

EXPERIENCE AND EXPERIMENT IN EARLY MODERN EUROPE
An NEH Summer Institute for College Teachers
Directed by Pamela H. Smith and Pamela O. Long

25 June to 3 August 2001

Some of the most basic assumptions about the nature of the world and our means of experiencing it changed fundamentally in the early modern period. This institute's study is shaped by the most crucial result: a transformation of natural philosophy grounded in Aristotelian common experience—or experience everyone would agree upon without need for investigation—into an experimental philosophy based on a central role for instrumentation and specialized material techniques used in the validation of knowledge claims.

But because experience remains such a touchstone of knowledge in our modern world, we readily believe that it is a stable and transhistorical, indeed a universal phenomena: an empathetic way back into the mind sets of the past. This institute seeks first to trouble those easy assumptions about the nature of experience and then to open up a wide ranging and carefully nuanced investigation of different strands and shifting understandings of experience in the early modern period. These understandings include a new orientation towards experimentalism in the seventeenth century. The institute will gather historians of science, cultural historians, art historians, philosophers, anthropologists, sociologists, literary critics, and historians of technology for this work. It will draw upon and consolidate some of the exciting research that is currently being done in each of these disciplines (by our contributors among others). With cross-, inter-, and counter-disciplinary conversations, it will undertake a comparative investigation of key issues and texts that inform our understandings of the transformations of experience and the uses of experimentation in diverse fields. It will analyze at what points and in what ways experiment comes to function as proof in a wide variety of local circumstances. As a result, it will help reshape a common body of knowledge about the radical change in the nature of experience in the early modern period, a change that traditionally has been signalled by the term “scientific revolution.”

The principal focus of the institute's meetings will be on selected primary texts of the period, read in such a way as to highlight the multiple conversations and contexts into which they were written. Participants will be encouraged to raise issues of audience, transmission, translation, and the nature of evidence—the foundations of the symbolic actions texts perform in their social settings. Participants will be further encouraged to explore the collections in the mornings and to make those explorations the bases of their own presentations to the group.

The institute will meet Monday through Thursday afternoons (with the exception of the week of 4 July). The average week will feature discussion with directors, faculty, and participants taking the lead at various times. Participants will also work collaboratively to incorporate new technologies into their own teaching. On a weekly basis, they will explore a range of digital resources, discussing how to structure assignments and how to provide students with strategies to make the best use of such resources. They will compile and evaluate a cumulative list of websites that offer texts and images of primary sources. They will also collectively assemble and annotate a set of images of primary sources that they have consulted at the Folger Library. Together with the institute's syllabus and bibliographies, these will be the components of a multifaceted web posting.

Directors

Professors Pamela H. Smith and Pamela O. Long will codirect “Experience and Experiment in Early Modern Europe.” Smith is an Associate Professor in the Department of History at Pomona College, Claremont and Director of European Studies at Claremont Graduate University. Her first book, *The Business of Alchemy: Science and Culture in the Holy Roman Empire* (Princeton University Press, 1994), won the History of Science Society’s 1995 Pfizer Prize for the most outstanding book in the History of Science.

Pamela O. Long is a senior research fellow at the Dibner Institute at the Massachusetts Institute of Technology. Her book, *Openness, Secrecy and Authorship: Technē, Praxis, and the Culture of Knowledge from Antiquity to the Renaissance* is forthcoming from the Johns Hopkins University Press. The Society for the History of Technology awarded the Abbott Payson Usher Prize to her article “The Openness of Knowledge: An Ideal and its Context in Sixteenth-Century Writings on Mining and Metallurgy.”

