Overview

In Stradanus’s plate, the scholar in his study is surrounded by the new instruments of navigation, drafting, and surveying. An armillary sphere, a compass, an octant, several books, and other measuring tools sit on the table at left. In the left foreground, a lodestone floats on a raft of wood in a wine cooler. The model galleon suspended from the ceiling contrasts to the single-masted, oared Mediterranean vessel that can be seen through the window. The juxtaposition of instruments and books on the scholar’s desk indicates the coming together of the hitherto generally separate traditions of practice and theory. Out of their union, the new experimental philosophy emerged.

In the seventeenth century, practitioners of this new experimental philosophy came to view themselves as purveyors of a new kind of knowledge. In the wake of their claims, broad epistemological conflicts developed over the concepts of experience and experiment. These conflicts are examined by Peter Dear and Adrian Johns, among others. The conflicts threatened the dominant Aristotelian sense of common experience as that which was acknowledged by all and therefore required no demonstration (e.g., if you drop a brick, it will fall downwards). The new experimental philosophers posited instead that truth claims were to be subject to particular experiments. Often such experiments required complex apparatus, such as the air pump, that could be constructed and manipulated only by experts. Thus the status of the experimental philosophy as philosophical knowledge was problematic; how could it be universally accepted if it relied on particular experiences and events available only to a few individual experts?

Although, in many cases, experimental philosophers exaggerated their complete break with the natural philosophy of the past, several points of difference can be identified between the new experimental philosophy and the natural philosophy of the ancient and medieval periods. The experimental philosophers sought explanations in terms of mechanisms more often than causes. Although they did not always acknowledge their debt, the methods of the experimental philosophers drew from the ways in which craftspeople manipulated natural materials. Individuals who called themselves "new philosophers" were a more diverse group than natural philosophers in the past, and they were sometimes newly arrived in the republic of letters. In addition, venues for natural philosophical practice shifted from the universities to other sites—royal courts, the new academies such as the Royal Society that emphasized experimentation, craft workshops, and even private residences. Investigators proclaimed themselves active experimenters rather than bookish contemplators, interested not in system building, but in the active collection of experience.

Their standards of proof and their modes of legitimating their knowledge also differed markedly from the kinds of investigations that had come before. They couched their proofs in the terms of individual narratives of experimental practice rather than general logical demonstration. Thomas Sprat (1635-1713) in The History of the Royal Society (1667) laid out the correct comportment of the natural philosopher and the ideal natural philosophical community. Although very different as individuals, Galileo Galilei (1564-1624), Robert Boyle (1627-91), and, eventually, Isaac Newton (1643-1727), became model natural philosophers for their contemporaries. All three viewed instruments as part of nature, and all used mathematical arguments to make truth claims in natural philosophical and physical knowledge. Not all seventeenth-century philosophers accepted the epistemological claims of these natural philosophers as unproblematic, however. Thomas Hobbes (1588-1679) disputed them outright, while individuals such as Blaise Pascal (1623-1662) conducted natural philosophical investigation that combined older modes of legitimating knowledge with the use of philosophical instruments and mechanical theorizing.

The Scientific Revolution is often rightly viewed as a period of great theoretical change in natural philosophy. But it would be a mistake to view it solely in this way; it can also be seen as a period of transformation in attitudes to experience and to practice. In the sixteenth and seventeenth centuries, practices involving the investigation of nature changed, and the kinds of people who pursued such
investigations expanded. Natural knowledge became a resource by which a great variety of individuals made claims to authority and intellectual legitimacy. As “experiment” came to replace “experience,” knowledge of nature, based upon the new experimental philosophy, came to occupy a central place in early modern culture.
Astronomical Observations

In the Sidereus Nuncius (or Starry Messenger), first published in 1610, Galileo Galilei (1564-1642) reported his observations made with a new astronomical instrument, the telescope. Galileo did not invent the telescope, but hearing that such an instrument was being sold in France and the Netherlands, he tried to obtain one. When he failed, he undertook to make it himself. Spyglasses, as they were called, were made by placing a convex and a concave lens in a tube. The earliest instruments magnified three or four times. Galileo figured out that the magnification was determined by the ratio of the focal lengths of the two lenses. He set about to improve the instrument and in the process, learned to grind and polish lens. He first made an instrument that magnified eight or nine times, and eventually fabricated one that magnified twenty times.

