

Heidegger, Martin (2004). *Four seminars*. Translated by Andrew Mitchell and François Raffoul. Bloomington, IN: Indiana University Press. ISBN 0-253-34363-1, hc, \$35.00.

In this book, the world-renowned philosopher, Martin Heidegger reviews the entire trajectory of his thought and offers unique perspectives on fundamental aspects of his work. First published in French in 1976, these seminars were translated into German with Heidegger's approval and reissued in 1986 as part of his *Gesamtausgabe*, volume 15. Topics considered include the Greek understanding of presence, the ontological difference, the notion of system in German Idealism, the power of naming, the problem of technology, and the difficulties of enowning. Heidegger's engagements continue in surprising dialogues with his contemporaries – Husserl, Marx, and Wittgenstein. While providing important insights into how Heidegger conducted his lectures, these seminars feature him in his maturity reflecting back on his philosophical path. An important text for understanding contemporary philosophical debates, *Four Seminars* provides extraordinarily rich material for students and scholars of Heidegger.

Hughes, Thomas P. (2004). *Human-built world: How to think about technology and culture*. Chicago: University of Chicago Press. ISBN 0-226-35933-6, hc, \$22.50.

Thomas P. Hughes, eminent historian of technology and acclaimed author of *American Genesis*, a finalist for the Pulitzer Prize, wrote this book as a similar reminder, revealing the concept of technology as it was framed historically by thinkers who ran the gamut from horrified to euphoric. For just as Henry Ford's factories were revolutionizing the productive capacity of the American automobile industry, social critics were warning of the increasing "dehumanization" of machine-age culture. And just as Ralph Waldo Emerson was celebrating the transformative power of technology and its ability to express the ultimate creativity of the human race, the steam engine and coal production were beginning to ravage the nineteenth-century landscape.

Exploring such competing perspectives, *Human-Built World* is a concise intellectual biography of technology. Drawing on a vast body of work created over the centuries by philosophers and architects, social theorists and web designers, politicians and engineers, Hughes charts the multiple ways that technology has been viewed – sometimes with elation, sometimes with skepticism – by various thinkers. Technology has not been a slow and steady march to the ever-increasing complexity and sophistication of objects; it has been the subject of debate for centuries about the human will to create, the inherent danger of progress for its own sake, and the Mephistophelean urge to alter everything from the natural landscape to the daily activity of millions.

Israel, Paul B., Louis Carlat, David Hochfelder, Keith A. Nier, Eds. (2004). *The papers of Thomas A. Edison: Research to development at Menlo Park, January 1879-March 1881*. Volume 5 of the series. Baltimore, MD: The Johns Hopkins University Press. ISBN 0-8018-3104-0, hc, \$90.00.

Over 1,000 pages of this fifth volume of the papers of Thomas A. Edison covers Edison's invention and development of the first commercial incandescent electric light and power system. In the process he turned his famous Menlo Park laboratory into the first true research and development facility. This work enabled him to develop a new telephone for the British market in the midst of his Herculean efforts on electric lighting. By focusing on the characteristics of the entire system, Edison reconceptualized the requirements of a successful lamp design. While rivals worked primarily with lamps, Edison developed other parts of a complete system, an approach that most notably led to his revolutionary work on generator technology – one of the highlights of this volume. Edison also realized the importance of commercial development. To create a daytime market for electricity he developed electric motors for a variety of uses, including electric railways. This series is a monumental achievement and provides deep insights into a true technological genius.

Jones, Lyle E., Ingram Olkin (2004). *The nation's report card: Evolution and perspectives*. Bloomington, IN: Phi Delta Kappa International. ISBN 0-87367-848-6, hc, \$69.95.

Since its inception in the 1960s, the National Assessment of Educational Progress (NAEP) has become the standard for monitoring the academic progress of America's children. In this book, an extensive collection of perspectives traces the evolution of NAEP, from Francis Keppel's testimony before Congress in 1962 and the awarding of the assessment contract to the Educational Testing Service in 1983 to NAEP's role in the current No Child Left Behind Act of 2001. The story of the nation's report card is told through penetrating analyses, scholarly essays, and lively interviews, many with those who were there at the start 40 years ago.

