

Department II

Wet Specimens. Museum für Naturkunde
Berlin, Claudia Terstappen, Photograph,
face mounted 156 x 150 cm, 2007
(Courtesy of the artist)



Department II

Ideals and Practices of Rationality

Director: *Lorraine Daston*

Introduction: Towards a History of Rationality

Since it began work in 1995, Department II has explored the history of forms of rationality in the sciences through a series of projects, including *Biographies of Scientific Objects*, *Common Languages of Art and Science*, and *History of Scientific Observation*. Each project aimed to bring together a diverse group of scholars (junior and senior, from different specialties and national intellectual traditions) to explore a category of scientific thought and practice that was fundamental to the current understanding of rationality. Three premises informed these projects: *first*, that even the most central features of scientific rationality (such as “fact” or “objectivity” or “demonstration”) have evolved historically; *second*, that their history is best pursued by simultaneously attending to both abstract ideas (e.g. philosophical discourses about evidence) and concrete practices (e.g. how scientific images are made and used); and *third*, that comparisons among historical periods, cultures, and disciplines are essential to such a history.

These premises, especially the last, have shaped the working methods as well as the topics investigated by Department II. Research projects bring together groups of scholars (approximately twenty-five at any given time), who contribute both by single-authored publications, which examine some specific aspects of the topic in depth, and by collective works, produced by groups that meet several times to plan, discuss, and prepare articles or chapters for a joint publication. Recent examples of the latter include *The Moral Authority of Nature* (Chicago: University of Chicago, 2004), *Things that Talk: Object Lessons from Art and Science* (New York: Zone Books, 2004), and *Believing Nature, Knowing God* (*Science in Context*, vol. 20, nr. 3, 2007; see *Knowledge and Belief*, below). Research projects are designed to cut across disciplines, time periods, and cultural traditions.

All scholars in residence in Department II meet regularly to present and discuss work-in-progress at the bimonthly departmental colloquium and irregularly in ad hoc reading groups and ongoing conversations about shared research interests. The colloquium follows a workshop format, with pre-circulated papers (in English, French, or German) and designated commentators. Approximately two-thirds of the papers are by members of the research group; the remaining third are by guests invited because



their work is particularly relevant to the themes of the department's current projects. Several conferences are organized every year in conjunction with departmental research projects, bringing in additional external participants.

During 2006–7, five research projects were conducted in Department II: *The History of Scientific Observation*; *Between the Natural and Human Sciences*; *Gender Studies of Science*; *Science in Circulation: The Exchange of Knowledge among Islam, Judaism, and Christianity, 9th–17th Centuries*; and *Knowledge and Belief*. A bibliography of publications listed by researcher's name may be found at the end of this volume.

Project

History of Scientific Observation

DURATION 2005–2010

MPIWG ORGANIZERS *Lorraine Daston, Andreas Mayer, Tania Munz, Kelley Wilder*

COOPERATION PARTNERS Freie Universität Berlin, Germany; Universiteit van Amsterdam, The Netherlands, (additional external funding of individual scholars noted below).

Observation is everywhere and nowhere in the history and philosophy of science. It is ubiquitous as an essential scientific practice in all the empirical sciences, both natural and human, and even arguably in mathematics in some of its exploratory phases. It is invisible because it has been generally conceived, especially since the mid-nineteenth century, to be so basic as to merit no particular historical or philosophical attention. This project aims to create the first history of scientific observation as an epistemic category, from the high middle ages to the late twentieth century, in both the human and natural sciences.

There is no science, natural or human, that does not make use of refined practices of observation to identify and investigate its objects of inquiry. Although almost all forms of scientific observation involve a long and arduous training of the senses, learning to look (or smell or hear) is only the beginning of an apprenticeship. Whether the observation in question is the psycho-physicist's detection of reaction times or the anatomist's mapping of the nervous system, novices are schooled in the use of instruments, the co-ordination of eye and hand, and the making of notes and often sketches. Nor does the observation stop there: it must be forged into a description and often a display. Numerical tables, maps, graphs, and stylized descriptions (as in the case of botany) are all part of the craft of performing, not just preserving an observation.

In addition to these tools and techniques, there are sites of observation: the astronomical observatory, the anatomy theater, the meteorological balloon, the field of naturalists and anthropologists, the laboratory of psychologists and chemists, the archives of the historian. The history of scientific observation is in many ways the inverse of that of the casual observation: an accumulation of paraphernalia (the collecting jar, the microscope, the chronometer, the notebook), of experiences (the expedition, the vigil, the dissection, the survey), of techniques (staining a microscope slide, pressing a herbarium specimen, deciphering an old script), and, above all, of habits of attention standardized by discipline—all these acquisitions, both of disciplines as they develop historically and of practitioners as they master their craft, render the scientific observation in the highest degree deliberate and specialized.

The history of scientific observation is in part that of instruments, buildings, and records and in part that of less tangible cognitive practices. Especially in its early stages, forms of scientific observation build upon skills and perceptual acuity acquired in other contexts, including the connoisseurship of natural materials possessed by artisans as well as the reading practices of the learned. Gradually, each scientific discipline acquires a tradition of observation, into which aspiring entomologists or astronomers or historians are initiated; indeed, the double meanings of “discipline” as field of study and molding of mind and body converge in this process.

Observation in the sciences has not only been practiced but theorized, and in strikingly different ways. Sixteenth- and seventeenth-century philosophers of observation, such as Bernard Palissy, Francis Bacon, and Robert Hooke emphasized the danger, difficulty, and tedium of the task; their eighteenth-century successors in contrast portrayed observation as an all-consuming obsession, pursued to the point of blindness. Starting in the nineteenth century, it became customary to oppose, as Auguste Comte and Claude Bernard did, “active” experiment with “passive” observation, a distinction that was nonetheless constantly blurred in scientific practice. In the twentieth century, philosophers of science such as Rudolf Carnap, Gaston Bachelard, and Thomas Kuhn debated the possibility of a “neutral observation language,” as opposed to “theory-laden observation.”

The *History of Scientific Observation* project seeks to bring to light varied and refined practices that will connect the history of science to the history of the senses and the self, as part of a larger history of the distinctive forms of scientific experience.



History of Scientific Observation

Conferences

Lay Participation in the History of Scientific Observation,

May 31–June 1, 2007

ORGANIZERS *Jeremy Vetter* (MPIWG/Dickinson College, U.S.A.),
Susanne B. Keller (MPIWG/Altonaer Museum für Kunst und Kulturgeschichte,
Hamburg, Germany)

One of the key issues in the history of scientific observation is how the producers of natural knowledge have incorporated the experiences, skills, and knowledge of lay people into their research. In various periods and domains, a crucial status or class boundary line of participation in science has been constructed as amateur vs. professional, mechanic vs. gentleman, or lay vs. expert. Questions addressed by the conference included: How have naturalists, natural philosophers, and scientists communicated, translated, and verified observational data from lay people? How have they translated experiential categories into scientific categories? What epistemological mechanisms have they devised to guarantee the validity of knowledge produced through lay observations? What criteria in different periods have shaped or created a distinction between experts and lay people? A publication is planned.

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- *Victoria Cain*, “The Art of Authority: Exhibits, Exhibit-Makers, and the Contest for Status in American Natural History Museums, 1890–1940”
- *Brita Brenna*, “A Naturalist-Bishop and His Network of Priests: Mid-Eighteenth Century Natural History in Norway”
- *Brian Frehner*, “Wildcatters, Local Knowledge, and Bubblin’ Crude”
- *Simon Werrett*, “Meteoric Heights: Art, Nature, and Audience Epistemology in Eighteenth-Century England”
- *Jenny Beckman*, “Schools, Clubs, Field Guides: Infrastructures of Biological Recording”
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- *Jeremy Vetter*, “Lay Observers, Telegraph Lines, and Kansas Weather: The Field Network as a Mode of Knowledge Production, 1885–1915”
- *Emmanuel Didier*, “Why People on Relief Were Disqualified as Statistical Survey Interviewers: The ‘Trial Census of Unemployment’ of 1934 in the U.S.”
- *Fa-ti Fan*, “The People’s Science: Everyday Epistemology and Earthquake Prediction in Communist China”

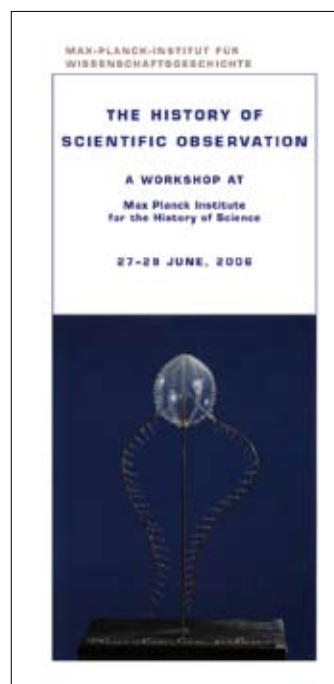
Working Group on the History of Scientific Observation,

June 27–29, 2006; July 3–6, 2007; July 7–9, 2008;

November 5, 2008

ORGANIZERS *Lorraine Daston* (MPIWG), *Kelley Wilder* (MPIWG / University of Leicester, U. K.)

This group plans a collective publication treating the history of scientific observation from the high Middle Ages to the late twentieth century, with studies from the history of physics, psychology, biology, economics, natural history, astronomy, medicine, meteorology, and chemistry. A long introductory essay (co-authored by Gianna Pomata, Katharine Park, and Lorraine Daston) will trace the history of observation as an epistemic category from the thirteenth through the early nineteenth century. Four meetings are planned in all; the volume will be sent to press in 2009.



Working Group on the History of Scientific Observation

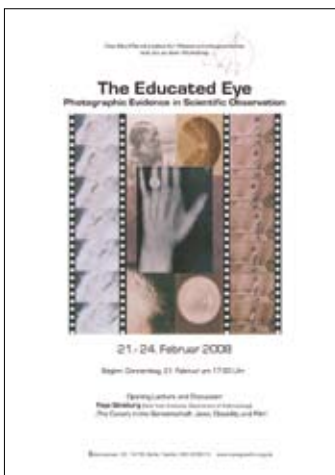
Members

- *Domenico Bertoloni-Meli** (University of Indiana at Bloomington, U.S.A.)
- *Charlotte Bigg** (MPIWG/CNRS, France)
- *Daniela Bleichmar* (University of Southern California, Los Angeles, U.S.A.)
- *Jimena Canales** (Harvard University, U.S.A.)
- *Lorraine Daston** (MPIWG)
- *Otniel Dror** (Hebrew University, Israel)
- *Michael Gordin** (Princeton University, U.S.A.)
- *Elizabeth Lunbeck* (Vanderbilt University, U.S.A.)
- *Harro Maas** (Universiteit van Amsterdam, The Netherlands)
- *Andrew Mendelsohn* (Imperial College London, U.K.)
- *Mary Morgan* (London School of Economics, U.K.)
- *Katharine Park** (Harvard University, U.S.A.)
- *Gianna Pomata* (Università di Bologna, Italy)
- *Theodore M. Porter** (University of California, Los Angeles, U.S.A.)
- *Anne Secord** (University of Cambridge, U.K.)
- *Mary Terrall** (University of California, Los Angeles, U.S.A.)
- *Kelley Wilder** (MPIWG)

(* member of Working Group also involved as resident scholar in the MPIWG research group on the History of Scientific Observation)

History of Scientific Observation

Planned Conferences



The Educated Eye: Photographic Evidence in Scientific Observation,

February 21 – 24, 2008

ORGANIZERS *Kelley Wilder* (MPIWG/University of Leicester, U.K.), *Gregg Mitman* (University of Wisconsin-Madison, U.S.A.)

Where do photography and film stand in the larger picture of scientific observation's history? And how exactly does their use in observation translate into evidence? What sort of relationship is there between observation and evidence in photography and film in the construction of scientific arguments or as part of the historian's craft? Presentations on topics ranging from the earliest photographs in 1839 to images from the Mars Rover mission in 2004 address these questions. The negotiation and renegotiation of documents made with photographic media stand at the center of discussion, bridging the methodological approaches of scholars from anthropology, history of science, and history of art and visual culture.

Animal Subjects under Observation,

July 11–13, 2008

ORGANIZER *Andreas Mayer* (MPIWG)

In many scientific disciplines, animals are cast less as passive objects of inquiry than as actual performers of truth, especially in psychology, ethology, equestrian science, or ornithology (to name just a few examples). The workshop will trace the emergence of the notion of the “animal subject” in the late 19th century and identify its models (machine, intelligent actor), discuss the problems of anthropomorphism and empathy through an analysis of the interaction of humans and animals in 19th and 20th century practices of scientific observation, propose historical examples and analytical tools for understanding the performative and active roles of animals in various areas of research, and reassess the notion of standardization of laboratory animals in the 20th century by analyzing the production of “technological animals.”



Physiologist Etienne-Jules Marey (left) and his assistant Georges Demeny (right, bare-headed) are watching a goat walking on the runway of the Station physiologique. May 5, 1887
(Courtesy Musée Marey, Beaune, France)

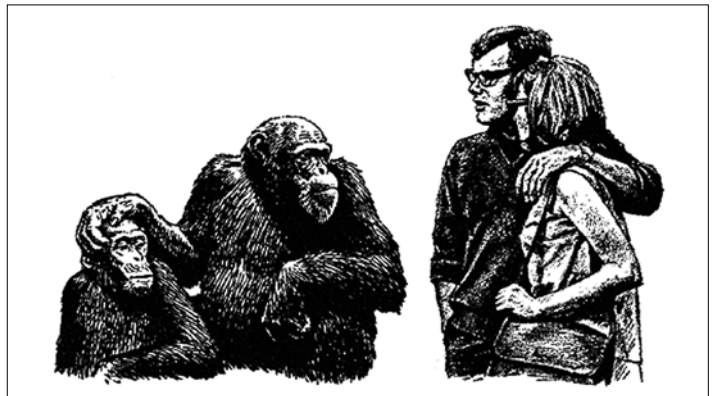
Animal Cultures—Human Natures:**Participant Observation in the History of the Natural and Social Sciences,**

November 13–15, 2008

ORGANIZER *Erika Lorraine Milam* (MPIWG/ University of Maryland at College Park, U.S.A.)

If we take seriously the idea that animals have culture, from primates to dolphins, elephants, cats, dogs, and even experimental laboratory animals, how would that change the way we write the history of the social and life sciences? This conference will take a new look at the material and social interactions of ethologists, anthropologists, and sociologists with their animal subjects through the lens of “participant observation.” The conference will highlight continuities between the natural and social sciences by exploring the traffic of scientific concepts between these disciplines:

concepts such as culture, ritual, display, and language (communication), are equally resonant among scientists who study human and animal societies. The conference will also serve as a bridge between the kinds of historical narratives presented in publications for a scientific audience and the anecdotes told when relating research experiences in person or for the popular media or trade press.



