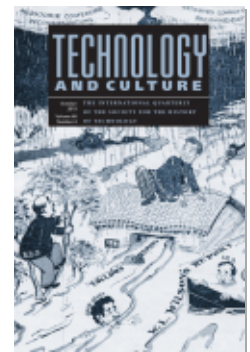




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Robert Belot, Yoel Bergman, Hans-Joachim Braun, Jan Hadlaw, Stefan Poser, Magdalena Zdrodowska



Technology and Culture, Volume 60, Number 4, October 2019, pp. 1083-1092 (Article)

Published by Johns Hopkins University Press

DOI: <https://doi.org/10.1353/tech.2019.0102>

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CONFERENCE REPORT

Forty-fifth Symposium of the International Committee for the History of Technology

“Technological Drive from Past to Future? 50 Years of ICOHTEC,” Jean Monnet University, Saint-Étienne, France, 17–21 July 2018

**ROBERT BELOT, YOEL BERGMAN, HANS-
JOACHIM BRAUN, JAN HADLAW, STEFAN
POSER, and MAGDALENA ZDRODOWSKA**

The forty-fifth annual symposium of ICOHTEC (the International Committee for the History of Technology) took place at the Jean Monnet University, Saint-Étienne, France, 17–21 July 2018. Some forty different sub-themes listed at the end of this report were examined in one or more sessions of ninety minutes each and with three speakers. An appreciable number of participants explored technological initiatives and social effects from around the globe, allowing for mutual comparisons, including historical desalination in Chile; hydroelectric power stations in Brazil; clean energy in Romania; irrigation systems in Pakistan and China; railways in Africa; and computer advancement in the Warsaw Pact countries.

The symposium was also a proper occasion for celebrating ICOHTECH's fiftieth anniversary. Founded in 1968, ICOHTECH aims to promote studies on History of Technology (HoT) through conferences and

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0040-165X/19/6004-0007/1083–92

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cooperation between researchers, beyond political and geographical divisions. At Saint-Étienne (S.E.), a sizeable number of the 250 participants came from all corners of the world, with participants offering to host future symposia in venues from Chile to India. The symposium was co-organized with the S.E. local organizing committee (LOC). Longtime ICOHTEC members in the LOC, such as Robert Belot (LOC chair), Pierre Lamard, Monique Chapelle, and Alexandre Herlea, helped to facilitate the preparations.

Beginning in Porto 2016, ICOHTEC co-organizes with the LOCs a “summer school,” that shortly precedes the annual symposium. Aimed at rethinking historical and contemporary narratives on technology, the school is open to Ph.D. students and recent postdoctoral researchers. The teachers are longtime researchers in the history of technology. Participation has gained momentum and in Saint-Étienne, the school was held during 16–17 July, with some participants joining the symposium afterwards. See more in the last pages of the report. The next summer school session was held before the next symposium in Katowice, Poland, 22–27 July 2019.

The official reception took place at the Saint-Étienne city hall (17 July) and was held by Michel Rautenberg, Dean of the Humanities faculty, with welcoming notes by councilor of the Loire Department Mr. Georges Ziegler, ICOHTEC president Sławomir Łotysz, and Robert Belot. Professor Robert Bud, the research keeper at the Science Museum in London, delivered the traditional Kranzberg Memorial Lecture, titled “Conceptual History: Branding and Technology as Part of the Public Sphere.” Bud reflected on the concept of “technology” in the English public sphere over time. The changing meaning of technology, more than any other outcome of human culture, has been used to calibrate the metronome of progress.

In the following days, participants presented findings and viewpoints through fruitful discussions. The hospitality of the French team, excursions to memorable technological and cultural sites in Saint-Étienne, and the surroundings and the social events all worked to make the conference successful and enjoyable. In the next paragraphs, a brief outline of selected subthemes and sessions will be given.

One session, chaired by Alex Lesanu, was devoted to the role of “Electricity in Cultural and Political Development.” Various perspectives were presented not only on how electrical infrastructure influenced the local contexts, but also on the challenges of recognizing the electrical network as part of technological and cultural heritage. Duygu Aysal Cin considered the status and the role of electric poles in Ottoman Istanbul during World War I, concentrating on how electricity shifted from a commodity forbidden for private use to a commercial product. Fabian Zimmer investigated the cultural representations of hydroelectric dams in 1950s European industrial films—the effects of the rise of both European documentary film and hydroelectricity after World War II. By close-reading films, Zimmer decodes the culture–nature relations represented by specific aesthetic

strategies. Michael Hascher discussed the issue of preservation and protection of the electrical infrastructure, now obsolete and deteriorating. He asked how to deal with the remaining elements of the old networks and called for a meticulous documentation as well as an integration of the antiquated electricity grids into new infrastructure.

