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Patently Contestable A Electrical Technologies And 2023-08-10
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Technology and Globalisation Springer

An examination of how activists combine political advocacy and technical practice in their promotion of the emancipatory potential of local low-power FM radio. The United States ushered in a new era of small-scale broadcasting in 2000 when it began issuing low-power FM (LPFM) licenses for noncommercial radio stations around the country. Over the next decade, several hundred of these newly created low-wattage stations took to the airwaves. In *Low Power to the People*, Christina Dunbar-Hester describes the practices of an activist organization focused on LPFM during this era. Despite its origins as a pirate broadcasting collective, the group eventually shifted toward building and expanding regulatory access to new, licensed stations. These radio activists consciously cast radio as an alternative to digital utopianism, promoting an understanding of electronic media that emphasizes the local community rather than a global audience of Internet users. Dunbar-Hester focuses on how these radio activists impute emancipatory politics to the “old” medium of radio technology by promoting the idea that “microradio” broadcasting holds the potential to empower ordinary people at the local community level. The group’s methods combine political advocacy with a rare commitment to hands-on technical work with radio hardware, although the activists’ hands-on, inclusive ethos was hampered by persistent issues of race, class, and gender. Dunbar-Hester’s study of activism around an “old” medium offers broader lessons about how political beliefs are expressed through engagement with specific technologies. It also offers insight into contemporary issues in media policy that is particularly timely as the FCC issues a new round of LPFM licenses.

Technology and Society, second edition Harvard University Press

How electricity became a metaphor for modernity in the United States, inspiring authors from Mark Twain to Ralph Ellison. At the turn of the twentieth century, electricity emerged as a metaphor for modernity. Writers from Mark Twain to Ralph Ellison grappled with the idea of electricity as both life force (illumination) and death spark (electrocution). The idea that electrification created exclusively modern experiences took hold of Americans’ imaginations, whether they welcomed or feared its adoption. In *Power Lines*, Jennifer Lieberman examines the apparently incompatible notions of electricity that coexisted in the American imagination, tracing how electricity became a common (though multifarious) symbol for modern life. Lieberman examines a series of moments of technical change when electricity accrued new social meanings, plotting both power lines and the power of narrative lines in American life and literature. While discussing the social construction of electrical systems, she offers a new interpretation of Twain’s use of electricity as an organizing metaphor in *A Connecticut Yankee in King Arthur’s Court*, describes the rhetoric surrounding the invention of electric execution, analyzes Charlotte Perkins Gilman’s call for human connection in her utopian writing and in her little-known *Human Work*, considers the theme of electrical interconnection in Jack London’s work, and shows how Ralph Ellison and Louis Mumford continued the literary tradition of electrical metaphor. Electrical power was a distinctive concept in American literary, cultural, and technological histories. For this reason, narratives about electricity were particularly evocative. Bridging the realistic and the romantic, the historical and the fantastic, these stories guide us to ask new questions about our enduring fascination with electricity and all it came to represent.

Knowledge Management and Intellectual Property Manchester University Press

An examination of the fierce disputes that arose in Britain in the decades around 1900 concerning patents for electrical power and telecommunications. Late nineteenth-century Britain saw an extraordinary surge in patent disputes over the new technologies of electrical power, lighting, telephony, and radio. These battles played out in the twin tribunals of the courtroom and the press. In *Patently Contestable*, Stathis Arapostathis and Graeme Gooday examine how Britain’s patent

laws and associated cultures changed from the 1870s to the 1920s. They consider how patent rights came to be so widely disputed and how the identification of apparently solo heroic inventors was the contingent outcome of patent litigation. Furthermore, they point out potential parallels between the British experience of allegedly patentee-friendly legislation introduced in 1883 and a similar potentially empowering shift in American patent policy in 2011. After explaining the trajectory of an invention from laboratory to Patent Office to the court and the key role of patent agents, Arapostathis and Gooday offer four case studies of patent-centered disputes in Britain. These include the mostly unsuccessful claims against the UK alliance of Alexander Graham Bell and Thomas Edison in telephony; publicly disputed patents for technologies for the generation and distribution of electric power; challenges to Marconi’s patenting of wireless telegraphy as an appropriation of public knowledge; and the emergence of patent pools to control the market in incandescent light bulbs.

