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Between Making And Knowing: Tools In The History Of Materials Research University of Chicago Press

This book offers a comprehensive sketch of the tools used in material research and the rich and diverse stories of how those tools came to be. We aim to give readers a sense of what tools materials researchers required in the late 20th century, and how those tools were developed and became accessible. The book is in a sense a collective biography of the components of what the philosopher of science, Ian Hacking, calls the 'instrumentarium' of materials research. Readers should gain an appreciation of the work materials researchers put into developing and using such tools, and of the tremendous variety of such tools. They should also gain some insight into the material (and hence financial) prerequisites for materials research. Materials research requires funding for the availability and maintenance of its tools; and the category of tools encompasses a broad range of substances, apparatus, institutions, and infrastructure.

[Discovering the Nanoscale](#) MIT Press

What makes a good scientific image? Is science defined by its pictures? The present book offers a broad comparative survey of the history, generation, use and function of images in scientific practice based on an extensive range of historical sources in the natural sciences, technology and medicine, particularly physics, astronomy, and chemistry.

[Biofouling Methods](#) CRC Press

The life of Nobel-winning biologist Salvador Luria, whose passion for science was equaled by his commitment to political engagement in Cold War America. Blacklisted from federal funding review panels but awarded a Nobel Prize for his research on bacteriophage, biologist Salvador Luria (1912–1991) was as much an activist as a scientist. In this first full-length biography of Luria, Rena Selya draws on extensive archival research; interviews with Luria's family, colleagues, and students; and FBI documents obtained through the Freedom of Information Act to create a compelling portrait of a man committed to both science and society. In addition to his work with viruses and bacteria in the 1940s, Luria broke new ground in molecular biology and cancer research from the 1950s to the 1980s and was a leader in calling for scientists to accept an educational and advisory responsibility to the public. In return, he believed, the public should rely on science to strengthen social and political institutions. Luria was born in Italy, where the Fascists came to power when he was ten. He left Italy for France due to the antisemitic Race Laws of 1938, and then fled as a Jewish refugee from Nazi Europe, making his way to the United States. Once an American citizen, Luria became a grassroots activist on behalf of civil rights, labor representation, nuclear disarmament, and American military disengagement from the Vietnam and Gulf Wars. Luria joined the MIT faculty in 1960 and was the founding director of the Center for Cancer Research. Throughout his life he remained as passionate about his engagement with political issues as about his science, and continued to fight for peace and freedom until his death.

[Science in the Twentieth Century](#) Oxford University Press

The Beginnings of Electron Microscopy - Part 2, Volume 221 in the Advances in Imaging and Electron Physics series, highlights new advances in the field, with this new volume presenting interesting chapters on Recollections from the Early Years: Canada-USA, My Recollection of the Early History of Our Work on Electron Optics and the Electron Microscope, Walter Hoppe (1917–1986), Reminiscences of the Development of Electron Optics and Electron Microscope Instrumentation in Japan, Early Electron Microscopy in The

Netherlands, L. L. Marton, 1901-1979, The Invention of the Electron Fresnel Interference Biprism, The Development of the Scanning Electron Microscope, and much more. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in Advances in Imaging and Electron Physics series Reconceiving the Gene Academic Press

This book features papers on the history and philosophy of science. It also includes related reviews of recent research literature on Rudolf Carnap, Eino Kaila, Ernst Mach, and Otto Neurath. The central idea behind this volume is that this distinctive field is both historical and philosophical at the same time. Good history and philosophy of science is not just history of science into which some philosophy of science may enter. On the other hand, it is neither philosophy of science into which some history of science may enter. The founding insight of this modern research discipline is that history and philosophy have a special affinity and one can effectively advance both simultaneously. The selection of contributions collected in this volume are good examples and best practices for these claims. In addition, it includes illuminating case studies. It will appeal to scholars in the history of and philosophy of science, especially history and philosophy of physics and biology, as well as economics, extended evolution, and the history of knowledge.