The question of “New Approaches to Industrial Heritage” was examined in a session chaired by Michael Hascher. Armando Quintas and Alexandre Ramos considered films as historical sources. Concentrating on methodological issues, they analyzed the film representation of marble industry in Portugal. Aurora Donoso-Sequeiros presented the details of the reconstruction and revalidation of the Tharsis Pier in Huelva, Spain, and its redefinition as Monument of Spanish Industrial Heritage. Sheila Palomares Alarcón and Pietro Viscomi pointed out that the industrial heritage is painfully underrepresented on UNESCO’s World Heritage Site list, and considered advantages and drawbacks of enlisting based on the example of Spanish heritage sites.

One session was devoted to “Technified Bodies at Work.” The panel chaired by Karsten Uhl explored procedures of work as well as human–technology relations in the design of machines. Kevin Liggieri examined the idea of the human as a norm for machine design in the 1920s and 1930s. He pointed out that the wholistic concept of the human resulted in treating psychotechnics as a tool of 20th-century automatization, mechanization, and consequently, the enhancement of productivity. Eike-Christian Heine explored the severe discipline earth workers were subject to in the 1900s. Not only their bodies but also habits, addictions, and minds were under control of their employers. Lars Bluma gave insight into the mechanization of mining in the 1920s (scrutinizing the shaker conveyor, pneumatic pick and the process of substitution of muscles with machines), while Christian Ehardt investigated man-machine and technology-body relations in the 1970s shipyard industry, emphasizing the dual position of the worker’s body: dangerous for the machines but also endangered by them.

The session on “West–East Transfer of Technology during the Cold War,” chaired by Timo Myllyntaus, was devoted to technological exchange over the Iron Curtain. As Myllyntaus explained, the Curtain was impermeable for technology; however, technological transfer did take place, both officially and under cover. Alexandru Lesanu explored the case of relocating a sugar factory from Germany to Romania, while Irina Sheveleva explored the tactics of illegal technology duplication.

“The Annual Symposium of the Social History of Military Technology,” held for the thirteenth consecutive time during ICOHTEC’s symposia, was organized by Bart Hacker and Ciro Paolletti. It consisted of five sessions with participants examining particular cases of military technology throughout the ages, as well as those cases’ interactions with society. A special panel of three veteran historians in military technology—and long-

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time participants—was the first session (Bart Hacker, Kelly DeVries, and David Zimmerman). They discussed the role of technology in shaping the military and battles. DeVries argued that recent trends, emphasizing the importance of technology in premodern military battles' successes and defeats, obscure the more common-sense importance of men, leaders, and terrain. For Zimmerman, on the contrary, military technology was always one determinant factor that influenced battles, campaigns, and wars, and became more prominent during the nineteenth century. Military technology is central to any study of war and should overcome the descriptive approach, which appears to be promoted by anti-determinists. For Bart Hacker, new military technologies, as shown historically and in many places, often lead to large social changes. Militaries reorganize themselves to assimilate and domesticate new technology and politics, and reshape themselves to support and deploy new military formations.

Two sessions were devoted to the topic of "Technological Momentum: From Gunpowders to Modern Explosives and Propellants." These were organized by Brenda Buchanan, Steven Walton, and Yoel Bergman, and revived the numerous gunpowder sessions organized by Buchanan in previous symposia. In the first presentation, Walton discussed the diversity of non-optimal gunpowder formulations at the period of the often-told "inevitable" rise of gunpowder weaponry from its appearance in Europe in the mid-fourteenth century to very large use by the late-sixteenth century. The various gunpowder formulations, and their slow closure to standard mixtures, challenge the "inevitable" success story, as did the studies on the other aspects of the episode. A successful emergence, according to Walton, may take place when technological obstacles in different aspects of a new technology are resolved.