Power Lines McGill-Queen’s Press - MQUP

An unflinching look at the unique challenges posed by complex technologies we cannot afford to let fail—and why the remarkable achievements of civil aviation can help us understand those challenges. Nuclear reactors, deep-sea drilling platforms, deterrence infrastructures—these are all complex and formidable technologies with the potential to fail catastrophically. In *Rational Accidents*, John Downer outlines a new perspective on technological failure, arguing that undetectable errors can lurk in even the most rigorous and “rational” assessments of these systems due to the inherent limits of engineering tests and models. Downer finds that it should be impossible, from an epistemological viewpoint, to achieve the near-perfect reliability that we require of our most safety-critical technologies. There is, however, one such technology that demonstrably appears to achieve these “impossible” reliabilities: jetliners. Downer looks closely at civil aviation and how it has reckoned with the problem of failure. He finds that the way we conceive of jetliner reliability hides the real practices by which it is achieved. And he shows us why those practices are much less transferrable across technological domains than we are led to believe. Fully understanding why jetliners don’t crash, he concludes, should lead us to doubt the safety of other “ultra-reliable” technologies. A unique and sobering exploration of technological reliability from an STS perspective, *Rational Accidents* is essential reading for understanding why our most safety-critical technologies are even more dangerous than we believe.

Vulnerability in Technological Cultures MIT Press

This volume brings together a group of contributors from varied backgrounds to tell a history of intellectual property in 50 objects.

Patent Cultures MIT Press

Heidi Tworek’s innovative history reveals how, across two devastating wars, Germany attempted to build a powerful communication empire—and how the Nazis manipulated the news to rise to dominance in Europe and further their global agenda. When the news became a form of international power, it changed the course of history.

Reordering Life MIT Press

Tracing global histories of patenting, this book reveals the resilient diversity of patent systems, challenging the universality of ‘intellectual property’.

The Long Arm of Moore’s Law MIT Press

How the regimes governing biological research changed during the genomics revolution, focusing on the Human Genome Project. The rise of genomics engendered intense struggle over the control of knowledge. In *Reordering Life*, Stephen Hilgartner examines the “genomics revolution” and develops a novel approach to studying the dynamics of change in knowledge and control. Hilgartner focuses on the Human Genome Project (HGP)—the symbolic and scientific centerpiece of the emerging field—showing how problems of governance arose in concert with new knowledge and technology. Using a theoretical framework that analyzes “knowledge control regimes,” Hilgartner investigates change in how control was secured, contested, allocated, resisted, justified,

and reshaped as biological knowledge was transformed. Beyond illuminating genomics, *Reordering Life* sheds new light on broader issues about secrecy and openness in science, data access and ownership, and the politics of research communities. Drawing on real-time interviews and observations made during the HGP, *Reordering Life* describes the sociotechnical challenges and contentious issues that the genomics community faced throughout the project. Hilgartner analyzes how laboratories control access to data, biomaterials, plans, preliminary results, and rumors; compares conflicting visions of how to impose coordinating mechanisms; examines the repeated destabilization and restabilization of the regimes governing genome databases; and examines the fierce competition between the publicly funded HGP and the private company Celera Genomics. The result is at once a path-breaking study of a self-consciously revolutionary science, and a provocative analysis of how knowledge and control are reconfigured during transformative scientific change.

Patently Contestable MIT Press

How a team of musicians, engineers, computer scientists, and psychologists developed computer music as an academic field and ushered in the era of digital music. In the 1960s, a team of Stanford musicians, engineers, computer scientists, and psychologists used computing in an entirely novel way: to produce and manipulate sound and create the sonic basis of new musical compositions. This group of interdisciplinary researchers at the nascent Center for Computer Research in Music and Acoustics (CCRMA, pronounced “karma”) helped to develop computer music as an academic field, invent the technologies that underlie it, and usher in the age of digital music. In *The Sound of Innovation*, Andrew Nelson chronicles the history of CCRMA, tracing its origins in Stanford’s Artificial Intelligence Laboratory through its present-day influence on Silicon Valley and digital music groups worldwide. Nelson emphasizes CCRMA’s interdisciplinarity, which stimulates creativity at the intersections of fields; its commitment to open sharing and users; and its pioneering commercial engagement. He shows that Stanford’s outsized influence on the emergence of digital music came from the intertwining of these three modes, which brought together diverse supporters with different aims around a field of shared interest. Nelson thus challenges long-standing assumptions about the divisions between art and science, between the humanities and technology, and between academic research and commercial applications, showing how the story of a small group of musicians reveals substantial insights about innovation. Nelson draws on extensive archival research and dozens of interviews with digital music pioneers; the book’s website provides access to original historic documents and other material.

