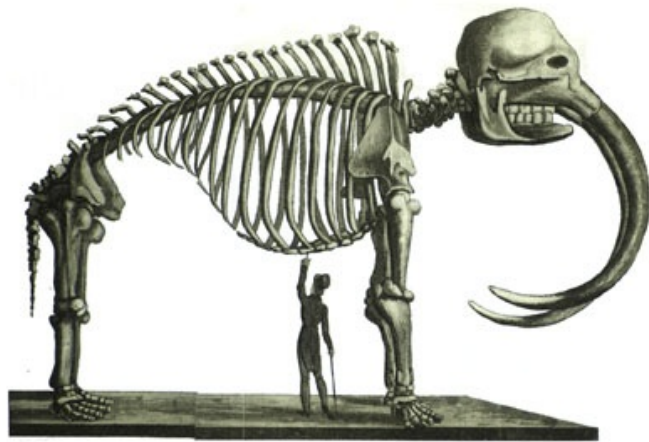


hsci 5970 / spring 2010 /  
wed. 1:30-4:20 / harlow room bizzell  
assoc. prof. katherine pandora

office hours: wed 11:00-1:00  
office: phsc 619  
email: [kpandora@ou.edu](mailto:kpandora@ou.edu)  
tel/voice: 325.3427



## Research, Criticism and Analysis: Natural History as Modern Science

In conventional usage and scholarly tradition, the term “modern science” refers to such research arenas as the astronomical “revolution” that was presumed to inaugurate a break with outmoded forms of natural philosophy, or, more currently, to areas such as nuclear physics and experimental biology – that is to scientific work perceived to be on the “cutting edge” of the advance of knowledge. “Science” is, of course, a much more diverse set of enterprises than is depicted by this conventional image, and the sphere of inquiry that falls under the rubric of “natural history” is a prime example. Over the last twenty years, significant advances in redressing the dearth of attention to the history of natural history have emerged, complicating traditional narratives of “the rise of modern science.” Our central question will be to ask what it means to think of natural history as modern science – both in the limited sense of how our historiographic horizons change when studies of natural history supplement canonical literatures from the physical and experimental sciences, but also in a more expansive sense by considering how disciplinary norms are challenged when assigning natural history a major role in the history of science. Our reading will cover the period from the early modern era to the middle decades of the twentieth century.

### Books

- Nicholas Jardine, James Secord, and E.C. Spary, eds. *Cultures of Natural History* (Cambridge U Pr, 1996)
- Brian Ogilvie. *The Science of Describing: Natural History in Renaissance Europe* (U of Chicago Pr, 2008)
- Susan Scott Parrish. *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* (U of North Carolina Pr, 2006)
- Laura Dassow Walls. *The Passage to Cosmos: Alexander von Humboldt and the Shaping of America* (U of Chicago Pr, 2009)
- Lynn Nyhart. *Modern Nature: The Rise of the Biological Perspective in Germany* (U of Chicago Pr, 2009)
- Claudine Cohen. *The Fate of the Mammoth: Fossils, Myths, and History* (U of Chicago Pr, 2002)
- Susan Davis. *Spectacular Nature: Corporate Culture and the Sea World Experience* (U of California Pr, 1997)

# Reading Schedule

---

## week 1

1/20 introduction: where we're starting from, where we're going, and why

---

## week 2

1/27 mapping the terrain: natural history epistemologies, practices, identities, sources of authority, and cultural referents

### reading:

William James, "Pragmatism and Humanism" from *Pragmatism: A New Name for Some Old Ways of Thinking* (Longman Green and Co., 1907)

Katherine Pandora, "Natural History and Psychological Habitats," from *Rebels within the Ranks: Psychologists' Critique of Scientific Authority and Democratic Realities in New Deal America* (Cambridge U Pr, 1997)

John Pickstone, "Natural History," from *Ways of Knowing: A New History of Science, Technology, and Medicine* (U of Chicago Pr, 2000)

James Secord, "The Crisis of Nature," from *Cultures of Natural History* (Chapter 26)

Ogilvie, *Science of Describing* (chapters 1-3)

---

## week 3

2/3 rethinking the revolution: natural history in the renaissance

1<sup>st</sup> mini-assignment due: presentation of a renaissance natural history book / reflection paper

### reading:

Ogilvie, *Science of Describing* (chapters 4-6)

Deborah Harkness, excerpt from *The Jewel House: Elizabethan London and the Scientific Revolution* (Yale U Pr, 2007) / Prelude and Chapter 1, "Living on Lime Street: 'English' Natural History and the European Republic of Letters"