"The History of Repair Cultures and the Temporalities of Technology" was the topic proposed by Stefan Krebs. The session chaired by Hans-Joachim Braun began with the presentation by Krebs, who pointed out that maintenance and repair practices are an element of the life cycle of consumer products. The starting point for his argument was car self-repair in Germany in the twentieth century, which turned from necessity in the 1920s to a popular hobby in the 1960s. Krebs draws attention to the community- and identity-building element of DIY movements as well as knowledge distribution patterns within repairing collectives. Heike Weber presented theoretical aspects of the products' afterlife, presenting the strategies of long-term use of technologies as well as planned obsolescence of electronic equipment. She underlined that the history of technology fails to include the products' afterlives into the narrative about the evolution of technology.

One session was devoted to "Unusual Sounds." The panel organized by Hans-Joachim Braun and chaired by Stefan Krebs proposed a wide range of issues related to music. Susan Schmidt Horning explored the history of girl bands in an extremely masculine environment of rock music in the

1960s. Mikko Ojanen devoted his presentation to Erkki Kurenniemi, an artist and musical instrument designer, and the influence his electronic instruments had on electroacoustic music in Finland. Using examples of music software and interviews with musicians, Andreas Möllenkamp investigated the impact of technological utopias and the imaginary on the development of actual technologies. Hans-Joachim Braun concentrated on the relations between computer-generated music and improvisation, exemplifying his presentation with footage of robots performing along with human musicians.

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A session chaired by Darryl Cressman was devoted to “Taming Sounds and Transmitting Speech.” Magdalena Zdrodowska considered how the image and function of ear trumpets changed over the course of the twentieth century as they were replaced with increasingly advanced hearing prostheses and emerged, most recently, as in-demand collector’s items. Jan Hadlaw explored the promotional strategies of early telephone services in the United States with a special emphasis on the figure of women in advertisements as well as role the telephone played in women’s lives in the 1950s and 1960s. Benjamin Lindquist in turn concentrated on the cinematic representations of synthetic speech in film narratives, and the relations between sound in film and synthesized speech.

The session “The Dream of Flight in the Popular Imagination,” organized by Tom Crouch, explored air and space travel from practical and playful perspectives. Crouch’s paper (presented by Dorothy Cochrane) examined the influence of thirteenth- and sixteenth-century era aerodynamic children’s toys, especially rotary wing devices, on eighteenth- and nineteenth-century flight enthusiasts and experimenters, including inventors Wilbur and Orville Wright. Margaret Weitekamp discussed how fictional accounts of space travel evolved over time in ways that engaged creatively with real-life scientific experiments and accomplishments. Dorothy Cochrane noted the public’s longstanding fascination with the idea of the flying car despite the predictable failures of flying car designs, and proposed that engineers set aside efforts to make the flying car a practical form of transportation and instead enjoy the playful opportunities the technology affords.

The influence of popular and specialist perceptions of media and technologies on modern and postmodern experience was the theme of the session “Approaches to Technological Utopias and Paradigms.” Jukka Kortti considered the role played by media technologies—such as the printing press, film, television, and new media—in simultaneously provoking and articulating utopian and dystopian views of everyday life and of the media themselves. Marcin Krasnodebski’s talk considered the contested meaning of Photonics within scientific, government, and business communities, and argued that the lack of a working definition hinders the introduction of policies needed to foster developments in the physical science of light generation. Mitsuhiro Hayashi drew on Timothy Morton’s description of

the atomic bomb as a “hyperobject”—an object or technology which cannot form networks with humans—to raise questions about socio-historical memory, and to propose new approaches to memorializing and narrating devastating historical events such as Hiroshima or the Holocaust.

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Two different functions of audio communications were the focus of the session “Reception of Novelties in Radio, Broadcasting, and Communication,” chaired by Jan Hadlaw. Anne MacLennan focused on the domestication of the radio in rural Canada between the two World Wars. Drawing on archival sources and interviews with 1930s radio listeners, she explained how early Canadian radio manufacturers adapted their designs to accommodate technological developments, audience expectations, and network expansion. Roman Artemenko examined the less-studied history of the AMPEX Corporation—famous in the entertainment industry for its audio tape technology—by focusing on the scientific devices it developed for NASA and the U.S. military.

