

History of Science 5970 (Univ. of Oklahoma)
Seminar: Historiography of Non-Western Science

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We shall meet once a week on Wednesdays from 1:30-4:20 in the History of Science Collections. The following books have been ordered and should be available at the bookstores:

H. F. Cohen, The Scientific Revolution: A Historiographical Inquiry (Chicago: University of Chicago Press, 1994).

Toby E. Huff, The Rise of Early Modern Science: Islam, China, and the West (New York: Cambridge University Press, 1993).

G. E. R. Lloyd, Demystifying Mentalities (New York: Cambridge University Press, 1990).

G. E. R. Lloyd, Adversaries and Authorities: Investigations Into Ancient Greek and Chinese Science (New York: Cambridge University Press, 1996).

Additional Readings will be also be assigned from books on reserve in the Collections and from Main Reference in Bizzell, and from articles available for photocopying in Physical Science 626 (Conference Room).

Requirements: You will be asked to write a 2 or 3-page paper (max. 1000 words) about every two weeks. For some of these, we will ask you to analyze/criticize a specific reading or group of readings; in other cases we will ask you to locate a piece of writing that has relevance for the main assignment and write a critical analysis of it. You will also be asked to lead class discussions; this may involve either your supplemental reading or the main assignment.

Course Schedule:

Jan 14: Introduction to the Problem of Non-Western Science

Jan 21: The "Great Divide" and the Historiography of Ancient Science

Lloyd, Demystifying Mentalities, pp. 1-72

Robin Horton, "African Traditional Thought and Western Science," in B. R. Wilson, Rationality (Oxford, 1970). [This is an abridgement of the much longer article that originally appeared in Africa 37 (1967): 50-71, 155-187.]

Some reading questions:

- 1) What is a mentality?
- 2) What does each author mean by such terms as myth, science, rational, theory, common sense, magic, metaphor?
- 3) See attached list of questions related to the Horton reading.

Jan 28: Hellenophilia and the Writing of History

David Pingree, "Hellenophilia versus the History of Science," Isis 83 (1992): 554-563.

Heinrich von Staden, "Affinities and Elisions. Helen and Hellenocentrism," Isis 83 (1992): 578-595.

Lloyd, Demystifying Mentalities, pp. 73-104, 135-145

- 1ST PAPER DUE

Feb 4: Ancient Science and the Politics of Knowledge: The M. Bernal Challenge

Martin Bernal, "Animadversions on the Origins of Western Science," Isis 83 (1992): 596-607.

Robert Palter, "Black Athena, Afro-Centrism, and the History of Science," History of Science 31 (1993): 227-287. (astronomy: 227-246; math: 246-264; medicine: 264-274)

Martin Bernal, Black Athena: The Afroasiatic Roots of Classical Civilization: Volume I: The Fabrication of Ancient Greece 1785-1985 (New Brunswick, NJ: Rutgers University Press, 1987), pp. 1-38, esp. 22-38. [Bernal's book was subject to an extraordinary amount of attention, both positive and negative, and came to play a role in several political controversies. The most sustained anti-Bernal stance was taken by Mary R. Lefkowitz, Not Out of Africa : How "Afrocentrism" Became an Excuse to Teach Myth as History (New York : BasicBooks, 1996) and earlier in an article in the New Republic.

Feb 11: Cross-Cultural Comparisons: Greece and China

Lloyd, Adversaries and Authorities (selections)

- 2nd PAPER DUE

Feb 18: Needham and his Critics (friendly and otherwise)

Joseph Needham, "Mathematics and Science in China and the West," in his Science and Civilization in China (Cambridge: Cambridge Univ. Press), vol. III, pp. 150-168

Joseph Needham, The Grand Titration (Toronto: University of Toronto Press, 1969), pp. 190-217.

A. C. Graham, "China, Europe and the Origins of Modern Science," in S. Nakayam and N. Sivin (eds.), Chinese Science, pp. 45-69.

Yung Sik Kim, "Natural Knowledge in a Traditional Culture: Problems in the Study of the History of Chinese Science," Minerva 20 (1982): 83-104.

Nathan Sivin, "Why the Scientific Revolution Did Not Take Place in China--or Didn't It?," Chinese Science 5 (June 1982): 45-66.

Robert S. Cohen, "The Problem of 19(k)," Journal of Chinese Philosophy 1 (Dec. 1973): 103-117.