Media Technologies MIT Press

How the US Environmental Protection Agency designed the governance of risk and forged its legitimacy over the course of four decades. The US Environmental Protection Agency was established in 1970 to protect the public health and environment, administering and enforcing a range of statutes and programs. Over four decades, the EPA has been a risk bureaucracy, formalizing many of the methods of the scientific governance of risk, from quantitative risk assessment to risk ranking. Demortain traces the creation of these methods for the governance of risk, the controversies to which they responded, and the controversies that they aroused in turn. He discusses the professional networks in which they were conceived; how they were used; and how they served to legitimize the EPA. Demortain argues that the EPA is structurally embedded in controversy, resulting in constant reevaluation of its credibility and fueling the evolution of the knowledge and technologies it uses to produce decisions and to create a legitimate image of how and why it acts on the environment. He describes the emergence and institutionalization of the risk assessment–risk management framework codified in the National Research Council’s *Red Book*, and its subsequent unraveling as the agency’s mission evolved toward environmental justice, ecological restoration, and sustainability, and as controversies over determining risk gained vigor in the 1990s. Through its rise and fall at the EPA, risk decision-making enshrines the science of a bureaucracy that learns how to make credible decisions and to reform itself, amid

constant conflicts about the environment, risk, and its own legitimacy.

Rational Accidents MIT Press

An examination of how the daily work of NASA's Mars Exploration Rovers was organized across three sites on two planets using local Mars time. In 2004, mission scientists and engineers working with NASA's Mars Exploration Rovers (MER) remotely operated two robots at different sites on Mars for ninety consecutive days. An unusual feature of this successful mission was that it operated on Mars time—the daily work was organized across three sites on two planets according to two Martian time zones. In *Making Time on Mars*, Zara Mirmalek shows that this involved more than a resetting of wristwatches; the team's struggle to synchronize with Mars time involved technological and communication breakdowns, informal workarounds, and extra work to support the technology that was intended to support people. Her account of how NASA created an entirely new temporality for the MER mission offers insights about the assumptions behind the organizational relationship between clock time and work. Mirmalek, herself a member of the mission team, offers an insider's view of the MER workplace and community. She describes the discord among MER's multiple temporalities and examines issues of professional identity that helped shape the experience of working according to Mars time. Considering time and work relationships through a multidisciplinary lens, Mirmalek shows how contemporary and historical human-technology relationships inform assumptions about the unalterability of clock time. She argues that the organizational connection between clock time and work, although still operational, is outdated.

European Objects MIT Press

Writings by thinkers ranging from Rokeya Sakhawat Hossain to Bruno Latour that focus on the interconnections of technology, society, and values. Technological change does not happen in a vacuum; decisions about which technologies to develop, fund, market, and use engage ideas about values as well as calculations of costs and benefits. In order to influence the development of technology for the better, we must first understand how technology and society are inextricably bound together. These writings--by thinkers ranging from Bruno Latour to Francis Fukuyama--help us do just that, examining how people shape technology and how technology shapes people. This second edition updates the original significantly, offering twenty-one new essays along with fifteen from the first edition. The book first presents visions of the future that range from technological utopias to cautionary tales and then introduces several major STS theories. It examines human and social values and how they are embedded in technological choices and explores the interesting and subtle complexities of the technology-society relationship. Remedying a gap in earlier theorizing in the field, many of the texts illustrate how race and gender are intertwined with technology. Finally, the book offers a set of readings that focus on the sociotechnical challenges we face today, treating topics that include cybersecurity, geoengineering, and the myth of neutral technology.

