

# Ethics Of Emerging Technologies Scientific Facts And Moral Challenges

Innovation in Scientific Research and Emerging Technologies Handbook of Research on Digital Information Technologies: Innovations, Methods, and Ethical Issues Emerging Technologies Ageing and Digital Technology Nanotechnology Science and Technology Governance and Ethics Practical Guidance on Science and Engineering Ethics Education for Instructors and Administrators Ethics, Technology, and Engineering Ethical Tensions from New Technology Technoscience and Citizenship: Ethics and Governance in the Digital Society Emerging Technologies in Sport Technology, Ethics and the Protocols of Modern War Ethical Assessments of Emerging Technologies Ethical Governance of Emerging Technologies Development Military Ethics and Emerging Technologies The Rightful Place of Science The Ethics of Technology Future Law Next-Generation Ethics Surveillance Futures Human Rights and Emerging Technologies Ethics and the Future of Spying Ethics of Emerging Technologies Ethics in Scientific Research Ethics and Emerging Technologies Emerging Pervasive Information and Communication Technologies (PICT) Emerging and Readily Available Technologies and National Security Embedding New Technologies Into Society Nanotechnology & Society Nanotechnology The Ethical Challenges of Emerging Medical Technologies Commercial Space Exploration New Perspectives on Technology in Society The Ethics of Invention: Technology and the Human Future Moral Responsibility and Risk in Society The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight Interreligious Perspectives on Mind, Genes and the Self Emerging Technologies and Ethical Issues in Engineering Healthcare Robots Emerging and Advanced Technologies in Diverse Forensic

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Sciences

## Innovation in Scientific Research and Emerging Technologies

Attitudes towards science, medicine and the body are all profoundly shaped by people ' s worldviews. When discussing issues of bioethics, religion often plays a major role. In this volume, the role of genetic manipulation and neurotechnology in shaping human identity is examined from multiple religious perspectives. This can help us to understand how religion might affect the impact of the initiatives such as the UNESCO Declaration in Bioethics and Human Rights. The book features bioethics experts from six major religions: Buddhism, Confucianism, Christianity, Islam, Hinduism, and Judaism. It includes a number of distinct religious and cultural views on the anthropological, ethical and social challenges of emerging technologies in the light of human rights and in the context of global bioethics. The contributors work together to explore issues such as: cultural attitudes to gene editing; neuroactive drugs; the interaction between genes and behaviours; the relationship between the soul, the mind and DNA; and how can clinical applications of these technologies benefit the developing world. This is a significant collection, demonstrating how religion and modern technologies relate to one another. It will, therefore, be of great interest to academics working in bioethics, religion and the body, interreligious dialogue, and religion and science, technology and neuroscience.

Handbook of Research on Digital Information Technologies: Innovations, Methods, and Ethical Issues

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From birth to adulthood, children now find themselves navigating a network of surveillance devices that attempt to identify, quantify, sort and track their thoughts, movements and actions. This book is the first collection to focus exclusively on technological surveillance and young people. Organised around three key spheres of children ' s day-to-day life: schooling, the self and social lives, this book chronicles the increasing surveillance that children, of all ages, are subject to. Numerous surveillance apparatus and tools are examined, including, but not limited to: mobile phones, surveillance cameras, online monitoring, GPS and RFID tracking and big data analytics. In addition to chronicling the steady rise of such surveillance practices, the chapters in this volume identify and problematise the consequences of technological surveillance from a range of multidisciplinary perspectives. Bringing together leading scholars working across diverse fields – including sociology, education, health, criminology, anthropology, philosophy, media and information technology – the collection highlights the significant socio-political and ethical implications of technological surveillance throughout childhood and youth.

## Emerging Technologies

This book discusses the ethical and legal challenges related to innovations, with reference to both scientific research and emerging technologies. It analyzes scientific research with specific reference to experimentation, with a focus on vulnerable people (minors, women, people in developing countries), compassionate care, biobanks and ethical committees. In the context of emerging technologies, it examines the ethical and legal aspects of neuroscience, genomics, ICT, big data, biometrics, converging technologies, enhancement and robotics. The book provides conceptual tools and categories to help

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readers understand and acquire a critical awareness of the current debates in the field.