Roy Porter, "The Terraqueous Globe," in George Rousseau and Roy Porter, eds., *The Ferment of Knowledge: Studies in the Historiography of Eighteenth-Century Science* (Cambridge U Pr, 1980)

### further:

Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (Yale U Pr, 2008)

Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge U Pr, 2010)

Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150-1750* (Zone, 2001)

Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (U of California Pr, 1996)

Ella Reitsma, *Maria Sibylla Merian and Daughters: Women of Art and Science* (Getty, 2008)

Londa Schiebinger and Claudia Swan, eds., *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (U of Penn Pr, 2004)

---

## week 4

2/10 rethinking the revolution: natural history's curious consequences

### reading:

*Cultures of Natural History* (Introduction and Part 1: Curiosity, Erudition and Utility – all)

Parrish, *American Curiosity* (Introduction, chapters 1-2)

### further:

Jorge Cañizares-Esguerra, *How to Write the History of the New World: Histories, Epistemologies, and Identities in the Eighteenth-Century Atlantic World* (Stanford U Pr, 2001)

Richard Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World* (Yale U Pr, 2000)

Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge U Pr, 1996)

Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Harvard U Pr, 2007)

---

**week 5**

**2/17** rethinking the natural history of centers and peripheries: transatlantic challenges

**reading:**

Parrish, *American Curiosity* (Introduction, chapters 3-7)

**further:**

Paul Farber, *Finding Order in Nature: The Naturalist Tradition from Linnaeus to E.O. Wilson* (Johns Hopkins U Pr, 2000)

Lisbet Koerner, *Linnaeus: Nature and Nation* (Harvard U Pr, 2001)

Therese O'Malley, *The Art of Natural History: Illustrated Treatises and Botanical Paintings, 1400-1850* (NGW-Stud Hist Art, 2008)

Harriet Ritvo, *The Platypus and the Mermaid: and Other Figments of the Classifying Imagination* (Harvard U Pr, 1998)

Londa Schiebinger, *Nature's Body: Gender in the Making of Modern Science* (Rutgers U Pr, 2004)

Emma Spary, *Utopia's Garden: French Natural History from Old Regime to Revolution* (U of Chicago Pr, 2000)

---

**week 6**

**2/24** rethinking the natural history of the state: animal, vegetable, mineral

*2<sup>nd</sup> mini-assignment due:* presentation of an annotated textual primary source (pre-circulate to all) / reflection paper

**reading:**

*Cultures of Natural History* (Part 2: Virtuosity, Improvement, and Sensibility – all; and Part 3: Discipline, Discovery, and Display, chapters 15-17)

---

**week 7**

**3/3** rethinking disciplinary investments: natural history and the return of the repressed (art, gender, the antebellum U.S., and other presumed side matters)

**reading:**

Walls, *The Passage to Cosmos* (beginning through chapter 4)

**further:**

Barbara T. Gates, ed., *In Nature's Name: An Anthology of Women's Writing and Illustration, 1780-1930* (U of Chicago Pr, 2002)

Lynn Merrill, *The Romance of Victorian Natural History* (Oxford U Pr, 1989)

Amy R.W. Meyers, ed., *Art and Science in America: Issues of Representation* (Huntington Lib., 1998)

Barbara Novak, *Nature and Culture: American Landscape and Painting, 1825-1875*, 3<sup>rd</sup> ed. (Oxford U Pr, 2007)

Margaret Welch, *The Book of Nature: Natural History in the United States, 1825-1875* (Northeastern U Pr, 1998)

---

**week 8**

**3/10** rethinking disciplinary investments: when even giants are invisible

**reading:**

Walls, *The Passage to Cosmos* (chapters 5-6, Epilogue)

*Cultures of Natural History* (Part 3: Discipline, Discovery, and Display, chapters 18-20)

**further:**

Melinda B. Fagan, "Wallace, Darwin, and the Practice of Natural History," *Journal of the History of Biology*, 2007, 40:601-635

Henrika Kuklick and Robert Kohler, eds., "Science in the Field," *Osiris*, vol. 11 (1996)  
James Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation* (U of Chicago Pr, 2003)  
Jonathan Smith, "Darwin's Barnacles," Chapter 2 in *Charles Darwin and Victorian Visual Culture* (Cambridge U Pr, 2006)  
Rebecca Stott, "Darwin's Barnacles: Mid-Century Victorian Natural History and the Marine Grotesque," in R. Luckhurst and J. McDonagh, *Transactions and Encounters: Science and Culture in the Nineteenth Century* (Manchester U Pr, 2002)