Kinney, Thomas A. (2004). *The carriage trade: Making horse-drawn vehicles in America*. Baltimore, MD: The Johns Hopkins University Press. ISBN 0-8018-7946-9, hc, \$49.95.

In this sweeping study of a forgotten trade, Thomas Kinney traces the rise and fall of the horse-drawn carriage industry, from the preindustrial shop system to the coming of the automobile. Using as case studies Studebaker, Brewster & Company, the New York-based luxury carriage maker, and dozens of smaller firms from around the country, he also explores the experiences of the carriage and wagon worker over the life of the industry. The carriage industry epitomized a batch-work approach to production that flourished for decades. Contradicting the model of industrial development in which hand tools, small firms, and individual craftsmanship simply gave way to mechanized factories, the carriage industry successfully employed small-scale business and manufacturing practices throughout its history. Deeply researched and strikingly original, this study contributes a vivid chapter to the story of America's industrial revolution.

Lazer, David, Ed. (2004). *DNA and the criminal justice system: The technology of justice*. Cambridge, MA: The MIT Press. ISBN 0-262-62186-X, pb, \$27.00.

This book, written by a distinguished group of authors including U.S. Supreme Court Justice Stephen Breyer, explores the ethical, procedural, and economic challenges posed by the use of DNA evidence as well as future directions for the technology. After laying the conceptual historical, legal, and scientific groundwork for the debate, the book considers bioethical issues raised by the collection of DNA, including the question of control over DNA databases. The authors then turn to the possible genetic bases of human behavior and the implications of this still unresolved issue for the criminal justice system. Finally, the book examines the current debate over the many roles that DNA can and should play in criminal justice.

Lefèvre, Wolfgang, Ed. (2004). *Picturing machines 1400-1700*. Cambridge, MA: MIT Press. ISBN 0-262-12269-3, hc, \$40.00.

Technical drawings by the architects and engineers of the Renaissance made us of a range of new methods of graphic representation. These drawings – among them Leonardo da Vinci's famous drawing of mechanical devices – have long been studied for their aesthetic qualities and technological ingenuity, but their significance for the architects and engineers themselves is seldom considered. The essays in this book take this alternate perspective and look at how drawing shaped the practice of early modern engineering. They do so through detailed investigations of specific images, looking at more than one hundred that range from sketches to perspective views to thoroughly constructed projections. These drawings were not merely visualizations of ideas but acted as models that shaped ideas. The authors establish basic categories for the origins, purposes, functions, and contexts of early modern engineering illustrations as well as how they functioned among practitioners.

Levy, Frank and Richard J. Murnane (2004). *The new division of labor: How computers are creating the next job market*. Princeton, NJ: Princeton University Press. ISBN 0-691-11972-4, hc, \$24.95.

This book tells stories of people at work – a high-end financial advisor, a customer service

representative, a pair of successful chefs, a cardiologist, an automotive mechanic, the author Victor Hugo, and floor traders in a London financial exchange. The authors merge these stories with insights from cognitive science, computer science, and economics to show how computers are enhancing productivity in many jobs even as they eliminate other jobs – both directly and by sending work offshore. They use these observations and conclusions to argue for a focus on extensive teaching of problem solving and interpersonal communication within school environments, drawing upon examples of lower elementary grade programs, IBM's managerial training program, and Cisco Networking Academies in high schools.

Lewens, Tim (2004). *Organisms and artifacts: Design in nature and elsewhere*. Cambridge, MA: The MIT Press. ISBN 0-262-12261-8, hc, \$32.00.