His first astronomical observations were of the moon. Galileo's observations of the moon and other heavenly bodies such as the moons of Jupiter and the stars of the Milky Way revolutionized astronomy because they provided evidence that the heavens were not perfect and unchanging, as the Aristotelian geocentric model assumed. For example, Galileo showed that the moon was not smooth, but rough and uneven, similar to the earth. He argued that the surface of the moon contained structures such as mountains and valleys. He observed that the line on the moon that separated light and darkness (the terminator) was not a smooth curved line that would be found on a uniform surface, but jagged and irregular as was expected for a rough, uneven surface. Rather than a sharp division between the sublunary and supralunar spheres, Galileo's observations supported the view that the moon was like the earth. It followed that the earth was similar to the other heavenly bodies (and perhaps orbited the sun as the moon orbited the earth and the moons of Jupiter revolved around that planet). Galileo's observations provided powerful support for the Copernican heliocentric model of the cosmos.

Galileo described the moon's earth-like surface but he also provided drawings that served as strikingly persuasive images. This is the second of a series of four moon drawings that appeared in the Sidereus Nuncius. Galileo's drawings are not accurate maps of the moon; it is difficult to correlate his structures with modern moon maps. Rather, his drawings were meant to persuade his readers of the earth-like nature of the moon. Perhaps in his use of images he was influenced by William Gilbert's drawings of the terrella or "little earth," that appear throughout the De magnete (1600) and help to convince the reader of Gilbert's argument that the earth is a magnet.

Pamela O. Long
Washington, DC

Suggested Reading


Experience and Experiment in Early Modern Europe

Boyle's Air Pump

Robert Boyle was a central figure in the investigations of the natural world by means of experimentation that were carried out by the members of the Royal Society and other experimental philosophers in England and elsewhere in the seventeenth century. Boyle already had a long-standing interest in pneumatics when he read of the experiments (carried out in 1644) by Evangelista Torricelli (1608-1647) and Vincenzo Viviani (1622-1703) that effectively created a barometer. They had filled a tube with mercury, closed it at the end, and inverted it into a dish of mercury, whereupon the column sank to about 760 millimeters above the dish, leaving an empty space in the tube above the mercury. Torricelli concluded that his instrument might be used to measure atmospheric pressure. The experiment was of great philosophical interest because it seemed to disprove the Aristotelian dictum that "nature abhors a vacuum."

Boyle heard of these experiments by the early 1650s and repeated them. He then attempted to create a variation of the apparatus that would allow the introduction of larger objects into the empty space, and thus allow further investigation of the nature of air. He was aided again by hearing of experiments carried out in 1647 by the mayor of Magdeburg, Otto Guericke. Guericke built an air suction pump with a cylinder, a piston, and two flap valves. Boyle set for his assistant Robert Hooke (1635-1703) the problem of creating an air pump that was suitable for carrying out experiments concerning the nature of air. The image that appears in Boyle's treatise, *New Experiments Physico-Mechanical Touching the Spring of the Air*, displays the apparatus that Hooke devised and that was used for the numerous experiments described in the treatise.

Boyle provides a complete description of the apparatus, which included two main parts: the glass vessel and a pump to draw the air out. He labels and describes each part, including an account of the way in which it was constructed and the materials with which it was made. These details contribute to the immediacy of the descriptions of the experiments. They suggest that Boyle is not referring to Aristotelian common experience (agreed upon by everyone) but rather to particular experiments, carried out at a particular time by specific experimenters, watched by reliable witnesses, and using a specific, complex apparatus.

Boyle's phrase, the "spring of the air," points to a major focus of the experiments, the capacity of the air to exert pressure and to expand. Boyle was cautious about overdrawing his conclusions. For example, he did not claim that the air pump created a true vacuum, that is, that the space became truly empty. Rather, he referred to the removal of "ordinary air," leaving open whether or not the operational vacuum was a true one. This refusal was part of his methodology in which he claimed to be dealing only in "facts" rather than hypothesis and theory.