## Ageing and Digital Technology

Advances in technology have always had a significant impact on sport. This book surveys the next generation of emerging technologies and considers how sport managers, governing bodies and officials can meet the challenges that they pose for sport competition, participation and events. It explores cutting edge developments in areas such as gene doping, vision and brain technologies, 3D printing technologies, molecular communication technologies and our ability to "rebuild" bodies. Each chapter considers the implications of a particular technology in terms of ethics, rules and regulations, facilities and resourcing, as well as the emergence of completely new forms of sport, and offers strategies for future sport management. *Emerging Technologies in Sport* is a valuable resource for sport industry professionals, undergraduate students in the fields of sport management, sport tourism, and sport business, and a fascinating read for anyone with an interest in sport and future applications of emerging technologies within sport.

## Nanotechnology

Scientific research ethics vary by discipline and by country, and this analysis sought to understand those variations. The authors reviewed literature and conducted interviews to provide researchers, government officials, and others who create, modify, and enforce ethics in scientific research around the world with

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an understanding of how ethics are created, monitored, and enforced across scientific disciplines and across international borders.

### Science and Technology Governance and Ethics

First and only undergraduate textbook that addresses the social and ethical issues associated with a wide array of emerging technologies, including genetic modification, human enhancement, geoengineering, robotics, virtual reality, artificial meat, neurotechnologies, information technologies, nanotechnology, sex selection, and more.

### Practical Guidance on Science and Engineering Ethics Education for Instructors and Administrators

Advances in nanotechnology are transforming the ways of creating materials and products, leading society to the threshold of a second industrial revolution. However, future opportunities will depend significantly on how nanotechnology stakeholders deal with the short-term and long-term benefits, limitations, uncertainties and risks of nanotechnology. They will be tasked with navigating a variety of new social and ethical challenges associated with areas such as privacy, the environment, energy, population, genetics, agriculture, food, and security. Unique in its depth, breadth, and variety of viewpoints, *Nanotechnology: Ethical and Social Implications* stimulates, inspires, and builds awareness of nanotechnology's impact on society. Spanning the immense range of disciplines at work in

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nanotechnology, the book 's selection of chapters focuses on how advances in science, and the convergence of multiple technologies, will impact society at individual, community, national, and international levels. The book focuses on raising the awareness of nanotechnology stakeholders, which includes undergraduate and graduate students; educators in sciences, engineering, business, and public policy; engineers; business and finance professionals; and policymakers. It also addresses the demands on the future workforce to learn new skill sets. The book uses an interactive format—which includes case studies, scenarios, and Web exercises—to promote critical thinking and problem solving skills. Content includes numerous tables, statistics, and figures to supplement and enhance the topics covered in each chapter. The result is a must-read for anyone seeking either a technical or nontechnical understanding of the societal impact of nanotechnology.

### Ethics, Technology, and Engineering

This book provides students with a toolbox for the study of the ethics of technology, exploring the methods available for ethical assessments of technologies and their social introduction.

### Ethical Tensions from New Technology

This study deals with an underexplored area of the emerging technologies debate: robotics in the healthcare setting. The author explores the role of care and develops a value-sensitive ethical framework for the eventual employment of care robots. Highlighting the range of positive and negative aspects

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associated with the initiative to design and use care robots, it draws out essential content as a guide to future design both reinforcing this study ' s contemporary relevance, and giving weight to its prescriptions. The book speaks to, and is meant to be read by, a range of disciplines from science and engineering to philosophers and ethicists.

### Technoscience and Citizenship: Ethics and Governance in the Digital Society

This volume looks at current and emerging technologies of war and some of the ethical issues surrounding their use. Although the nature and politics of war never change, the weapons and technologies used in war do change and are always undergoing development. Because of that, the arsenal of weapons for twenty-first century conflict is different from previous centuries. Weapons in today ' s world include an array of instruments of war that include, robotics, cyber war capabilities, human performance enhancement for warriors, and the proliferation of an entire spectrum of unmanned weapons systems and platforms. Tactical weapons now have the potential of strategic results and have changed the understanding of the battle space creating ethical, legal, and political issues unknown in the pre-9/11 world. What do these technologies mean for things such as contemporary international relations, the just-war tradition, and civil-military relations? Directed at readers in the academic, scientific, military, and public policy communities, this volume offers current thought on ethics and emerging technologies from internationally-recognized scholars addressing the full spectrum of issues in present warfare technology. It includes current and ongoing topics of multi-discipline and international interest, such as ethics, law, international relations, war studies, public policy, science and technology. This book was originally published in various issues and volumes of the Journal of Military Ethics.