In *Organisms and Artifacts* Tim Lewens investigates the analogical use of the language of design in evolutionary biology. Uniquely among the natural sciences, biology uses descriptive and explanatory terms more suited to artifacts than organisms. When biologists discuss, for example, the purpose of the panda's thumb and look for functional explanations for organic traits, they borrow from a vocabulary of intelligent design that Darwin's findings could have made irrelevant over a hundred years ago. Lewens argues that examining the analogy between the processes of evolution and the processes by which artifacts are created – looking at organisms as analogical artifacts – sheds light on explanations of the form of both organic and inorganic objects. He argues further that understanding the analogy is important for what it can tell us not only about biology but also about technology and philosophy. In the course of his argument Lewens discusses issues of interest to philosophers of biology, biologists, philosophers of mind, and students of technology. These issues include the pitfalls of the design-based thinking of adaptationism, the possible conflict between selection explanations and developmental explanations, a proposed explanation of biological function, and prospects for an informative evolutionary model of technological change.

Lewis, E. E. (2004). *Masterworks of technology: The story of creative engineering, architecture, and design*. Amherst, NY: Prometheus Books. ISBN 1-59102-243-6, hc, \$28.

In this absorbing exploration of technological creativity throughout the ages, a professor of engineering at Northwestern University eloquently tells the story of how science and engineering – which had little in common until a few hundred years ago – came together to create the technological world of the 21st century. Melding his own personal experiences – from visiting Chartres Cathedral to flying aboard a Boeing 777 – with vivid historical vignettes, the author skillfully demonstrates the importance of craft tradition, scientific methods, production organization, economics, and more to the creation of modern technology. The many topics that Lewis illuminates include the slow evolution of the wheelwright's craft, the background and training of the architect-engineers who undertook the construction of medieval cathedrals, the importance of patronage and venture capitalists in realizing the big ideas of past and present, the increasing importance of basic science as the seedbed of engineering and design innovations, and more.

Lindley, David (2004). *Degrees Kelvin: A tale of genius, invention and tragedy*. Washington, DC: Joseph Henry Press. ISBN 0-309-09073-3, hc, \$27.95.

As a young scholar, William Thomson dazzled a Victorian society enthralled with the seductive authority and powerful beauty of scientific discovery. At a time when no one really understood heat, light, electricity, or magnetism, Thomson found key connections between them, laying the groundwork for two of the cornerstones of 19th century science – the theories of electromagnetism and thermodynamics. He was elevated to a peerage, becoming Sir William Thomson, Lord Kelvin, the first scientist to be so honored. In the latter part of his life he proclaimed doubt over the existence of atoms, refused to believe that radioactivity involved the transmutation of elements, and railed against evolution and Charles Darwin in particular. This definitive biography

unravels the mystery of a life composed of equal parts triumph and tragedy, hubris and humility, yielding a surprising and compelling portrait of a complex and enigmatic man.

Lomborg, Bjørn, Ed. (2004). *Global crises, global solutions*. New York: Cambridge University Press. ISBN 0-521-60614-4, pb, \$29.99.

Lomborg, Associate Professor of Statistics at the University of Aarhus and at the time of this work, director of the Danish Environmental Assessment Institute, made headlines in 2001 with his controversial bestseller, *The Skeptical Environmentalist*, which argued that many doomsday forecasts from environmentalists were fatally flawed. In May of 2004, Lomborg organized the first-ever Copenhagen Consensus, a meeting where experts from around the world established a prioritized list of solutions to the world's ten greatest challenges which are viewed as climate change, communicable diseases, conflicts, education, financial instability, governance and corruption, migration, malnutrition and hunger, subsidies and trade barriers, and sanitation and access to clean water. This volume compiles the results of the May 2004 meeting into ten core chapters surveying each of the above challenges by world-renowned experts, an introduction by the editor, a ranking of the opportunities by a panel of eight of the world's top economists, including three Nobel Prize winners, and a concluding youth forum on human benefit analysis.

Long, Pamela O. (2001). *Openness, secrecy, authorship: Technical arts and the culture of knowledge from antiquity to the Renaissance*. Baltimore, MD: The Johns Hopkins University Press. ISBN 0-8018-8061-0, pb, \$24.95.

The craft traditions from ancient times to the Renaissance established the nature and role of intellectual property as various practitioners guarded their trade secrets, passing them on to selected insiders and purposefully shielding them from others. This significant study uses a very diverse set of sources to explore how knowledge was viewed over this time frame, and particular ways in which cultural and social mores and traditions were established, maintained, and evolved over time. As we come closer to the present, there was a growing interaction among the technical arts, political power, and knowledge – a tradition that lay the groundwork for the modern world. Long contributes an important study for the historical background of the technical arts and their practices.