There were two sessions on the topic of “Plastics, Emotions, and Consumer Society,” both organized by Maria Elvira Callapez, Günter Lattermann, and Stefan Poser, dedicated to the “mythos of plastics,” as Roland Barthes described the material in the 1950s. No other group of substances has provoked such strong emotions of refusal and approval, hate and love as synthetic polymeric materials. This was the reason to link the development of plastics to the process of shaping consumer societies, and to discuss emotions generated by plastics. Callapez investigated the role of plastics for consumer societies; Poser introduced emotion studies in the history of materials, focusing on emotions linked to plastics before and after the Oil Crisis of the 1970s; Lattermann analysed to which degree different types of synthetic materials in different periods were appreciated by society. Angela Cope focused on PVC as a new material for the summer toy industries in the postwar period and linked plastics to playful leisure activities. Inês Soares and Susana Sá introduced the history of synthetic materials in Portugal, while Laura-Mihaela Lelutiu and Elena Helerea gave insight on the role of plastics in Romanian society. Although plastics shaped societies, there is still not much historical research on its impact. Linked to the research project “The Triumph of Bakelite: History of Plastics in Portugal,” work will be continued on the Plastic Heritage Conference in Lisbon in May 2019.

A focus on the afterlives of technological innovations and objects informed the session “Technological Nostalgia and Post Industrialist Idealism.” Ben Bradley explored how the modernization of western Canada’s rail and road systems during the interwar years drove a popular nostalgia in the region’s communities for transportation technologies of the past, expressed in the preservation, restoration, and display of horse-drawn stagecoaches and freight wagons. Katarzyna Pietrzak argued for the preserva-

tion of historic lifts as aesthetically valuable examples of cultural heritage and as material evidence of historical technological mechanisms.

ICOHTEC awarded two prizes in St. Étienne: the Turriano ICOHTEC Prize for books or Ph.D. theses and the Maurice Daumas Prize for articles in the history of technology. The award ceremony was combined with a prize session in which the subjects of the winning works were presented and discussed. Thus, we learned of the excellent book by Lino Camprubi (Universidad de Sevilla, Spain), *Los ingenieros de Franco: ciencia, Catolicismo y Guerra Fría en el estado Franquista* [The Engineers of Franco: Science, Catholicism, and the Cold War under the Francoist State (Barcelona, Crítica)]. The prize committee, chaired by Hans-Joachim Braun, decided on this book due to its well-chosen case studies and its very original approach that concentrates on material objects. The author succeeded in putting these material objects into the contexts of history of technology, history of science, and political history. The book was first published in English in 2014 (MIT Press and a considerably enlarged Spanish version appeared in 2017. Two other submissions received honorable mention, one being Jonas van der Straeten's Ph.D. thesis (Darmstadt Technical University, Germany), "Transmitting Development: Global Networks and the Development of Local Grids in the Electrification of East Africa, 1906–1970." The author contributed in this work to a global history of technology; a book will be published in 2019 or 2020. The second book receiving honorable mention is dedicated to construction history: Daniel López López and Marta Domènech Rodríguez, *Tile Vaults: Structural Analysis and Experimentation* (2015: Guastavino Biennial), published online in 2017. The prize was kindly sponsored by the Juanelo Turriano Foundation, Madrid, Spain.

ICOHTEC's eighth Maurice Daumas Prize was awarded to Mirjam Sarah Brusius, a postdoctoral researcher at University of Oxford / German Historical Institute, for her challenging paper "Photography's Fits and Starts: The Search for Antiquity and its Image in Victorian Britain," published in *History of Photography* 40, no. 3 (2016): 250–66. The author discusses the role of photography in its early period, as well as its influence on research in humanities, particularly the field of archaeology. She investigates the relationship between ancient objects and their visual depictions in British archaeological expeditions to the Middle East in the mid-nineteenth century. The committee was chaired by Maria Elvira Callapez, while the prize was kindly sponsored by the Université de Technologie de Belfort-Montbéliard (UTBM), France.

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The Summer School

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“Does Technology Drive History? Theoretical Concepts and Historical Examples” was the topic of the Second ICOHTEC Summer School at Jean Monnet University, St. Étienne, 16–17 July 2018. The forty-fifth ICOHTEC Symposium that followed was part of the Summer School. The Summer School was organized by the ICOHTEC Summer School Committee: Hans-Joachim Braun (chair), Maria Elvira Callapez, Michel Cotte, Timo Myllyntaus, and Klaus Stauber. The four Summer School tutors came from the *École Nationale des Travaux Publics de l’État*: Richard Cantin, Mike Coillot, Mohamed El Mankibi, and Pierre Michel.

The Summer School took stock of the current state of theoretical approaches in the history of technology such as technological determinism, LTS, SCOT, ANT, cultural history, and concepts of transnational and global history of technology. The main questions were: What are the strengths and weaknesses of these concepts as heuristic and analytical tools for investigating diverse issues in the history of technology? What about the feasibility and merits of combining some of those concepts? What could a new and original approach to the history of technology look like?