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## Emerging Technologies in Sport

At the same time that the pace of science and technology has greatly accelerated in recent decades, our legal and ethical oversight mechanisms have become bogged down and slower. This book addresses the growing gap between the pace of science and technology and the lagging responsiveness of legal and ethical oversight society relies on to govern emerging technologies. Whether it be biotechnology, genetic testing, nanotechnology, synthetic biology, computer privacy, autonomous robotics, or any of the other many emerging technologies, new approaches are needed to ensure appropriate and timely regulatory responses. This book documents the problem and offers a toolbox of potential regulatory and governance approaches that might be used to ensure more responsive oversight.

## Technology, Ethics and the Protocols of Modern War

An important contribution to the professional work performed in the areas on emerging technologies, this book provides an extensive expansion of the literature base on contemporary theories and investigative techniques used in the forensic sciences. Forensic science, as a relatively new field of research still actively identifying itself in the larger landscape of the sciences, has been sharply criticized for utilizing techniques deemed largely unscientific by subject area experts. This book presents a collective analysis and review of the existing challenges as well as directions for state-of-the-art practices found in diverse forensic settings, enabling the reader to make an informed decision about the scientific validity of forensic techniques, and emphasizes the need for a greater understanding of the use of the

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most appropriate methodology and procedures. The contributors address cutting-edge, developing, and even hypothetical techniques and technologies in forensics research and practice, especially as it relates to the sphere of criminal justice and law enforcement in contemporary society. A useful work for forensics professionals, and students and scholars working in the fields of politics and technology, criminal justice, forensic psychology, police psychology, law enforcement, and forensic science.

### Ethical Assessments of Emerging Technologies

Over the last two decades, colleges and universities in the United States have significantly increased the formal ethics instruction they provide in science and engineering. Today, science and engineering programs socialize students into the values of scientists and engineers as well as their obligations in the conduct of scientific research and in the practice of engineering. Practical Guidance on Science and Engineering Ethics Education for Instructors and Administrators is the summary of a workshop convened in December 2012 to consider best practices for ethics education programs in science and engineering. The workshop focused on four key areas: goals and objectives for ethics instruction, instructional assessment, institutional and research cultures, and development of guidance checklists for instructors and administrators. Leading experts summarized and presented papers on current research knowledge in these areas. This report presents the edited papers and a summary of the discussions at the workshop.

### Ethical Governance of Emerging Technologies Development

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The newest book in The Rightful Place of Science series from Arizona State University's Consortium for Science, Policy & Outcomes, Future Conflict & Emerging Technologies explores the cutting edge of conflict and warfighting. The rapidly evolving environment for conflict combines destabilizing geopolitical factors with fast-moving technologies in ways that make familiar institutions and behaviors questionable, if not obsolete.

### Military Ethics and Emerging Technologies

The summary version of Emerging and Readily Available Technologies and National Security distills the findings and recommendations of the complete report into a a booklet format. The full report is available [here](#).

### The Rightful Place of Science

Not since man set foot on the moon over four decades ago has there been such passion and excitement about space exploration. This enthusiasm and eagerness has been spurred on by the fact that for the first time since the very beginning of the space age, space travel is no longer limited to an elite group of highly trained and well-disciplined military officers and test pilots. Instead, we must understand that the possibility of commercial space travel is already on our horizon and that it comes with a number of significant practical and moral challenges. Our level of scientific development and ability to influence international affairs and policy confers upon us an obligation to study the ethical, legal and social

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considerations associated with space exploration and understanding the potential consequences from the beginning is critical. This volume provides the first comprehensive and unifying analysis concerning the rise of private space exploration, with a view toward developing policy that may influence real-world decision making. The plethora of questions demanding serious attention - privatisation and commercialisation, the impact on the environment, health futures, risk assessment, responsibility and governance - are directly addressed in this scholarly work.