By the end of the seventeenth century, the principle that the atmosphere was a fluid possessing weight and that its pressure could be excluded from the interior of a closed vessel so as to obtain a vacuum was incorporated into the construction of the first steam engines, the technology that came eventually to define the course of the Industrial Revolution.

Pamela O. Long
Washington, DC

Harry Kitsikopoulos
New York University

Suggested Reading


Partisan Almanacs

The invention of the telescope, the new models of the cosmos, and the increasing authority of personal observation did not diminish the popular zeal for astrology. In England, the publication of almanacs rose steadily from the end of the sixteenth century and they remained extremely popular throughout the following century. After bibles and printed sermons, almanacs were the most commonly published books in seventeenth-century England. They were also heavily used. Never far from hand, they were consulted frequently for personal guidance, planting schedules, and daily information of every sort.

There is little variation in the astrological information found in seventeenth-century almanacs. Most of the charts laying out the position of stars and planets in these books are uniform, drawn from standard compendia of astrological data known as *ephemerides*. What distinguished particular publications were the various essays and prognostications that accompanied the charts. Gradually, these readings of the past, present, and future became far more significant than the data, and they remain fascinating reflections of social and political positions.

Writers of almanacs became particularly strident during the English Civil War. The celebrated protestant astrologer *William Lilly* (1602-1681) scored some notable successes—and prominence—in foretelling Parliamentary victories.

John Booker secured his own reputation with his predictions of the deaths of Gustavus Adolphus and the elector palatine. Parliament appointed him licensor of mathematical (or astrological) books. His *Bloody Irish Almanack*, 1646, is less an actual almanac than a prognostication written in response to the 1641 rebellion in Ireland against the new English planters and in contestation of an earlier polemical reading of the stars that had been published in Ireland. Invoking the authority of the stars, Booker foretells the doom of the rebellious and Royalist Irish. He dismisses the Irish almanac's celebration of the rule of "glorious King Charles" over Britain and Ireland and its denigration of the treasonous Roundheads. Booker offers his own chronology of the world, beginning at the creation, which reveals the eventual triumph of the Protestant cause. He associates England with the sign of Mars, Ireland with Taurus, and shows that the imminent movement of Saturn and Mars into the house of Taurus naturally indicates that God will pour out his "overflowing cup of wrath and vengeance" upon the Irish "insurrection."

**Eric Leonidas**
Central Connecticut State University

**Suggested Reading**


The Magnetic Earth

In *De magnete*, William Gilbert describes numerous experiments with the magnet or lodestone. Gilbert’s treatise is a key text in the development of the experiment as a means of discovering truths about the natural world. In twentieth-century scholarship, *De magnete* is the focal point of a discussion about the origins of the methodology that became central to the experimental philosophy in the seventeenth century. One issue involves the extent to which Gilbert derived his methods and views from earlier treatises such as the thirteenth-century “Letter on the Magnet” by Pierre de Maricourt, first published in 1558, and *The Newe Attractive* by the retired mariner and compass maker, Robert Norman, first published in 1581.

For most of his experiments Gilbert chose a natural lodestone, which he shaped into a sphere by turning the stone on a lathe. He called this round stone a *terrella*, or little earth. The many images of this “little earth” (of which the image shown here is the first) thoroughly prepare the reader to accept Gilbert’s conclusion that the earth itself is a magnet. The illustration shows how to find the poles of the *terrella* similar to the earth’s poles. Gilbert explains how to do this using an instrument called a versorium. The *versorium* is a small compass needle made with a piece of magnetized iron that can freely turn on its base. The *versorium* is placed on various spots on the *terrella* and the point to which it turns is marked. Gilbert explains that after marking a number of points, you can discover the point at which all the points converge (A and B) which are the poles. A *versorium* placed near but not on the *terrella* (as D) will point directly at the pole.

Nine years later, Galileo created strikingly earth-like images of the moon which he claimed to have viewed through his new instrument, the telescope. Galileo was acquainted with Gilbert’s *De magnete* and may have noticed how effectively Gilbert used visual images of magnets that looked like small earths to help persuade his readers that the earth itself was actually a magnet.