Rethinking modern prostheses in Anglo-American commodity cultures, 1820-1939

Springer

An examination of nanotechnology as a lens through which to study contemporary democracy in both theory and practice. In *Democratic Experiments*, Brice Laurent discusses the challenges that emerging technologies create for democracy today. He focuses on nanotechnology and its attendant problems, proposing nanotechnology as a lens through which to understand contemporary democracy in both theory and practice. Arguing that democracy is at stake where nanotechnology is defined as a problem, Laurent examines the sites where nanotechnology is discussed and debated by scientists, policymakers, and citizens. It is at these sites where the joint production of nanotechnology and the democratic order can be observed. Focusing on the United States, France, and Europe, and various international organizations, Laurent analyzes representations of nanotechnology in science museums, collective discussions in participatory settings, the making of categories such as "nanomaterials" or responsible innovation" in standardization and regulatory arenas, and initiatives undertaken by social movements. He contrasts American debates, in which the concern for public objectivity is central, with the French "state experiment," the European goal of harmonization, and the international concern with a global market. In France, public debate proceeded in response to public protest and encountered a radical critique of technological development; the United States experimented with an innovative approach to technology assessment. The European regulatory approach results in lengthy debates over political integration; the United States relies on the adversarial functioning of federal agencies. Because nanotechnology is a domain where concerns over anticipation and participation

are pervasive, Laurent argues, nanotechnology—and science and technology studies more generally—provides a relevant focus for a renewed analysis of democracy.

Producing Power Routledge

An examination of the relationship between technical objects and culture in contemporary China, drawing on concepts from science and technology studies. Technical objects constrain what users do with them. They are not neutral entities but embody information, choices, values, assumptions, or even mistakes embedded by designers. What happens when a technology is designed in one culture and used in another? What happens, for example, when a Chinese user is confronted by Roman-alphabet-embedded interfaces? In this book, Basile Zimmermann examines the relationship between technical objects and culture in contemporary China, drawing on concepts from science and technology studies (STS). He presents a new theoretical framework for "culture" based on the notions of waves and forms, which provides a powerful descriptive toolkit for technology and culture. The materials Zimmermann uses to develop and illustrate his theoretical arguments come from three groups of case studies about the use of technical devices in today's China. The first and most extensive group consists of observations of electronic music devices in Beijing; the second is a study of a Chinese networking site, "Happy Network"; and the third is a collection of personal, small-scale observations on the way Chinese characters behave when located in alphabet-encoded devices such as mobile phones, web pages, or printed documents. Zimmermann discusses well-known frameworks from STS and combines them with propositions and topics from Chinese studies. Each of the case studies advances his theoretical argument. Zimmermann's account shows how cultural differences can be integrated into STS research, and how sinologists can turn their attention from ancient texts and traditional art to everyday things in present-day China.

In a New Light MIT Press

This book examines the role of experts and expertise in the dynamics of globalisation since the mid-nineteenth century. It shows how engineers, scientists and other experts have acted as globalising agents, providing many of the materials and institutional means for world economic and technical integration. Focusing on the study of international connections, Technology and Globalisation illustrates how expert practices have shaped the political economies of interacting countries, entire regions and the world economy. This title brings together a range of approaches and topics across different regions, transcending nationally-bounded historical narratives. Each chapter deals with a particular topic that places expert networks at the centre of the history of globalisation. The contributors concentrate on central themes including intellectual property rights, technology transfer, tropical science, energy production, large technological projects, technical standards and colonial infrastructures. Many also consider methodological, theoretical and conceptual issues.

The Science of Bureaucracy University of Pittsburgh Press

Benoît Godin is a Professor at the Institut national de la recherche scientifique, Montreal. Models abound in science, technology, and society (STS) studies and in science, technology, and innovation (STI) studies. They are continually being invented, with one author developing many versions of the same model over time. At the same time, models are regularly criticized. Such is the case with the most influential model in STS-STI: the linear model of innovation. In this book, Benoît Godin examines the emergence and diffusion of the three most important conceptual models of innovation from the early twentieth century to the late 1980s: stage models, linear models, and holistic models. Godin first traces the history of the models of innovation constructed during this period, considering why these particular models came into being and what use was made of them. He then rethinks and debunks the historical narratives of models developed by theorists of innovation. Godin documents a greater diversity of thinkers and schools than in the conventional account, tracing a genealogy of models beginning with anthropologists, industrialists, and practitioners in the first half of the twentieth century to their later formalization in STS-STI. Godin suggests that a model is a conceptualization, which could be narrative, or a set of conceptualizations, or a paradigmatic perspective, often in pictorial form and reduced discursively to a simplified representation of reality. Why are so many things called models? Godin claims that model has a rhetorical function. First, a model is a symbol of "scientificity." Second, a model travels easily among scholars and policy makers. Calling a conceptualization or narrative or perspective a model facilitates its propagation.

