

## **History of Science 909: History of Biology and Medicine**

### **Spring 2011: History of Biology-Society Analogies**

3 cr.; 9:30-12:00 M, 202 Bradley Memorial.

Instructor: Lynn Nyhart

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Office hrs: Tuesdays 1:30-3:30 and by appt.

How are societies like organisms? How are organisms like societies or states? How have concepts of autonomy, dependence, and hierarchy been mediated through the discourses of nature and society? The metaphorical and analogical traffic between social and biological discourses has been rich and dense throughout Western history. Focusing on the period since 1750, this graduate seminar examines such key metaphors as the state as a “body politic” and society as a “social organism” (both of which might be healthy or diseased); the organism as a “cell state;” the ecological “community;” and the “division of labor” in biology and society. What political freight and social values have been carried by these different metaphors? We will also consider efforts in the twentieth century to create a language explicitly covering both biology and society via systems theory. In addition to analyzing historical case studies and primary sources, we will read theorists from philosophy and rhetoric on the nature of analogy and metaphor.

#### Course Requirements:

- 1) **Research paper** of 18-25 pages that engages both primary and secondary sources, due **Monday, May 9** (60% of grade, including intermediate stages). Intermediate deadlines: **Feb. 7-25:** Make an appointment with me to discuss your research paper. Bring an “Ideas sheet/preliminary proposal that answers the following questions: What is your research question? How will you go about answering it? What are your key primary and secondary sources?  
**March 7: Project Parade:** Each person has 10 minutes to describe his/her project to the class.  
**April 13: Drafts due for Editing Workshop:** You will share drafts with two other students, to be discussed on April 18. (Editing will be part of class participation grade). Please include a source list.
- 2) **Class participation** (40% of grade). Please come to each seminar having read all the reading and prepared to discuss it intelligently, in the spirit of collective learning. As part of your contribution to the class, over the course of the semester each student will **write two analytical summaries** of course readings, to be assigned in the first class. These will be due by 9 pm the night before we discuss the reading, in the L@UW Discussion forums. Each analytical summary should be no more than one page, single-spaced (500-600 words), in paragraph form (no bullet points). It should cover these questions: What is the topic of the article or chapter, with respect to historical content? What is the author’s

claim or thesis? With what argument, using what sort of evidence, does s/he support this main claim? What tools or lessons does this paper offer that could be adapted for use in other analyses? You may also wish to contextualize the reading or provide brief critical comments, but the primary goal is to cover the questions. (Note that these are mostly the same issues one might cover in writing a standard 600-word book review for a journal like *Isis*.)

Books available for purchase:

George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago, 1980, reprint ed. 2003)

Gregg Mitman, *The State of Nature: Ecology, Community, and American Social Thought, 1900-1950* (Chicago, 1992)

Other readings will be posted on Learn@UW and available for download or printing from there.

**Week-by-Week Overview:**

Jan. 24: Introduction: Thinking about Analogy, Metaphor, and the History of “Science”

Jan. 31: Analogy and Metaphor as Objects of Analysis

Feb. 7: The Economy of Nature

Feb. 14: Political Economy and Biology in Early 19thC France and Britain

Feb. 21: Organisms and Individuals: Parts and Wholes

Feb. 28: Progress/Development/Differentiation/History

**March 7: Project Parade**

[March 14: Spring Break]

March 21: Governing the (Cell) State

March 28: Defending the (Social) Body

April 4: Community

April 11: Systems Ecology

**April 18: Editing Workshop (please post papers by Wed. April 13)**

April 25: Social and Cultural “Systems” in the 1960s and 1970s

May 2: The Collapse of Bio-Social Analogizing? Wrap-Up

May 9: Research paper due. Please submit an electronic copy to the L@UW Drop-box, and a hard copy along with the drafts edited by your peers to my mailbox.