## The Ethics of Technology

Risks, including health and technological, attract a lot of attention in modern societies, from individuals as well as policy-makers. Human beings have always had to deal with dangers, but contemporary societies conceptualise these dangers as risks, indicating that they are to some extent controllable and calculable. Conceiving of dangers in this way implies a need to analyse how we hold people responsible for risks and how we can and should take responsibility for risks. *Moral Responsibility and Risk in Society* combines philosophical discussion of different concepts and notions of responsibility with context-specific applications in the areas of health, technology and environment. The book consists of two parts addressing two crucial aspects of risks and responsibility: holding agents responsible, i.e. ascribing and distributing responsibility for risks, and taking responsibility for risk. More specifically, the book discusses the values of fairness and efficacy in responsibility distributions and makes distinctions between backward-looking and forward-looking responsibility as well as individual and collective responsibility. Additionally, it analyses what it means to take responsibility for technological risks, conceptualising this kind of responsibility as a virtue, and furthermore, explores the notion of responsible risk communication

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and the implications for adult-child relationships. This book will be of great interest to students and scholars of environmental ethics, bioethics, public health ethics, engineering ethics, philosophy of risk and moral philosophy.

### Future Law

The embedding of any new technologies in society is challenging. The evolving state of the scientific art, often-unquantifiable risks and ill-defined developmental trajectories have the potential to hinder innovation and/or the commercial success of a technology. There are, however, a number of tools that can now be utilized by stakeholders to bridge the chasm that exists between the science and innovation dimensions on the one hand, and the societal dimensions on the other. This edited volume will draw together leading researchers from the domains of law, philosophy, political science, public administration and the natural sciences in order to demonstrate how tools such as, for example, constructive technology assessment, regulatory governance and societal scenarios, may be employed by stakeholders to assist in successfully embedding new technologies into society. This volume will focus primarily on the embedding of two emergent and emerging technologies: nanotechnologies and synthetic biology. Government, industry and the epistemic community continue to struggle with how best to balance the promised benefits of an emerging technology with concerns about its potential impacts. There is a growing body of literature that has examined these challenges from various cultural, scientific and jurisdictional dimensions. There is, however, much work that still needs to be done; this includes articulating the successes and failures of attempts to the societal embedding of technologies and their associated products. This edited volume is significant and timely, as unlike other books currently on the

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market, it shall draw from real work experiences and experiments designed anticipate the societal embedding of emerging technologies. This empirical work shall be supported by robust theoretical underpinnings.

## Next-Generation Ethics

Nanotechnology & Society is a collection of sixteen papers focused on the most urgent issues arising from nanotechnology today and in the near future. Written by leading researchers, policy experts, and nanoethics scholars worldwide, the book is divided into five units: foundational issues; risk and regulation; industry and policy; the human condition; and selected global issues. The essays tackle such contentious issues as environmental impact, health dangers, medical benefits, intellectual property, professional code of ethics, privacy, international governance, and more.

## Surveillance Futures

This book provides insights on how emerging technosciences come together with new forms of governance and ethical questioning. Combining science and technologies and ethics approaches, it looks at the emergence of three key technoscientific domains - body enhancement technologies, biometrics and technologies for the production of space -exploring how human bodies and minds, the movement of citizens and space become matters of technoscientific governance. The emergence of new and digital technologies pose new challenges for representative democracy and existing forms of citizenship. As

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citizens encounter and have to adapt to technological change in their everyday life, new forms of conviviality and contestation emerge. This book is a key reference for scholars interested in the governance of emerging technosciences in the fields of science and technology studies and ethics.

## Human Rights and Emerging Technologies

We live in a world increasingly governed by technology—but to what end? Technology rules us as much as laws do. It shapes the legal, social, and ethical environments in which we act. Every time we cross a street, drive a car, or go to the doctor, we submit to the silent power of technology. Yet, much of the time, the influence of technology on our lives goes unchallenged by citizens and our elected representatives. In *The Ethics of Invention*, renowned scholar Sheila Jasanoff dissects the ways in which we delegate power to technological systems and asks how we might regain control. Our embrace of novel technological pathways, Jasanoff shows, leads to a complex interplay among technology, ethics, and human rights. Inventions like pesticides or GMOs can reduce hunger but can also cause unexpected harm to people and the environment. Often, as in the case of CFCs creating a hole in the ozone layer, it takes decades before we even realize that any damage has been done. Advances in biotechnology, from GMOs to gene editing, have given us tools to tinker with life itself, leading some to worry that human dignity and even human nature are under threat. But despite many reasons for caution, we continue to march heedlessly into ethically troubled waters. As Jasanoff ranges across these and other themes, she challenges the common assumption that technology is an apolitical and amoral force. Technology, she masterfully demonstrates, can warp the meaning of democracy and citizenship unless we carefully consider how to direct its power rather than let ourselves be shaped by it. *The Ethics of Invention* makes