Machamer, Peter, Gereon Wolters, Eds. (2004). *Science, values, and objectivity*. (2004). Pittsburgh, PA: University of Pittsburgh Press. ISBN 0-8229-4237-2, hc, \$44.95.

The essays in this volume identify the crucial values that play a role in science, distinguish some of the criteria that can be used for value identification, and elaborate the conditions for warranting certain values as necessary or central to the very activity of scientific research. The fact that these values operate within the world does not negate the fact that objects exist in the world. Objects have the power to constrain our actions and thoughts, though the norms for these thoughts lie in the public, social world. Values may be decried or defended, praised or blamed, but in a world that strives for a modicum of reason, values, too, must be reasoned. Critical assessment of the values that play a role in scientific research is as much a part of doing good science as interpreting data. While focused on science, several contributors also discuss aspects of technology in relation to values.

MacKenzie, Donald (2004). *Mechanizing proof: Computing, risk, and trust*. Cambridge, MA: The MIT Press. ISBN 0-262-63295-0, pb, \$28.00.

Most aspects of our private and social lives now depend on computing. But how can we know that this computing is trustworthy? MacKenzie argues that our culture now contains two ideals of proof: proof as traditionally conducted by human mathematicians, and formal, mechanized proof. He describes the systems constructed by those committed to the latter ideal and the many questions those systems raise about the nature of proof. He looks at the primary social influence on

the development of automated proof – the need to predict the behavior of the computer systems on which human life and security depend – and explores the involvement of powerful organizations such as the National Security Agency. He concludes that in mechanizing proof, and in pursuing dependable computer systems, we do not and cannot obviate the need for trust in our collective human judgment.

Malone, Thomas W. (2004). *The future of work: How the new order of business will shape your organization, your management style, and your life*. Cambridge, MA: Harvard Business School Press. ISBN 1-59139-125-3, hc, \$29.95.

Malone argues that a convergence of technological and economic factors – particularly the rapidly falling cost of communication – is enabling a change in business organizations as profound as the shift to democracy in governments. For the first time in history, it will be possible to have both economic and scale efficiencies of large organization and the human benefits of small ones: freedom, motivation, and flexibility. Based on twenty years of research, the author presents models of the concepts he discusses already operational in companies and provides a framework for decision makers to determine how to proceed.

Misa, Thomas J., Philip Brey, Andrew Feenberg, Eds. (2004). *Modernity and technology*. Cambridge, MA: The MIT Press. ISBN 0-262-63310-8, pb, \$27.00.

If asked, most people would agree that there are deep connections between technology and the modern world, and even that technology is the truly distinctive feature of modernity. Until recently, however, there has been surprisingly little overlap between technology studies and modernity theory. The goal of this ambitious book is to lay the foundations for a new interdisciplinary field by closely examining the co-construction of technology and modernity. The book as a whole suggests a broad research program that is both academic and applied and that will help us understand how contemporary societies can govern technologies instead of being governed by them.

Moore, Adam D. (2004). *Intellectual property and information control: Philosophic foundations and contemporary issues*. New Brunswick, NJ: Transaction Publishers. ISBN 0-7658-0832-3, pb, \$24.95.

Computer technology and the proliferation of digital networks have radically altered how ideas and information are gathered and manipulated and generated new conflicts between public use and private rights. These conflicts raise serious problems: Are abstract ideas and information proper subjects of ownership? What role should privacy rights play? How does the violation of intellectual property rights compare morally to the violation of physical property rights? Now available in paperback, this book provides answers and strategies for dealing with these and other questions while mounting a philosophical defense of rights to intellectual and intangible property.

Neuwirth, Robert (2005). *Shadow cities: A billion squatters, a new urban world*. New York: Routledge. ISBN 0-415-93319-6, hb, \$27.95.