**Pamela O. Long**  
Washington, DC

**Suggested Reading**


Experience and Experiment in Early Modern Europe

Syllabus

The Textures of Experience

Visiting Faculty: John Sutton, Senior Lecturer in Philosophy, Macquarie University, Australia

Monday:
Recommended reading: Vol. 1: Sense and Sensibilia, pp. 693-713.

Tuesday:
Vol. 1: pp. 641-92. Read especially Book One, chapters 1 and 5; Book Two, chapters 1-5 and 12; and Book Three, chapters 3-5.


See especially pp. 31-49.


Wednesday:
Read Book I, chapters 1-6; Book III, especially chapters 1-6, 13, 20-21, 25-26.

Read pp. 280-284.


Read Book I, chapters 18, 32-33, 35-38.


Read especially pp. 117-148.

**Thursday:**


Read pp. 1-25.


Read chapter 4.


**Supplementary Reading:**


Read especially the introduction and the conclusion.


Read the papers by Rhodes and Sawday; Marcus; Sawday; Corns; and Rhodes.


Read especially chapters 1, 2, and 4.

Vernacular Epistemologies

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

**Monday:** Vernacular Knowledge and Print Culture
Read Vol. II: Century I, Experiments 45–59 (358–65), Experiment 63 (367), Experiments 65–66 (368–69), Experiment 98 (380–82); Century III, Experiment 293 (437–38); Century VII, Experiments 601–607 (528–30); and Century X, Experiment 928 (649), Experiment 960 (660–1).


**Tuesday:** The Body and/in The World

Paster, Gail Kern. "The Body and Its Passions."


Read especially pp. 1–39.

**Thursday:** Book Exercise

**Friday:** Female Bodies


**Supplementary Reading:**


Vaughan, William. *Naturall and Artificial Directions for Health, derived from the best philosophers, as well moderne, as auncient.* London, 1600.


**Mechanical Arts, Natural Philosophy, and Visual Representation**

*Visiting Faculty: David Summers, William R. Kenan, Jr. Professor of the History of Art, University of Virginia; and Beth L. Holman, Associate Professor, Studies in the Decorative Arts, Design, and Culture, The Bard Graduate Center*

**Monday:**


**Tuesday:**


**Wednesday:**


**Thursday:**


**Supplementary Primary Reading:**


Serlio, Sebastiano. Tutte L’Opere d'Architettura. Venice, 1584.


**Supplementary Secondary Reading:**


**Disciplining Experience:** Cartography and Mathematics
**Monday:**
Cortés, Martín. *Breve compendio de la sphera*. Seville, 1551.

La Cosa, Juan de. *Spanish World Chart*, ca. 1500.

Read chapters 3 and 4.


**Tuesday:**


**Wednesday:**


Hooke, Robert. "An Attempt to Prove the Motion of the Earth" and "Animadversions on the Machina Coelestis of Johannes Hevelius,"

**Thursday:**


**Supplementary Reading:**


**Objects of Art/Objects of Nature**
Visiting Faculty: Paula Findlen, Director of the Science, Technology, and Society Program and Professor of History, Stanford University

**Monday:**


**Tuesday:**
Session in the National Gallery with Dr. Peter Parshall in the exhibit
"The Unfinished Print," 1:00 - 3:00 p.m.


Wednesday:


Thursday:
Session in the National Gallery sculpture collection and conservation lab with Dr. Shelley Sturman and Dr. Debra Pincus, 3:30 - 5:00 p.m.


Supplementary Reading:


**Experience and Experiment in the Scientific Revolution**

*Visiting Faculty: Peter Dear, Professor of History and of Science & Technology Studies, Cornell University; and Adrian Johns, Professor of History, University of Chicago*

**Monday:**

Read chapter 2.

Read especially pp. 115-163.

Read especially pp. 1-71.

**Tuesday:**


Hooke, Robert. "The Present State of Natural Philosophy" and "Of the True Method of Building a Solid Philosophy, or of a Philosophical Algebra" Posthumous Works... containing his Cutlerian Lectures and other discourses. London, 1705, pp. 1-70.