Faculty and Weekly Schedule

Week 1 (25—29 June): The Textures of Experience

Visiting Faculty: **John Sutton** (Lecturer of Philosophy, Macquarie University, NSW, Australia)

In the first week, we will introduce a range of different kinds of experience and the formative impact on them of various knowledge traditions. We will ask how the conceptualization of experience is related to human perception, reason, and the acquisition of knowledge. We begin with close readings of texts that give us a basis for understanding both traditional concepts of human experience and the revisions of those concepts that the institute will investigate in ensuing weeks. With these readings, we establish a framework of select models for further development and analysis. We will read Aristotle’s *De Anima (On the Soul)* in which the powers of the soul are described, including the place of the senses and of thinking, and the relationships between them. We will read several shorter works from Aristotle’s *Parva Naturalis*, including his *Sense and Sensibilia* and *On Dreams*. We then move to several specific contexts of knowledge and experience in the fifteenth century, reading parts of *The Commentaries of Aeneas Sylvius Piccolomini*, della Porta’s *Natural Magic*, and Ficino’s *De Vita*, considering the relationship of body, soul, and experience. Such texts shed light on views of the human psyche and the ways in which nature is experienced. The secondary sources for the week will help us formulate generative questions. For instance, we will consult the influential work of Lorraine Daston and Katharine Park on attitudes of wonder toward phenomena in the world and the changes in such attitudes over time. Are things in nature perceived as marvellous or as instances of order and regularity? Finally, we will read Descartes’ *Treatise on Man*. John Sutton, who will be this week’s visitor, has extensively investigated the relationship of philosophy to structures of cognition, especially in Descartes. He will help the seminar link issues of the senses and the organic soul with the history of physiological psychology as he explores the ways views of the natural world are affected by such structures.

Week 2 (2—6 July): Vernacular Epistemologies

Visiting Faculty: **Mary Fissell**, Associate Professor of the History of Science, Medicine, and Technology at the Johns Hopkins University, and **Gail Kern Paster**, Professor of English at George Washington University

Here we consider the ways in which everyday experience was conceived by ordinary kinds of people, including millers, artisans, and other non-elites. We will also look at the representations of that experience in drama on the English stage. Our readings will include such texts as Ginzburg's *The Cheese and the Worms*, which concerns the heresy trial of Menocchio, a miller, together with the actual documents of his trial. We will also study the world of the artisan as described in the goldsmith Benvenuto Cellini's *Autobiography*. A medical treatise of Paracelsus's offers an opportunity to understand the ways in which this immensely interesting figure related experience and healing. We will consider Professor Smith's argument that Paracelsus articulated an "artisanal science of matter," and that by reading his texts alongside artisanal objects and treatises, we gain insight not only into this science of matter, but into what Mary Fissell calls a vernacular epistemology, in which nature and experience are primary, knowledge is active; knowing is doing, and matter is alive. With Professor Gail Kern Paster, we will turn to other views of the experience of the body, including bodies understood as operating on principles of Galenic humoralism and the resulting subjective experience of being-in-the-body. Our investigations of bodily experiences will include Francis Bacon's *Sylva Sylvarum* and at least one of plays such as *The Alchemist*, *The Family of Love*, or *The Wise-woman of Hogsdon*. Finally we will look at *Aristotle's Masterpiece*, and other popular health texts that were printed in numerous editions and forms in the seventeenth and eighteenth centuries and which were significantly directed toward women. These diverse sources serve as a basis for a comparative consideration of the vernacular epistemologies under investigation. Participants will look particularly at the ways in which lay people experienced their own bodies and the ways in which female bodies, in particular, were constructed by women as well as men. These diverse sources allow us to move from artisanal contexts to issues of popular health and healing. With their extensive studies of primary source materials, Professors Fissell and Paster will significantly expand the scope of materials of investigation beyond the canonical texts and traditions treated in the first week.

