

HI218 PRACTICAL KNOWLEDGE IN THE EARLY MODERN WORLD

Seminar Leaders: Maria Avxentevskaya and Sebastian Felten

Course Times: Fridays, 13:30-15:00 and 15:15-16:45

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Office Hours: By arrangement only.

What do we consider “useful” knowledge? We might consider a variety of skills highly useful, like knowing how to cook or how to fix a bicycle, but we still encounter hierarchies in which “practical” skills are less prized than intellectual capacities. Writing the history of the early modern period was previously influenced by such a hierarchy between skill and intellect. However, new approaches have shown the continual and often surprisingly productive link between everyday know-how and theoretical insight. This course explores the interaction between these two realms, and across a variety of contexts, such as the (al)chemical laboratory, the meeting rooms of learned societies, or the furnaces of mines. Our investigation will focus on understanding these sites, the physical objects found and processes staged within them, and the distinctive bodies of knowledge – artisanal and humanist, empirical and bookish, popular and academic – that they establish and intermingle. We discover illuminating links between alchemical experiments and methodical ale brewing at country houses; between bureaucratic paper-shuffling and the evocation of new fauna in marine expeditions; between the legal protocols of a witch trial, and new rules for discourse about nature at the Royal Society in London. These interactions often transformed existing techniques of perception and knowledge-acquisition, and sometimes created new reserves and conceptions of knowledge concerning nature. The notion of expertise itself came as a result to be reevaluated, as did hierarchies determining unimportant or illegitimate sources or criteria of knowing. Our course will include an examination of primary source material, and visits to the Staatliche Kunstsammlungen Dresden, and the library of the Max Planck Institute Berlin.

Requirements

Attendance

Attendance at ALL classes is expected. More than two absences (i.e. absences from two sessions of 90 minutes) in a semester will significantly affect the participation grade for the course. Students should consult the Student Handbook for regulations on periods of illness or leaves of absence.

Readings

Students are required to complete the essential reading for each session (see below), and are encouraged to take a look at the further reading, which should also be used as the starting point in preparing essays. There is no required textbook, but all essential reading, and many of the sources for further reading, will be provided via GoogleDrive. Students are encouraged to take advantage of Berlin’s libraries and museum collections to find other secondary literature to read, and images

and objects to examine. The website of the Max-Planck Institute for the History of Science (<http://www.mpiwg-berlin.mpg.de/en/research>) also offers a wide range of illustrative materials.

Class Presentation

Each student will make a brief (10-15 minutes) presentation on an object or image of their choosing, and then be prepared to answer questions relating to their presentation. The presented object or picture should relate to the theme of the course, and originate from the early modern world (approx. 1450-1750). The presentation should introduce the object, and explain how it helps us understand early modern practical knowledge. Presentations will be scheduled during classes from 3rd February on. An email will be sent regarding presentation slots by the middle of January. Students MUST send in an image, or link to an image, no later than one week before their presentation.

Writing Assignments

Students must write one mid-term essay, and one final essay. The list of available topics for each essay is given below. Word count: Mid-term Essay: 2,000-3,000 words
Final Essay: 3,000-4,000 words

Essay Deadlines

Deadline for the midterm essay: Monday, 20th March.

Deadline for the final essay: Friday, 19 May.

Mid-term Essay Topics

1. How did measurement techniques affect knowledge-making in the early modern world?
2. Why was practical knowledge important for the early modern learned societies?
3. What practical skills were employed in navigation?
4. How did the development of mining techniques affect the early modern monetary history?

Final Essay Topics

1. What specific features characterize early modern practical knowledge?
2. How did art and science interact in the early modern craft knowledge?
3. How did visual artists and writers of manuals convey information about practical skills in the early modern period? Answer with regards to at least two different crafts or techniques.
4. What was happening in the early modern laboratories of knowledge? Answer with regard to at least two different sites where arts or crafts were learned and practiced.

Policy on Late Submission of Papers

Essays that are up to 24 hours late will be downgraded one full grade (from B+ to C+, for example). Instructors are not obliged to accept essays that are more than 24 hours late. Where an instructor agrees to accept a late essay, it must be submitted within four weeks of the deadline and cannot receive a grade of higher than C. Thereafter, the student will receive a failing grade for the assignment. For more information, please consult the Student Handbook.