The soothing effect of bodily contact. Irenäus Eibl-Eibesfeldt, *Love and Hate: The Natural History of Behavior Patterns*, translated by Geoffrey Strachan. New York: Aldine de Gruyter (Figure 33), 1970

Evidence and Reason in the Long Renaissance, April 27–28, 2009

ORGANIZERS *Daniel Andersson* (MPIWG), *Richard Serjeantson* (Cambridge University, U.K.)

This workshop attempts to answer some fundamental questions in the intellectual history of early modern England. What is the best and most academically responsible way of gaining ‘hermeneutic control’ over the texts that we study? How porous are the schemata of dialectic and rhetoric with respect to the other disciplines, such as natural philosophy? To what extent does the informal assumption of the unity of knowledge affect the notion of disciplinary formation and the scholarly career? How widely diffused were the practices of the arts course outside of the academy? What is the relation of university learning to the alternative institutions of the period, such as academies? When does humanism lose its specificity? The workshop will focus on a series of case studies, each taking its starting point a given discipline of the arts course.

History of Scientific Observation

Individual Projects

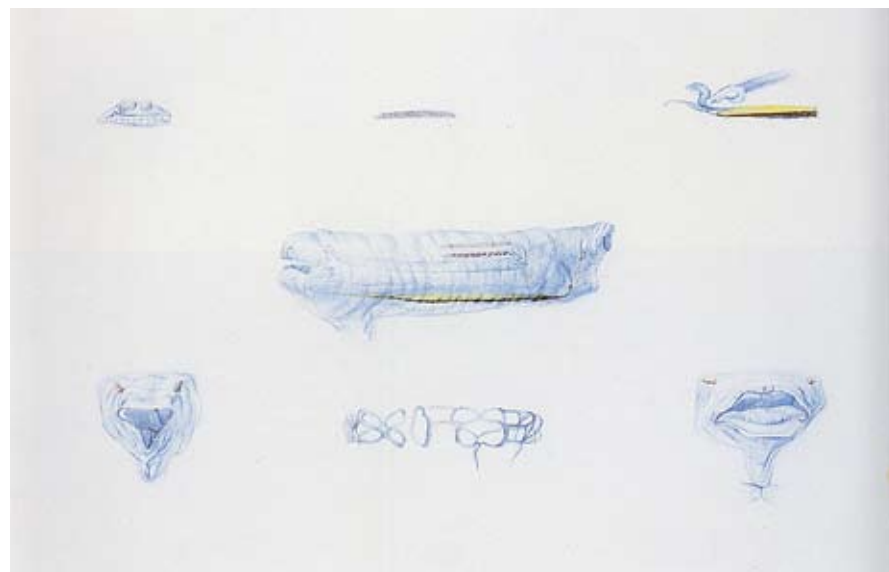


Jan Altmann

Jan Altmann (Postdoctoral Fellow, Humboldt-Universität zu Berlin, Germany)

Drawing as Observing in the Enlightenment

Seeing involves focusing, noticing, ordering, attributing meaning, as well as overlooking and disregarding—all the more so when performing a visual scientific observation, with its highly standardized and specialized habits. When the observation is carried out and preserved in the form of drawing, the material drawing apparatus also literally enters the picture. In order to retrace the correlations between eye, mind, hand and body, the project examines the process by which the finished (or unfinished) image emerges from repeated strokes on textured paper, on the basis of a series of French case studies which are mainly situated in the field of natural history and which range



Salpe [*Cyclosalpa pinnata* (Forskål, 1775)].
Watercolor on vellum, 44 x 29 cm.
Charles-Alexandre Lesueur, *Baudin in Australian Waters: The Artwork of the French Voyage of Discovery to the Southern Lands* (1800–1804), ed. by Jacqueline Bonnemains et al., Melbourne: Oxford University Press/Australian Academy of the Humanities (Cat.No. 75002), 1988

from the Académie royale des sciences in the late seventeenth century to Georges Cuvier's proto-paleontological studies in the early nineteenth. One main goal is to locate different 'styles' of observation, in both aesthetic and epistemological senses.

Daniel Andersson (Postdoctoral Fellow, Warburg Institute, London, U.K.)

Aristotelian Thought Between Concept and Observation

Starting from a thorough survey of the genres of university natural philosophy in early modern Europe, the main project involves looking at what J. L. Ackrill once termed the 'descriptive metaphysics' of Aristotle's *Physics* and seeing how it is transformed by various modes of analogical reasoning. One such mode, 'intuitive observation', shows how the influence of such things as 'heat' work their way into both the physical and the metaphysical presuppositions of mainstream natural philosophy.



Daniel Andersson

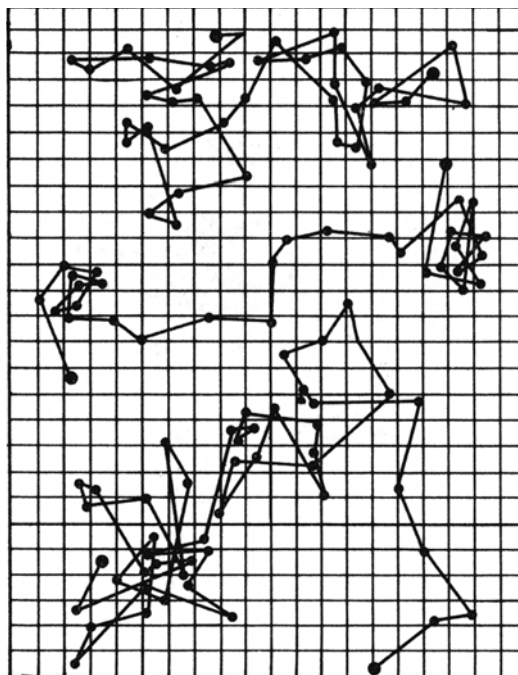
Charlotte Bigg (Visiting Scholar, University of Cambridge, U.K., funded by Deutsche Forschungsgemeinschaft)

Brownian Motion and Observation of the Microworld circa 1900

In the years around 1900 scientific research was particularly concerned with sub-microscopic entities, including atoms, molecules, ions, bacteria and all sorts of minute organisms. In the physical sciences the opening up of new dimensions also stimulated the development of mathematical and theoretical tools to account for the workings of the microcosmos and to relate it to the macroscopic realm: new optical theories helped analyze the visual appearance of phenomena at the limit of optical resolution; statistical methods were introduced to treat the behavior of large numbers of particles and account for their effect on a macroscopic scale. The irruption of new microscales on scientific research agendas arguably contributed to a profound transformation in scientific practices and social organization in the early twentieth century, with for instance an increasing differentiation of physicists into theoreticians on the one hand and experimentalists on the other. These transformations are studied by focusing on Brownian motion research in early twentieth-century France, in particular the investigations carried out by the physical chemist Jean Perrin, the physicist Paul Langevin and the mathematician Emile Borel.



Charlotte Bigg



Displacement of individual particles agitated by Brownian motion.

Jean Perrin, "Mouvement Brownien et Réalité Moléculaire", *Annales de Chimie et de Physique*, ser. 8, vol. 18, p. 81., 1909

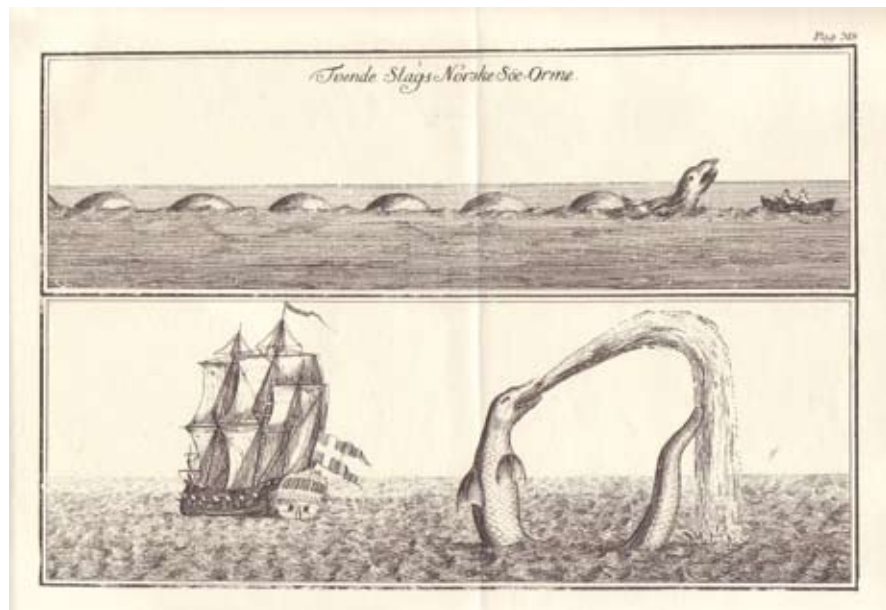


Brita Brenna

Brita Brenna (Visiting Postdoctoral Fellow, Universitetet i Oslo, Norway, funded by the Centre for Technology, Innovation and Culture at the University of Oslo, Norway)

The Emergence and Practice of Natural History in Mid-Eighteenth-Century Norway

The First Attempt at a Natural History of Norway (1752–53) was translated from Danish into English and German soon after its publication and became a standard text for foreigners venturing into Norwegian nature. Mermaids, sea serpents, and diligent farmers colored the picture of Norwegian nature for years to come. But the work also prompted an array of topographical writings by vicars and local state officials, promoting an experience-based, rational approach to natural history. The project seeks to understand the physico-theological and scientific genealogy of Norwegian approaches to nature.



Erich Pontoppidan, *The First Attempt at a Natural History of Norway*, p. 318., 1752–53

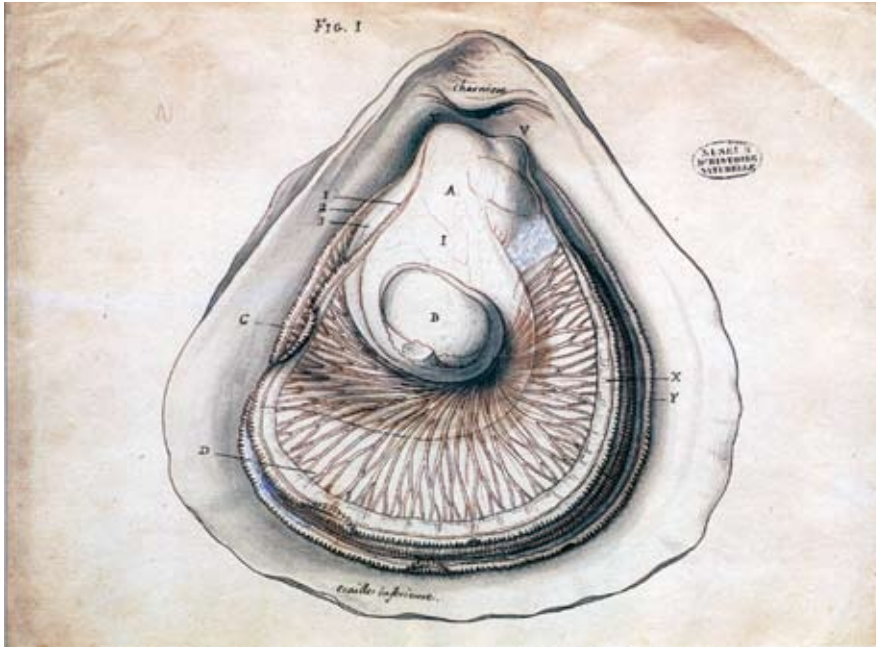


Lorraine Daston

Lorraine Daston (Director)

The Cognitive Practices of Scientific Observation, circa 1550–1800

As an epistemic genre, “observation” took its place among a throng of other early modern innovations in the realm of disciplined experience, including the history, fact, case, and experiment. Far from being a lowly art, plied by unlettered artisans and peasants, or an inferior substitute for experiment, observation had by the late seventeenth century become an essential and ubiquitous scientific practice, an art in the service of science. During the Enlightenment, it enjoyed greater prestige than at any time before or since. The project attempts to reconstruct the cognitive practices of observation—attention, memory, judgment—and the material culture upon which they depended—the notebook, the magnifying glass, the pocket watch—on the basis of the published works and manuscripts of early modern European naturalists.



Joseph Pitton de Tournefort, *Observations sur les huitres*, fig. I, Bibliothèque centrale du Muséum national d'histoire naturelle, Paris, MS. 254.

Emmanuel Didier (Visiting Scholar, Centre National de la Recherche Scientifique—Centre de recherches Sociologiques sur le Droit et Institutions Pénales, Guyancourt, France, funded by the Centre National de la Recherche Scientifique, France)

Statistical Observation in New Deal America

The invention of statistical random sampling in the American administration during the New Deal had a little remarked but important effect on the politics of Franklin D. Roosevelt's administration. The new technique was enlisted in the fight against industrial unemployment, but some of its earliest applications were in agriculture. A very innovative and impressive random statistical survey, called the Master Sample of Agriculture, was invented at Iowa State University during the 1930's and 1940's in the Statistical Laboratory headed by George Snedecor. The project studies how a statistical technique and a policy option worked hand in hand, reinforcing each other.



Emmanuel Didier



Clerical staff of the Statistical Laboratory at Iowa State University drawing "sampling areas" into U.S. county maps. (Courtesy Iowa State University Library, Special Collection Department)



Erna Fiorentini

Erna Fiorentini (Visiting Scholar, Freie Universität Berlin, funded by SFB 626, “Aesthetic Experience and the Dissolution of Scientific Limits,” Deutsche Forschungsgemeinschaft)

Protomodern Observers and the Camera Lucida 1806–1850

A new mode of seeing emerged and established itself in the first three decades of the nineteenth century, one that implied the conciliation of individual perception with the demands of images expected to convey ‘objective’ observational data. The new visual habit was concomitant with the appearance and spread of prismatic instruments for drawing, which combined subjective and objective aspects: “prismatic vision.” In various fields of art and science, most notably landscape sketching, natural history and microscopy, the relationship between sensory, cognitive, and emotional experience and their translation into images became the object of practical as well as theoretical reflections. In addition to several conferences and publications, the project created the Open Digital Library *Drawing with Optical Instruments. Practices and Concepts of Visuality and Representation* <<http://echo.mpiwg-berlin.mpg.de/content/optics>>.