Investigative reporter Robert Neuwirth spent two years living in squatter neighborhoods on four continents. In this book, he reports what he has learned from squatters in Rio de Janeiro, Istanbul, Mumbai, and Nairobi. He started his journey prepared to find squatters as signifiers of urban decay and lawlessness. Instead, he found vital communities of industrious and highly moral people who have built communities of lasting power. He dispels the myth that shantytowns are purely a third world phenomenon, showing that the great cities of Europe and North America were once dominated by shantytowns. And Neuwirth shows that squatters will build vital neighborhoods without private titles as long as they know they are not subject to eviction. Squatters, Neuwirth argues powerfully, are building the cities of tomorrow.

Newman, Frank, Lara Couturier, Jamie Scurry (2004). *The future of higher education: Rhetoric, reality, and the risks of the market*. San Francisco, CA: Jossey Bass. ISBN 0-7879-6972-9, hc, \$33.00.

A powerful look at the risks inherent in the trend toward making higher education a market rather than a regulated public sector, *The Future of Higher Education* reveals the findings of an extensive four-year investigation into the major forces that are transforming our American system of higher education. The book explores the challenges of intensified competition among institutions, globalization of colleges and universities, the expansion of the new for-profit and virtual institutions, and the influence of technology on learning. This important resource offers college and university leaders and policy makers an analysis of the impact of these forces of change and includes suggestions for creating an effective higher education market as well as a call for a renewed focus on the public purposes of higher education.

Using the information provided in this vital book, technology leaders can seize the opportunity to meet today's daunting challenges and expand access to educators, improve academic achievement, and advance student learning. By working toward these goals, academic leaders and policy makers can go a long way toward rebuilding the historic compact between higher education and society.

Nye, David E. (2004). *America as second creation: Technology and narratives of new beginnings*. Cambridge, MA: The MIT Press. ISBN 0-262-14081-0, hc, \$29.95.

After 1776, the former American colonies started to imagine themselves as a unified, self-created community. Technologies had an important role in the resulting national narratives, and a few assumed particular prominence. Among these were the axe, the mill, the canal, the railroad, and the irrigation dam. David Nye explores the stories that clustered around these technologies. In doing so, he rediscovers the American story of origins, conceived as a second creation built in harmony with God's first creation. He also devoted alternating chapters to narratives of those who rejected this view, including marginalized groups who told their own stories of destruction and loss.

O'Mara, Margaret Pugh (2005). *Cities of knowledge: Cold war science and the search for the next Silicon Valley*. Princeton, NJ: Princeton University Press. ISBN 0-691-11716-0, hc, \$29.95.

A historian specializing in urban history, weaves a fascinating study of the development of science and technology intensive areas within the context of urban development and economic renewal. She focuses on three areas of the country and a major research university powerhouse associated with each area: the San Francisco Peninsula and Stanford University, Philadelphia and the University of Pennsylvania, and Atlanta and the Georgia Institute of Technology. Her tale is a careful one that links the overwhelming success of Silicon Valley to a unique combination of abundant land and excellent climate, visionary leaders in both academia and business, and the infusion of massive federal dollars related to defense industries during the Cold War. These "cities of knowledge" are planned communities that effectively capitalize on these different elements to fuel rapid and expansive economic development and technological and scientific innovations. She contrasts the overwhelming success of Silicon Valley with the more mixed success stories of Penn and Philadelphia and GA Tech and Atlanta. This is fascinating reading to think about the next Silicon Valley and the essential conditions for it to arise.

Pallogg, Rena M., Keith Pratt (2005). *Collaborating online: Learning together in community*. San Francisco, CA: Jossey-Bass. ISBN 0-7879-7614-8, pb, \$20.00.

This slim tome provides practical guidance for faculty members seeking to help their students work together in creative ways, moving out of the box of traditional papers and projects, and deepening their learning experience through their work with one another. The authors draw on extensive knowledge and experience to show how collaboration brings students together to support the learning of each member of the group while promoting creativity and critical thinking.

Perkowitz, Sidney (2004). *Digital people: From bionic humans to androids*. Washington, DC: Joseph Henry Press. ISBN 0-309-08987-5, hc, \$24.95.