Grade Breakdown

Attendance and Active Participation in Classes - 20%

Class Presentation – 20%
Mid-term essay – 30%
Final essay – 30%

Schedule

Scheduled class times are available online under the relevant course heading:

<http://www.berlin.bard.edu/academics/courses/spring-2017/>

Sessions 1 and 2: Introduction 3rd February

Essential Reading:

- Bacon, Francis, *New Atlantis*. London: Printed by J.H., 1628, available: <http://www.gutenberg.org/files/2434/2434-h/2434-h.htm>
- Pamela H. Smith and The Making and Knowing Project, “Historians in the Laboratory: Reconstruction of Renaissance Art and Technology in the Making and Knowing Project,” *Art History*, Volume 39, Issue 2 (2016): 210–233, available: <http://onlinelibrary.wiley.com/doi/10.1111/1467-8365.12235/full>

Further Reading:

Primary

- Hartmann Schopper, *[Panoplia] omnium illiberalium mechanicarum*. Francofurti ad Moenum: [Sigmundus Feyrabend], 1568, available: https://bildsuche.digitale-sammlungen.de/index.html?c=viewer&bandnummer=bsb00028626&pimage=35&v=100&n_av=&l=en
- Jan van der Straet, *Nova Reperta* [c. 1580], available: http://echo.mpiwg-berlin.mpg.de/ECHODocuView?url=/permanent/einstein_exhibition/sources/PZ39PA1P/index.meta&pn=1

Secondary

- Pamela H. Smith, *The Body of the Artisan. Art and Experience in the Scientific Revolution*. Chicago: University of Chicago Press, 2004.
- Pamela H. Smith and Benjamin Schmidt, *Making Knowledge in Early Modern Europe: Practices, Objects, and Texts, 1400-1800*. Chicago: University of Chicago Press, 2007.
- Pamela O. Long, *Artisan/Practitioners and the Rise of the New Sciences 1400-1600*. Corvallis, OR: Oregon State University Press, 2011.
- *Transmitting Knowledge: Words, Images, and Instruments in Early Modern Europe*, ed. by Sachiko Kusukawa and Ian Maclean. Oxford: Oxford University Press, 2006.

Sessions 3 and 4: Learned Society 10th February

Essential Reading:

- Thomas Sprat, *The History of the Royal Society of London*. London: Printed for T.R. by J. Martyn, 1667. "To the Royal Society" by Abraham Cowley, and Part I (1-51), also available: <https://books.google.de/books>
- Mordechai Feingold, “‘Experimental Philosophy’: Invention and Rebirth of a Seventeenth-Century Concept,” *Early Science and Medicine* 21 (2016): 1-28.

Further Reading:

Primary

- John Evelyn, *The Diary of John Evelyn*, ed. William Bray. London: M. Walter Dunne, 1901, also available: <https://archive.org/details/diaryofjohnevely01eveliala>
- Robert Hooke, *Micrographia: or, Some physiological descriptions of minute bodies made by magnifying glasses*, ed. J. Martyn and J. Allestry. London, 1665, available: <http://digicoll.library.wisc.edu/cgi-bin/HistSciTech/HistSciTech-idx?type=header;pview=hide;id=HistSciTech.HookeMicro>
- Robert Boyle, *General Heads for the Natural History of a Country*. London: Printed for John Taylor and S. Hedford, 1692, available: <http://quod.lib.umich.edu/e/eebo/A28984.0001.001?view=toc>

Secondary

- Lisa Jardine, “The 2003 Wilkins Lecture: Dr. Wilkins's Boy Wonders”, *Notes and Records of the Royal Society of London*, Vol. 58, No. 1 (Jan., 2004): 107-129.
- Peter Dear, “The Meanings of Experience”, in *The Cambridge History of Science*, ed. David C. Lindberg and Ronald L. Numbers. Cambridge: Cambridge University Press, 2003, Volume III: 106-131.
- Tina Skouen and Ryan J. Stark (eds.), *Rhetoric and the Early Royal Society: A Sourcebook*, Leiden: E.J. Brill, 2014.
- Michael Hunter, *Boyle: between God and Science*. New Haven: Yale University Press, 2009.
- Richard Yeo, *Notebooks, English Virtuosi, and Early Modern Science*. Chicago: University of Chicago Press, 2014.