**Wednesday:**


**Thursday:**


**Supplementary Reading:**


Selected Primary Sources at the Folger Shakespeare Library

The Textures of Experience

Agrippa, Henry Cornelius (1486?-1535).
*De occulta philosophia.*
Cologne, 1533, and Lyon [Lugduni], 1600.
Folger Library Call Numbers: 212797 and 164979

Agrippa, Henry Cornelius (1486?-1535).
*Three books of occult philosophy.*
London, 1651.
Folger Library Call Number: 184128

Aristotle.
*Enarratio de anima ex aristotelis [De anima in Latin].*
Brescia, 1495.
Folger Library Call Number: Inc A351

Aristotle.
*L'anima d'Aristotele [De anima in Italian].*
N.p., 1551.
Folger Library Call Number: PA 3903 A1 A6 1551 Cage

Aristotle.
*[Parva naturalia].*
N.p., 1523, and Venice, 1573.
Folger Library Call Numbers: PA 3903 A1 N4 P2 1523 Cage and 167-118.3f

Descartes, René (1596-1650).
*De homine [Traité de l'homme in Latin].*
Leiden [Lugduni Batavorum], 1662.
Folger Library Call Number: QP 29 D4 1662 Cage

Descartes, René (1596-1650).
*Traité de l'homme.*
Paris, 1664.
Folger Library Call Number: 158235

Descartes, René (1596-1650).
*Opera philosophica.*
Amsterdam, 1664.
Folger Library Call Number: B 1836 1664 Cage

Digby, Kenelm Sir (1603-1665).
*Two treatises.*
Folger Library Call Numbers: 131522 and 135598

Ficino, Marsilio (1433-1499).
*De triplici vita.*
Strasbourg [Argeñ]., 1511.
Folger Library Call Number: R 128.6 F5 1511 Cage

Ficino, Marsilio (1433-1499).
*De vita libri tres [De triplici vita in French].*
Basel, 1549.
Folger Library Call Number: 159-527q

Paracelsus (1493-1547).
*De urinanum ac pulsuum indicis.*
Basel, 1568, and Strasbourg [Argentinas], 1568.
Folger Library Call Number: 165-464q and 184-931q

Paracelsus (1493-1547).
*Paracelsi genannt [Selected works in German].*
Paracelsus (1493-1547).
*Of the chymical transmutation, genealogy and generation of metals & minerals. Also, of the urim and thummim of the Jews.*
London, 1657.
Folger Library Call Number: B3543 Bd.w. H1677

Pliny the Elder.
*Naturalis historia* [Latin].
Parma, 1481, and Venice, 1483.
Folger Library Call Number: Inc P722 and Inc P723 2 cop.

Pliny the Elder.
*Historia naturale* [Naturalis historia in Italian].
Venice, 1489.
Folger Library Call Number: Inc P732

Pliny the Elder.
*L'histoire du monde* [Naturalis historia in French].
Lyon, 1566.
Folger Library Call Number: PA 6613 F7 1566 Cage 2 cop.

Pliny the Elder.
*Bücher und Schriften von Natur, Art, und Eygeschafft* [Naturalis historia in German].
Frankfurt, 1600.
Folger Library Call Number: PA 6613 G4 1600 Cage

Pomponazzi, Pietro (1462-1524).
*De immortalitate animae.*
N.p., 1534.
Folger Library Call Number: B785 P8 T8a

Porta, Giambattista della (1535?-1615).
*De i miracoli et maraglioni* [Magiae naturalis in Italian].
Venice, 1562.
Folger Library Call Number: 182-329q

Porta, Giambattista della.
*Magiae naturalis.*
Lyon [Lugduni], 1569.
Folger Library Call Number: Q155 P8 1569 Cage

Porta, Giambattista della.
*Natural Magick* [Magiae naturalis in English].
London, 1658.
Folger Library Call Number: 144662

**Vernacular Epistemologies**

*Aristotle’s Masterpiece: or The Secrets of Generation.*
London, 1694.
Folger Library Call Number: A3689A

Bacon, Francis (1561-1626).
*Sylva Sylvarum: or A Naturall Historie.*
London, 1626.
Folger Library Call Number: STC 1168 2 cop.