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a bold argument for a future in which societies work together—in open, democratic dialogue—to debate not only the perils but even more the promises of technology.

## Ethics and the Future of Spying

Featuring a wide range of international case studies, Ethics, Technology, and Engineering presents a unique and systematic approach for engineering students to deal with the ethical issues that are increasingly inherent in engineering practice. Utilizes a systematic approach to ethical case analysis -- the ethical cycle -- which features a wide range of real-life international case studies including the Challenger Space Shuttle, the Herald of Free Enterprise and biofuels. Covers a broad range of topics, including ethics in design, risks, responsibility, sustainability, and emerging technologies Can be used in conjunction with the online ethics tool Agora (<http://www.ethicsandtechnology.com>) Provides engineering students with a clear introduction to the main ethical theories Includes an extensive glossary with key terms

## Ethics of Emerging Technologies

This book systematically addresses the issue of assessing the normative nature of visions of emerging technologies in an epistemologically robust way. In the context of democratic governance of emerging technologies, not only it is important to reflect on technologies' moral significance, but also to address their emerging and future oriented character. The book proposes an original approach to deal with the

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issue of “ plausible ” ethical evaluation of new technologies. Taking its start from current debates about Technology Assessment, the proposed solution emerges as a combination of theoretical and methodological insights from the fields of Philosophy of Technology, Science and Technology Studies and a normative justification based on pragmatist ethics. The book ’ s main contribution is to engage a diverse and interdisciplinary audience (ethicists, philosophers, social scientists, technology assessment researchers and practitioners) in a reflection concerning the epistemological challenges that are associated to the endeavour of appraising the moral significance of emerging technologies in the attempt of democratically governing them. It brings together concepts and methodologies from different disciplines and shows their synergy in applying them to two specific case studies of emerging biomedical technologies.

## Ethics in Scientific Research

The emergence of nanoscience portends a revolution in technology that will soon impact virtually every facet of our technological lives. Yet there is little understanding of what it is among the educated public and often among scientists and engineers in other disciplines. Furthermore, despite the emergence of undergraduate courses on the subject, no basic textbooks exist. Nanotechnology: Basic Science and Emerging Technologies bridges the gap between detailed technical publications that are beyond the grasp of nonspecialists and popular science books, which may be more science fiction than fact. It provides a fascinating, scientifically sound treatment, accessible to engineers and scientists outside the field and even to students at the undergraduate level. After a basic introduction to the field, the authors explore topics that include molecular nanotechnology, nanomaterials and nanopowders,

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nanoelectronics, optics and photonics, and nanobiometrics. The book concludes with a look at some cutting-edge applications and prophecies for the future. Nanoscience will bring to the world technologies that today we can only imagine and others of which we have not yet dreamt. This book lays the groundwork for that future by introducing the subject to those outside the field, sparking the imaginations of tomorrow's scientists, and challenging them all to participate in the advances that will bring nanotechnology's potential to fruition.

### Ethics and Emerging Technologies

The development and introduction of a new technology to society can be viewed as an experimental process, full of uncertainties, which are only gradually reduced as the technology is employed. Unexpected developments may trigger an experimental process in which society must find new ways to deal with the uncertainties posed. This book explores how the experimental perspective determines what ethical issues new technologies raise and how it helps morally evaluate their introduction. Expert contributors highlight the uncertainties that accompany the process, identify the social and ethical challenges they give rise to, and propose strategies to manage them. Focusing on the introduction of new technologies and experimentation as ways to perceive new developments and changing contexts, a key theme of the book is how to approach the moral issues raised by new technology and understand the role of experimentation in exploring these matters.