Week 3 (9—13 July): Mechanical Arts, Natural Philosophy, and Visual Representation

Visiting Faculty: **David Summers**, William R. Kenan, Jr. Professor of the History of Art at the University of Virginia

This week we focus on one particular sensory experience, vision, to examine the complex and resonant cultural revisions of vision in the fifteenth and sixteenth centuries. We will ask about the changing status of visual representation and the mechanical arts. Recent scholarship in the histories of astronomy, art, and anatomy has produced fascinating new insights. David Summers, who has extensively investigated sixteenth-century art theory and the relationships between vision and judgement, will join the group for this week. With him, participants will compare recent research in these diverse fields. A study of optics and artists' perspective will involve us in a consideration of the fundamentally significant changes in the role of visual representation in this era. Painting was considered a "mechanical art" at the beginning of the fifteenth century while at the end of the period it had become in some quarters a higher status liberal art, partly as a result of writings such as Alberti's *On Painting*. In part by using perspective to depict machines and other apparatus, books about engineering and machines proliferated beginning with manuscript books such as Mariano Taccola's *De Machinis* and the writings of Francesco di Giorgio and Leonardo da Vinci. We will investigate aspects of Leonardo's treatise on mechanics, *Madrid Codex I*, as well as his writings on painting and anatomy. One focus will be on how the "natural" and the "mechanical" came to be interrelated and the ways in which observational experience, visual representation, and knowledge about the world were closely linked in the work of Leonardo and other sixteenth-century figures. The relationships among visual representation, the natural, and the mechanical will be explored further in the writings of Vesalius and Ambroise Paré. The theme of the transition from mechanical arts to mechanics will be introduced. At the same time, changing perceptions of visual representations and the significance of sight and its relationship to reason and to the understanding of the natural world will be explored.

Week 4 (16—20 July): Disciplining Experience

Visiting Faculty: **Chandra Mukerji** (Professor of Communications, Sociology, and Science Studies at the University of California, San Diego) and **Jim Bennett** (Keeper of the Museum of the History of Science in Oxford)

In this week we will shift perspective to look more closely at the way disciplines frame experience. We will take case studies from several specific disciplines—including alchemy, cartography, and surveying—to think about the influences that social, political, and economic forces exert in a variety of settings. We then ask again what difference this makes to the practice and definition of the discipline itself. Chandra Mukerji will guide participants in their study of the many uses of cartography. She brings the methodology of an anthropologist to her work on gardens, landscapes, cartography, and surveying—and their relationships to power—in early modern France. The extensive holdings of the Library of Congress's Geography and Mapping Division (including an extensive web posting project) will supplement the substantial materials at the Folger. Also in this week, participants will look at the way disciplines are linked in oblique ways by their tools and instruments. With Jim Bennett, they will examine the circumstances and ways in which instrument making itself may become a site of knowledge. Bennett's work on the London workshops of instrument makers has shown, for instance, that as the learned customers visited workshops to place orders and request maintenance, the instrument makers came to assume significant roles in those knowledge communities. We may also visit the American History Museum for a close viewing of their collection of early modern instruments.

Week 5 (23—27 July): Objects of Art/Objects of Nature

Visiting Faculty: **Paula Findlen** (Director of the Science, Technology and Society Program, and Professor of History at Stanford University)

In ancient times, theoretical knowledge about the world and practical knowledge about construction were separate and usually unrelated entities. Made objects were not considered particularly useful in explicating knowledge, in part because of the separation between the artificial and the natural. This week, participants will study the ways this separation came to be undermined in the early modern period. We will look at evidence that points to an increasing closeness of objects of nature and of art around 1500. For instance, Albrecht Dürer's diary of his trip to the Netherlands reveals a collapsing of the two categories of nature and artifact in his collection. The great *Kunstkammern* that developed in the seventeenth century also often mingled such objects. Paula Findlen, an expert on collecting in early modern Italy, will invite participants to consider collections as sites of knowledge and to consider, too, their epistemological significance and cultural meanings. The significance of objects can be seen in other ways, as well. In some cases, the work of fabrication came to be seen as revealing of the natural world. Francis Bacon's influential writings put forward a methodology for the investigation of the natural world which utilized the mechanical and constructive arts. Participants will read the *Novum Organum* for the way he makes this relationship explicit. They will ask what implications this proximity between art and nature holds for experience and experimental investigation.

