



MAX-PLANCK-GES. 1827

RESEARCH REPORT 2002—2003

**MAX-PLANCK-INSTITUT FÜR
WISSENSCHAFTSGESCHICHTE**

Max Planck Institute for the History of Science



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Cyanea capillata, glass model by Leopold and
Rudolph Blaschka, 1884.
Courtesy of the Museum für Naturkunde der
Humboldt-Universität, Berlin

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**Towards an Historical Epistemology
Ten Years Max Planck Institute for the History of Science,
1994 – 2004**

Jürgen Renn

At the beginning of the twenty-first century, we rely on the growth of scientific knowledge to meet the global challenges to humanity. Our understanding of the world around us, our lives, our economy, our technological achievements, and our vision of the future depend on it. But what is science? Can we blindly trust scientific knowledge when addressing delicate decisions on vital issues such as the use of nuclear energy or stem cells? Are there such things as scientific facts or objectivity that are not subject to the weaknesses of human judgment and the vicissitudes of historical change? Can scientific revolutions really affect fundamental categories of our thinking? How fragile is scientific truth and how predictable and dependable is scientific innovation? Will there ever be a final theory of the universe or are the very notions of what a universe and what a theory, let alone final theory mean, shaped by our historical context just as much as our judgment about what a good politician or a beautiful painting is? How deeply is science ingrained in culture, and how is scientific progress possible in spite of its contingent nature? These are some of the questions that any attempt to deal with the endeavor of science in a responsible way must raise and that motivate the interdisciplinary research projects at the Max Planck Institute for the History of Science.

Since its foundation in 1994, the Institute has become an international center of research in which historians and philosophers of science, historians of art, philologists, anthropologists, sociologists, psychologists, and scientists from many disciplines have joined forces in attempts to understand the historical nature of scientific knowledge, including its architecture, its development, its forms and practices, and its interactions with various cultural contexts. The historical objects of studies pursued at the Institute range from Babylonian mathematics to modern molecular biology, from Renaissance botanical illustrations to scientific photography, from natural history collections to general relativity theory, from the accounting systems of the Inca to Chinese mechanics and astronomy. Despite the range of topics addressed, the motivation, if not the approaches, the spirit, if not the methods of these studies have been similar. In the ten years of its existence, the Institute has approached the history of science as an integrated endeavor: instead of mirroring the specialist dividing lines of the sciences themselves, research at the Institute aims

to understand the nature of the knowledge more broadly, beyond the confines of this or that particular disciplinary or cultural perspective. The relations between practical experience and conceptual structures and between knowledge and belief, the history of epistemic objects, the role of non-textual knowledge in science, research on these and other topics seek to combine the potential of detailed empirical studies with that of a theoretical tradition stretching from ancient philosophy to modern cognitive science.

All of these diverse historical inquiries seek to trace the development of forms as well as the specific contents of knowledge. Projects on the history of experiment and observation, the invention of methods of demonstration and proof, and the emergence of scientific concepts and techniques from daily experience are cases in point. The premise of this “historical epistemology” is that not only scientific theories and empirical findings, but also the categories that make new kinds of knowledge possible have a history, one that is best studied comparatively, across cultures and historical epochs. This is an ambitious undertaking which must draw on the competence of many disciplines in the humanities and sciences and which also must exploit a spectrum of historical sources, from texts to images to material artifacts.

The vast field of historical material required for this research program depends on innovative techniques for accessing, analyzing, and disseminating sources as diverse as cuneiform tablets, scientific notebooks, simulations of experimental arrangements, and video recordings of the intuitive physical knowledge of children. The Institute has thus become one of the driving forces behind the movement to transform the Internet into a Web of Culture and Science. It is committed to making historical sources of human knowledge openly accessible over the Web not only to global scholarly collaborations, but also to a wider public, including teachers and students, interested in scientific documents as part of a collective human heritage. The Institute remains committed to sharing the results of its research to scholars, scientists, and the interested public, through public lectures, films, and exhibitions as well as publications.

Neither our research nor these efforts to contribute towards an understanding science and its histories would be possible without the creative and friendly atmosphere we enjoy at the Institute, the encouragement and support of our partners worldwide, and the reliable bonds of collaboration and exchange built over the past decade. We would like to take this occasion to express our gratitude to our colleagues all over the world. On the occasion of the Institute’s tenth anniversary, we have chosen a special form for our Annual Report, which contains, in addition to information about activities and publications, a collection of essays on selected aspects of our ongoing research. For those interested in learning more about the activities of the Institute, our newly designed website offers a wealth of information. Some of these are also featured on the enclosed CD-ROM.