Den engelske konstnären (The English Painter). Carl Jakob Lindström (1830), Photo: Bodil Karlsson/Nationalmuseum Stockholm, 1993



Michael Fotiadis

Michael Fotiadis (Visiting Scholar, University of Ioannina, Greece)

Practices of Classical Archaeology: The Emergence of the Aegean Concept in the 1890s

Schliemann is to this day thought of as “the father” of Aegean prehistory, but only because we have forgotten that Schliemann died without ever having suspected the existence of an “Aegean” civilization/culture. The concept grew out of 1890s creeds about the nature of nationality, race, and about “Europe” and “the Orient”—creeds that were shared across late-nineteenth-century human sciences and which came to inform the analysis of archaeological findings from the previous decades. The project documents the bearing of these habits of thought and niceties of practice—the discipline’s “ethic”—on the observations that rendered “the Aegean” a distinct object of scientific research.

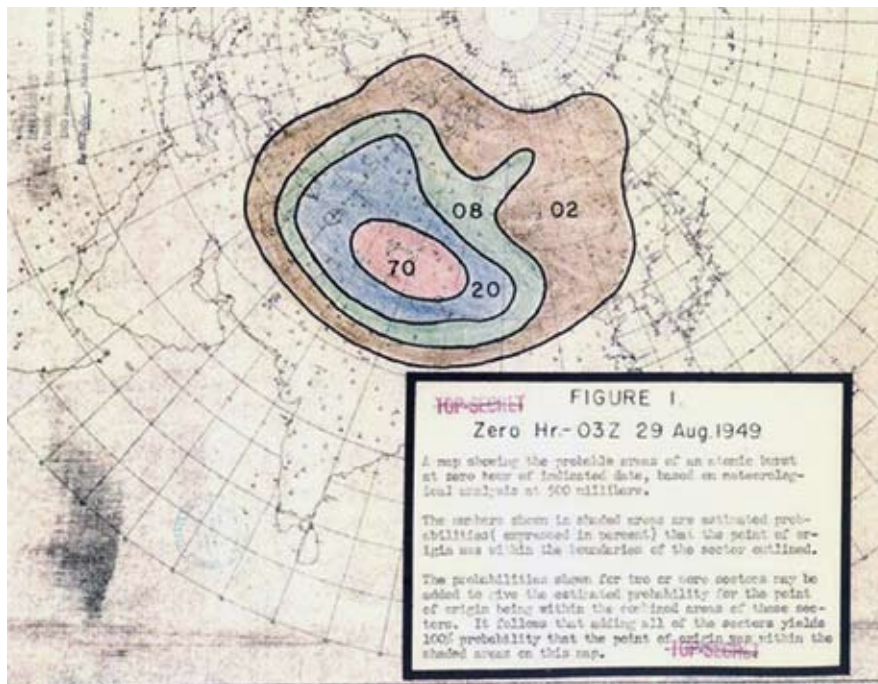
Michael Gordin (Visiting Scholar, Princeton University, U.S.A., funded by Princeton Bicentennial Preceptorship)

International History of the Atomic Monopoly, 1945–1949

The period of the American atomic monopoly—between the atomic bombing of Hiroshima and Nagasaki in early August 1945 and the Soviet detonation of their own atomic device in late August 1949—, far from being one of relative security for the Americans as the only people invulnerable from atomic attack, was beset by anxiety about how to maintain this monopoly, how to prevent others from breaking it, and how to know it when they did. The project deals with the practices of epistemology in the arena of atomic weapons—what one might call “nuclear observation.” Both the Soviets and the Americans invested tremendous resources in “detecting” aspects of the other side’s nuclear program, and the level of attention, the high stakes, and the extreme efforts by both sides to maintain secrecy highlight the epistemological problems that have been observed by historians of science in many other, less geopolitically fraught situations.



Michael Gordin



U.S. Weather Bureau Report on Alert Number 112 of the Atomic Detection System (Figure 3), 29 September 1949, President’s Secretary’s Files: Subject File 1940–1953, National Security Council – Atomic Files, Box 173, Folder: Atomic Bomb: Reports, Harry S. Truman Museum and Library, Independence, Missouri



Christelle Gramaglia

Christelle Gramaglia (Predoctoral Fellow, Ecole des Mines, Paris, France; as of 2007 Research Fellow of CEMAGREF, Montpellier, France)

Ecotoxicology and Expert / Lay Observations on Pollution: Contemporary Questions on Observation and Visual Evidence

Until the end of the 1980s, the observation and monitoring of pollution rested on conventional chemical methods that identify and assess concentrations of contaminants in the atmosphere, water, or sediments. As a young and controversial discipline, ecotoxicology developed new observation instruments that rely on “sentinel organisms,” whose biological responses to environmental perturbation permit researchers

to monitor the variations of toxicity in time and space in relation to their interaction and accumulation. The dissertation (completed 2006) concerns the interactions of these different modes of observation: What types of knowledge were produced, and when and how did lay practices and professional observational practices differentiated? Is there continuity between lay techniques for reading a river and the new scientific ones?



Portrait of Izaak Walton (author of *The Complete Angler*, 1653). James Inskipp, Government Art Collection, London, U.K., 1831



Anna Grimshaw

Anna Grimshaw (Visiting Scholar, Emory University, Atlanta, U.S.A.)

Rethinking Observational Cinema

Observational cinema is one of the most ubiquitous terms in visual anthropology. More often than not, it seems synonymous with the genre of ethnographic film itself. Once hailed as a radical breakthrough in the established conventions of documentary and ethnographic filmmaking, observational cinema quickly fell out of favor. It was widely criticized as a form of scientism in which a detached camera served to objectify and dehumanize the human subjects of its gaze. Despite extensive critique, observational cinema has continued to be a crucial point of reference for those concerned with the documentation of social life. The project is concerned with building a new case for observational cinema. A primary objective is the identification of key features distinguishing this genre of ethnographic film. Does *observational* refer to a method of working, a conception of knowledge, or a particular ethnographic sensibility? Drawing on a handful of case studies, the project explores the different ways that particular filmmakers have interpreted the observational task.

Karl Hall (Visiting Scholar, Central European University Budapest, Hungary)

Fragmented Science: Fabricating Reliable Phenomena in Industrial Laboratories circa 1925

The project uses the multidisciplinary context of industrial research in the 1920s to open up new avenues for approaching the problem of skills and tacit knowledge that the chemist and philosopher of science Michael Polanyi helped make central to a later generation of science studies—especially the contemporary awareness among chemists and engineers that received views of scientific method did not adequately account for the practical aspects of laboratory work, the more so the further one got from the physics of the atom. Polanyi’s work as an industrial consultant at Siemens forced him to confront the problem of how to account for structural failure in physical terms. But the intractability of these breakdown phenomena point to a larger problem in what one might call the history of failure. Polanyi’s idiosyncratic circumvention of the purported perils of analytic philosophy for science has its origins in a particular nexus of technoscientific investigations that happened to end in failure.



Karl Hall



The atrium of the new Siemens Research Laboratory in Berlin-Charlottenburg. Photograph, early 1920s (Siemens Archives, Munich)

Alexandra Hui (Visiting Predoctoral Fellow, University of California, Los Angeles, U.S.A., funded by the German Academic Exchange Service)

Psychophysics and Music in Nineteenth-Century Germany

At the end of the nineteenth century, the worlds of natural science and music coalesced. The potent interaction of psychophysical studies of sound sensation with the music culture of late-nineteenth-century Germany contributed to new theories—both psychophysical and musical—as well as to a new awareness of the historical and cultural contingency of sensory perceptions. The psychophysicists’ personal experience with music reinforced, even fueled, a shift to more relativistic, historicist conceptions of sensory perceptions. The dissertation, by addressing the rich relationship between natural science and music, supplements current histories of psychophysics by highlighting one of its critical cultural contexts.



Ludmila Hyman

Ludmila Hyman (Postdoctoral Fellow, Carnegie Mellon University Pittsburgh, U.S.A.)

Clinical Observation and the Making of Cultural-Historical Psychology

The cultural-historical program of the Soviet psychologists L.S. Vygostky, A.R. Luria, and A.N. Leontiev developed during the radical social upheavals in Russia that followed the socialist Revolution. These scientists developed new methods of psychological research, including observation of people in naturalistic contexts. This project addresses the following questions. (1) How did these psychologists' ideas develop in the socio-cultural context of the new Soviet society and in connection with their personal experience? (2) How did they use language to represent their concrete experiences, including observations? (3) How did they reason from observations to conclusions? The ultimate goal of the study is to test the theories of the Soviet psychologists against their practice.



Jeremiah James

Jeremiah James (Visiting Predoctoral Fellow, Harvard University, U.S.A.)

Observation and Structure Determination in Early X-Ray Crystallography

Central to the advance of X-ray crystallography both as a new field of inquiry and a network of research centers before World War II was the development of increasingly abstract and complex methods of using X-rays to observe the internal structure of crystals. These novel methods of observation often introduced and relied upon new modes of representing crystal structures and new understandings of how X-rays could expose the microstructure of crystals. Although many young disciplines face the challenges of standardizing and legitimating new observational and representational techniques, the case of X-ray crystallography is particularly interesting because X-ray crystallography became so rapidly and avowedly international and interdisciplinary.



Susanne B. Keller

Susanne B. Keller (Postdoctoral Fellow, Universität Hamburg, Germany; as of November 2006 Trainee at Altonaer Museum für Kunst und Kulturgeschichte, Hamburg, Germany)

Picturing the Inaccessible: Gazing Beneath the Earth's Surface (16th to 19th c.)

This project investigates the visualization of the hidden zones beneath the earth's surface and the interior of the earth in science and art. Pictures played a fundamental role in the production of knowledge of the earth's interior and the underground. Yet the translation of the fragmentary knowledge of the subterranean realms into images required the development of specific strategies of visualization. Starting with early mining illustrations, such as those by Agricola, the important role of images can be traced through eighteenth-century geological and stratigraphical treatises. By the beginning of the nineteenth century, geological sections had largely established themselves as part of the visual language of the earth sciences, as can be seen in the illustrations of books by Lyell, A.v. Humboldt, Cuvier, and others. A major focus of this project is the examination of the word-image relationship in those illustrated scientific treatises.



Ein Flöz, einen Gang schneidend A, C. Der Gang B.
Ein Flöz, mit einem Gang sich vereinigend D, E. Der Gang F. Ein Flöz G.
Teilstücke dieses Flözes H, I. Der Gang, ein Flöz zerteilend K.

Georgius Agricola, *De re metallica libri XII.*,
Basel 1556. German edition, Basel 1557:
Zwölf Bücher vom Berg- und Hüttenwesen.
Reprint edition, vol. 3, p. 53., 1928/2003

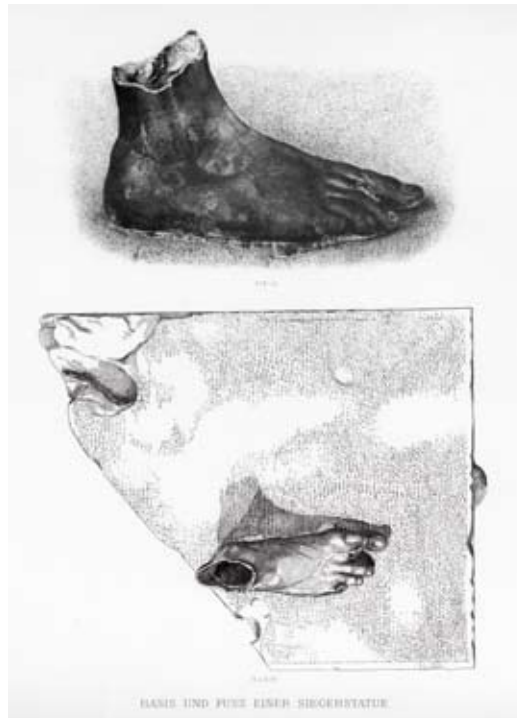
Stefanie Klamm (Predoctoral Fellow, Humboldt-Universität zu Berlin, Germany)

Strategies of Visualization and the Use of Images in 19th Century German Archaeology

As an object-based science, archaeology must retrieve objects of investigation not only in the place where they are actually situated but also make them available to a broader scientific discourse. Although the archaeologists stress that the *autopsia* of the object cannot be replaced by any visual reproduction whatsoever, it is nonetheless necessary to refer to reproductions for the purposes of comparative research, since the objects of archaeological inquiry are dispersed all over the world in different sites, museums and institutions. By the mid-nineteenth century different instruments of replication and reproduction were tested and improved; photographs, drawings, prints and plaster casts were used side-by-side. The project analyzes the plurality of media in the context of archaeological excavations, image archives and their classification systems, collections of plaster casts and the popular reception of archaeological images in the formation of archaeological knowledge.



Stefanie Klamm



Bronze foot on a stone basis in photograph and drawing. Adolf Furtwängler, *Die Bronzen und die übrigen kleineren Funde von Olympia*, Berlin, Taf. 3., 1890



Fabian Krämer

Fabian Krämer (Predoctoral Fellow, Ludwig-Maximilians-Universität München, Germany)

Reference Structures in the Study of Nature in the Seventeenth and Eighteenth Centuries

The project examines intertextual relations in early modern naturalist publications on monsters and changing standards of learned credibility. Some of the cases mentioned in these works sound both familiar and likely to the modern ear. There is not much reason to doubt a report of the birth of conjoined twins in a Southern German village in a given year, for instance. But some sound far less familiar, and less credible: the birth of a horse with a human head and voice or a race of centaurs allegedly living somewhere in the East. Where did these authors' knowledge of monsters come from? Which sources did they privilege, book learning or empirical observation of individuals considered monstrous? And ultimately, what does this tell us about the reading and writing practices employed by the respective authors?



Reproduction of a centaur woodcut from a publication by the Swiss philologist, theologian and widely read prodigy book author Conrad Wolffhart (1518–1561), known as Lycosthenes. Ulisse Aldrovandi, *Monstrorum historia. Cum paralipomenis historiae omnium animalium etc.* Bononiae: Nicolai Tebaldini, p. 31, 1642



Daryn Lehoux

Daryn Lehoux (Visiting Scholar, University of Manchester, U.K.)

What Did the Romans Know?

The aim of the project is to flesh out a wide-field synchronic snapshot of a science, a knowledge-about-the-natural-world, very different from our own and then use it as a testing ground for a number of stubborn questions in the epistemology of the sciences. A basic contention is that much of what is said about ancient science (and especially of Roman science) suffers from a gross decontextualization that makes ancient science look fundamentally different from modern science in all the wrong ways. It is different—radically different—but that is not the same as saying it is *fundamentally* different. Over 2000 years, a lot of *what* we believe has changed, but not *why* we believe it. The project explores a conjunction of ideas around how we understand nature, with particular emphasis on law, knowledge, and observation.