Week 6 (30 July—3 August): Experience and Experiment in the Scientific Revolution

Visiting Faculty: **Peter Dear** (Professor of History and of Science & Technology Studies at Cornell University) and **Adrian Johns** (Professor of Sociology at Cal Tech)

The institute concludes with a study of the broad epistemological conflicts that developed in the seventeenth century over the concepts of experience and experiment. These conflicts threatened the dominant Aristotelian sense of common experience—that which was instantly recognized by all and

therefore required no demonstration (e.g., if you drop a brick it will fall downwards). The new experimental philosophers argued instead that particular experiments, often using complex apparatus that could be constructed and manipulated only by experts, were required to validate claims about the natural world. Yet “experiment” meant different things to different philosophers in the seventeenth century. Participants will analyse the role of experiment in Bacon’s *New Atlantis* and will compare accounts of experimentation by Blaise Pascal, Robert Boyle, and Isaac Newton. Adrian Johns will remind participants of the need to situate what we know about experimental communities in the context of print culture. Peter Dear will also emphasize the need for a cultural history of communication; he will provide, too, a reminder of other networks of communication, including extensive correspondence that exists among experimental philosophers and mathematicians. Perhaps most importantly, he will encourage participants to analyse in detail the differences in the ways experiment is utilized and conceptualized even within relatively well defined learned communities.

Resources

The Folger holds the largest collection outside Britain of early English books, with about 50,000 volumes from the period 1475-1700, 35,000 early Continental imprints, and a 2,000-volume German Reformation collection. The 55,000-piece manuscript collection is especially strong in early correspondence and commonplace books. The Library’s online catalogue, HAMNET, is available through its web site at www.folger.edu. When consulting it, however, one should keep in mind that the modern materials are well represented on the online catalogue; the card catalogue of rare materials is being converted incrementally and is more reliably accessible on site or through the printed catalogues of Folger holdings. The collections of the Library of Congress, the National Gallery of Art, and regional university libraries expand the resources available to participants.

Eligibility

Applications are welcome from full-time faculty members in any of the humanities disciplines at colleges and universities in the United States. A few places may be available for independent scholars and for faculty members from colleges and universities outside the U. S. who are able to participate without stipend support; they are accordingly welcome to apply to attend. Enrollment in “Experience and Experiment” is largely limited to those eligible to receive N.E.H. support. That includes United States citizens, residents of U.S. jurisdictions, or foreign nationals who have been residing in the United States or its territories for at least the three years immediately preceding the application deadline. Candidates for degrees are not eligible.

Housing

Efficiency apartments on the campus of George Washington University, a short subway ride from the Folger Library, will be reserved for participants. The apartments are for single occupancy only, and each includes private kitchen facilities, bath, and telephone. The Institute expects the negotiated rate to be approximately \$1,700.00 for each participant.

Participants are encouraged but not obligated to stay on the G.W.U campus. If a participant requires alternative arrangements, a member of the Institute staff will assist the participant in a search for affordable lodging in the Washington area.

Stipends

The NEH provides eligible participants with a stipend of \$3,700. This amount includes travel and housing expenses. Participants will need to make their own travel arrangements and are encouraged to

make those arrangements at the lowest available rates. For those participants who take advantage of the housing provided by the Institute, the negotiated amount will be deducted from the stipend and submitted to George Washington University on the participant's behalf. One-half of the remaining stipend will be distributed to participants at the first meeting. The second half will be distributed at the beginning of the fourth week.

NEH SUMMER SEMINARS & INSTITUTES FOR COLLEGE & UNIVERSITY TEACHERS APPLICATION INFORMATION AND INSTRUCTIONS

Summer Seminars and Institutes for College and University Teachers are offered by the National Endowment for the Humanities to provide college and university faculty members and independent scholars with an opportunity to enrich and revitalize their understanding of significant humanities ideas, texts, and topics. These study opportunities are especially designed for this program and are not intended to duplicate courses normally offered by graduate programs, nor will graduate credit be given for them. Prior to completing an application, please review the enclosed letter from the project director and consider carefully what is expected in terms of residence and attendance, reading and writing requirements, and general participation in the work of the project.