Sessions 5 and 6: Mechanical Workshop 17th February

Essential Reading:

- Wilkins, John, *Mathematical Magick, or The wonders that may be performed by mechanical geometry*. London: Printed by M.F., 1648, Book I: 1-144.
- Alexander Marr, “Gentille curiosité: Wonderworking and the culture of automata in the late Renaissance” in *Curiosity and Wonder from the Renaissance to the Enlightenment*, ed. Robert John, Weston Evans, and Alexander Marr. Ashgate Publishing, 2006: 149-170.

Further Reading:

Primary

- Database Machine Drawings, available: <http://dmd.mpiwg-berlin.mpg.de/home>
- Isaac de Caus, *New and Rare Inventions of Water-Works*. London: Joseph Moxon, 1659.

Secondary

- Matteo Valleriani, *Galileo Engineer*. Springer, 2010.
- Wolfgang Lefèvre, “The Limits of Picture: Cognitive Function of Images in Practical Mechanics. 1400-1600”, in *The Power of Images in Early Modern Science*, ed. Wolfgang Lefèvre, Jürgen Renn, Urs Schoepflin. Springer, 2003: 69-88.
- Jim Bennett, “Early Modern Mathematical Instruments”, *Isis*, 102 (2011): 697-705.
- Mary G. Winkler and Albert van Helden, “Johannes Hevelius and the Visual Language of

Astronomy”, *Renaissance and Revolution: Humanists, Scholars, Craftsmen and Natural Philosophers in Early Modern Europe*, ed. Judith Veronica Field, et al. Cambridge: Cambridge University Press, 1997: 97-116.

Sessions 7 and 8: Captain’s Cabin on a Ship 24th February

Essential Reading:

- *The Journals of Captain James Cook on his Voyages of Discovery*, ed. by John Cawte Beaglehole. Cambridge: Published for the Hakluyt Society at the University Press, 1955-1974.
Chapter 10, available: <http://gutenberg.net.au/ebooks05/0500461h.html#ch10>
- Henrique Leitão, “All Aboard! Science and Ship Culture in Sixteenth-Century Oceanic Voyages”, *Early Science and Medicine* 21 (2016): 113-132.

Further Reading:

Primary

- William Barlow, *The Navigator’s Supply*. London: G. Bishop, R. Newbery, et al., 1597.
- William Dampier, *A New Voyage Around the World*. London: Adam and Charles Black, 1937, also available: <http://gutenberg.net.au/ebooks05/0500461h.html>
- Samuel Sturmy, *Mariner’s Magazine*, London: E. Cotes, 1669.

Secondary

- Margaret Schotte, “Expert Records: Nautical Logbooks from Columbus to Cook,” *Information & Culture* 48, No. 3, 2013: 281-322.
- John Law, “On the Methods of Long Distance Control: Vessels, Navigation, and the Portuguese Route to India”, in John Law (ed.), *Power, Action and Belief: A New Sociology of Knowledge?* Sociological Review Monograph 32, Routledge: Henley, 1986, 234-263.
- Eric H. Ash. *Power, Knowledge, and Expertise in Elizabethan England*. Baltimore: Johns Hopkins University Press, 2004.
- Edwin Hutchins, *Cognition in the Wild*. Cambridge, MA: MIT Press, 1995.

Sessions 9 and 10: Newton’s Mint 3rd March

Essential Reading:

- *Samuel Pepys’ Diary*. London: John Bell, 1893. Entry for Tuesday, 19 May, 1663, also available: <http://www.pepysdiary.com/diary/1663/05/19/>
- Craig Muldrew, “Hard food for Midas’: Cash and Its Social Value in Early Modern England.” *Past & Present* 170 (2001): 78-120.

Further Reading:

Primary

- *Samuel Pepys’ Diary*. London: John Bell, 1893.
- Edward Hatton, *The Merchant’s Magazine: Or Trades Man’s Treasury*. London: J.H., 1712.

Secondary

- C.E. Challis, *A New History of the Royal Mint*. Cambridge: Cambridge University Press, 1992.

- Carl Wennerlind, *Casualties of Credit: The English Financial Revolution, 1620-1720*. Cambridge, MA: Harvard University Press, 2011.
- Basil S. Yamey, *Art and Accounting*. New Haven: Yale University Press, 1989.
- Mark A. Peterson, "The World in a Shilling: Silver coins and the challenge of political economy in the early modern Atlantic world", in Paula Findlen (ed.), *Early Modern Things: Objects and Their Histories, 1500–1800*. New York: Routledge, 2012: 252-273.