Rhodri Lewis (Postdoctoral Fellow, Oxford University, U.K.; as of August 2007, Tutorial Fellow, St. Hugh's College, Oxford University, U.K.)

The Early Modern *ars memoriae*

The project studies the reception and development of the classical arts of memory (mnemotechnique), principally in northern Europe, in the years from about 1500–1700. At the beginning of this period, mnemotechnique was treated with some hostility by scholars, educators and natural philosophers who defined their activities with reference to humanism. But by the beginning of the seventeenth century, it had begun to be woven into the fabric of intellectual life once again. The collection of broadly observational practices arranged under Francis Bacon's heading of *experientia literata* are a convenient and useful index of this shift: mnemotechnique was approached as a set of tools through which one might accurately represent, and think about, the natural world. The goal is to shed some new light on the emergence of natural philosophical methodology—chiefly in terms of its journey from concerns that were principally logical, to concerns that were principally epistemological.



Rhodri Lewis

Harro Maas (Visiting Scholar, Universiteit van Amsterdam, The Netherlands)

A History of Observation in Economics

How do economists observe the world? For contemporary economists, used to working with large data sets, gathered by statistical bureaus all over the world, or—nowadays—generated from experiments in the lab, this may seem a question with an obvious answer. For these extensive data sets or experimentally generated data are commonly considered to serve as input or testing grounds for their models and theories, and so they are the “observations” economists work with. From an historical point of view, however, the idea that the observations of political economists can be identified with statistical (quantified) data is far from obvious. Quantified (statistical) data are better considered as a particular *kind* of observation, one of several, from Adam Smith's “armchair observations” on the division of labour to John Maynard Keynes' practical experience with and introspective insights about the “animal spirits” driving speculators on the stock exchange. This project studies economists' observational practices from an historical point of view, tying practices to specific sites: observatory, laboratory, and the armchair.



Harro Maas



Cartoon of John Maynard Keynes as armchair economist. David Low, *The New Statesman* 28, October 1933



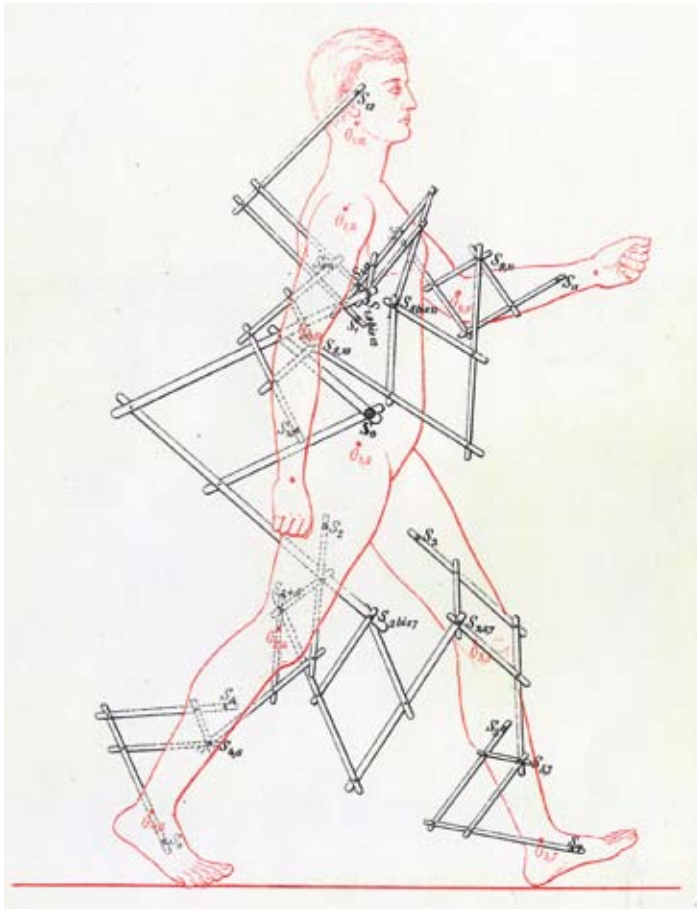
Andreas Mayer

Andreas Mayer (Visiting Scholar, University of Cambridge, U.K., funded by the Wellcome Trust, U.K.; as of November 1, 2007, Research Scholar, MPIWG)

The Science of Walking: Towards a History of the Pedestrian Age

This book project (completed in 2007) examines the emergence of the scientific study of human walking in the first decades of the nineteenth century in western societies (particularly France, Germany and Britain). To gain insights into the laws of human walking in its normal and pathological forms with the aim of improvement or accurate representation became the concern of a variety of professional groups such as anatomists, physiologists, neurologists, ergonomists, orthopaedists, shoe-makers,

artists, gymnastic teachers, and the military. The general question this project raised was the following: How and to what extent did scientific knowledge about the anatomy and physiology of the moving body shape walking practices in modern Western societies?



Concrete projection of the mechanism of walking illustrating the theory of Wilhelm Braune and Otto Fischer (*Der Gang des Menschen*, 1899)

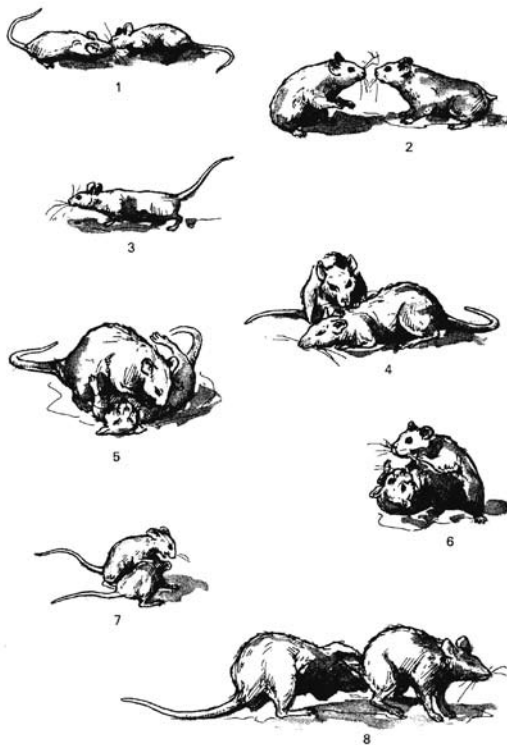


Erika L. Milam

Erika L. Milam (Postdoctoral Fellow, University of Wisconsin at Madison, U.S.A.; as of January 1, 2009, Assistant Professor, University of Maryland at College Park, U.S.A.)

Animal Models of Behavior: Anthropomorphism, Zoomorphism & Cultures of Observation

There are two main techniques by which scientists establish equivalencies across the animal-human boundary. One is to anthropomorphize animal actions as simplified versions of human behavior. Another is to zoomorphize human behavior as “animalistic” or “instinctual” in basis. These two techniques contribute to the ways in which social and natural scientists have used “nature” to justify contemporary social structures (the naturalistic fallacy). The project analyzes scientists’ uses of zoomorphism



in twentieth-century animal behavior research (spanning anthropology, ethology, psychology, and zoology), and the acclaim and/or critical eye with which their peers received this research, focusing on how and why social and natural scientists have turned to the study of non-human (often non-primate) behavior as a tool for understanding human social and cultural problems.

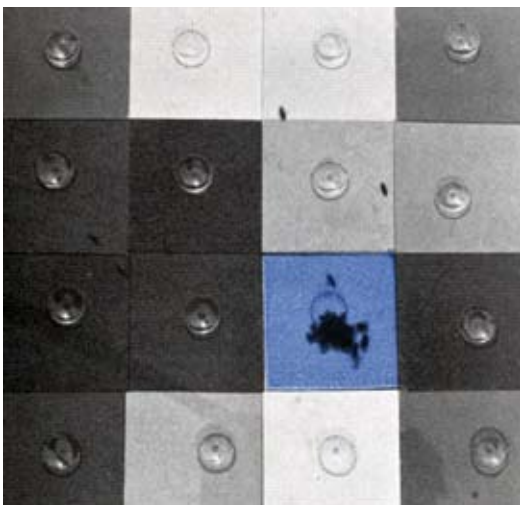
Allen W. Stokes, ed. *Animal Behavior in Laboratory and Field*, San Francisco: W. H. Freeman and Company, p. 167, 1968

Tania Munz (Research Scholar, MPIWG)

Of Birds and Bees: Konrad Lorenz, Karl von Frisch, and the Science of Animals

By the time they won the Nobel Prize in Physiology or Medicine (together with Niko Tinbergen of the Netherlands) in 1973, Karl von Frisch and Konrad Lorenz had emerged as two of the most significant voices on animals in German-speaking Europe—von Frisch attained acclaim for his discovery of the bee dance language, while Lorenz is remembered for his work on geese, imprinting, and as a controversial founder of ethology (the European approach to animal behavior that offered evolutionary explanations of complex instincts). Both scientists promoted a particular way, not just of doing science, but of observing and understanding animals—and both used

film to investigate their animals and promote themselves and their science. The project examines how they understood, created, and transgressed the animal-human boundary in their science and how they sought to teach the public about animals in their numerous popular writings and films.



Tania Munz

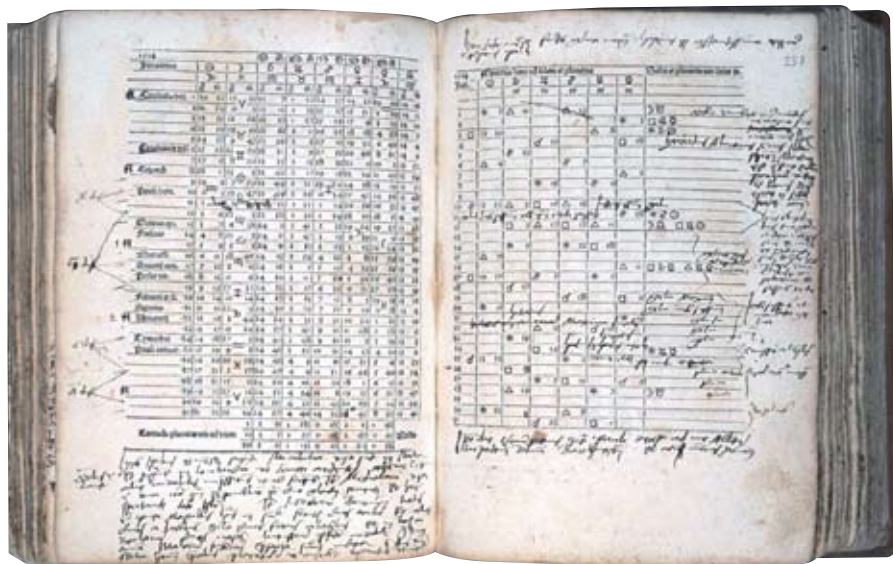
Trained honey bees cluster preferentially on the blue tile in an experiment designed to test their ability to see color.

Karl von Frisch, *Der Farbensinn und Formensinn der Biene*, *Zoologische Jahrbücher*, Abt. f. allgemeine Zoologie und Physiologie der Tiere, p. 1–182, table 1, figure 4, 1914

Katharine Park (Visiting Scholar, Harvard University, U.S.A.)

Scientific Observation in Medieval Europe

This topic has never been studied in a manner sensitive to actors' categories; the few scholars who have written on this topic have treated observation anachronistically, assuming that it was part of an undifferentiated, experience-based study of nature. In fact, there was a clear distinction between the sciences of experience (*experientia/experimentum*) and those of observation (*observatio*). The former—notably the Aristotelian sciences, as well as medicine, alchemy, and astronomy—invoked experience in the sense of trial or test: a punctual intervention intended to test the truth of a statement (e.g., that the cries of migrating birds are cries of pain, rather than attempts at communication), the accuracy of a planetary table, or the efficacy of a remedy or procedure. In contrast, the sciences of observation—astrology (the part of astronomy dealing with the terrestrial effects of changes in the heavens), agriculture, and navigation) were organized around the idea of watching and waiting, the patient noting and recording of longtime cyclical phenomena in order to determine patterns and correlations, e.g., among particular planetary configurations, weather conditions, political events, or optimum times to harvest or plant. Although medieval writers typically attributed observation to the ancient founders of the sciences in question (the Babylonians, the Egyptians, the pre-Hippocratics), there is evidence of medieval programs of observation related to monastic timekeeping and, beginning in the 13th century, weather science; individual observers attempted to lay the foundations for a science of weather prediction based on the positions of celestial bodies, by making daily records of the weather in the margins of manuscript and, eventually, printed ephemerides.



Annotations from 1514 by Martin Biem, professor at the university of Krakow, in his copy of Johann Stoeffler and Jacob Pflaum. Biem recorded his observations of the day's weather in the righthand margin of this and later almanachs over a period of more than 30 years. *Almanach nova sive Ephemerides* 1499–1531 (Ulm: Reger, 1499), fol. 250v–251r. (Krakow: Jagiellonian Library, Inc. BJ 2697)

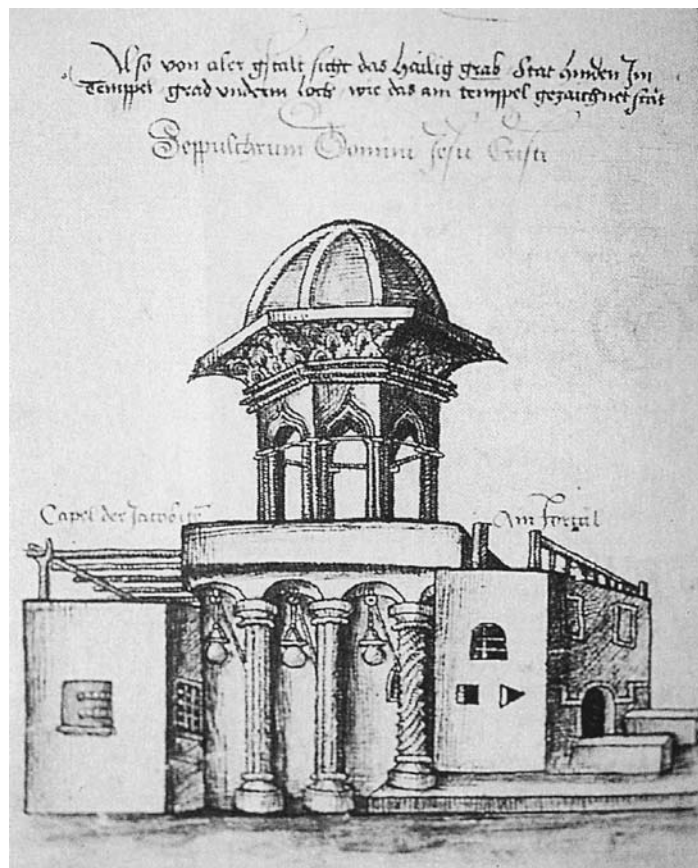
Susanne Pickert (Predoctoral Fellow, Humboldt-Universität zu Berlin, Germany, funded by the Gerda-Henkel-Stiftung; as of January 1, 2008, Scholar in Residence, Deutsches Museum, Munich, Germany)

Seeing and Believing. The Description of the Holy Sites of Jerusalem in Medieval Travel Accounts, 12th to 15th Centuries

The dissertation (completed in 2007) investigates the history of pre-modern observation in travelogues from the 12th to the 15th centuries. Deeply rooted in Christian mysticism, with a theoretical basis of the physiology of the mind and the practices of memory, the monastic phenomenon of the pilgrimage of the mind enabled medieval readers of travel accounts to recreate a little world within, which can be traversed and observed like the real world outside. The author of the travel account serves as an expert and teacher who preselects facts according to theological relevance and processes them for the reader. The critical philology of the Bible is at the core of these texts. Conversely, the terminology of Scripture and observed material reality are tested against each other in order to obtain reliable images for spiritual practice.