Digital People examines the ways in which technology is inexorably driving us to a new and different level of humanity. As scientists draw on nanotechnology, molecular biology, artificial intelligence, and materials science, they are learning how to create beings that move, think, and look like people. Other researchers are routinely using sophisticated surgical techniques to implant computer chips and drug-dispensing devices into our bodies, designing fully functional man-made body parts, and linking human brains with computers to make people healthier, smarter, and stronger. The author explores the potential for developing a completely synthetic human being and the attendant legal, ethical, and spiritual issues such development raises.

Schattschneider, Doris (2004). *M. C. Escher: Visions of symmetry*. New York: Harry N. Abrams, Inc. ISBN 0-8109-4308-5, hc, \$29.95.

A revision of a classic book that appeared in 1990, this is the most penetrating study of Escher's work in existence and the one most admired by scientists and mathematicians. It deals with one powerful obsession that preoccupied Escher: what he called the 'regular division of the plane,' the puzzlike interlocking of birds, fish, lizards, and other natural forms in continuous patterns. Schattschneider explores how he succeeded at this task by meticulously analyzing his notebooks. The work includes many of Escher's masterpieces as well as hundreds of lesser-known examples of his work. The new forward by Douglas Hofstadter and a new epilogue by the author show how Escher's ideas of symmetry have influenced mathematicians, computer scientists, and contemporary artists.

Schölkopf, Bernhard, Koji Tsuda, Jean-Philippe Vert, Eds. (2004). *Kernel methods in computational biology*. Cambridge, MA: The MIT Press. ISBN 0-262-19509-7, hc, \$50.00.

Modern machine learning techniques are proving to be extremely valuable for the analysis of data in computational biology problems. One branch of machine learning, kernel methods, lends itself particularly well to the difficult aspects of biological data, which include high dimensionality (as in microarray measurements), representation as discrete and structured data (as in DNA or amino acid sequences), and the need to combine heterogeneous sources of information. This book provides a detailed overview of current research in kernel methods and their applications to computational biology.

Schuler, Douglas, and Peter Day, Eds. (2004). *Shaping the network society: The new role of civic society in cyberspace*. Cambridge, MA: The MIT Press. ISBN 0-262-19497-X, hc, \$45.00.

Information and computer technologies are used every day by real people with real needs. The various contributors describe how technology can be used effectively by communities, activists, and citizens to meet society's challenges. In their vision, computer professionals are concerned less with bits, bytes, and algorithms and more with productive partnerships that engage both researchers and community activists. These collaborations are producing important sociotechnical work that will affect the future of the network society. Traditionally, academic research on real-world users of technology has been neglected or even discouraged. The authors seek to fill in this gap.

Schwartz, Evan I. (2004). *Juice: The creative fuel that drives world-class inventors*. Boston, MA: Harvard Business School Press. ISBN 1-59139-288-8, hc, \$24.95.

This exciting book takes us inside the labs and the minds of some of today's most prolific inventors to demystify the process by which they imagine and create. Evan Schwartz argues that invention is less about serendipity and genius than it is about a relentless inner compulsion to question and discover. This creative energy, says Schwartz, is the fuel – the "juice" – that drives

the best inventors. And this special form of creativity is latent in each of us.

Juice juxtaposes the stories of classic inventors with a new breed of innovators, such as hypersonic sound inventor Woody Norris, genomics pioneer Lee Hood, mechanical whiz Dean Kamen, business systems inventor Jay Walker, and biomimicry trailblazer James McLurkin. He reveals the brilliant strategies – such as crossing knowledge boundaries, visualizing results, applying analogies, and embracing failure – that enable inventors to transform improbable ideas into reality. We learn, for example, how a connection between slot machines and pill-bottle caps might improve the world of preventive medicine; how mud and weeds are being used to help carry a nation out of poverty; and how the development of a diagnostic nanochip could extend human lifespans. Powerful and inspiring, *Juice* will convince you that anything imaginable is possible.