Each **seminar** includes 15 participants working in collaboration with one or two leading scholars. Participants will have access to a major library collection, with time reserved to pursue individual research and study projects. **Institutes** provide intensive collaborative study of texts, topics, and ideas central to undergraduate teaching in the humanities under the guidance of faculties distinguished in their fields of scholarship. Institutes aim to prepare participants to return to their classrooms with a deeper knowledge of current scholarship in key fields of the humanities.

ELIGIBILITY

These projects are designed primarily for teachers of American undergraduate students. Qualified independent scholars and those employed by museums, libraries, historical societies, and other organizations may be eligible to compete provided they can effectively advance the teaching and research goals of the seminar or institute. Applicants must be United States citizens, residents of U.S. jurisdictions, or foreign nationals who have been residing in the United States or its territories for at least the three years immediately preceding the application deadline.

Applicants must complete the NEH application cover sheet and provide all the information requested below to be considered eligible. Applicants must have completed professional training by the application deadline. An applicant need not have an advanced degree in order to qualify. Candidates for degrees are generally not eligible. Individuals may not apply to study with a director of a seminar or institute who is a current colleague or a family member. Individuals must not apply to seminars directed by scholars with whom they have previously studied. An individual may apply to **no more than two NEH seminars or institutes** in any one year.

SELECTION CRITERIA

A selection committee reads and evaluates all properly completed applications in order to select the most promising applicants and to identify a small number of alternates. (Seminar selection committees consist of the project director and two colleagues. Institute selection committees consist of three to five members, usually drawn from the institute faculty and staff members.) Selection committees are charged to give first consideration to applicants who have not participated in an NEH-supported seminar or institute in the last three years.

The most important consideration in the selection of participants is the likelihood that an applicant will benefit professionally. This is determined by committee members from the conjunction of several factors, each of which should be addressed in the application essay. These factors include:

1. quality and commitment as a teacher, scholar, and interpreter of the humanities;
2. intellectual interests, both generally and as they relate to the work of the seminar or institute;
3. special perspectives, skills, or experiences that would contribute to the seminar or institute;
4. commitment to participate fully in the formal and informal collegial life of the seminar or institute;
5. the likelihood that the experience will enhance the applicant's teaching and scholarship; and
6. for seminars, the conception and organization of the applicant's independent project and its potential contribution to the seminar.

When choices must be made among equally qualified candidates, several additional factors are considered: **Preference is given to applicants who have not previously participated in an NEH seminar or institute, or who would significantly contribute to the diversity of the seminar or institute.**

Institute selection committees are advised that only under the most compelling and exceptional circumstances may an individual participate in an institute with a director or a lead faculty member who has previously guided that individual's research or in whose previous institute or seminar he or she has participated.

STIPEND, TENURE, AND CONDITIONS OF AWARD

Individuals selected to participate in six-week long projects will receive a stipend of \$3,700; those in five-week projects will receive \$3,250; and those in four-week projects will receive \$2,800. Stipends are intended to cover travel expenses to and from the project location, books and other research expenses, and living expenses for the duration of the period spent in residence. Adjustments in cases where the stipend is insufficient to cover all expenses are not possible.

Seminar and institute participants are required to attend all meetings and to engage fully in the work of the project. During the project's tenure, they may not undertake teaching assignments or any other professional activities unrelated to their participation in the project. Participants who, for any reason, do not complete the full tenure of the project must refund a pro-rata portion of the stipend.

At the end of the project's residential period, participants will be asked to submit evaluations in which they review their work during the summer and assess its value to their personal and professional development. Special forms for this report will be distributed by each project director. Completed forms should be returned directly to the Endowment. They will become part of the project's grant file and may become part of an application to repeat the seminar or institute.