Susanne Pickert



Drawing of the Holy Grave of Konrad von Grünenberg, 1847. Arwed Arnulf, *Mittelalterliche Beschreibungen der Grabeskirche in Jerusalem*, *Colloquia Academica*, Stuttgart, pp. 1–43, *ibid.* p. 41., 1997



Sarah de Rijcke

Sarah de Rijcke (Visiting Predoctoral Fellow, Rijksuniversiteit Groningen, The Netherlands, funded by the Netherlands Organization for Scientific Research)

Regarding the Brain: Scientific Practices of Cerebral Representation

The dissertation analyzes four diverse practices of visualizing the brain, plus the instrumental role these images play as part of constituting neuroscience. One focus is Santiago Ramón y Cajal's (1854–1932) drawings and photographs of neurons. Cajal won the Nobel Prize for Physiology or Medicine in 1906, and is still renowned for his artistic skills in translating his microscopic observations into drawings. He was also a gifted photographer. In light of this experience, it is remarkable that he rarely resorted to photography in his neurohistological work—just at a time when there was a deep competition between photographs and drawings. Instantaneous photography only recorded what could be seen in one focal plane, while direct (expert) observation had the added value of averaging over more planes. This was partly an unconscious process, relating to a peculiarity of human perception. Cajal's sensual experience was inextricably tied to process of observation and depth perception when looking through the microscope and adjusting the micrometric screw.



Santiago Ramón y Cajal with microtome, self-portrait, albumen print, 1888. Reproduced from Santiago Ramón y Cajal. *Ciencia y art Ed.* Obra Social Caja Madrid, 1852–2003



Anne Secord

Anne Secord (Visiting Scholar, University of Cambridge, U.K.)

Taking “Nature’s Path” in Eighteenth-Century Britain

The project examines how eighteenth-century imperatives to *follow* nature actually operated in practice. By considering processes not susceptible to quantification but that signaled a mastery of nature, the historian has to think more about eighteenth-century attitudes and ways of doing things rather than systematic bodies of knowledge or specific theoretical borrowings. A series of natural objects that can also be considered as artificial and, at times, even unnatural provides a window on to these attitudes. This approach promises ways to tap the voices of those rarely considered in connection with debates concerning natural knowledge, luxury, display and consumption, as early research on the cucumber, considered to be “unnaturally cultivated” in eighteenth-century Britain, has begun to reveal.



Frontispiece of Thomas Mawe [John Abercrombie], *Every Man His Own Gardener*, showing (on the left) a hotbed, whose heat was preserved by laying “straw, waste hay, or fern” round the sides of the bed. Forced cucumbers would be cultivated in hotbeds such as these. 2d ed., London, 1767

Hanna R. Shell (Visiting Predoctoral Fellow, Harvard University, U.S.A.)

Hide and Seek: Camouflage, Animal Skin and the Media of Reconnaissance

The dissertation (completed 2007) “Mending the Net: Camouflage, Serial Photography and the Suture of Self-Effacement and Reconnaissance (1914–1945)” argues that between the late-nineteenth century and World War Two, camouflage emerged out of nineteenth-century scientific practices as a potent response to film’s practical and theoretical impacts on natural science, art and the military.



Hanna R. Shell



Mending the Net. Hanna Rose Shell, Mixed-Media Assemblage, 2006

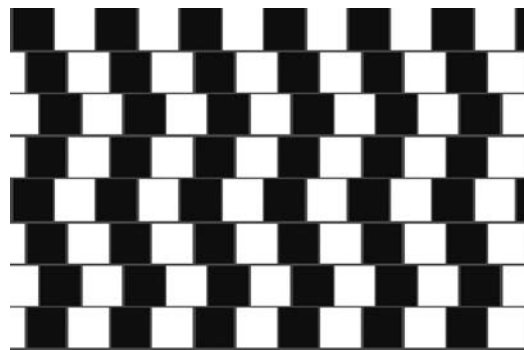


Thomas Sturm

Thomas Sturm (Postdoctoral Fellow, Universität Marburg, Germany; as of September 2007, Research Scholar, MPIWG)

Perceptual Illusions in Psychological Research

Illusions of perception create familiar problems for the reliability of observation and empirical knowledge; hence scientists try to account for them. How do psychologists explain perceptual illusions? In important cases such as the moon illusion, theories and even data are still open and disputed. What is more, the number of competing explanations of the illusion has increased rather than decreased, despite the development and spread of new experimental techniques over the last century. Why? Major reasons for this are conceptual ones: researchers have never agreed what



concepts are necessary and legitimate in descriptions of the illusion, and where to draw the line between judgment and perception. The project examines whether such difficulties are specific to research on such illusions, or symptomatic of larger problems within perception research.

Cafe wall illusion, first described by Richard L. Gregory and Priscilla Heard, who named it after the tiled wall of a Pizza Kebab in Bristol. The lines in between do not appear parallel as they are.



Margareta Tillberg

Margareta Tillberg (Visiting Scholar, Växjö Universitet, Sweden, funded by the Swedish Research Council)

Design, Art and Cybernetics: Russia in the 1960s–70s

This project studies the role of the interaction between the observer and the observed in the elaboration of new design methods at the All-Union Scientific Institute for Technical Esthetics (VNIITE), a research institute for design founded in Moscow in 1962. In co-operation with artists, designers and musicians, the experimental results were to be applied in high priority fields such as industrial interiors, transportation and education. The project embraces artistic, ergonomic, physiological, psychological

and technological/scientific aspects of design, architecture, and cybernetics. The application of various functional modes of cybernetic practices will be presented in a few case studies: in design (as a visual and organizational re-structuring system to produce a more effective and a worthier place to live and work in) and in art (as environments, performances).

Viacheslav Koleichuk (born in 1941, architect, theoretician, constructor, artist, who worked at VNIITE from 1977–94) wearing goggles of his own design, producing a kaleidoscopic vision for himself. Photograph, 1977, Exhibition catalogue Viacheslav Koleichuk, Moscow, 2001



Jeremy Vetter (Postdoctoral Fellow, University of Pennsylvania, U.S.A.; as of January 2007, Assistant Professor, Dickinson College, Pennsylvania, U.S.A.)

Knowledge, Environment, and Field Work in the American West in the 19th and 20th Centuries

The project emphasizes the diversity of ways of organizing the production of knowledge in the field in the American West during the railroad era—including surveys, field networks, stations, and quarries. It brings together evidence from a wide range of field-science disciplines, including paleontology, botany, zoology, ecology, archaeology, meteorology, geology, and agricultural science. The central focus is on divisions of labor, both within the practice of scientific field work and the larger geographical relations between regions of global science. While the history of science has traditionally focused on research leaders, this project aims to uncover the hierarchical division of labor that makes up rigorous scientific field work, from leaders to subordinate contributors, and crossing the conventional boundaries that have divided publishing scientists from their technicians, field hands, and other assistants.



Jeremy Vetter



Mr. Peter Wood and child at Amarillo, Texas, weather station. Photograph, June 1, 1903 (U.S. National Oceanic and Atmospheric Administration's National Weather Service Collection, Image ID: wea00911)

Marga Vicedo-Castello (Postdoctoral Fellow, Harvard University, U.S.A.; as of August 2006 Assistant Professor, University of Toronto, Canada)

The Nature of Mother Love: From Imprinting in Geese and Comfort in Monkeys to Attachment in Children

The project examined the evolution of scientific views about maternal love in biology and psychology since WWII and their impact on social views about gender roles. What kind of care do children need and who should provide it? The answer to those questions affects personal decisions, social expectations and public policy about parental roles, as well as decisions in custody cases, adoptions, orphanages, and child-care in general. The theory of attachment is regarded today as an important part of child psychology, family therapy and psychiatry. Its historical roots lie in psychological research on child development, ethology, and primate research. Because attachment research has profound implications for social policies, the history of this



Marga Vicedo-Castello

theory also illuminates the complex ways in which scientific views are incorporated into the wider society and reveals how the social context affects the directions of scientific inquiry.



Janina Wellmann

Janina Wellmann (Postdoctoral Fellow, Humboldt-Universität zu Berlin, Germany; as of September 2007 postdoctoral Fellow at the Cohn Institute for the History and Philosophy of Science and Ideas, Tel Aviv University, Israel)

Observing the In-Between. Learning to See the Microscopic in 19th Century Biology

The understanding of developmental processes was made possible only through the establishment of a new technique for the observation of complex biological processes by decomposing them into a final set of discrete moments, and then recomposing the process in terms of an orderly series of these moments. The ability to evoke a sense of a dynamic process out of a relatively short sequence of discrete observations lay in the choice of the specific ‘snapshots’ and in the way they were ordered as a series. Examining the microscopical work of a series of botanists and microscopical anatomists in the first half of the nineteenth century, the project shows how the history of microscopy in this period can be largely told in terms of this new technology of observation and depiction, with a focus on the discovery of division as the fundamental way of cell reproduction.



Graphic depiction of cell division.
Eduard Strasburger, *Über Zellbildung und Zelltheilung*, Jena 1875, Taf. VI.

Kelley Wilder (Research Scholar; as of July 2007, Senior Research Fellow, De Montfort University, Leicester, U.K.)

The Nature of Photographic Evidence in Science

Part of the reason photography caused such a sensation when its invention was publicly announced in 1839 was its outrageous promise to embody all the best traits of scientific observation. It was mechanical, indefatigable, optical, and consequently the most reliable method yet discovered of recording observations, especially those made on or with light. Although the tradition of using light sensitive materials was established well before this announcement, photography added the element of fixity, effectively establishing the possibility of permanent (or at least semi-permanent), automatic records of these observations. In the second half of the 19th century and the first decades of the 20th century, many scientists developed photographic methods as a way of conducting either experiments or observations with photographic apparatus. This project concentrates on the evidential nature of this sort of photographic record.



Kelley Wilder



Zeeman Curve, photographed by Henri Becquerel, sent to Woldemar Voigt in a letter 1899. Goettingen State and University Library, special collections (Waldemar Voigt papers)

Ongoing Project

Between the Natural and the Human Sciences

MPIWG ORGANIZERS *Lorraine Daston, Bernhard Kleeberg, Fernando Vidal*

COOPERATING ORGANIZERS *Francisco Ortega* (Universidade do Estado do Rio de Janeiro/UERJ, Brazil), *Robert J. Richards* (University of Chicago, U.S.A.), *Alison Winter* (University of Chicago, U.S.A.)

COOPERATION PARTNERS Universidade do Estado do Rio de Janeiro/UERJ, Brazil; University of Chicago, U.S.A.; Centre Alexandre Koyré, Paris, France

This ongoing project sponsors research, conferences, and exchanges of junior and senior scholars in the interests of creating a common framework of inquiry for the history of the natural and human sciences. In 2006–7 two major projects were pursued under this rubric: *The Cerebral Subject: Brain and Self in Contemporary Culture*, and *The History of the Human Sciences*.

Project

The Cerebral Subject: Brain and Self in Contemporary Culture

DURATION 2004–2008

MPIWG ORGANIZER *Fernando Vidal*

COOPERATING ORGANIZER *Francisco Ortega* (Universidade do Estado do Rio de Janeiro/UERJ, Brazil)

COOPERATION PARTNER Universidade do Estado do Rio de Janeiro/UERJ, Brazil
Website: <www.brainhood.net>

The project largely takes place in the framework of a cooperation agreement between MPIWG and the State University of Rio de Janeiro. In 2006–2007, it received support through the extension of a grant from the PROBRAL scholars exchange program of the German Academic Exchange Service and the CAPES, a funding agency of the Brazilian Ministry of Education and Culture.

“Cerebral subject” designates not so much a scientific object as an anthropological figure: the human being as brain, the belief that the brain is the only part of the body required for personhood. The goal of the project is to study the history of this figure, and to explore its concrete consequences in different realms since the mid-twentieth

century. The cerebral subject has innumerable materializations both inside and outside philosophy and the neuroscientific and psychological fields—to mention just a few, in medical ethics (which deals with such issues as brain death, brain intervention techniques and neural grafting); in the rapid development of new “neuro” fields, from neurotheology to neuroeconomics; in the rise of “neurosecurity” or the “neurodiversity” movement; in the neurologisation of mental illness and deviant behavior; in an expanding galaxy of beliefs and practices that go from learning how to feel with one side of the brain, to various forms of neurohealthism, neuroesotericism and neuroschatology. This project examines these developments not only from the perspective of the history and sociology of science and medicine since the mid-twentieth century, but also as the source of new definitions and experiences of the self.

Brain and Self in Contemporary Culture

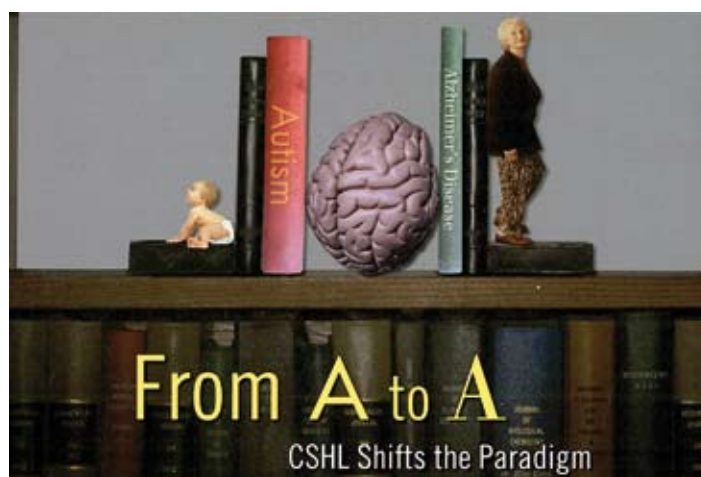
Conferences

The Cerebral Subject. Practices and Representations in Contemporary Culture,
Rio de Janeiro, August 2–4, 2006.