### Emerging Pervasive Information and Communication Technologies (PICT)

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This book provides a wide and deep perspective on the ethical issues raised by pervasive information and communication technology (PICT) – small, powerful, and often inexpensive Internet-connected computing devices and systems. It describes complex and unfamiliar technologies and their implications, including the transformative potential of augmented reality, the power of location-linked information, and the uses of “ big data, ” and explains potential threats, including privacy invaded, security violated, and independence compromised, often through widespread and lucrative manipulation. PICT is changing how we live, providing entertainment, useful tools, and life-saving systems. But the very smartphones that connect us to each other and to unlimited knowledge also provide a stream of data to systems that can be used for targeted advertising or police surveillance. Paradoxically, PICT expands our personal horizons while weaving a web that may ensnare whole communities. Chapters describe particular cases of PICT gone wrong, but also highlight its general utility. Every chapter includes ethical analysis and guidance, both specific and general. Topics are as focused as the Stuxnet worm and as broad as the innumerable ways new technologies are transforming medical care. Written for a broad audience and suitable for classes in emerging technologies, the book is an example of anticipatory ethics – “ ethical analysis aimed at influencing the development of new technologies ” (Deborah Johnson 2010). The growth of PICT is outpacing the development of regulations and laws to protect individuals, organizations, and nations from unintended harm and malicious havoc. This book alerts users to some of the hazards of PICT; encourages designers, developers, and merchants of PICT to take seriously their ethical responsibilities – if only to “ do no harm ” – before their products go public; and introduces citizens and policy makers to challenges and opportunities that must not be ignored.

### Emerging and Readily Available Technologies and National Security

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Leaders from academia and industry offer guidance for professionals and general readers on ethical questions posed by modern technology.

## Embedding New Technologies Into Society

Engineers and ethicists participated in a workshop to discuss the responsible development of new technologies. Presenters examined four areas of engineering--sustainability, nanotechnology, neurotechnology, and energy--in terms of the ethical issues they present to engineers in particular and society as a whole. Approaches to ethical issues include: analyzing the factual, conceptual, application, and moral aspects of an issue; evaluating the risks and responsibilities of a particular course of action; and using theories of ethics or codes of ethics developed by engineering societies as a basis for decision making. Ethics can be built into the education of engineering students and professionals, either as an aspect of courses already being taught or as a component of engineering projects to be examined along with research findings. Engineering practice workshops can also be effective, particularly when they include discussions with experienced engineers. This volume includes papers on all of these topics by experts in many fields. The consensus among workshop participants is that material on ethics should be an ongoing part of engineering education and engineering practice.

## Nanotechnology & Society

The introduction of new technologies can be controversial, especially when they create ethical tensions

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as well as winners and losers among stakeholders and interest groups. While ethical tensions resulting from the genetic modification of crops and plants and their supportive gene technologies have been apparent for decades, persistent challenges remain. This book explores the contemporary nature, type, extent and implications of ethical tensions resulting from agricultural biotechnology specifically and technology generally. There are four main arenas of ethical tensions: public opinion, policy and regulation, technology as solutions to problems, and older versus new technologies. Contributions focus on one or more of these arenas by identifying the ethical tensions technology creates and articulating emerging fault lines and, where possible, viable solutions. Key features include focusing on contemporary challenges created by new and emerging technologies, especially agricultural biotechnology. Identifying a unique perspective by considering the problem of ethical tensions created or enhanced by new technologies. Providing an interdisciplinary perspective by including perspectives from sociologists, economists, philosophers and other social scientists. This book will be of interest to academics in agricultural economics, sociology and philosophy and policymakers concerned with introducing new technology into agriculture.

### Nanotechnology

Contemporary security has expanded its meaning, content and structure in response to globalisation and the emergence of greatly improved world-wide communication. The protocols of modern warfare, including targeted killing, enhanced interrogations, mass electronic surveillance and the virtualisation of war have changed the moral landscape and brought diverse new interactions with politics, law, religion, ethics and technology. This book addresses how and why the nature of security has changed and what

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this means for the security actors involved and the wider society. Offering a crossdisciplinary perspective on concepts, meanings and categories of security, the book brings together scholars and experts from a range of disciplines including political, military studies and security studies, political economy and international relations. Contributors reflect upon new communication methods, postmodern concepts of warfare, technological determinants and cultural preferences to provide new theoretical and analytical insights into a changing security environment and the protocols of war in the 21st century. A useful text for scholars and students of security studies, international relations, global governance, international law and ethics, foreign policy, comparative studies and contemporary world history.