APPLICATION INSTRUCTIONS

This application packet should accompany a letter from the project director that contains detailed information about the topic under study; project requirements and expectations of the participants; the academic and institutional setting; and specific provisions for lodging, subsistence, and extracurricular activities. If you do not have such a letter, please request one from the director of the project in which you are interested before you attempt to compete and submit an application. **All application materials should be sent to the project director. Sending application materials and reference letters to the Endowment will result in delay.**

CHECKLIST OF APPLICATION MATERIALS

The following items constitute a completed application to a summer seminar or institute:

- three copies of the completed application cover sheet,
- three copies of a detailed résumé,
- three copies of an application essay as outlined below, and
- two letters of recommendation (sent separately).

The Application Essay

The application essay should be no more than four double-spaced pages. This essay should include any relevant personal and academic information. It should address reasons for applying; the applicant's interest, both academic and personal, in the subject to be studied; qualifications and experiences that equip the applicant to do the work of the seminar or institute and to make a contribution to a learning community; a statement of what the applicant wants to accomplish by participating; and the relation of the project to the applicant's professional responsibilities. Applicants to seminars should be sure to discuss any independent study project that is proposed beyond the common work of the seminar. Applicants to institutes may need to elaborate on the relationship between institute activities and their responsibilities for teaching and curricular development.

REFERENCE LETTERS

The two referees should be chosen carefully. They should be familiar with the applicant's professional accomplishments or promise, interests, and ability to contribute to and benefit from participation in the seminar or institute. They should specifically address these issues in their recommendations. Letters from colleagues who know the applicant's teaching and from those outside the applicant's institution who know his or her scholarship are often more useful than letters from college or university administrators. Referees should be provided with copies of the director's description of the seminar or institute and the applicant's essay. If an applicant has previously participated in an NEH summer seminar or institute, a recommendation from the director or lead scholar of that program would be useful. It is the applicant's responsibility to ask the referees to send their letters directly to the **project director** and to make certain that their letters are mailed to arrive not more than one week after the March 1 deadline.

SUBMISSION OF APPLICATIONS AND NOTIFICATION PROCEDURE

Completed applications should be submitted **to the project director** and should be **postmarked** no later than March 1, 2001.

Successful applicants will be notified of their selection by April 1, 2001, and they will have until April 15 to accept or decline the offer. Applicants who will not be home during the notification period are advised to provide an address and phone number where they can be reached. No information on the status of applications will be available prior to the official notification period.

EQUAL OPPORTUNITY STATEMENT

Endowment programs do not discriminate on the basis of race, color, national origin, sex, disability, or age. For further information, write to the Equal Opportunity Officer, National Endowment for the Humanities, 1100 Pennsylvania Avenue, N.W., Washington, D.C. 20506. TDD: 202/606-8282 (this is a special Telephone Device for the Deaf).

**NEH SUMMER SEMINARS AND INSTITUTES
PARTICIPANT APPLICATION COVER SHEET**

If this Application Cover Sheet is reproduced by computer, the information *must appear with the headings listed in the order printed here*. Do not exceed the space allotted on this page. Incomplete or illegible applications may be deemed ineligible.

NAME:

HOME ADDRESS:

WORK ADDRESS:

(department,
institution,
street address,
city/state/ZIP)

e-mail:

INSTITUTION TYPE: Public _____ Private

2-year College _____ 4-year College _____ University

COURSES TAUGHT THIS YEAR--INDICATE U (UNDERGRADUATE) OR G (GRADUATE):

NUMBER OF STUDENTS TAUGHT THIS YEAR:

DEGREES YOUR DEPARTMENT GRANTS:

HOW MANY YEARS HAVE YOU BEEN TEACHING?

CITIZENSHIP (IF NOT U.S., SPECIFY COUNTRY, MONTH AND YEAR U.S. RESIDENCE BEGAN)

TELEPHONES, HOME AND WORK (include at least one where a message can be left and indicate which):

NAME OF DIRECTOR AND TITLE OF SEMINAR OR INSTITUTE TO WHICH YOU ARE APPLYING:

LIST DATES AND TITLES OF NEH SEMINARS AND INSTITUTES YOU HAVE PARTICIPATED IN:

(printed name)

(signature)

(date)