---

**week 9**

**3/17 no class || spring break**

---

**week 10**

**3/23** rethinking the natural history of boundaries between the "serious" and the "trivial"

**reading:**

*Cultures of Natural History* (Part 3: Discipline, Discovery, and Display, chapters 21-25)  
Nyhart, *Modern Nature* (chapters 1-4)

**further:**

Elizabeth Hanson, *Animal Attractions: Nature on Display in American Zoos* (Princeton U Pr, 2002)  
Christoph Irmscher, *The Poetics of Natural History: From John Bartram to William James* (Rutgers U Pr, 1999)  
Bernard Lightman, *Victorian Popularizers of Science: Designing Nature for New Audiences* (U of Chicago Pr, 2007)  
Peter Raby, *Bright Paradise: Victorian Scientific Travellers* (Princeton U Pr, 1996)  
Nigel Rothfels, *Savages and Beasts: The Birth of the Modern Zoo* (Johns Hopkins U Pr, 2002)

---

**week 11**

**3/31** rethinking scientific habitats: perspectives from natural history

**reading:**

Nyhart, *Modern Nature* (chapters 5-10)

**further:**

Eileen Crist, *Images of Animals: Anthropomorphism and Animal Mind* (Temple U Pr, 2000)  
Robert E. Koehler, *All Creatures: Naturalists, Collectors and Biodiversity, 1850-1950* (Princeton U Pr, 2006)  
-----, *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology* (U of Chicago Pr, 2002)  
Sally Gregory Kohlstedt, *Teaching Children Science: Hands-On Nature Study in North America, 1890-1930* (U of Chicago Pr, forthcoming 2010)  
Nancy Parezo, *Anthropology Goes to the Fair: The 1904 Louisiana Purchase Exposition* (U of Nebraska Pr, 2009)  
Charlotte Sleigh, *Six Legs Better: A Cultural History of Myrmecology* (Johns Hopkins U Pr, 2007)

---

**week 12**

**4/7** rethinking disciplinary investments: the curious incident of the dinosaur that barked in the night-time

*3<sup>rd</sup> mini-assignment due:* reflection paper on *Cultures of Natural History*

**reading:**

Cohen, *Fate of the Mammoth*

**further:**

Mark Barrow, *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology* (U of Chicago Pr, 2009)  
Charles R. Knight, *Life Through the Ages: A Commemorative Edition* (Indiana U Pr, 2001)  
Url Lanham, *The Bone Hunters: The Heroic Age of Paleontology in the American West* (Dover, 1992)

- W.J.T. Mitchell, *The Last Dinosaur Book: The Life and Times of a Cultural Icon* (U of Chicago Pr, 1998)
- Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802-1856* (U of Chicago Pr, 2008)
- Martin J.S. Rudwick, *Scenes from Deep Time: Early Pictorial Representations of the Prehistoric World* (U of Chicago Pr, 1995)
- Paul Semonin, *American Monster: How the Nation's First Prehistoric Creature became a Symbol of American Identity* (NYU Pr, 2000)
- Scott Weidensaul, *The Ghost with Trembling Wings: Science, Wishful Thinking, and the Search for Lost Species* (North Point Pr, 2003)
- Donald Worster, *A River Running West: The Life of John Wesley Powell* (Oxford U Pr, 2002)
- 

### **week 13**

4/14 rethinking 20<sup>th</sup>-century history of biology: the missing (prehistoric human) link

#### **reading:**

Excerpt from Stephanie Moser and Clive Gamble, *Ancestral Images: The Iconography of Human Origins* (Cornell U Pr, 1998)

#### **(and choose one)**

- Peter Bowler, *Theories of Human Evolution: A Century of Debate, 1844-1944* (Johns Hopkins U Pr, 1986)
- Constance Clark, *God – or, Gorilla: Images of Evolution in the Jazz Age* (Johns Hopkins U Pr, 2008)
- Misia Landau, *Narratives of Human Evolution* (Yale U Pr, 1993)
- Roger Lewin, *Bones of Contention: Controversies in the Search for Human Origins*, 2<sup>nd</sup> ed. (U of Chicago Pr, 1987)
- Ian Tattersall, *The Last Neanderthal: The Rise, Success, and Mysterious Extinction of Our Closest Human Relatives*, rev. ed. (Basic Books, 1999)
- Melanie Wiber, *Erect Men, Undulating Women: The Visual Imagery of Gender, "Race," and Progress in Reconstructive Illustrations of Human Evolution* (Wilfred Laurier U Pr, 1997)
- 

