widely discussed. Becoming a Human Engineer explores the moral and ethical challenges of educating engineers through the philosophical lens of personalism, a branch of philosophy that puts the person first, seeing human growth and development as central to good. Building from the philosophy of the 20th century philosopher John Macmurray, this book explores how ethics and education intersect through a continuous cycle of action and reflection. By pulling together disparate and wide-ranging topics across engineering education, several promising areas of future work are identified. Engineering methods and ways of reflection are deeply embedded in engineering education to the extent that they may interfere with becoming a person. A focus on specific knowledges must complement rather than distract from developing the habits of mind necessary for engineers to adapt to a changing world. Providing meaningful experiences and explicitly focusing on developing multiple ways to reflect on these experiences are shown to be critical for the holistic development of engineers as persons.

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 Routledge Handbook of the Philosophy of Engineering Diane P. Michelfelder 2020-12-30 Engineering has always been a part of human life but has only recently become the subject matter of systematic philosophical inquiry. The Routledge Handbook of the 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 the 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, calls not only 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.

Philosophy and Engineering: An Emerging Agenda Ibo van de Poel 2009-12-11 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.

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Philosophy and Engineering Education: Practical Ways of Knowing Russell Korte 2022-02-23 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 of Engineering and Artifact in the Digital Age Emilia Guliciuc 2010-02-19 Our world became engineered, remaining, nevertheless, human. Through the philosophy of engineering, both Engineering and Philosophy are profoundly involved in the transcendental curve of the debates on the future of humankind in the Era of the Artifacts, brought by the emergent technologies of robotics, genetic engineering and nanotechnology. In the Era-Just-Before-Singularity, while engineering is improved by philosophy (as Peter Simons has demonstrated), the “respected system of perplexities we call philosophy” (Jorge Luis Borges) are encouraged by engineering. This book is an anthology of papers presented during PHEADE 2009 (Philosophy of Engineering and Artifact in the Digital Era—www.goldenideashome.com/pheade2009/)—an exploratory workshop organized in the mythical county of Bucovina (in the northern Romania). Registered by The Reasoner as one of the first East European meetings of Philosophers and Engineers of the third millennium, the event was organized by the Romanian Society for Philosophy, Engineering and Technoethics, in an original attempt to redefine the engineered future of the humankind.

Philosophy of Technology after the Empirical Turn Maarten Franssen 2016-06-23 This volume features 16 essays on the philosophy of technology that discuss its identity, its position in philosophy in general, and the role of empirical studies in philosophical analyses of engineering ethics and engineering practices. This volume is published about fifteen years after Peter Kroes and Anthonie Meijers published a collection of papers under the title The empirical turn in the philosophy of technology, in which they called for a reorientation toward the practice of engineering, and sketched the likely benefits for philosophy of technology of pursuing its major questions in an empirically informed way. The essays in this volume fall apart in two different kinds. One kind follows up on The empirical turn discussion about what the philosophy of technology is all about. It continues the search for the identity of the philosophy of technology by asking what comes after the empirical turn. The other kind of essays follows the call for an empirical turn in the philosophy of technology by showing how it may be realized with regard to particular topics. Together these essays offer the reader an overview of the state of the art of an empirically informed philosophy of technology and of various views on the empirical turn as a stepping stone into the future of the philosophy of technology.

A View on Structural Engineering Via Engineering Science, Mathematics, Philosophy, and Arts Jih-Jiang Chyu 2016-06-16 A View on Structural Engineering Via Engineering Science, Mathematics, Philosophy, and Arts by Jih-Jiang Chyu In his book A View on Structural Engineering Via Engineering Science, Mathematics, Philosophy, and Arts Jih-Jiang Chyu presents a unique look on structural engineering that appeals to a variety of interests and backgrounds. Using history and life applications, Dr. Chyu presents structural engineering concepts to provide students and those experienced in the field the chance to engage in critical thinking and analysis while further exploring the vast concepts of structural engineering.

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.

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.

Philosophy and Engineering: An Emerging Agenda Ibo van de Poel 2012-03-14 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.

Literature and Philosophy D. Rudrum 2006-07-31 A collection of essays, grounded in state-of-the-art research that explores contemporary debates at the interface between literature and philosophy. It brings together diverse schools of thought and provides both a useful overview and an examination of one of the most fascinating cross-disciplinary encounters in the humanities today.