Sinclair, Bruce, Ed. (2004). *Technology and the African-American experience: Needs and opportunities for study*. Cambridge, MA: The MIT Press. ISBN 0-262-19504-6, hc, \$35.00.

Race and technology are two of the most powerful motifs in American history, but until recently they have not often been considered in relation to each other. This collection of essays examines the intersection of the two in a variety of social and technological contexts, pointing out the needs and opportunities for study. The essays challenge the myth that black people were technically incompetent. Enslaved Africans brought with them the techniques of rice cultivation that proved so profitable to their white owners, and antebellum iron working in the South depended heavily on blacks' craft skills. The essays document the realities of black technical creativity – in catalogs of patented inventiveness, in the use of invisible technologies such as sea chanteys, and in the mastery of complex new technologies.

Smil, Vaclav (2004). *Enriching the Earth: Fritz Haber, Carl Bosch, and the transformation of world food production*. Cambridge, MA: The MIT Press. ISBN 0-262-69313-5, pb, \$19.95.

The industrial synthesis of ammonia from nitrogen and hydrogen has been of greater fundamental importance to the modern world than the inventions of the airplane, nuclear energy, space flight, or television. The expansion of world population from 1.6 billion in 1900 to today's six billion or more would not have been possible without the synthesis of ammonia. The core of the book is a detailed narrative of the discovery of ammonia synthesis in 1908 by Fritz Haber – a discovery scientists had sought for over one hundred years – and its commercialization by Carl Bosch and the chemical company BASF. Smil also examines the emergence of the large-scale nitrogen fertilizer industry and analyzes the extent of global dependence on the Haber-Bosch process and its biospheric consequences. Finally, he looks at the role of nitrogen in civilization and, in a sad coda, describes the lives of Fritz Haber and Carl Bosch after the discovery of ammonia synthesis.

Solove, Daniel J. (2004). *The digital person: Technology and privacy in the information age*. New York: New York University Press. ISBN 0-8147-9846-2, hc, \$29.95.

The creation and implementation of “digital dossiers” as we daily surf the internet and other electronic sources has thus far gone largely unchecked. In this startling account of new technologies for gathering and using personal data, Solove explains why these digital profiles pose a grave threat to our privacy. For example, they increase our vulnerability to identity theft, a serious crime that has been escalating at an alarming rate. Moreover, since September 11, the government has been tapping into vast stores of information collected by businesses and using it to profile people for criminal or terrorist activity. Using a wide variety of sources, including history, philosophy and literature, Solove puts forth a new understanding of what privacy is, one that is appropriate for the new challenges of the Information Age. Solove recommends how the law can be reformed to simultaneously protect our privacy and allow us to enjoy the benefits of our increasingly digital world.

Stefik, Mark and Barbara Stefik (2004). *Breakthrough: Stories and strategies of radical innovation*. Cambridge, MA: The MIT Press. ISBN 0-262-19514-3, hc, \$29.95.

Since the late 1990s, technology markets have declined dramatically. Responding to the changing business climate, companies use strategies of open innovation: acquiring technologies from outside, marketing their technologies to other companies, and outsourcing manufacturing. But open innovation is not enough; it is mainly a way to run a business to its endgame. By itself, open innovation results in razor-thin profits from products that compete as commodities. Businesses also need a path to renewal. No one has ever achieved a breakthrough with open innovation. Drawing on stories from repeat inventors and managers of technology, the authors uncover the best practices for inventing the future.

Thompson, Emily (2004). *The soundscape of modernity: Architectural acoustics and the culture of listening in America, 1900-1933*. Cambridge, MA: The MIT Press. ISBN 0-262-70106-5, pb, \$27.95.

In this history of aural culture in early twentieth-century America, Emily Thompson charts dramatic transformations in what people heard and how they listened. What they heard was a new kind of sound that was the product of modern technology. They listened as newly critical consumers of aural commodities. By examining the technologies that produced this sound, as well as the culture that enthusiastically consumed it, Thompson recovers a lost dimension of the Machine Age and deepens our understanding of the experience of change that characterized the age. Reverberation equations, sound meters, microphones, and acoustical tiles were deployed. The control provided by these technologies, however, was applied in ways that denied the particularity of place, and the diverse spaces of modern America began to sound alike as a universal new sound predominated. Although this sound – clear, direct, efficient, and nonreverberant – had little to say about the physical spaces in which it was produced, it speaks volumes about the culture that created it. By listening to it, Thompson constructs a compelling new account of the experience of modernity in America.