Virtual Microscopy and Virtual Slides in Teaching, Diagnosis, and Research NYU Press

The Development Of Microscopy Revolutionized The World Of Cell And Molecular Biology As We Once Knew It And Will Continue To Play An Important Role In Future Discoveries. Bioimaging: Current Concepts In Light And Electron Microscopy Is The Optimal Text For Any Undergraduate Or Graduate Bioimaging Course, And Will Serve As An Important Reference Tool For The Research Scientist. This Unique Text Covers, In Great Depth, Both Light And Electron Microscopy, As Well As Other Structure And Imaging Techniques Like X-Ray Crystallography And Atomic Force Microscopy. Written In A User-Friendly Style And Covering A Broad Range Of Topics, Bioimaging Describes The State-Of-The-Art Technologies That Have Powered The Field To The Forefront Of Cellular And Molecular Biological Research.

Handbook of Molecular and Cellular Methods in Biology and Medicine World Scientific  
Genesis: The Evolution of Biology presents a history of the past two centuries of biology, suitable for use in courses, but of interest more broadly to evolutionary biologists, geneticists, and biomedical scientists, as well as general readers interested in the history of science. The book covers the early evolutionary biologists-Lamarck, Cuvier, Darwin and Wallace through Mayr and the neodarwinian synthesis, in much the same way as other histories of evolution have done, bringing in also the social implications, the struggles with our religious understanding, and the interweaving of genetics into evolutionary theory. What is novel about Sapp's account is a real integration of the cytological tradition, from Schwann, Boveri, and the other early cell biologists and embryologists, and the coverage of symbiosis, microbial evolutionary phylogenies, and the new understanding of the diversification of life coming from comparative analyses of complete microbial genomes. The book is a history of theories about evolution, genes and organisms from Lamarck and Darwin to the present day. This is the first book on the general history of evolutionary biology to include the history of research and theories about symbiosis in evolution, and first to include research on microbial evolution which were excluded from the classical neo-Darwinian synthesis. Bacterial evolution, and symbiosis in evolution are also excluded from virtually every book on the history of biology. [History of Science in United States](#) University of Pittsburgh Press

We normally think of viruses in terms of the devastating diseases they cause, from smallpox to AIDS. But in *The Life of a Virus*, Angela N. H. Creager introduces us to a plant virus that has taught us much of what we know about all viruses, including the lethal ones, and that also played a crucial role in the development of molecular biology. Focusing on the tobacco mosaic virus (TMV) research conducted in Nobel laureate Wendell Stanley's lab, Creager argues that TMV served as a model system for virology and molecular biology, much as the fruit fly and laboratory mouse have for genetics and cancer research. She examines how the experimental techniques and instruments Stanley and his colleagues developed for studying TMV were generalized not just to other labs working on TMV, but also to research on other diseases such as poliomyelitis and influenza and to studies of genes and cell organelles. The great success of research on TMV also helped justify increased spending on biomedical research in the postwar years (partly through the National Foundation for Infantile Paralysis's March of Dimes)—a funding priority that has continued to this day.

The Beginnings of Electron Microscopy - Part 2 CRC Press

Labeled either as the "next industrial revolution" or as just "hype," nanoscience and nanotechnologies are controversial, touted by some as the likely engines of spectacular transformation of human societies and even human bodies, and by others as conceptually flawed. These challenges make an encyclopedia of nanoscience and society an absolute necessity. Providing a guide to what these understandings and challenges are about, the *Encyclopedia of Nanoscience and Society* offers accessible descriptions of some of the key technical achievements of nanoscience along with its history and prospects. Rather than a technical primer, this encyclopedia instead focuses on the efforts of governments around the world to fund nanoscience research and to tap its potential for economic development as well as to assess how best to regulate a new technology for the environmental, occupational, and consumer health and safety issues related to the field. Contributions examine and analyze the cultural significance of nanoscience and nanotechnologies and describe some of the organizations, and their products, that promise to make nanotechnologies a critical part of the global economy. Written by noted scholars and practitioners from around the globe, these two volumes offer nearly 500 entries describing the societal aspects of nanoscience and nanotechnology. Key Themes - Art, Design, and Materials - Bionanotechnology Centers - Context - Economics and Business - Engagement and the Public - Environment and Risk - Ethics and Values - Geographies and Distribution - History and Philosophy - Integration and Interdisciplinarity - Nanotechnology Companies - Nanotechnology Organizations Biographies of Scientific Objects Springer