Sessions 11 and 12: Mining Complex 10th March

Essential Reading:

- Georgius Agricola, *De Re Metallica*. Translated by Herbert Clark Hoover and Lou Henry Hoover. New York: Dover Publications, 1950, Book I: 48-90, also available: http://archimedes.mpiwg-berlin.mpg.de/docuserver/images/archimedes/agric_remet_002_en/downloads/agric_remet_002_en.text.pdf
- Pamela Smith, "Making as Knowing; Craft as Natural Philosophy" in *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, ed. Pamela H. Smith et al. Bard Graduate Center/University of Michigan Press, 2016: 17-47.

Further Reading:

Primary

- Georgius Agricola, *De Re Metallica*. Translated into English by Herbert Clark Hoover and Lou Henry Hoover. New York: Dover Publications, 1950.
- Carl Heinrich Jacob Fehling, "Die Kleidungen derer hohen und niedren Berg Officiers, Berg Beamden u. Berg Arbeiter", 1719. Staatliche Kunstsammlungen Dresden, also available: <http://www.deutschefotothek.de/documents/obj/3010066>
<http://www.deutschefotothek.de/documents/obj/80416931>
- Friedrich Wilhelm Heinrich von Trebra, *Erfahrungen vom Innern der Gebirge*. Dessau: Verlagskasse für Gelehrte und Künstler, 1785. See also: *Observations de M. de Trébra sur l'intérieur des montagnes*, ed. by M. de le Baron de Dietrich, Paris: De Monsieur, 1787.

Secondary

- Warren Alexander Dym, *Divining Science: Treasure Hunting and Earth Science in Early Modern Germany*. Leiden: Brill, 2011.
- Bruce T. Moran, "German Prince-Practitioners: Aspects in the Development of Courtly Science, Technology, and Procedures in the Renaissance," *Technology and Culture* 22, No. 2 (1981): 253-274
- Pamela O. Long, "Trading Zones in Early Modern Europe", *Isis* 106, no: 4 (2016): 840-847.
- Silvia Figueirôa and Clarete da Silva, "Enlightened Mineralogists: Mining Knowledge in Colonial Brazil, 1750-1825," *Osiris* 15 (2000): 174-189.

Sessions 13 and 14: Doctor's Practice 17th March

Essential Reading:

- Online exhibition "Drug Trade: Therapy, Pharmacy and Commerce in Early Modern Europe":

<http://www.mhs.ox.ac.uk/drugtrade/index.htm>

- The Casebooks Project: A digital edition of Simon Forman's & Richard Napier's medical records 1596–1634, A Day with the Astrologers: <http://www.magicandmedicine.hps.cam.ac.uk/the-manuscripts/a-day-with-the-astrologers>
- Philipp Klaas et al., "Daily Business: The Organization and Finances of Doctor's Practices" in *Medical Practice, 1600-1900: Physicians and Their Patients*, ed. Michael Stolberg, et al. Brill: Rodopi, 2016. *Medical Practice, 1600-1900: Physicians and Their Patients*, ed. Michael Stolberg, et al. Brill: Rodopi, 2016.

Further Reading:

Primary

- Leonhart Fuchs, *De historia stirpium*, Basel, 1542, available: http://www.e-rara.ch/bau_1/content/titleinfo/543675
- Andreas Vesalius, *De humani corporis fabrica*. Basel, 1543, available: http://www.e-rara.ch/bau_1/content/pageview/6299765

Secondary

- Andrew Wear, *Knowledge and practice in English medicine, 1550-1680*. Cambridge: Cambridge University Press, 2000.
- Gianna Pomata, "Praxis historialis: the uses of historia in early modern medicine", in *Historia: empiricism and erudition in early modern Europe*, ed. G. Pomata and N. G. Siraisi. Cambridge, MA: MIT Press, 2005: 105-146.
- James Shaw and Evelyn Welch, *Making and Marketing Medicine in Renaissance Florence*. Amsterdam: Rodopi, 2011.
- Michael Cyril and William Hunter, *The Occult Laboratory: Magic, Science, and Second Sight in Late Seventeenth-Century Scotland*. Woodbridge: Boydell Press, 2001.
- Anke Timmerman, "Doctor's Order: An Early Modern Doctor's Alchemical Notebooks", *Early Science and Medicine*, Vol. 13, No. 1 (2008): 25-52.

Sessions 15 and 16: Household 24th March

Essential Reading:

- Excerpts from Gervase Markham, *Cheape and Good Husbandry. A Way to Get Wealth: Containing the Sixe Principall Vocations or Callings*. London, 1631.
- Elaine Leong, "Collecting Knowledge for the Family: Recipes, Gender and Practical Knowledge in the Early Modern English Household", *Centaurus* 55 (2013): 81–103.