Organized in the framework of the cooperation between MPWIG and the Institute for Social Medicine of the State University of Rio de Janeiro, Brazil. Financed by the MPIWG, the State University of Rio de Janeiro, the Brazilian CAPES and FAPERJ, and the Instituto Bennett of Rio de Janeiro, with additional support from ETH Zurich, Switzerland, and the Institute for the History of Medicine and Public Health of the University of Lausanne, Switzerland.

ORGANIZERS *Francisco Ortega* (Universidade do Estado do Rio de Janeiro, Brazil),
Fernando Vidal (MPIWG)

The belief that human beings are essentially reducible to their brains has become extremely powerful in contemporary societies. Especially since the mid-20th century, the anthropological figure of the “cerebral subject” has emerged as a major feature of industrialized and highly medicalized societies. In speaking of “practices and representations *in* contemporary society” the conference intended to emphasize that science is not only autonomous from society and has an external “impact” on it, but that it is inherently a set of cultural and social practices, and is enmeshed in other such practices. While this has always been so, the cultural rootedness of the neurosciences, and the neuroscientific presence in extra-scientific areas of society have never been so pervasive.



Cover of the magazine *Harbor Transcript* [Cold Spring Harbor Laboratory], vol. 27, no. 3, summer 2007

A publication entitled *The Neurosciences in Contemporary Society. Glimpses from an Expanding Universe*, edited by Francisco Ortega and Fernando Vidal, is currently under preliminary review.

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Brain and Self in Contemporary Culture

Planned Conferences

Neurocultures, February 20–21, 2009

ORGANIZERS *Nicolas Langlitz* (MPIWG), *Fernando Vidal* (MPIWG), in collaboration with the BIOS Centre of the London School of Economics. U.K.

Particularly since the “Decade of the Brain,” various neuro fields have emerged. Neurotheology, neuroesthetics, neuropsychanalysis, neuroeducation, and neuroeconomics seek to reform the human sciences on the basis of knowledge about the brain. Driven by the availability of brain imaging technologies, particularly PET and fMRI, these fields tend to focus on the quest for “neural correlates” of the behaviors and mental processes in question. The media, both popular and specialized, have covered these emergent fields extensively, as well as new forms of sociability and identity politics represented in the “neurodiversity” movement and various sorts of “neurocommunities.” These developments show that neuroscientific knowledge is spreading rapidly beyond the confines of brain research proper into different areas of life and our culture as a whole. The workshop proposes to examine such constellations of ideas, practices, and social forms as “neurocultures.”

Brain and Self in Contemporary Culture

Individual Projects

Vicente Barretto (Visiting Scholar, Universidade do Estado do Rio de Janeiro, Brazil, funded by PROBRAL):

Neurosciences and the Law

How have the neurosciences and neuroimaging technologies affected the notion of the human person that underlies legal decisions? The project focused on the impact of the neurosciences on juridical thought and practice, especially on the ideas of human dignity and human rights that are at the heart of the democratic states in which the exercise of power is constrained by the law.

Cristiane Brandão Augusto Mérida (Visiting Predoctoral Fellow, Universidade do Estado do Rio de Janeiro, Brazil, funded by PROBRAL)

The Neurosciences in the Courtroom

The brain sciences have played a role in criminology since the 19th century; recently, however, the field of “neurolaw” has emerged as an important player in the courtroom. Neurolaw comprises the presence of the neurosciences in the courts, especially in the form of the controversial field of “forensic neuroscience.” The debates studied in the context of the project concern largely the role of organic brain defense (which replaces the traditional insanity defense) and the admissibility in court of neuroscientific evidence, particularly brain scans—two developments that are beginning to alter the theory of justice and the practice of the law.



Luciana Vieira Caliman

Luciana Vieira Caliman (Predoctoral Fellow, Universidade do Estado do Rio de Janeiro, Brazil, funded by German Academic Exchange Service, DAADa; as of September 2006 adjunct Professor and Postdoctoral Fellow of the Postgraduate Program of Psychology, Universidade do Estado do Rio de Janeiro, Brazil)

The History of Attention Deficit Hyperactivity Disorder

The dissertation (completed 2006) deals with the biologization of attention disorders in the late twentieth century. Both the American Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD) began to describe mental pathologies in a language of individual susceptibility, molecular and genetic risk, and brain dysfunction. The controversial diagnostic category “Attention Deficit Disorder” (ADD), now “Attention Deficit Hyperactivity Disorder” (ADHD), was established and expanded to include adulthood. In the process, the inattentive individual came to be understood as, essentially, an inattentive brain.



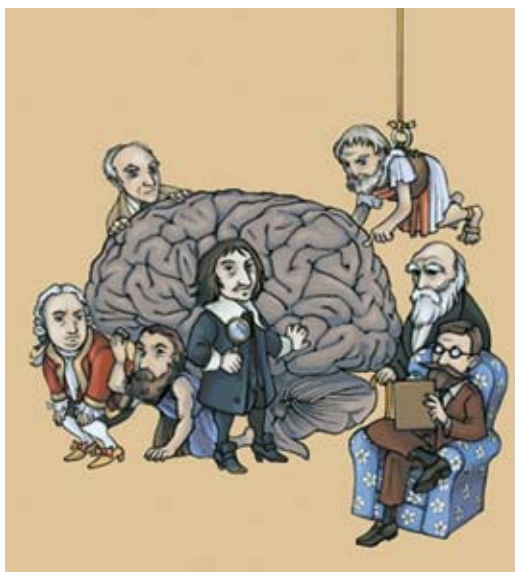
Illustration from the famous German children's story *Zappel-Phillip*, first published in 1844



Nicolas Langlitz

Nicolas Langlitz (Postdoctoral Fellow, MPIWG, University of California, Berkeley, U.S.A.)

Neurophilosophers, Neuroscientists, and the Dreaming Brain



Book-cover of Patricia Smith Churchland's *Brain-Wise. Studies in Neurophilosophy*, Cambridge, Mass, 2002

In the last two centuries, human persons have come to be identified with their brains. In the 1980s, the anthropological, epistemological, and ethical consequences of this conception of ourselves as “cerebral subjects” became the subject matter of the novel philosophical subdiscipline of neurophilosophy. The project is a historical and ethnographic examination of neurophilosophy and addresses three general questions: (1) How did neurophilosophy come into existence and how can it be demar-

cated from previous as well as alternative contemporary forms of philosophical reflection on the brain? (2) How did and do neurophilosophers and neuroscientists relate to each other? What happens to their concepts and ideas when they cross disciplinary boundaries? (3) How do neurophilosophers seek to espouse a certain *cultura animi*, a rejuvenation of philosophy as both a way of life and an ethical cultivation of the soul?

Rossano Cabral Lima (Visiting Predoctoral Fellow, Universidade do Estado do Rio de Janeiro, Brazil, funded by PROBRAL)

Autism: From Disorder of the Mind to Brain Pathology

Since the 1940s, autism has moved from being considered a “disorder of affective contact whose causes are essentially psychogenic, to being seen as a “disorder of the brain” with, sometimes, a genetic component. The research focused on the factors, both in the medical field and in the wider culture of Western societies, that account for such diagnostic transformations.

Francisco Ortega (Visiting Scholar, Universidade do Estado do Rio de Janeiro, Brazil, funded by PROBRAL)

Brain Fitness and Neurobics from the 1840s to the Present

The project examines how the neurobics literature reproduces commonplaces of earlier self-help literature, even going back to the nineteenth century, with an updated scientific vocabulary. Among those practices, “neuroasceticism,” or a cerebral self-discipline aimed at maximizing brain performance, has gained considerable momentum. This particular culture is socially significant in that it contributes to form neurosocialities and neuroidentities. Identifying oneself as a cerebral subject implies adopting a biosocial criterion of social grouping, as can be seen in support groups for bearers of different diseases and neurodegenerative disorders and their families.



Francisco Ortega

Book-cover of Lawrence Katz's and Ruben Manning's bestseller *Keep Your Brain Alive: 83 Neurobic Exercises to Help Prevent Memory Loss and Increase Mental Fitness*. New York, 1999

Maria Paula Sibilía (Visiting Scholar, Universidade Federal Fluminense, Rio de Janeiro, Brazil, funded by PROBRAL)

Digitalized Memory and the Cerebral Subject

The project examines how various forms of corporality relate to the rise of the anthropology of the cerebral subject since the second half of the 20th century, partly focusing on the popularization of theories about memory, and on speculations about the “digital” manipulation and erasure of memories as an instance of the digitalization of the cerebral subject.



Fernando Vidal

Fernando Vidal (Research Scholar, MPIWG)

The Cerebral Subject: Brain and Self in Contemporary Culture

Working towards a cultural history of the belief that “we are our brains” and a topography of the growing “neurocultural” universe, the project focused largely on two areas. One is the emergence of neuroethics as a new discipline that since the early 2000s has received wide media coverage, and undergone an extraordinarily

rapid institutionalization and professionalization. The other area is the elaboration of the “cerebral subject,” or the belief that persons are essentially their brains, in film, especially in movies of the 1940s through the 1970s where the brain itself appears as a main protagonist, as well as in movies that, since the 1980s, have capitalized on the memory theory of personal identity.

The “superpowers of the brain” in the company of the most expensive meals in the world, vampires, the clash of civilizations, the cars of the future, and ET’s landing in India. Cover of the popular Brazilian magazine *Superinteressante*, August 2006



Rafaela Teixeira Zorzaneli (Visiting Predoctoral Fellow, Universidade do Estado do Rio de Janeiro, Brazil, funded by PROBRAL)

The Neuroscientific Transformation of the Psychosomatic Field

Current practices in the psychosomatic field are increasingly influenced by the neurosciences. Such clinical entities as fibromyalgia, myofascial syndrome, irritable bowel syndrome, temporomandibular disorders or restless leg syndrome, which stimulated the study of the relationship between physical and mental factors, are being redefined in neurobiological terms. The project deals with how the understanding and treatment of these classically “psychosomatic” conditions, which were earlier understood from a holistic and psychogenetic perspective, are being transformed by the conviction that the human being can be defined primarily in terms of his or her brain.

Project

The History of the Human Sciences

MPIWG ORGANIZER *Lorraine Daston*

COOPERATING ORGANIZERS *Robert J. Richards* (University of Chicago, U.S.A.),
Alison Winter (University of Chicago, U.S.A.)

COOPERATION PARTNERS University of Chicago, U.S.A.; Centre Alexandre Koyré,
Paris, France

The History of the Human Sciences

Conferences

On Knowing in the Human Sciences, August 25–26, 2006

MPIWG ORGANIZERS *Lorraine Daston* (MPIWG), *Robert J. Richards* (University of Chicago, U.S.A.), *Alison Winter* (University of Chicago, U.S.A.)

What kind of knowledge do the human sciences produce? Can the human sciences grow, discover, invent, probe, prove, explain, predict—in short, create knowledge as it has come to be defined on the basis of successes in the sciences of life, matter, and energy? This workshop brought together a small group of scholars and students to explore the knowledge-making practices of the human sciences. In contrast to the rich recent literature on the history of scientific practices, there has been almost no sustained historical inquiry into the practices of the human sciences. Yet it is out of these practices that disciplines crystallize. Taught since the early nineteenth century in university seminars, the skills by which historians learn to ferret out archival secrets, philologists to construct text stemmata, economists to model mathematically, art historians to look at a painting, anthropologists to go into the field, literary scholars to read a text—all these skills create disciplines, as both a well-bounded domain of inquiry and a distinctive habitus.

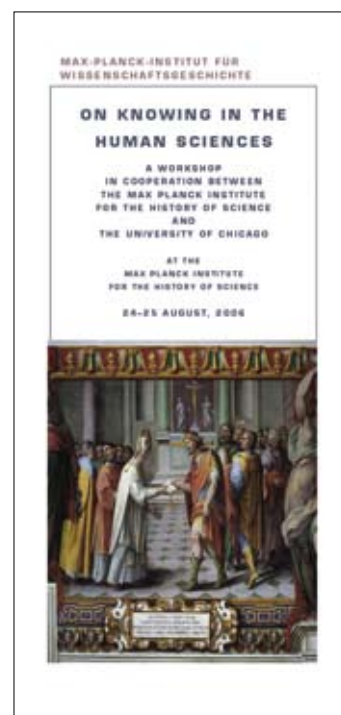
On the Responsibilities of the Human Sciences,

University of Chicago, October 20–21, 2006.

ORGANIZERS *Lorraine Daston* (MPIWG), *Robert J. Richards* (University of Chicago, U.S.A.), *Alison Winter* (University of Chicago, U.S.A.)

COOPERATION PARTNER Franke Center for the Humanities, University of Chicago, U.S.A.

Scientists exercise (or should exercise) various modes of responsibility: representations well grounded in the evidence; appropriate attributions; restraint on generalization; fair treatment of other races, nationalities, groups; illustrations that are not molded to the ends of argument; consideration of the psychological state of subjects.

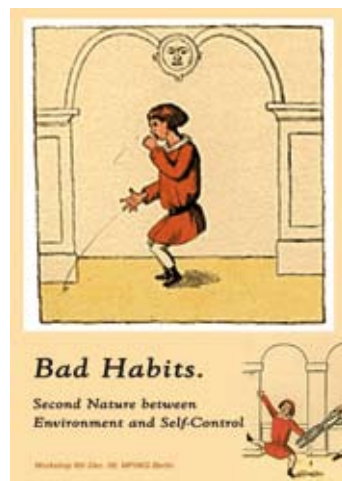


For instance, a scientist might offer an illustration as evidence for a conclusion, when it more properly ought to be regarded as a pedagogical aid to make clear the theory at issue. On the other side of the text, historians bear responsibility to their readers and to the subject of their concern. The workshop posed questions of responsibility on hand from both historical and contemporary examples taken from sociology, psychoanalysis, psychology, film studies, history, and the neurosciences.

Bad Habits. Second Nature between Environment and Self-Control,

December 9, 2006

ORGANIZER *Bernhard Kleeberg* (MPIWG/Universität Konstanz, Germany)



Nineteenth-century discourses on the social question show an increasing interest of economists and social engineers, physicians and psychologists, pedagogues, or philanthropists in the environmental and structural causes of poverty. Often, their respective explanations referred to habitual modes of behavior, practices and attitudes, to *bad habits* in the sense of weak will, lack of self-control, bad character, unrestrained appetites, barbarism, and the like. In order to explore new perspectives for research and build up an international research-network, the workshop assembled scholars working on related aspects in 18th to 20th century approaches to instinctive and emotional behavior, socio-cultural norms and moral economies, practices of self-control and social discipline.