### The Ethical Challenges of Emerging Medical Technologies

An insightful guide to understanding and navigating the ethical issues faced by anyone affected by the ethical dilemmas associated with current and emerging technologies *Ethics of Emerging Technologies* provides the background, insight, and tools for approaching and solving ethical dilemmas across a broad range of topics. The text discusses ethical problems, using examples and reasoning tools that will aid engineers, scientists, managers, administrators, and the public who wish to understand risks, benefits, and possible approaches to resolving conflicts associated with new technologies in the context of the global community. Solutions we choose to ethical dilemmas accompanying new technologies will profoundly affect future generations. Scientific facts and guides to decision-making for all associated with emerging technologies are presented. Some of the topics are: Human health and environmental effects of alternative energy production methods Communications and privacy Plagiarism and authorship Genetic modification of organisms Human and animal experimentation Synthetic biology and bioterrorism

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Confidentiality in science, engineering, and business communications  
Risks and consequences of enhancing human beings through new technologies  
Cloning of human beings and stem cell research  
Brain modifications  
Space exploration

## Commercial Space Exploration

Emerging technologies present a challenging but fascinating set of ethical, legal and regulatory issues. The articles selected for this volume provide a broad overview of the most influential historical and current thinking in this area and show that existing frameworks are often inadequate to address new technologies - such as biotechnology, nanotechnology, synthetic biology and robotics - and innovative new models are needed. This collection brings together invaluable, innovative and often complementary approaches for overcoming the unique challenges of emerging technology ethics and governance.

## New Perspectives on Technology in Society

This book brings together Sociologists, Computer Scientists, Applied Scientists and Engineers to explore the design, implementation and evaluation of emerging technologies for older people. It offers an innovative and comprehensive overview, not only of the rapidly developing suite of current digital technologies and platforms, but also of perennial theoretical, methodological and ethical issues. As such, it offers support for researchers and professionals who are seeking to understand and/or promote technology use among older adults. The contributions presented here offer theoretical and

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methodological frameworks for understanding age-based digital inequalities, participation, digital design and socio-gerontechnology. They include ethical and practical reflections on the design and evaluation of emerging technologies for older people, as well as guidelines for ethical, participatory, professional and cross-disciplinary research and practice. In addition, they feature state-of-the-art, international empirical research on communication technologies, games, assistive technology and social media. As the first truly multidisciplinary book on technology use among ageing demographics, and intended for students, researchers, applied researchers, practitioners and professionals in a variety of fields, it will provide these readers with insights, guidelines and paradigms for practice that transcend specific technologies, and lay the groundwork for future research and new directions in innovation.

### The Ethics of Invention: Technology and the Human Future

"This book provides a collection of successful designs, defined as communicative relation-building solutions, for individuals and collectives of interlocutors. It includes a longitudinal perspective of past mistakes, current trends and future opportunities, and is a must-have for beginners in the field as well as qualified professionals exploring the full potential of human interactions"--Provided by publisher.

### Moral Responsibility and Risk in Society

How can law ethically regulate a future of fast-changing technologies? From recent inventions to science fiction, Future Law explores how law, ethics and regulation must respond to new technologies that

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challenge the boundaries of our ethics.

## The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight

This volume examines the ethical issues generated by recent developments in intelligence collection and offers a comprehensive analysis of the key legal, moral and social questions thereby raised. Intelligence officers, whether gatherers, analysts or some combination thereof, are operating in a sea of social, political, scientific and technological change. This book examines the new challenges faced by the intelligence community as a result of these changes. It looks not only at how governments employ spies as a tool of state and how the ultimate outcomes are judged by their societies, but also at the mind-set of the spy. In so doing, this volume casts a rare light on an often ignored dimension of spying: the essential role of truth and how it is defined in an intelligence context. This book offers some insights into the workings of the intelligence community and aims to provide the first comprehensive and unifying analysis of the relevant moral, legal and social questions, with a view toward developing policy that may influence real-world decision making. The contributors analyse the ethics of spying across a broad canvas – historical, philosophical, moral and cultural – with chapters covering interrogation and torture, intelligence 's relation to war, remote killing, cyber surveillance, responsibility and governance. In the wake of the phenomena of WikiLeaks and the Edward Snowden revelations, the intelligence community has entered an unprecedented period of broad public scrutiny and scepticism, making this volume a timely contribution. This book will be of much interest to students of ethics, intelligence studies, security studies, foreign policy and IR in general.