Turchi, Peter (2004). *Maps of the imagination: The writer as cartographer*. San Antonio, TX: Trinity University Press. ISBN 1-59534-005-X, hc, \$24.95.

Using the map as a metaphor, the author considers writing as a combination of exploration and presentation. He compares the way a writer leads a reader through the imaginary world of a story, novel, or a poem to the way a mapmaker charts the physical world. With intelligence and wit, the author looks at how mapmakers and writers deal with blank space and the blank page; the conventions they use or consciously disregard; the role of geometry in maps and the parallel role of form in writing; how both maps and writing serve to recreate an individual's view of the world' and the artist's delicate balance of intuition with intention. A unique combination of history, critical cartography, personal essay, and practical guide to writing, *Maps of the Imagination* is a book for writers, for readers, and for anyone interested in creativity. It is a fascinating book that helps you look at problems differently.

Waltar, Alan E. (2004). *Radiation and modern life: Fulfilling Marie Curie's dream*. Amherst, NY: Prometheus Books. ISBN 1-59102-250-9, hc, \$28.00.

As we celebrate the 100th anniversary of Marie Curie's first Nobel Prize, awarded to her and her husband, Pierre, for their discovery of radioactivity, it is an ideal time to reflect on the countless ways that their work has enriched our daily lives. In this lucid overview of radiation's many benefits and ongoing potential, Dr. Alan E. Waltar, past president of the American Nuclear Society, explains how this important energy source has been harnessed to serve a plethora of humanitarian tasks. Through artful use of vivid anecdotes that give vibrancy to technical explanations, Waltar provides numerous examples of radiation's many uses in agriculture, medicine, electricity generation, modern industry, transportation, public safety, environmental protection, space

exploration, and even archaeology and the arts. Estimating the total financial contribution of all these varied uses at \$420 billion to the U.S. economy and over 4.4 million jobs, Waltar foresees continuous improvement in many areas of science, industry, and medicine through tapping the incredible potential of Marie Curie's initial insights.

West, Thomas G. (2004). *Thinking like Einstein: Returning to our visual roots with the emerging revolution in computer information visualization*. Amherst, NY: Prometheus Books. ISBN 1-59102-251-7, \$28, hc, \$28.00.

Einstein was a visual thinker first and foremost who then sought to translate these mental images into the language of words and mathematics to be understood by others. West predicts that computer visualization technology will radically change the way we all think, moving from an old world based on words and numbers to a new one of images and moving pictures. We are on the verge of a new era of visualization techniques that speak to right-brain creativity. The book profiles a number of pioneers at the forefront of visualization technologies at universities and super-computing centers. These individuals are working to facilitate the spread of these technologies to education, business, law, and throughout the economy in general. As these trends continue, West foresees an exciting revolution in thought, creative modes of expression, and productive technologies.

Wilson, David Gordon (2004). *Bicycling science*. 3rd edition. Cambridge, MA: The MIT Press. ISBN 0-262-73154-1, pb, \$22.95.

The classic known to many readers of JOTS is now in a new third edition that begins with a brief history of bicycles and bicycling that demolishes many widespread myths. This edition includes information on recent experiments and achievements in human-powered transportation, including the "ultimate human-powered vehicle," in which a supine rider in a streamlined enclosure steers by looking at a television screen connected to a small camera in the nose, reaching speeds of around 80 miles per hour. It contains completely new chapters on aerodynamics, unusual human-powered machines for use on land, water, and air, human physiology, and the future of bicycling. This edition also provides updated information on rolling drag, transmission of power from rider to wheels, braking, heat management, steering and stability, power and speed, and materials. Many new illustrations grace this must-have resource for technology educators.