Ruptures: Music, Philosophy, Science, and Modernity,

July 26–28, 2007

ORGANIZERS *Martin Brody* (Wellesley College, U.S.A.), *Arnold Davidson* (University of Chicago, U.S.A)

The conference brought together composers, performers, musicologists, historians of science, and philosophers from Europe and the United States for intensive discussion of the notions of discontinuity, rupture, tradition, and innovation in modern and contemporary science and music. These have been dominant themes in the twentieth-century historiography of music, philosophy, and science, a striking convergence of narratives among disciplines that otherwise seldom intersect. The conference included scholarly presentations as well as concert performances, bridging the gap between traditionally distinct intellectual paradigms: historiography, epistemology, aesthetics, performance, and composition. The comparison and confrontation between science and music allowed to rearticulate concepts and practices in the history of science, stimulating new directions in interdisciplinary research.

The History of the Human Sciences

Planned Conferences

Crisis? What Crisis? Causes, Contexts, and Consequences of the “Crisis in Psychology” in the Early 20th Century,

October 10–12, 2008

ORGANIZERS *Ludmila Hyman* (MPIWG), *Thomas Sturm* (MPIWG)

Psychologists from the late 19th century until the 1930s diagnosed their discipline as being in crisis, a reaction against the high expectations connected with the new psychological laboratories, institutes, journals, societies, and research practices established since the 1870s. Many had hoped that these new frameworks would guide psychology upon the secure path of an experimental and, thereby, proper science. However, by 1900 these expectations were met by doubts and criticisms. The early twentieth-century debate dealt with fundamental questions: Were the results of the new experimental studies to be trusted? Would different experimental approaches converge towards a unified theoretical and methodological framework? Could psychology become a respected science like physics, chemistry, or astronomy? The workshop will explore both the historical contexts and the current relevance of the debate for psychology and the history and philosophy of science.

What Are the Human Sciences? Traditions, Histories, Reflections,

Paris, September 2009

ORGANIZERS *Jacqueline Carroy* (Centre Alexandre Koyré, Paris, France),
Lorraine Daston (MPIWG), *Jan Goldstein* (University of Chicago, U.S.A.)

Les sciences humaines, die Geisteswissenschaften, the social sciences and the humanities: simply to name the major divisions of knowledge dedicated to the study of things human in the major European languages is to evoke contrasting traditions concerning what is to be investigated—and how and why. These disjunctions are signs of different national traditions and institutions, for the most part established since the eighteenth century. The corresponding histories have played an active role in shaping the self-image and agenda for the human sciences: the past has been made to serve as prologue, justification, alternative, and cautionary tale for the present. The purpose of the conference is to reflect upon the significance of the distinct traditions and uses of the history of the human sciences, rather than to take them for granted. The chronological framework will be the eighteenth through the twentieth centuries and francophone, anglophone, and germanophone traditions supply the subject matter.

The History of the Human Sciences

Individual Projects



John Carson

John Carson (Visiting Scholar, University of Michigan, Ann Arbor, U.S.A., funded by the University of Michigan, Ann Arbor)

Mental Ability and the Birth of Medical Jurisprudence

The project investigates the relations between the medical and legal communities that developed during the nineteenth century around the issue of individual mental ability and competency, focusing in particular on the concept of idiocy. By teasing out the complex ways in which physicians, mental philosophers, asylum keepers, lawyers, and judges constructed notions of mental deficiency, the project reveals the range of ways in which individuals could be categorized according to their mental ability, the meaning of these abstract categorizations when applied to specific situations, and the means by which knowledge generated in one context could, or could not, become persuasive within another.



Philip Kitcher

Philip Kitcher (Visiting Scholar, Columbia University, New York, U.S.A., funded by Columbia University)

Naturalistic Ethics

This naturalistic approach to ethics elaborates a very general philosophical stance, pragmatic naturalism, which fuses ideas from the classical pragmatists (particularly James and Dewey) with the opposition to mysterious entities and processes that is the hallmark of naturalism. Central to this approach is the thought that we can understand human practices—the sciences, religion, mathematics, and ethics—by analyzing the historical processes that have produced them in their current forms. Following themes from Dewey, the task is conceived not as developing any complete system of ethics, but of going on from where we are.

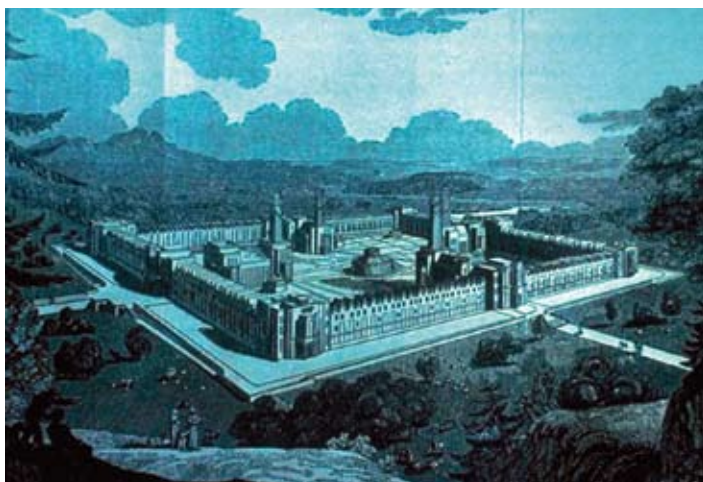


Bernhard Kleeberg

Bernhard Kleeberg (Research Scholar; as of October 2007, Assistant Professor, Universität Konstanz, Germany)

Raising the Standard of Living. The History of a Concept, 1750–1900

The project studied the emergence of structural and mechanical explanations of the “social problem” in the 19th century: mechanisms of (cultural) evolution, social environment, physiological conditions and anthropological dispositions of the poor. Embracing statistical methods and referring to observations from social surveys, the advocates of these approaches presented their newly gained knowledge in form of tables, diagrams, architectural drawings, and maps. Claiming that government interference was necessary, they dismissed traditional accounts of poverty that relied on divine or individual (moral) providence and questioned the distinction between deserving and undeserving poor. Central to their program was the possibility of improving living standards.



Model Colony for the Poor at New Harmony, Indiana (1826). Robert Owen, Richard Ketchum ed., *The American Heritage Book of the Pioneer Spirit*, p. 252., 1959 (Library of Congress, Prints and Photographs Division, Washington, DC. LC-USZ62-1045)

Margaret Schabas (Visiting Scholar, University of British Columbia, Vancouver, Canada)

Hume's Political Economy

The project takes Hume's dozen or more essays on economic subjects and imbeds them in the context of his moral and political philosophy. Topics include "Temporal Dimensions in Hume's Monetary Theory," and "Thought Experiments in Hume's Political Economy."



Margaret Schabas

Udo Thiel (Visiting Scholar, Australian National University, Canberra, Australia, funded by the Australian National University)

Self-Consciousness and Personal Identity in Eighteenth-Century Philosophy

The book project deals with the notions of self-consciousness and personal identity in eighteenth-century German, French, and British philosophy. The book's aim is twofold: (1) to provide an account of the development of this topic in the eighteenth century, and critically to evaluate the contributions of both "major" and "minor" thinkers of the period; and (2) to explain the philosophical arguments in their historical context. This means that developments outside the narrow area of what is today called "philosophy" are taken into account. These include, for example, developments in the history of science and theology.



Udo Thiel

Ongoing Project

Gender Studies of Science

MPIWG ORGANIZERS *Christine von Oertzen, Annette Vogt*

COOPERATIONS “Women and Gender in the History of Science and Medicine: State of the Arts and Future Perspectives.” Cooperation between the MPIWG (Coordinator: *Christine von Oertzen*) and the Wellcome Trust Centre for the History of Science and Medicine, London, U.K. (Coordinator: *Helga Satzinger*)

The analytical category of gender comes close to being an anthropological universal, structuring almost all known cultures—their economies, politics, institutions, and thought systems. Historically, science has been no exception. Department II supports a number of studies on this topic on an ad hoc but ongoing basis.

Gender Studies of Science

Planned Conferences

Women and Gender in the History of Science and Medicine: State of the Arts and Future Perspectives, August 29, 2008

ORGANIZERS *Christine von Oertzen* (MPIWG); *Helga Satzinger* (Wellcome Trust Center for the History of Medicine, London, U.K.)

Research on the history of women and gender in science has expanded considerably in the recent past and has, at the same time, become more and more diverse. This small workshop with a few leading scholars in the field aims to evaluate and synthesize the research on women and gender in the history of science and medicine of the past decade, and to identify promising avenues for future research. The workshop also serves to conceptualize two conferences in 2009 and 2010, to be hosted in Berlin and London respectively. These conferences will give junior and senior researchers the chance to present current work in progress.

Gender Studies of Science

Individual Projects



Hannah Lotte Lund

Hannah Lotte Lund (Coordinator of the Research Network on the History of Scientific Objects, MPIWG)

Jewish Salonières in Berlin circa 1800

The project focuses on the forms and results of the communication that took place in Jewish open houses in Berlin around 1800. Theoretically, in a time when women and Jews were excluded from almost any public career and most of the public places, a salon gave them the opportunity to circumvent this exclusion. By inviting members

of the public, politicians, authors, actors, to their private homes, the women were able to participate in the intellectual discourse of their time. Many prominent writers on the women question around 1800 attended salons regularly. Some of the most influential gender theories of that time, by Wilhelm von Humboldt or Friedrich Schlegel, were literally written on salon tables. In what way did the salon experience influence the men's ideas on woman in general?



Duchess Anna Amalia of Saxony
Hosting a Soiree.
Watercolor by Georg Melchior Kraus,
Goethe-Nationalmuseum, Weimar,
Germany, around 1795

Christine von Oertzen (Research Scholar, MPIWG)

Gender, Science, Internationalism: A Transnational History of Female Academic Networking, 1917–1950

The book project is an account of the formation and fortunes of a new, international academic community of women, the International Federation of University Women (IFUW). It depicts how the IFUW took shape, and tracks the Federation's activities across five decades, examining the shifting political, social, and intellectual contexts in which the organization sought to implement its ambitious goals. The work deals with the actors and concepts, programs and strategies of the Anglo-American dominated umbrella organization, but with special attention to what the IFUW meant for female academics and scholars from Continental Europe, and particularly for those from Germany. The entangled past of the IFUW and the German Federation of University Women reveals a history of a female academic network across national borders and academic cultures, scientific disciplines, and generations.



Christine von
Oertzen



International Convention of the IFUW
1932 in Edinburgh. The IFUW leadership
is getting ready to marching to the opening
ceremonies, with the Mayor of Edinburgh
and the President of the University of
Edinburgh. (Courtesy International
Federation of University Women, Geneva)



Annette Vogt

Annette Vogt (Research Scholar, MPIWG)

Women Scientists at the Berlin University and in the Kaiser Wilhelm Society

The book on women scientists (published in 2007) draws a multitude of national and international comparisons between disciplines, institutions and persons, including comparisons of the conditions for male and female scientists. The study consists of two “long durée” studies about women scientists at the Berlin University (from 1899 until 1945), and in the Kaiser Wilhelm Institutes (from 1911 until 1945). A supplement takes into account the development from 1945 until 1948/1949. Other topics include the involvement of women scientists in the different resistance movements against the Nazis and the impact of this history for contemporary debates about women’s role in science and society.



Members of the Chemical Department, Deutsche Forschungsanstalt for Psychiatry (KWI) in Munich, ca. 1930. On the left is Lydia Pasternak. (Photo: Private Collection)

Ongoing Project

Science in Circulation: The Exchange of Knowledge among Islam, Judaism, and Christianity, 9th–17th Centuries

MPIWG ORGANIZER *Lorraine Daston*

COOPERATING ORGANIZERS *Rivka Feldhay* (University of Tel Aviv, Israel), *Jamil Ragep* (McGill University, Canada), and *Sally Ragep* (McGill University, Canada)

COOPERATION PARTNERS McGill University, Canada; American Council of Learned Societies; Member Institutions of ISMI Board (see below)

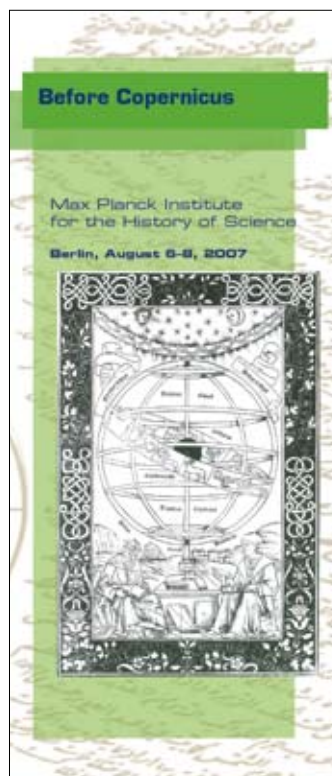
Working Group

Before Copernicus: The Cultures and Context of Scientific Learning in the Fifteenth Century

ORGANIZERS *Rivka Feldhay* (Tel Aviv University, Israel), *Jamil Ragep* (McGill University, Canada)

The project aims to investigate the encounter and cross-fertilization among the Eastern and Western learning traditions that constituted astronomical knowledge in the century before Copernicus and had an impact on his work. The Working Group consists of scholars specializing in history of astronomy, history of science, intellectual history and cultural history of the Islamic, Byzantine-Greek, Jewish and Western-European traditions. Geographically, the scope of the project stretches from Samarkand and Istanbul to Eastern, Central, and Western European countries.

The main questions posed by the Working Group are: (1) What was the status of astronomical models in the Eastern and Western astronomical traditions? (2) What was the relationship of astronomy to mathematics and to physics, and what was the epistemological status of astronomical arguments in those traditions? (3) How was the relationship between appearances and theoretical presuppositions conceived? What was the status of the un-



observable or invisible in astronomy? (4) What was the status of the principles of motions in astronomy—physical or metaphysical—and how were these related to the understanding of terrestrial motion? (5) What was the social status of astronomers and how was it related to astrological and medical practices? (6) How could models of writing, reading and publishing in Europe affect the reception of the work of Copernicus? (7) What was the image of Islam and the Ottomans among Europeans in the 15th century and how could it affect the reception of Islamic traditions?

The first meeting of the group took place in December 2006, the second in August 2007, and a third one is planned for December 2008. As with other MPIWG Working Groups, the meetings focus on the discussion and revision of precirculated papers. The final product will be a collectively authored book that will offer a re-evaluation of the rich conversation between different traditions and disciplines that constitutes the relevant context for interpreting Copernicus' contribution.