Further Reading:

Primary

- John Houghton, *A Collection for the Improvement of Husbandry and Trade*. London: Woodman and Lyon, 1728, available: https://books.google.de/books/about/A_Collection_for_the_Improvement_of_Husb.html?id=vL0PAAAAQAAJ&redir_esc=y
- The Recipes Project Database, available: <http://recipes.hypotheses.org/about>
- Salem Witch Trials Archive, available <http://salem.lib.virginia.edu/home.html>

Secondary

- Vanessa Harding, “Shops, markets and retailers in London's Cheapside, c. 1500-1700”, in *Buyers, Sellers and Salesmanship in Medieval and Early Modern Europe*, ed. B. Blondé et al. Brepols: 2006: 155-70.
- *The Experience of Domestic Service for Women in Early Modern London*, ed. Paula Humfrey. Routledge, 2011.
- Antony Buxton, *Domestic Culture in Early Modern England*. Boydell & Brewer, 2015.
- *The Witchcraft Sourcebook*, ed. Brian P. Levack. Routledge, 2015.

Sessions 17 and 18: Bureau 21st April

Essential Reading:

- Samuel Hartlib, *A Memorandum on the Office of Address*. Hartlib Papers 63/7/4A-5B, available:
https://www.hrionline.ac.uk/hartlib/view?docset=main&docname=63A_07_04&term0=transtext_addresses&term1=transtext_of&term2=transtext_office#highlight
- Samuel Hartlib, *A Further Discovery of the Office of Public Address for Accommodations*, 1648. Ibid. 14/2/3/1A-19B, available:
https://www.hrionline.ac.uk/hartlib/view?docset=main&docname=14A_02_03&term0=transtext_addresses&term1=transtext_of&term2=transtext_office#highlight
- Edward Gieskes, *Representing the Professions: Administration, Law, and Theater in Early Modern England*. University of Delaware Press, 2006: 68-113.

Further Reading:

Primary

- H. Robinson, *Printed Notice on Functions of an Office of Address*. Ibid. 63/7/1A-B, available:
https://www.hrionline.ac.uk/hartlib/view?docset=main&docname=63A_07_01&term0=transtext_office#highlight

Secondary

- James Scott, *Seeing Like a State: How certain schemes to improve human condition have failed*. New Haven, CT: Yale University Press, 1998: 11-52 (Chapter 1).
- Ben Kafka, *Hunting the Plumed Mammal: The History of “Bureaucracy” in France, 1750-1850*, in Peter Becker and Rüdiger von Krosigk, *Figures of Authority: Contributions towards a Cultural History of Governance from the Seventeenth to the Twentieth Century*. Brussels: Peter Lang, 2008: 111-126.
- Andre Wakefield, *The Disordered Police State: German Cameralism as Science and Practice*. Chicago: University of Chicago Press, 2009.
- Chandra Mukerji, “The Great Forestry Survey of 1669–1671: The Use of Archives for Political Reform”, *Social Studies of Science* 37/2 (April 2007): 227–253.

Sessions 19 and 20: Cabinet of Curiosities 28th April

Essential Reading:

- Online exhibition of the Kunstkammer Wien, available:
<http://www.khm.at/en/visit/collections/kunstkammer-wien/selected-masterpieces/>
- Lorraine Daston, "Curiosity in early modern science," in *Word and Image*, 11:4 (1995): 391-404.
- Glenn Adamson, "The Labor of Division: Cabinet-making and the Production of Knowledge", *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, ed. Pamela H. Smith et al. Bard Graduate Center/University of Michigan Press, 2016: 243-279.

Further Reading:

Primary

- Nicolas Lemery, *Modern curiosities of art and nature: extracted out of the cabinets of the most eminent personages of the French Court*. London: Printed for Matthew Gilliflower and James Partridge, 1685, available: Staatsbibliothek zu Berlin, Elektronische Ressourcen.
- *A Catalogue of the Large and Justly Admired Museum of Curiosities, of James West, Esq.* London, 1773, available: Staatsbibliothek zu Berlin, Elektronische Ressourcen.