Bacon, Francis (1561-1626).
*Histoire naturelle* [Sylva Sylvarum in French].
Paris, 1631.
Folger Library Call Number: PR 2206 S9 F7 1631 Cage

Bacon, Francis (1561-1626).
*Sylva Sylvarum* [Latin].
Amsterdam, 1661.
Folger Library Call Number: PR 2206 S9 L5 1661 Cage

Culpeper, Nicholas (1616-1642).
*Directory for Midwives.*
Folger Library Call Number: C7494.2

Galilei, Galileo (1564-1642).
*Systema cosmicum* [Dialogo dei massimi sistemi in Latin].
London, 1663.
Folger Library Call Number: G168

Galilei, Galileo (1564-1642).
*Discorsi e dimstrazioni mathematiche*.
Bologna, 1655.
Folger Library Call Number: QC 123 G12 1655 Cage

Galilei, Galileo (1564-1642).
*Opere* [Latin].
Bologna, 1655.
Folger Library Call Number: QB 3 G14 1655 Cage

Lupton, Thomas (fl. 1583).
*A thousand notable things of sundrie sorts*.
London, 1601.
Folger Library Call Number: STC 16959

Moffett, Thomas (1553-1604).
*Healths Improvement*.
London, 1655.
Folger Library Call Number: M2382

Vaughan, William (1577-1641).
*Directions for health, naturall and artificiall* [Natural and artificial directions].
London, 1633.
Folger Library Call Number: STC 24618

**Mechanical Arts, Natural Philosophy, and Visual Representation**

Alberti, Leon Battista (1404-1472).
*L'Architettura* [De re aedificatoria in Italian].
Venice, 1565.
Folger Library Call Number: NA 2515 A5 18

Homer.
*Poetarum omnium secularum longe principis Homeri Ilias* [Iliad in Latin].
Basel, 1540.
Folger Library Call Number: 203-876q

Ovid.
*Metamorphoseos vulgare* [Metamorphoses in Italian].
Venice, 1522.
Folger Library Call Number: 162-165q

Vesalius, Andreas (1514-1564).
*De humani corporis fabrica*.
Basel, 1555.
Folger Library Call Number: QM 25 V4 1555 CAGE

**Disciplining Experience: Cartography and Mathematics**

Blith, Walter (fl. 1649).
*The English Improver, or a New Survey of Husbandry*.
London, 1649.
Folger Library Call Number: B3194

Dee, John (1527-1608).
*Preface, The Elements of Geometrie of ... Euclide*.
London, 1570.
Folger Library Call Number: STC 10650

Gilbert, William (1540-1603).
*De Magnete* [Latin].
Objects of Art/Objects of Nature

Bacon, Francis (1561-1626).
Sylva Sylvarum: or A Naturall Historie.
London, 1626.
Folger Library Call Number: 1168 2 cop.

Bacon, Francis (1561-1626).
Instauratio Magna [Novum Organum in Latin].
London, 1620
Folger Library Call Number: STC 1163 4 cop.

Bacon, Francis (1561-1626).
Nova Atlantis. [New Atlantis in Latin].
Utrecht [Utrarict], 1643.
Folger Library Call Number: PR 2283 H7 M8 1643 Cage

Dürer, Albrecht (1471-1528).
Les quatre livres [De symmetria in French].
Paris, 1557.
Folger Library Call Number: 155-502f

Dürer, Albrecht (1471-1528).
Unterweisung der Messung.
Nuremberg, 1538.
Folger Library Call Number: 170-649f

Montaigne, Michel de (1533-1592).
Les Essais.
Lyon, 1595.
Folger Library Call Number: PQ 1641 A1 1595 Cage

Palsissy, Bernard (1510?-1590).
Discours Admirables.
Paris, 1580.
Folger Library Call Number: Q 155 P192 1580 Cage

Experience and Experiment in the Scientific Revolution

Boyle, Robert (1627-1691).
Tracts . . . containing new experiments, touching the relation betwixt flame and air.
London, 1672.
Folger Library Call Number: B4060

Hooke, Robert (1635-1703).
Micrographia: or some physiological descriptions of minute bodies made by magnifying glasses. London, 1667.
Folger Library Call Number: 140490

Hooke, Robert (1635-1703).
The Posthumous Works . . . containing his Cutlerian lectures and other discourses.
London, 1705.
Folger Library Call Number: 165791