Members

- *Nancy Bisaha* (Vassar College, U.S.A.)
- *Christopher S. Celenza* (Johns Hopkins University, U.S.A.)
- *Raz Chen-Morris* (Bar Ilan University, Israel)
- *Ihsan Fazlioglu* (Istanbul University, Turkey)
- *Rivka Feldhay** (Tel Aviv University, Israel)
- *Maria Mavroudi* (Princeton University, U.S.A.)
- *Robert Morrison* (Whitman College, U.S.A.)
- *Jamil Ragep** (McGill University, Canada)
- *Sally Ragep** (McGill University, Canada)
- *Michael Shank* (University of Wisconsin at Madison, U.S.A.)
- *Edith Sylla* (North Carolina State University, U.S.A.)

(* indicates Working Group members who were also Visiting Scholars at the MPIWG in connection with the *Before Copernicus* project)

Science in Circulation

Islamic Scientific Manuscripts Initiative (ISMI)

MPIWG ORGANIZER *Lorraine Daston*

COOPERATING ORGANIZERS *Jamil Ragep* (McGill University, Canada), *Sally Ragep* (McGill University, Canada)

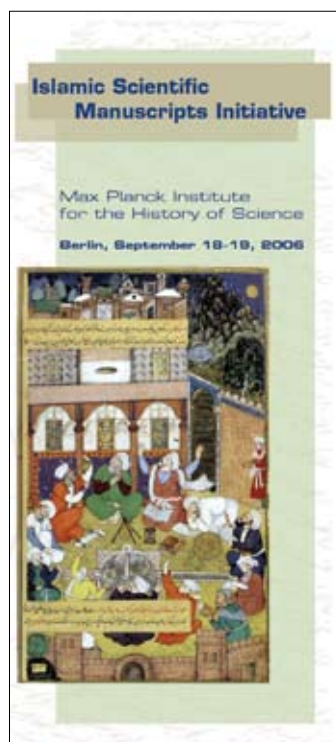
COOPERATION PARTNERS McGill University, Canada; American Council on Learned Societies

Member Institutions of the ISMI Board: Institute for the Study of Muslim Civilizations, Aga Khan University, London, U.K.; Archimedes Project, Harvard University, U.S.A.; Filologia Semítica, Universitat de Barcelona, Spain; Encyclopaedia Islamica Foundation, Tehran, Iran; Institute for the History of Arabic Science, Aleppo Univer-

sity, Syria; Institute for the History of Science and Technology, Moscow, Russia; Institute of Ismaili Studies, London, U.K. Warburg Institute, London, U.K.; The Written Heritage Research Center, Tehran, Iran

The ISMI project aims to make available a vast array of information about the exact sciences in the premodern Islamic world. Through the internet, this material will be accessible without charge both to researchers and experts in the field and to the educated public worldwide. It will be an online database that contains the works of some 1,700 authors who span the entire Islamic world from Islamic Spain to India and the borders of China, beginning in the eighth century and continuing until the nineteenth. These works in astronomy, mathematics, physics, geography, mechanics, and related disciplines number in the thousands and are represented, conservatively speaking, by tens of thousands of manuscript copies spread throughout the world.

The first meeting of the ISMI Advisory Board was held at the MPIWG 18–19 September 2006. In December 2007 a delegation representing the MPIWG and the ISMI project and logistically supported by Professor Raza Ansari traveled to India for two weeks to survey manuscript collections in Aligarh, Patna, and Hyderabad and to establish ties with the National Mission for Manuscripts in New Delhi.



Completed Project

Knowledge and Belief (2003–06)

MPIWG ORGANIZERS *Lorraine Daston, Bernhard Kleeberg, Fernando Vidal*

COOPERATION PARTNERS Princeton University, U.S.A.; McGill University, Canada

In its final year, two working groups (*Natural Theology* and *The Epistemology of Belief*) and one conference (*Miracles as Epistemic Things*) associated with this project concluded publication of their results, while the third working group (*Before the Revolutions: The Fifteenth Century*) formed the basis for a new group on pre-Copernican science in multicultural context (see *Science in Circulation: The Exchange of Knowledge among Islam, Judaism, and Christianity, 9th–17th Centuries*).

Knowledge and Belief (2003–06)

Working Groups**Natural Theology**MPIWG ORGANIZERS *Bernhard Kleeberg, Fernando Vidal*MEMBERS *Rivka Feldhay* (Tel Aviv University, Israel), *Bernhard Kleeberg* (MPIWG), *Scott Mandelbrote* (University of Cambridge, U.K.), *Joan L. Richards* (Brown University, U.S.A.), *Laura Ackermann Smoller* (University of Arkansas at Little Rock, U.S.A.), *Fernando Vidal* (MPIWG)

The contributors to the *Science in Context* issue “Believing Nature, Knowing God” started working together on the history of natural theology, one of the major ways in which the relationship between knowledge and belief has been construed within the history of science. From the 17th to 19th centuries, “natural theology” designated the knowledge of God drawn from the “book of nature,” in contrast to knowledge of God contained as revelation in the “book of scripture.” The way the terms “knowledge” and “belief” are usually employed implies a dichotomy. While knowledge seems to require belief, belief does not seem to necessitate knowledge. Knowledge stands on the side of objectivity, proof and science; belief, on the side of subjectivity, opinion and faith. In practice, knowledge and belief have been much more intimately linked than is suggested by the usual dichotomies. When examined in specific historical cases, the epistemic and cognitive states of knowledge and belief turn out to function together as a crucial element for the context of science. Procedures to gain knowledge about nature entail intellectual and social mechanisms aimed equally at producing belief in the value and legitimacy of the methods used and the evidence generated. If authors engaged in natural theological activities affirm or discover religious truths by their study of nature, at the same time they express their faith in an epistemology that trusts the perceptions of the senses and the faculty of reason.

Bernhard Kleeberg, Fernando Vidal, eds. *Believing Nature, Knowing God*
Special issue of *Science in Context* (vol. 20, n° 3, September 2007)

- *Fernando Vidal and Bernhard Kleeberg*, “Introduction: Knowledge, Belief, and the Impulse to Natural Theology”
- *Rivka Feldhay*, “Thomist Epistemology of Faith: The Road from ‘Scientia’ to Science”
- *Laura Ackerman Smoller*, “Astrology and the Sybils: John of Legnano’s *De adventu Christi* and the Natural Theology of the Later Middle Ages”
- *Scott Mandelbrote*, “The Uses of Natural Theology in Seventeenth-Century England”
- *Fernando Vidal*, “Miracles, Science, and Testimony in Post-Tridentine Saint-Making”
- *Joan L. Richards*, “In Search of the ‘Sea-Something’: Reason and Transcendence in the Frennd/De Morgan Family”
- *Bernhard Kleeberg*, “God-Nature Progressing: Natural Theology in German Monism”

The Epistemology of Belief

ORGANIZER *Lorraine Daston* (MPIWG)

MEMBERS *Mary Baine Campbell* (Brandeis University, U.S.A.), *Lorraine Daston* (MPIWG), *Arnold I. Davidson* (University of Chicago, U.S.A.), *John Forrester* (University of Cambridge, U.K.), *Simon Goldhill* (University of Cambridge, U.K.)

The aim of the group was to reflect on the bases of reasonable belief in science and scholarship now, in light of several decades of dissatisfaction with prevailing philosophical models of the relationship between knowledge and belief—and also in the context of recent political attacks on the credibility of science and scholarship. The multi-authored article (1) set forth the main features of the standard, “Enlightenment” model of knowledge and belief; (2) surveyed the criticisms advanced by scholars and scientists to the standard model; and (3) outlined what an alternative model of knowledge and belief that is more, not less faithful to reality might look like.

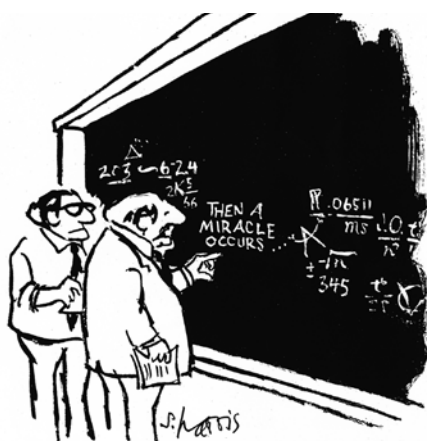
Mary Baine Campbell, Lorraine Daston, Arnold I. Davidson, John Forrester, and Simon Goldhill, “Enlightenment Now: Reflections on Knowledge and Belief,” *Common Knowledge* 13 (2007): 429–450.

Miracles as Epistemic Things

ORGANIZER *Fernando Vidal* (MPIWG)

This book project resulted from a workshop held in October 2004 and has been accepted for publication by Brill. The purpose of this book is to explore the problems raised by miracles as exemplary objects of both knowledge and belief, to bring miracle-making into the purview of the history of science broadly conceived, and to explore the theme beyond the rubric of “science and religion.” The theological issues concern the existence and powers of supernatural agents other than God (e.g. demons who might produce apparent miracles), or the place of the miraculous in the economy of

salvation. The metaphysical issues concern the very possibility of miracles, and through it, the nature of nature and the boundaries that separate it from the supernatural; and the epistemological ones, the establishment of these boundaries by means of practices that involve theorizing and applying such notions as fact, evidence, causality, and probability.



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Cartoon by Sidney Harris.
(Courtesy of the artist)

Fernando Vidal, ed. *Miracles as Epistemic Things*

- *Thomas Wetzstein*, “Proving the Supernatural. Miracles, Sanctity, and the Law of Evidence in Medieval and Early Modern Canonization”
- *Laura Smoller*, “Authentic Miracles in Public Form. Canonization and the Authentication of Miracles in the Case of Vincent Ferrer (d. 1419)”
- *Gábor Klaniczay*, “The Construction of Healing Miracles in the Age of Medieval Canonization Processes”
- *Gianna Pomata*, “Making Room for Doubt. Medical Testimony in Late 17th Century Canonization Proceedings”
- *Fernando Vidal*, “Trust, Knowledge, and Miracles in Prospero Lambertini’s Doctrine and Praxis”
- *Nancy Caciola* and *Moshe Sluhovsky*, “The Discernment of Spirits in Medieval and Early Modern Europe”
- *Elisabeth Claverie*, “The Work of Testing an Apparition and Its ,Grammars.’ The Case of Medjugorje”
- *Andrew Keitt*, “Cutting the Gordian Knot of Spiritual Imposture. Feigned Sanctity in 16th and 17th Century Spain”
- *Arnold Davidson*, “Representing the Stigmata: Miraculous Event, Mystical Experience”
- *Vittorio Casale*, “The Role of Images of Saints and Miracles in Canonization Ceremonies in the Late 17th and Early 18th Centuries”
- *Claire Gantet*, “Hans Engelbrecht (1599–1642) and the Uncertainty of Protestant Miracles”
- *Scott Mandelbrote*, “English Protestants and the Meaning of Miracles”

Short-term Visiting

Pre- and Postdoctoral Fellows 2006–7

- *Zeynep Celik* (Massachusetts Institute of Technology, U.S.A., funded by the Center for Advanced Study in the Visual Arts): Kinaesthetic Impulses: Space, Performance, and the Body in German Architecture, 1870–1914
- *Christopher DiTeresi* (Visiting Predoctoral Fellow, University of Chicago, U.S.A.): Visualization and Experiment in Early Entwicklungsmechanik
- *Anna Echtermöller* (Visiting Predoctoral Fellow, Humboldt-Universität zu Berlin, Germany): Epistemic Values in Obituaries of Scientists (1760–1860)
- *Maurizio Meloni* (Visiting Postdoctoral Fellow, Università la Sapienza di Roma, Italy): Molecular Dasein: Living and Thinking in a Neurobiological Era
- *Alessandro Pajewski* (Visiting Predoctoral Fellow, University of Chicago, U.S.A.): The Role of the Emotions in Nineteenth-Century Evolutionary Theory
- *Alireza Taheri* (Visiting Predoctoral Fellow, University of Cambridge, U.K.): Comparative Study of Freud and Nietzsche on Guilt

- *Tuomo Tuusala* (Visiting Predoctoral Fellow, Helsingin Yliopisto, Helsinki, Finland, funded by the Finnish Cultural Foundation): Historical Epistemology and Philosophy
- *Sophia Vaccines* (Postdoctoral Fellow, The New York School for Social Research, U.S.A., funded by the Max Planck Research Network on the History of Scientific Objects): The Aesthetics of Genetic Engineering (for an abstract of the project see p.155)
- *Cecelia Watson* (Visiting Predoctoral Fellow, University of Chicago, U.S.A.): The Art of Science: William James and John La Farge
- *Mechthild Widrich* (Visiting Predoctoral Fellow, Massachusetts Institute of Technology, U.S.A.): Performative Monuments. Commemoration in Postwar Europe
- *Rafael Ziegler* (Visiting Predoctoral Fellow, McGill University, Canada, funded by the Canadian Social Science and Humanities Research Council): Visions Need Accounts — Essays on Political Perception and Action in a Statistical Age

Short-term Visiting Scholars 2006–7

- *Hannah Baader* (Kunsthistorisches Institut (MPI), Florence, Italy, funded by Kunsthistorisches Institut, Florence): A Visual History of the Mediterranean
- *Marie-Noëlle Bourguet* (Université de Paris-Denis Diderot VII, France): Note-Taking by Scientific Travelers
- *Monika Dommann* (Universität Zürich, Switzerland, funded by Schweizerischer Nationalfonds): Copying in Libraries: A History of Science, Technology, and Law
- *Mechthild Fend* (University College of London, U.K., funded by Princeton University, U.S.A.): History and Representation of Skin in late 18th and 19th Century France
- *Hannah Ginsborg* (University of California, Berkeley, U.S.A., funded by the University of California, Berkeley, U.S.A.): The Normativity of Nature: Empirical Concepts, Aesthetic Experience, and Teleology in Kant's *Critique of Judgment*
- *Matthew L. Jones* (Columbia University, U.S.A., funded by U.S. National Science Foundation): Early Modern Calculating Machines
- *Fabien Locher* (Centre Nationale de Recherche Scientifique, Paris, France): Geomagnetic and Meteorological Expeditions in the Early Nineteenth Century
- *Wolfgang Schivelbusch* (New York University, New York, U.S.A.): The Mythology, Physiology, and Economics of Air
- *Danny Trom* (Centre National de Recherche Scientifique, Paris, France, funded by Centre National de Recherche Scientifique): Seeing Landscapes: The Politics of Nature in late 19th Century Germany
- *André Turmel* (Laval University, Quebec City, Canada, funded by Laval University): Scientific Observation and Developmental Psychology
- *M. Norton Wise* (University of California, Los Angeles, U.S.A., funded by the University of California, Los Angeles): Bourgeois Berlin and Laboratory Science