Secondary

- Helmar Schramm et al. (ed.), *Collection, Laboratory, Theater. Scenes of Knowledge in the 17th Century*. Berlin/New York: Walter de Gruyter, 2005.
- Horst Bredekamp, *The Lure of Antiquity and the Cult of the Machine: The Kunstkammer and the Evolution of Nature, Art and Technology*. Princeton: Marcus Weiner, 1995.
- Sven Dupré, *Laboratories of Art: Alchemy and Art Technology from Antiquity to the 18th Century*. New York: Springer, 2014.
- Valentina Pugliano, "Specimen Lists: Artisanal Writing or Natural Historical Paperwork?" *Isis*, 103, No. 4 (December 2012): 716-726.
- Elizabeth Yale, "Making Lists: Social and Material Technologies in the Making of Seventeenth Century British Natural History", *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, ed. Pamela H. Smith et al. Bard Graduate Center/University of Michigan Press, 2016: 281-301.
- Peter N. Miller, *Cultural Histories of the Material World*. Ann Arbor: Bard Graduate Center/University of Michigan Press, 2013.

Sessions 21-22-23: Field Trip to the Museum Complex in Dresden 5th May

Essential Reading:

Dresden State Art Collections Online:

- The Mathematisch-Physikalischer Salon:
<http://www.skd.museum/en/museums-institutions/zwinger-with-semperbau/mathematisch-physikalischer-salon/index.html>
- The Porzellansammlung:
<http://www.skd.museum/en/museums-institutions/zwinger-with-semperbau/porzellansammlung/index.html>
- The Grünes Gewölbe:
<http://www.skd.museum/en/museums-institutions/residenzschloss/gruenes-gewoelbe/index.html>
- The Kupferstich-Kabinett:

<http://www.skd.museum/en/museums-institutions/residenzschloss/kupferstich-kabinett/index.html>

- The Rüstammer:
<http://www.skd.museum/en/museums-institutions/residenzschloss/ruestkammer/index.html>
- The Münzkabinett:
<http://www.skd.museum/en/museums-institutions/residenzschloss/muenzkabinett/index.html>
- Sven Dupré and Michael Korey, “Inside the Kunstkammer: The Circulation of Optical Knowledge and Instruments at the Dresden Court”, *Studies in History and Philosophy of Science Part A*, 40 (4-2009): 405-420.
- Mary M. Brooks, “Decay, Conservation, and the Making of Meaning through Museum Objects”, *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, ed. Pamela H. Smith et al. Bard Graduate Center/University of Michigan Press, 2016: 377-404.

Further Reading:

Secondary

- *Princely Splendor: Dresden Court 1580-1620*, ed. Dirk Syndram. New York: Metropolitan Museum of Art - Dresden: Staatliche Kunstsammlungen, 2004.
- *Die Inventare der kurfürstlich-sächsischen Kunstkammer in Dresden*, ed. Dirk Syndram and Martina Minning. Staatliche Kunstsammlungen Dresden, 2012. Essays in German, available:
http://verlag.sandstein.de/reader/422-00_InventareEssays/

Sessions 24-25: Library Visit to the Max Planck Institute for the History of Science 12th May

Essential Reading:

- Jürgen Renn, “From the History of Science to the History of Knowledge – and Back”, *Centaurus*, Volume 57, Issue 1 (February 2015): 37-53.
- Malcolm Baker, “Making and Knowing, Then and Now”, *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, ed. Pamela H. Smith et al. Bard Graduate Center/University of Michigan Press, 2016: 377-404.

Further Reading:

Secondary

- *The Mindful Hand: Inquiry and Invention from the Late Renaissance to Early Industrialization*, ed. Lissa Roberts, Simon Schaffer, Peter Dear. Edita-the Publishing House of the Royal, 2007.
- *Artisanal-scientific experts in eighteenth-century France and Germany*, ed. Ursula Klein. Taylor and Francis, *Annals of Science*; 69/3 (2012).
- *Expertise: Practical Knowledge and the Early Modern State*, ed. by Eric H. Ash, Chicago, UCP, 2010.
- *The Structures of Practical Knowledge*, ed. by Matteo Valleriani. Springer, 2016.

Sessions 26-27: Revisiting the Early Modern Practical Knowledge: Final Discussion 19th May

There is no assigned reading for this class, but students should look back at the primary and secondary sources which they have read during the semester. They should review one or two primary sources they have encountered, which they feel are significant for understanding practical knowledge in the early modern world. We shall also discuss the main ideas, images, and objects mentioned in the secondary publications which students are planning to cite in their final essays.