A. Koslow, "More on 19 (k)," Journal of Chinese Philosophy 1 (March 1975): 181-196.

Feb. 25: Student Reports on Chinese Topics

- 3rd PAPER DUE

March 4: The Weberian/Nelson challenge to Needham

Toby Huff, pp. 1-46, 237-320

March 11 SPRING BREAK

March 18: Huff and Islam

Read Huff on Islam

- 4th PAPER DUE

March 25: Other views of Islam; the Problem of Orientalism

Finish Huff

Edward Said and his critics (selections from Said and the savage exchange in the New York Review of Books, 1982)

Renan, Von Grünebaum, Duhem, etc. on the poverty of Islamic science

April 1: Responses to the "Standard" View of Islamic Science

R. Rashed, "Science as a Western Phenomenon," in Helaine Selin, Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures (Kluwer, 1997), pp. 884-890

A.I. Sabra, "Science and Philosophy in Medieval Islamic Theology: The Evidence of the Fourteenth Century," Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften 9 (1994): 1-42.

- 5th PAPER DUE

April 8: Cohen, pp. 1-150

April 15: Cohen, pp. 151-307

- 6th PAPER DUE

April 22: Cohen, pp. 308-417

April 29: Cohen, pp. 418-525

- 7th PAPER DUE

First Paper Assignment
Due Wed., Jan 28

Possibilities:

- 1) Analyze the argument of the Frankfurts presented in their The Intellectual Adventure of Ancient Man (Chicago: The University of Chicago Press, 1977), chs. 1 and 12 [=Frankfurt et al., Before Philosophy, chs. 1 and 8].

Or

- 2) Pick an article that deals with the origins of science or mathematics (or a specific discipline) and analyze the author's argument paying special attention to how he/she uses words such as myth, theory, science, rationality, metaphor, etc. (There are several possibilities on the attached bibliography, e.g. Mahoney on Babylonian Algebra, Aaboe on Babylonian astronomy, Popper on the Presocratics, Cornford on the Presocratics, etc.)

Second Paper Assignment
Due Wed., Feb. 11

Find at least 2 reviews of Martin Bernal's Black Athena, preferably ones written from different perspectives (e.g. favorable/unfavorable, by a classicist vs. a modern historian, etc). After summarizing the reviews, try to characterize the historiographical assumptions that underlie the reviews.

Lists of book reviews are given in the Isis CB, but for this assignment you will probably have better luck looking in the book review references on the first floor of Bizzell. You should also ask the reference librarians about databases or on-line services that provide book review information. We're anxious to learn about any new tools you can find!

Third Paper Assignment
Due Wed., Feb. 25

Select an article on Chinese Science and write a 2-4 page analysis that includes an appraisal of the author's solution to the "viewpoint problem." (e.g. does he/she start with a western definition and look for Chinese equivalents ; eastern definition and look for western relations?)

Fourth Paper Assignment
Due Wed., March 25

Toby Huff's *The Rise of Early Modern Science* has been extensively reviewed. For the next assignment, we ask you to read at least 5 reviews (including the first three below) and write a summary and analysis of what you find. In particular, you should examine the kind of historiographical (or other) assumptions the reviewers make. Are there disciplinary differences you can detect? (For example, do sociologists seem more sympathetic to Huff's approach than historians.) Some of these reviews may need to be obtained through interlibrary loan, so order now! [N.B. Brownie points will be cheerfully given for reviews not on the following list.]

John S. Major, *Isis*, 1994, 85: 675f.
David Lindberg, *Speculum*, 1995, 70: 390-2
A.C. Crombie, *Journal of Asian Studies*, 1994, 53: 1213-15

J. Henry, *British Journal Hist. Sci.*, 1995, 28: 101-2
F. Abbri, *Nuncius*, 1994, 9: 902-4
B. A. Elman, *American Journal of Sociology*, 1994, 100: 817-19
Z. Sardar, *Nature*, 1994, 368: 376-78
G. Blue, *Journal of World History*, 1996, 7: 137-41.
R. Lindborg, *Lychnos*, 1995: 291-2
S. Gaukroger, *Metascience*, 1994, 6: 62-81
H. F. Cohen, *Tijdsch. Gesch.*, 1995, 108: 382-83
J. North, *Times Lit. Suppl.*, 1995 (Dec. 15): 3-4
A.G. Keller, *Ambix*, 1996, 43: 105-6

(additional Huff article; title unknown):

Toby Huff, *Journal of Arabic, Islamic, Middle East Studies*, 2(2), 1995, pp. 1-27

Some Additional Bibliography

Non-Western Science

Frank J. Swetz and ang Tian Se, " A brief chronological and bibliographic guide to the history of Chinese mathematics," *Historia Mathematica* 11(1984), 39-56.