### **week 14**

4/21 rethinking scientific habitats: perspectives from natural history

4<sup>th</sup> mini-assignment due: reflection paper on visit to the Sam Noble Oklahoma Museum of Natural History

#### **reading:**

- Isis* Focus section on "Museums and the History of Science," 2005, vol. 96; authors: Samuel Alberti, Sophie Forgan, Sally Gregory Kohlstedt, and Jim Bennett
- Victoria Cain, "Exhibitionary Complexity: Reconsidering Museums' Cultural Authority," 2008, *American Quarterly*, 60:1143-1153
- Victoria Cain and Karen Rader, "From Natural History to Science: Display and the Transformation of American Museums of Science and Nature, 1930-1968," *Museum and Society*, 2008, 6:152-171

#### **further:**

- Bluford Adams, *e Pluribus Barnum: The Great Showman and the Making of American Popular Culture* (U of Minnesota Pr, 1997)
- Charles Coleman Sellers, *Mr. Peale's Museum* (W.W. Norton, 1980)
- James W. Cook, *The Arts of Deception: Playing with Fraud in the Age of Barnum* (Harvard U Pr, 2001)
- Ronald Rainger, *An Agenda for Antiquity: Henry Fairfield Osborn and Vertebrate Paleontology at the American Museum of Natural History, 1890-1935* (U of Alabama Press, 1991)
- Mary P. Winsor, *Reading the Shape of Nature: Comparative Zoology at the Agassiz Museum* (U of Chicago Pr, 1991)
- Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History* (Almqvist & Wiksell, 1993).
- Carla Yanni, *Nature's Museums* (Athlone Pr, 2001)

---

**week 15**

4/28 rethinking science and popular culture: natural history spectaculars and modern enchantment

Film: *Miss Goodall and the Wild Chimpanzees* (1965)

**reading:**

Davis, *Spectacular Nature*

Michael Saler, "Modernity and Enchantment: A Historiographic Review," *American Historical Review*, 2006, 111:692-716

**further:**

Derek Bouse, *Wildlife Films* (U of Penn Pr, 2000)

Cynthia Chris, *Watching Wildlife* (U of Minnesota Pr, 2006)

Steve Fiffer, *Tyrannosaurus Sue: The Extraordinary Saga of the Largest, Most Fought-Over T. Rex Ever Found* (W.H. Freeman, 2001)

Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (Routledge, 1989)

Catherine Lutz and Jane Collins, *Reading National Geographic* (U of Chicago Pr, 1993)

Gregg Mitman, *Reel Nature: America's Romance with Wildlife on Film*, 2<sup>nd</sup> ed. (U of Washington Pr, 2009)

Science Fiction / for example: Arthur Conan Doyle, *The Lost World* (1912); Frank Herbert, *Dune* (1965); Michael Crichton, *Jurassic Park* (1990); Vonda McIntyre, *The Moon and the Sun* (1997)

---

**week 16**

5/5 individual consultations on papers

---

**Assignments**

1. There will be four short reflection papers, three of which also have presentation components. Each paper is worth 10% for a total of 40% of the course grade. They are due in Weeks 3, 6, 12, and 15.

2. The final 60% component of the grade will be a final paper, of approximately 15-20 pages, the topic to be decided upon in consultation with the instructor. The paper can be an historiographic essay using the core books for the semester along with selections from the "further reading" suggestions – contained in the syllabus and in *Cultures of Natural History*; or an historiographic paper on a particular sub-topic related to the course theme, drawing on the "further reading" suggestions – contained in the syllabus and in *Cultures of Natural History*; or a research paper on a topic related to the course theme. The Final Paper is due on Thursday, May 15<sup>th</sup> by 5 p.m. in my office, phsc 619.

Science is a body of empirical, theoretical, and practical knowledge about the natural world, produced by a global community of researchers making use of scientific methods, which emphasize the observation, explanation, and prediction of real world phenomena by experiment. Given the dual status of science as objective knowledge and as a human construct, good historiography of science draws on the historical methods of both intellectual history and social history. History " a science exact science, its main task is to establish the truth. Stories are inherent attributes of the most important science " the laws, techniques, methodology. In order to become a historian not enough availability of professional knowledge (of ownership "craft"), but it is necessary and possession of outlook. 1. Establishing the truth is carried out through the identification and formulation of scientific laws, and this happens through the use of research methods based on scientific methodology. The study of the historical process is happening and by logical reasoning (qualitative analysis) and by analyzing the mass of material (quantitative analysis of the obvious " economic indicators, to a non-obvious " ideas).