Twenty-three Ph.D. candidates from seventeen different countries participated in the Summer School. They listened to and discussed the three Summer School lectures and participated in panels of their choice in the ICOHTEC Symposium. But they also had the opportunity to present an outline of their individual Ph.D. projects, which were then discussed by the Summer School participants. There were three Summer School lecturers: Francesca Bray, Michel Cotte, and David Edgerton.

In her talk “Resisting Transformation: Technology, Reproduction, and the Making of History,” Francesca Bray (University of Edinburgh) discussed theoretical and methodological possibilities opened up by an anthropological perspective focusing on technologies as tools for reproducing specific material worlds or social relations. These, she argued, can successfully adapt to or absorb pressures for change or disintegration. As an illustration, she took the case of communication technologies and their role in maintaining family cohesion.

Michel Cotte (University of Nantes) lectured on the topic “Railway of Saint-Étienne to Lyon, a Brother of the Liverpool–Manchester Railway (1826–1833): Adaptation and Innovation During the Industrial Revolution.” Cotte distinguished two main ways supporting industrial growth in early industrial France: French state engineers, or private engineers and entrepreneurs directly in contact with British engineers and companies. His emphasis was on Marc Seguin, the first builder of a railway outside Britain. Cotte showed to what extent ANT and SCOT can successfully be used as analytical tools for this topic.

David Edgerton (King's College London) held a talk titled "What is 'Technological Determinism' and Why is it so Disliked by Historians of Technology?" He dealt with the changing meanings of technological determinism and its status as a badly-specified strawperson in the discourse on what the history of technology could be. Edgerton argued that what is usually wrong with technologically-determinist arguments is not so much the method, but rather the choice of technology as such, the analysis of society, and the specific nature of the connections between them.

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The Summer School was generally well-received by the participants. But there was justified criticism about time constraints being too narrow for discussing research projects and for social events. This will be remedied in the next ICOHTEC Summer School, scheduled for Katowice, Poland, 19–22 July 2019, preceding the forty-sixth ICOHTEC Symposium on "Technology and Power," Katowice, Poland, 22–27 July 2019.

Symposium Subthemes (topics discussed)

- Railways in the Making of Modern Societies
- The Dream of Flight in the Popular Imagination
- Encounters of New War Machines and Fictional Armored Shields
- Electricity in Cultural and Political Development
- Technological Mindset in Political Activism and Miracles in Cookery
- Energy and the Environment: Conflict or Compatibility
- Digital Uses and Tools for Historical Knowledge Management
- Technified Bodies at Work
- Approaches to Technological Utopias and Paradigms
- Technological Momentum: From Gunpowder to Modern Explosives and Propellants
- Electronics and Computers in History
- Technology as a Tool and a Target of Intelligence Agencies in the Second Half of the Twentieth Century
- Reassembling Crops for Changing Climates
- The Conquest of Hydraulic Power and its Place in the History of Mankind
- Plastics, Emotions, and Consumer Society: Industrial Strategies from the Past to the Future
- Reception of Novelties in Radio, Broadcasting, and Communication
- New Approaches to Industrial Heritage
- Technical Democracy: What are its Antecedents and its Prospects?
- West–East Transfer of Technology during the Cold War
- Manufacturing Industries, Management, and Entrepreneurship

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- Thirteenth Annual Symposium of the Social History of Military Technology
 - Technological Education and Exchange of Knowledge
 - Human Impacts on Nature and Landscape
 - Technical Democracy: What are its Antecedents and its Prospects?
 - Turns in the Energy Supply: Past, Present, and Future
 - The History of Repair Cultures and the Temporalities of Technology
 - Technological Innovations in Architecture
 - Humans Encountering Medical and Psychological Technology
 - From Insights to Technology to Technological Futurism
 - How to Write Global History of Technology? Interactive Discussion
 - Sustainable Buildings and Innovations
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 - Digitalization: Revolution of Contemporary History
 - Search for Pure Potable H₂O: Development of Water Supply Systems
 - Unusual Sounds: Girls with Electric Guitars, Finnish Synthesizers, and New Issues in the Development of Computer Music
 - Tourism—What Can History of Technology Contribute?
 - Beauty of Products: Technology and Design
 - Taming Sounds and Transmitting Speech
 - Support of Science, Technology, and Society: Interactions and Innovations
 - Commanded Nature: Technology and the Environment in Authoritarian Regimes