'I recommend this book to anyone interested in learning the history of nanoscale science, and to those who would like to better understand some of the ethical, legal and social dilemmas to what I believe has rightly been labeled the technology of the 21st century.' - Rocky Rawstern, *Nanotechnology Now* Science and engineering, industry and politics, environmentalists and transhumanists are Discovering the Nanoscale. Policy makers are demanding explicit consideration of ethical, legal and social aspects, and popular books are explaining the achievements and promises of nanoscience. It may therefore seem surprising that this is the first collection of studies that considers nanoscience and nanotechnologies from the critical perspective of Science and Technology Studies (STS). However, when one appreciates that such a critical perspective needs to be historically informed it often involves intimate acquaintance with the research process. Accordingly, this book on the historical, analytical, and ethical study of nanoscience and -technology has come together in a period of several years. Though it presents only first results, these results for the most part stem from sustained investigations of nanoscience and nanotechnologies and of the contexts that are shaping their development. Nanoscience and technologies are developing very quickly, and for this reason, both pose a challenge to the more reflective approach commonly taken by science studies, while at the same time requiring the perspective provided by science studies scholars. Many are convinced that nothing meaningful can be said about the social and ethical implications of nanotechnologies at this early stage, but one can already see what programmatic attitudes go into nanoscale research, what metaphors are shaping it, and what conception of nature is implicit in its vision. It is also often assumed that in order to consider all aspects of nanotechnologies it is sufficient to know a bit of the science and to have some ethical intuitions. This collection of papers establishes that one also needs to appreciate nanoscale research and development in the larger context of the changing relations of science, technology, and society.

[Encyclopedia of Nanoscience and Society](#) Royal Society of Chemistry

Industrial methods, and industrially produced instruments, reagents and living organisms are central to research activities today. They play a key role in the homogenization and the diffusion of laboratory practices, thus in their transformation into a stable and unproblematic knowledge about the natural world. This book displays the - frequently invisible - role of industry in the construction of fundamental scientific knowledge through the examination of case studies taken from the history of nineteenth and the twentieth century physics, chemistry and biomedical sciences.

Salvador Luria IOS Press

As science becomes more deeply embedded in a complex technological infrastructure, has this changed the relationship between the sciences and the various technologies that support them? As our technologies help shrink our world, can we restrict our ethical concerns or must we find a way to face the fact that we are now one world? What do new forms of architecture say about whom we are? Is the design process the new epistemological paradigm? The answers to all of these is "yes" according to Joseph C. Pitt (VirginiaTech). *Doing Philosophy of Technology* presents an updated and integrated overview of the most important thinking from this prominent philosopher of technology. Throughout his career Joseph C. Pitt has defended the view that to say anything meaningful about the value of a technology one must know something about that technology and how it functions in the world. This starting point leads naturally to a pragmatist philosophical stance, since it is the real world consequences of introducing a technology that must be the basis for any further normative judgements. In the book we find an extended set of arguments that challenge the idea that there are eternal philosophical issues that transcend the impacts that technologies make on human beings and

their world. Rather, it is claimed that as our technologies transform our world they transform us and the kinds of questions we find important to answer.

Mapping AIDS University of Chicago Press

Scientists' views on what makes an experiment successful have developed dramatically throughout history. Different criteria for proper experimentation were privileged at different times, entirely new criteria for securing experimental results emerged, and the meaning of commitment to experimentation altered. In *About Method*, Schickore captures this complex trajectory of change from 1660 to the twentieth century through the history of snake venom research. As experiments with poisonous snakes and venom were both challenging and controversial, the experimenters produced very detailed accounts of their investigations, which go back three hundred years—making venom research uniquely suited for such a long-term study. By analyzing key episodes in the transformation of venom research, Schickore is able to draw out the factors that have shaped methods discourse in science. *About Method* shows that methodological advancement throughout history has not been simply a steady progression toward better, more sophisticated and improved methodologies of experimentation. Rather, it was a progression in awareness of the obstacles and limitations that scientists face in developing strategies to probe the myriad unknown complexities of nature. The first long-term history of this development and of snake venom research, *About Method* offers a major contribution to integrated history and philosophy of science.