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## Interreligious Perspectives on Mind, Genes and the Self

The more integrated technology becomes in our everyday lives and businesses, the more vital it grows that its applications are utilized in an ethical and appropriate way. Ethical Governance of Emerging Technologies Development combines multiple perspectives on ethical backgrounds, theories, and management approaches when implementing new technologies into an environment. Understanding the ethical implications associated with utilizing new advancements in technology is useful for professionals, researchers, and graduate students interested in this growing area of research.

## Emerging Technologies and Ethical Issues in Engineering

This collection of essays emphasizes society ' s increasingly responsible engagement with ethical challenges in emerging medical technology. Expansion of technological capacity and attention to patient safety have long been integral to improving healthcare delivery but only relatively recently have concepts like respect, distributive justice, privacy, and autonomy gained some power to shape the development, use, and refinement of medical tools and techniques. Medical ethics goes beyond making better medicine to thinking about how to make the field of medicine better. These essays showcase several ways in which modern ethical thinking is improving safety, efficacy and efficiency of medical technology, increasing access to medical care, and empowering patients to choose care that comports with their desires and beliefs. Included are complimentary ethical approaches as well as compelling counter-arguments. Together, the articles demonstrate how improving the quality of medical technology relies on every

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stakeholder -- not just medical researchers and scientists -- to assess each given technology ' s strengths and pitfalls. This collection also portends one of the next major issues in the ethics of medical technology: developing the requisite moral framework to accompany shifts toward patient-centred personalized healthcare.

### Healthcare Robots

What is the state of current European governance on new and emerging technologies, and where is it going? What is, and what can be, the role of human rights in governance arrangements? These are the main questions that this book answers for both European and non-European scholars. It provides a wide picture of current European governance, notably in biotechnology, nanotechnology and synthetic biology, and discusses the model of Responsible Research and Innovation, which is gaining popularity within the European Union, under a human rights perspective. It shows how human rights can contribute to governance frameworks without posing obstacles to research and innovation. The theory presented in the book is followed by practical guidelines drawn from human rights law. Starting from the Strasbourg Court jurisprudence, it provides a complete review of the wide range of rights that the European Convention on Human Rights protects in light of the challenges of techno-scientific advances. This analysis will come in handy for private actors, policymakers, regulators, as well as judges in solving hard cases raised by techno-scientific progress in the future.

### Emerging and Advanced Technologies in Diverse Forensic Sciences

## Access PDF Ethics Of Emerging Technologies Scientific Facts And Moral Challenges

This book analyzes the possibilities for effective global governance of science in Europe, India and China. Authors from the three regions join forces to explore how ethical concerns over new technologies can be incorporated into global science and technology policies. The first chapter introduces the topic, offering a global perspective on embedding ethics in science and technology policy. Chapter Two compares the institutionalization of ethical debates in science, technology and innovation policy in three important regions: Europe, India and China. The third chapter explores public perceptions of science and technology in these same three regions. Chapter Four discusses public engagement in the governance of science and technology, and Chapter Five reviews science and technology governance and European values. The sixth chapter describes and analyzes values demonstrated in the constitution of the People ' s Republic of China. Chapter Seven describes emerging evidence from India on the uses of science and technology for socio-economic development, and the quest for inclusive growth. In Chapter Eight, the authors propose a comparative framework for studying global ethics in science and technology. The following three chapters offer case studies and analysis of three emerging industries in India, China and Europe: new food technologies, nanotechnology and synthetic biology. Chapter 12 gathers all these threads for a comprehensive discussion on incorporating ethics into science and technology policy. The analysis is undertaken against the backdrop of different value systems and varying levels of public perception of risks and benefits. The book introduces a common analytical framework for the comparative discussion of ethics at the international level. The authors offer policy recommendations for effective collaboration among the three regions, to promote responsible governance in science and technology and a common analytical perspective in ethics.

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