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Structure and Organization of the Institute



Scientific Advisory Board

Prof. Dr. Paolo Galluzzi

Istituto e Museo di Storia della Scienza and Università degli Studi di Firenze, Italy (Chair)

Prof. Dr. Peter Galison

Department of the History of Science, Harvard University, Cambridge, U.S.A.
(Vice Chair)

Prof. Dr. Roger Chartier

Centre de Recherches Historiques, CNRS, École des Hautes Études en Sciences Sociales, Paris, France

Prof. Dr. Rivka Feldhay

The Cohn Institute for the History and Philosophy of Science and Ideas,
Faculty of Humanities, Tel Aviv University, Israel

Prof. Dr. Jean Gayon

Institut d'histoire et de philosophie des sciences et des techniques – UFR de Philosophie, Université
Paris 1-Panthéon-Sorbonne, Paris, France

Prof. Dr. Jürgen Mittelstraß

Philosophische Fakultät, Fachgruppe Philosophie, Universität Konstanz, Germany

Prof. Dr. Rüdiger Wehner

Philosophische Fakultät-II, Zoologisches Institut, Universität Zürich, Switzerland

Departments and Research Groups

Department I: Structural Changes in Systems of Knowledge

Director: **Prof. Dr. Jürgen Renn**

Research Scholars: *Dr. Peter Beurton, Katja Bödeker, Dr. des. Ing. Claudia Bührig, Giuseppe Castagnetti, PD Dr. Peter Damerow, Brian Fuchs, Prof. Dr. Dieter Hoffmann, Dr. Horst Kant, Prof. Dr. Wolfgang Lefèvre, Jean Maroldt, PD Dr. Peter McLaughlin (until March 2003), Dr. Jürgen Neffe, Dr. Marcus Popplow (until April 2002), Dr. Albert Presas i Puig, Simone Rieger, Dipl. Phys. Matthias Schemmel, Markus Schnöpf, Dr. Volkmar Schüller, Prof. Dr. Renate Wahsner (until March 2003), Falk Wunderlich (until June 2002, now Lorenz Krüger Postdoctoral Research Fellow)*



From left to right, sitting: Jörn Henrich, Renate Wahsner, Ursula Müller, Lindy Divarci, Petra Schröter, Shadiye Leather-Barrow, Milena Wazeck; standing: Giuseppe Castagnetti, Ekkehard Sieker, Dieter Hoffmann, Tibor Frank, Markus Schnöpf, Jochen Buettner, Matthias Schemmel, Carmen Hammer, Volkmar Schüller, Juergen Renn, Horst Kant, Simone Rieger, Carola Grossmann, Peter Beurton, Peter Damerow, Mark Schiefsky, Antonio Becchi, Peter McLaughlin, Matteo Valleriani

Department II: Ideals and Practices of Rationality

Director: **Prof. Dr. Lorraine Daston**

Research Scholars: *Dr. Mechthild Fend, Dr. Anke te Heesen, Dr. Bernhard Kleeberg, Dr. Antoinette Roesler-Friedenthal (until March 2002), PD Dr. Fernando Vidal, Dr. Annette Vogt*



From left to right, sitting: Claire Gantet, Lorraine Daston, Susanne Pickert, Mechthild Fend, Delphine Gardey, Anke te Heesen, Monika Baär, Ashley West; standing: Mark Seltzer, Carola Kuntze, Jamil Ragep, Sicco Lehmann-Brauns, Erna Fiorentini, Natalie Nagel, Daniel Stolzenberg, Annette Vogt, Luciana Caliman, Kathrin Müller, Nathalie Huët, Fabian Krämer, Abigail Lustig, Thomas O. Haakenson, Bernhard Kleeberg, Fernando Vidal, Albert Schirrmeyer

Department III: Experimental Systems and Spaces of Knowledge

Director: *Prof. Dr. Hans-Jörg Rheinberger*

Research Scholars: *Dr. Christina Brandt, Dr. Sven Dierig, Dr. Peter Geimer, Dr. Bettina Gockel (until July 2003), PD Dr. Michael Hagner (until September 2003), Dr. Staffan Müller-Wille, Dr. Henning Schmidgen, PD Dr. Friedrich Steinle*



From left to right, sitting: Antje Radeck, Friedrich Steinle, Barbara Wittmann, Julia Kursell, Janina Wellmann, Nancy Anderson, Josephine Fenger; standing: Sven Dierig, Sofie Lachapelle, Katrin Solhdju, Manfred Laubichler, Hans-Jörg Rheinberger, Jennifer Marie, Laura Otis, Christoph Hoffmann, Uljana Feest, Björn Brusch, Christina Brandt, Tara Abraham, Henning Schmidgen

Independent Research Group I

(January 1999–December 2004): History and Philosophy of Laboratory Sciences

Director: *PD Dr. Ursula Klein*



From left to right: Leo Slater, Gisela Marquardt, Maria Rentetzi, Andrew Sparling, Angela Bandinelli, Ursula Klein

Independent Research Group II
(April 1999–February 2005): Experimental History of Science

Director: PD Dr. H. Otto Sibum

Research Scholar: *Annik Pietsch*



From left to right: Suman Seth, Charlotte Bigg, David Bloor, Annik Pietsch, H. Otto Sibum, Richard Staley

Service Units

Administration headed by *Claudia Paaß*

Library headed by *Urs Schoepflin*

Computing Service Unit headed by *Jörg Kantel*

Information Technology Project Group headed by *Dirk Wintergrün*

Research Coordination: *Jochen Schneider*



From left to right: Karin Sachse, Hannelore Grapentin, Renate Dutschmann, Barbara Köhler, Claudia Paaß, Sabine Steffan, Jochen Schneider



From left to right, sitting: Kathi Woitas, Bianca Henn, Ellen Garske, Anke Pietzke, Sabine Bertram; standing: Urs Schoepflin, Ralf Hinrichsen, Beate MacPhail, Matthias Schwerdt, Ruth Kessentini, Urte Brauckmann



From left to right, sitting: Hartmut Kern, Robert Casties, Dirk Wintergrün, Stefan Schulz; standing: Jörg Kantel, Turhan Gezer

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