[A Tale of Two Viruses](#) Springer

Holography exploded on the scientific world in 1964, but its slow fuse had been burning much longer. Over the next four decades, the echoes of that explosion reached scientists, engineers, artists and popular culture. Emerging from classified military research, holography evolved to represent the power of post-war physics, an aesthetic union of art and science, the countercultural meanderings of holism, a cottage industry for waves of would-be entrepreneurs and a fertile plot device for science fiction. New working cultures sprang up to mutate holography, redefining its products, reshaping its audiences and reconceiving its applications. The outcomes included ever more sublime holograms and exquisitely sensitive measuring techniques - but also priority disputes, prurience and poisonous business rivalries. New subjects cross intellectual borders, and so do their explanations. This book draws on the history and philosophy of science and technology, social studies, politics and cultural history to trace the trajectory of holography. The result is an in-depth account of how new science emerges. Based on unprecedented interviews with pioneer holographers and extensive archival research, it reveals how science, technology, art and wider culture are entwined in the modern world.

Principles of Electron Optics, Volume 1 John Wiley & Sons

Volume one of *Principles of Electron Optics: Basic Geometrical Optics*, Second Edition, explores the geometrical optics needed to analyze an extremely wide range of instruments: cathode-ray tubes; the family of electron microscopes, including the fixed-beam and scanning transmission instruments, the scanning electron microscope and the emission microscope; electron spectrometers and mass spectrograph; image converters; electron interferometers and diffraction devices; electron welding machines; and electron-beam lithography devices. The book provides a self-contained, detailed, modern account of electron optics for anyone involved with particle beams of modest current density in the energy range up to a few mega-electronvolts. You will find all the basic equations with their derivations, recent ideas concerning aberration studies, extensive discussion of the numerical methods needed to calculate the properties of specific systems and guidance to the literature of all the topics covered. A continuation of these topics can be found in volume two, *Principles of Electron Optics: Applied Geometrical Optics*. The book is intended for postgraduate students and teachers in physics and electron optics, as well as researchers and scientists in academia and industry working in the field of electron optics, electron and ion microscopy and nanolithography. Offers a fully revised and expanded new edition based on the latest research developments in electron optics Written by the top experts in the field Covers every significant advance in electron optics since the subject originated Contains exceptionally complete and carefully selected references and notes Serves both as a reference and text

*Advances in Imaging and Electron Physics* Oxford University Press

Most chemists today have either taken part in, or been affected by, the chemical revolution that has taken place over the course of the last century. Developments in instrumentation have changed not just what chemists do, but also how they think about chemistry. New and exciting areas of previously inaccessible research have been opened up as a direct result of this revolution. This is the first book to examine this instrumental revolution and goes on to assess the impact on chemical practice in areas ranging from organic chemistry and biochemistry to environmental analysis and process control, thus demonstrating how fundamental and extensive are the changes that have occurred. With contributions from internationally recognised specialists, this lavishly illustrated book provides a focal point for any historian of chemistry or chemist with an interest in this fascinating topic. This book is published in association with the Science Museum, London, UK and the Chemical Heritage Foundation, Philadelphia.

*A History of the Life Sciences, Revised and Expanded* University of Chicago Press

*A Companion to the History of American Science* offers a collection of essays that give an authoritative overview of the most recent scholarship on the history of American science.

Covers topics including astronomy, agriculture, chemistry, eugenics, Big Science, military technology, and more Features contributions by the most accomplished scholars in the field of science history Covers pivotal events in U.S. history that shaped the development of science and science policy such as WWII, the Cold War, and the Women's Rights movement

Image Studies Academic Press

This Encyclopedia examines all aspects of the history of science in the United States, with a special emphasis placed on the historiography of science in America. It can be used by students, general readers, scientists, or anyone interested in the facts relating to the development of science in the United States. Special emphasis is placed in the history of medicine and technology and on the relationship between science and technology and science and medicine.

*Integrated History and Philosophy of Science* Taylor & Francis

A detailed history of the use of amphetamines follows the rise, fall, and surprising resurgence of the popular drug in America since they were marketed as the original antidepressant in the 1930s.

Holographic Visions CRC Press

Several milestones in biology have been achieved since the first publication of the *Handbook of Molecular and Cellular Methods in Biology and Medicine*. This is true particularly with respect to genome-level sequencing of higher eukaryotes, the invention of DNA microarray technology, advances in bioinformatics, and the development of RNAi technology