A. Rahman, *Science and Technology in Indian Culture: A Historical Perspective*, New Delhi: National Institute of Science, Technology & Development Studies, 1984.

Peng Yoke Ho, *Li, Qi, and Shu: An Introduction to Science and Civilization in China*, Hong Kong: Hong Kong Univ. Press, 1985.

Paul Unschuld, *Medicine in China: A History of Ideas*, Berkeley: UC Press, 1985. [1986 on Pharmaceutics]

Nathan Sivin, "A Supplemental Bibliography of Traditional Chinese Science: Introductory Books and Articles in Western Languages," *Chinese Science* 7 (1986): 33-41.

Robert Temple, *The Genius of China: 3000 Years of Science, Discovery and Invention*. Introduced by Joseph Needham. New York: Simon and Schuster, 1986.

J.T. Fraser, N. Lawrence, and F. C. Haber (eds.), *Time, Science and Society in China and the West*. Amherst, Univ. of Mass. Press, 1986.

A. P. Youschkevitch. Chinese Mathematics: Some Bibliographic Comments, *Historica Mathematica*, 13 (1986): 36-38.

Anna Sofaer and Rolf Sinclair, "An Appraisal of Michael Zeilik's 'A Reassessment of the Fafada Butte Solar Marker,'" *Archaeoastronomy*, 10 (1986): 59-69; includes response by Zeilik.

Shigeru Nakayama. "Periodization of the East Asian History of Science," *Revue de Synthèse*, 108(1987): 375-379.

Cheng-Yih Chen (ed.), *Science and Technology in Chinese Civilization*," Singapore: World Scientific, 1987.

Debiprasad Chattopadhyaya, *History of Science and Technology in Ancient India: The Beginnings*, Calcutta: Firma KLM, 1986.

Surendranath Dasgupta, *Natural Science of the Ancient Hindus*, edited by Debiprasad Chattopadhyaya, New Delhi: Indian Council of Philosophical Research, 1987.

Paul U. Unschuld, "Traditional Chinese Medicine: Some Historical and Epistemological Reflections," *Social Science and Medicine*, 24 (1987): 1023-1029.

Virendra Shekhawat, "Alternative Models of Scientific Rationality: Theorisation in Classical Indian Sciences," *Diogenes* 144 (1988): 32-51.

"Bibliographie concernant l'histoire des sciences en Chine," *Revue d'histoire des sciences et de leurs applications*, 43 (1990): 99-107.

Jacques Gernet, "Sciences et rationalité: l'originalité des données chinoises," *Revue d'histoire des sciences et de leurs applications*, 42 (1989): 323-332.

A. Rupert Hall, "A Window on the East," *Notes and Records of the Royal Society of London*, 44(1990): 101-110.

Nathan Sivin, "Science and Medicine in Imperial China: The State of the Field," *Journal of Asian Studies*, 47 (1988): 41-90.

Nathan Sivin, "Science and Medicine in Chinese History," in Paul S. Ropp (ed.), *Heritage of China: Contemporary Perspectives on Chinese Civilization*, Berkeley: Univ of Cal Press, 1990.

Nathan Sivin, "A Cornucopia of Reference Works for the History of Chinese Medicine," *Chinese Science*, 9(1989): 29-52.

Derk Bodde, *Chinese Thought, Society and Science: The Intellectual and Social Background of Science and Technology in pre-Modern China*, Honolulu: Univ of Hawaii Press, 1991.

Shlomo Biderman and Ben-Ami Scharfstein (eds.), *Rationality in Question: On Eastern and Western Views of Rationality*, Leiden Brill, 1989; a work by Sivin (pp. 165-189) "On the Limits of Empirical Knowledge in Chinese and Western Science"

Paul U. Unschuld, *Introductory Readings in Classical Chinese Medicine: Sixty Texts with Vocabulary, etc.*, Dordrecht: Kluwer Academic, 1988.

Mathew C. Gutmann, "Cross Cultural Conceits: Science in China and the West," *Science as Culture* 3 (1992): 208-239.

Joseph Needham and Colin A. Ronan, "China and Europe: Their Different Progress in Science," *Interdisciplinary Science Reviews* 15 (1990): 301-309.