Newton, Isaac Sir (1642-1727).
New theory about light and colours.
London, 1672.
Folger Library Call Number: R 2152.5
Experience and Experiment in Early Modern Europe

Web Resources

Architecture

Architecture Virtual Library
http://www.clr.toronto.edu:1080/VIRTUALLIB/ARCH/hist.html

Images from Serlio’s Architettura

Musei Vaticani e Cappella Sistina
http://www.christusrex.org/www1/vaticano/0-Musei.html

Renaissance and Baroque Architecture
http://www.lib.virginia.edu/dic/colls/arth102/index.html

Society of Architectural Historians
http://www.sah.org/netresources.html

Cartography

Library of Congress Geography and Map Reading Room
http://lcweb.loc.gov/rr/geogmap/

History of Science Societies and Institutes

History of Science Society
http://www.hssonline.org/

Max Planck Institute for the History of Science
http://www.mpiwg-berlin.mpg.de/ENGLHOME.HTM

SHOT Society for the History of Technology
http://www.shot.jhu.edu/

Dibner Institute for the History of Science and Technology
http://dibinst.mit.edu/

History of Science Sites

The Alchemy Website and Virtual Library
http://www.levity.com/alchemy/home.html

Catalog of the Scientific Community in the 16th and 17th Centuries
http://es.rice.edu/ES/humsoc/Galileo/Catalog/catalog.html

History of Science on the World Wide Web
http://www.ou.edu/cas/hsci/ref-site.htm

The Universal Laboratory for the History of Science
http://www.its.caltech.edu/~winter/

Individuals and their Works

Galileo Galilei’s Notes on Motion
http://galileo.imss.firenze.it/ms72/index.html

The Galileo Project
http://es.rice.edu/ES/humsoc/Galileo/

Leon Battista Alberti’s On Painting
http://www.noteaccess.com/Texts/Alberti

The Robert Boyle Project
http://www.bbk.ac.uk/Boyle/
**Instrumentation**

Epact: Scientific Instruments of Medieval and Renaissance Europe  
[http://www.mhs.ox.ac.uk/EPACT](http://www.mhs.ox.ac.uk/EPACT)

**Journals and Periodicals**

Arts Journal  
[http://artsjournal.com](http://artsjournal.com)

Bulletin of the History of Medicine  
[http://muse.jhu.edu/journals/bulletin_of_the_history_of_medicine/](http://muse.jhu.edu/journals/bulletin_of_the_history_of_medicine/)

Technology and Culture  
[http://www.press.jhu.edu/journals/technology_and_culture/](http://www.press.jhu.edu/journals/technology_and_culture/)

**Mathematics**

MacTutor History of Mathematics Archive St. Andrews, Scotland  
[http://www-groups.dcs.st-and.ac.uk:80/](http://www-groups.dcs.st-and.ac.uk:80/)

**Miscellaneous**

Octavodigital rare books  
[http://www.octavo.com](http://www.octavo.com)

A Romantic Natural History  
[http://www.dickinson.edu/%7Ericholsa/Romnat/romnat1.htm](http://www.dickinson.edu/%7Ericholsa/Romnat/romnat1.htm)

Women Writers Project  
[http://www.wwp.brown.edu/wwp_home.html](http://www.wwp.brown.edu/wwp_home.html)

**Museums and Libraries**

Museums in the District of Columbia  

Museum of the History of Science, University of Oxford  
[http://www.mhs.ox.ac.uk/](http://www.mhs.ox.ac.uk/)

National Gallery, London  

National Library of Medicine  

Smithsonian Institution Libraries  
[http://www.sil.si.edu/](http://www.sil.si.edu/)

**Visual Arts**

ArtLex Visual Arts Directory  
[http://www.artlex.com](http://www.artlex.com)

The Art of Renaissance Science  
[http://www.mcm.edu/academic/galileo/ars/arshtml/arsitle.html](http://www.mcm.edu/academic/galileo/ars/arshtml/arsitle.html)

Johannes Vermeer and Delft Geography  
[http://www.xs4all.nl/~kelden/](http://www.xs4all.nl/~kelden/)