Models of Innovation MIT Press

Leading scholars chart the future of studies on technology and journalism in the digital age. The

use of digital technology has transformed the way news is produced, distributed, and received. Just as media organizations and journalists have realized that technology is a central and indispensable part of their enterprise, scholars of journalism have shifted their focus to the role of technology. In *Remaking the News*, leading scholars chart the future of studies on technology and journalism in the digital age. These ongoing changes in journalism invite scholars to rethink how they approach this dynamic field of inquiry. The contributors consider theoretical and methodological issues; concepts from the social science canon that can help make sense of journalism; the occupational culture and practice of journalism; and major gaps in current scholarship on the news: analyses of inequality, history, and failure. Contributors Mike Ananny, C. W. Anderson, Rodney Benson, Pablo J. Boczkowski, Michael X. Delli Carpini, Mark Deuze, William H. Dutton, Matthew Hindman, Seth C. Lewis, Eugenia Mitchelstein, W. Russell Neuman, Rasmus Kleis Nielsen, Zizi Papacharissi, Victor Pickard, Mirjam Prenger, Sue Robinson, Michael Schudson, Jane B. Singer, Natalie (Talia) Jomini Stroud, Karin Wahl-Jorgensen, Rodrigo Zamith

Milk and Honey Bloomsbury Publishing

How the breeding of new animals and plants was central to fascist regimes in Italy, Portugal, and Germany and to their imperial expansion. In the fascist regimes of Mussolini's Italy, Salazar's Portugal, and Hitler's Germany, the first mass mobilizations involved wheat engineered to take advantage of chemical fertilizers, potatoes resistant to late blight, and pigs that thrived on national produce. Food independence was an early goal of fascism; indeed, as Tiago Saraiva writes in *Fascist Pigs*, fascists were obsessed with projects to feed the national body from the national soil. Saraiva shows how such technoscientific organisms as specially bred wheat and pigs became important elements in the institutionalization and expansion of fascist regimes. The pigs, the potatoes, and the wheat embodied fascism. In Nazi Germany, only plants and animals conforming to the new national standards would be allowed to reproduce. Pigs that didn't efficiently convert German-grown potatoes into pork and lard were eliminated. Saraiva describes national campaigns that intertwined the work of geneticists with new state bureaucracies; discusses fascist empires, considering forced labor on coffee, rubber, and cotton in Ethiopia, Mozambique, and Eastern Europe; and explores fascist genocides, following Karakul sheep from a laboratory in Germany to Eastern Europe, Libya, Ethiopia, and Angola. Saraiva's highly original account—the first systematic study of the relation between science and fascism—argues that the "back to the land" aspect of fascism should be understood as a modernist experiment involving geneticists and their organisms, mass propaganda, overgrown bureaucracy, and violent colonialism.

The Sound of Innovation MIT Press

In the early 1970s, a German study estimated that women expended as many calories cleaning their coal-mining husbands' work clothes as their husbands did working below ground, arguably making the home as much a site of industrialized work as factories and mines. But while energy studies are beginning to acknowledge the importance of social and historical contexts and to produce more inclusive histories of the unprecedented energy transitions that powered industrialization, women have remained notably absent from these accounts. In *A New Light* explores the vital place of women in the shift to fossil fuels that spurred the Industrial Revolution, illuminating the variety of ways in which gender and energy intersected in women's lives in nineteenth- and twentieth-century Europe and North America. From their labour in the home, where they managed the adoption of new energy sources, to their work as educators in electrical housecraft and their protests against the effects of industrialization, women took on active roles to influence energy decisions. Together these essays deepen our understanding of the significance of gender in the history of energy, and of energy transitions in the history of women and gender. By foregrounding women's energetic labours and concerns, the authors shed new light on energy use in the past and provide important insights as societies move towards a carbon-neutral future.

Assetization MIT Press

This diverse and insightful volume investigates changing patterns of knowledge management practices and intellectual property regimes across a range of different techno-scientific disciplines and cultures. The book links the practices and regimes of the past with those of contemporary and emerging forms, covering the mid-19th century to the present. The contributors are noted scholars from various disciplines including history of science and technology, intellectual property law, and innovation studies. The chapters offer original perspectives on how proprietary regimes in knowledge production processes have developed as a socio-political phenomenon of modernity, as well as providing an analysis of the way individuals, institutions and techno-sciences interact within this culture. With in-depth analysis, this book will appeal to academics and students of STS

(Science, Technology and Society), history of science and technology, business history, innovation studies, law, science and technology policy as well as business studies. Historians of science and technology and business will also find much to interest them in this book.