## Course Topics and Readings

### Jan. 24: Introduction: Thinking about Analogy, Metaphor, and the History of "Science"

George Lakoff and Mark Johnson, *Metaphors We Live By*, 2<sup>nd</sup> ed. (Chicago, 1980), 1-114 (chs. 1-18).

Ed Cohen, "A Body Worth Having?: Or, A System of Natural Governance," *Theory, Culture & Society* 25 (2008): 103-29.

### Jan. 31: Analogy and Metaphor as Objects of Analysis

George Lakoff and Mark Johnson, *Metaphors We Live By*, 115-94 (chs. 19-25); the rest is optional.

Dedre Gentner and Michael Jeziorski, "The Shift from Metaphor to Analogy in Western Science," in *Metaphor and Thought*, Andrew Ortony, ed, 2<sup>nd</sup> ed. (Cambridge UP 1993), 447-480.

Nancy Leys Stepan, "Race and Gender: The Role of Analogy in Science," *Isis* 77 (1987): 261-77

### Supplementary:

I. Bernard Cohen, "Analysis of Interactions between the Natural Sciences and the Social Sciences," in *The Natural Sciences and the Social Sciences*, ed. I. Bernard Cohen (Dordrecht: Kluwer, 1994), 1-99, esp. 6-10, 15-16, 21(bottom)-31(bottom), 35-38, 48-60.

Michel Foucault, *The Order of Things*

### Feb. 7: The Economy of Nature

Margaret Schabas, *The Natural Origins of Economics* (Chicago, 2005), 1-35, 161.

Charles T. Wolfe and Motoichi Terada, "The Animal Economy as Object and Program in Montpellier Vitalism," *Science in Context* 21 (2008): 537-579.

Trevor Pearce, "'A Great Complication of Circumstances' –Darwin and the Economy of Nature," *Journal of the History of Biology* 43 (2010): 493-528.

### Feb. 14: Political Economy and Biology in Early 19thC France and Britain

John V. Pickstone, "How Might We Map the Cultural Fields of Science? Politics and Organisms in Restoration France," *History of Science* 37 (1999), 347-64.

Camille Limoges, "Milne-Edwards, Darwin, Durkheim and the Division of Labour: A Case Study in Reciprocal Conceptual Exchanges between the Social and the Natural Sciences," in *The Natural Sciences and the Social Sciences*, ed. I. Bernard Cohen (Dordrecht: Kluwer, 1994), 317-43.

Victor L. Hilts, "Towards the Social Organism: Herbert Spencer and William B. Carpenter on the Analogical Method." In *The Natural Sciences and the Social Sciences*, ed. I. Bernard Cohen (Dordrecht: Kluwer, 1994), 275-303.

James Elwick, "Herbert Spencer and the Disunity of the Social Organism," *History of Science* 41 (2003): 35-72.

**Supplementary:**

Silvan S. Schweber, "Darwin and the Political Economists: Divergence of Character." *Journal of the History of Biology* 13:2 (1980): 195–289.

Emmanuel D'Hombres, "The 'Division of Physiological Labour': The Birth, Life and Death of a Concept." *Journal of the History of Biology*, Online First: 16 November 2010. DOI 10.1007/s10739-010-9256-2. 29 pages.

Evelyn L. Forget, "Jean-Baptiste Say and Spontaneous Order," *History of Political Economy* 33 (2001): 193-218.

**Feb. 21: Organisms and Individuals: Parts and Wholes**

Tobias Cheung, "From the organism of a body to the body of an organism," *British Journal for the History of Science*, 2006, 39(3): 319-339.

L.S. Jacyna, "The Romantic Programme and the Reception of Cell Theory in Britain," *Journal of the History of Biology* 17(1), (1984):13–48.

Lynn K. Nyhart and Scott Lidgard, "Individuals at the Center of Biology: Rudolf Leuckart's *Polymorphismus der Individuen* and the Ongoing Narrative of Parts and Wholes," forthcoming, *Journal of the History of Biology*, 2011.

**Supplementary:**

Henri Milne-Edwards, "Organisation" and "Nerfs," in *Dictionnaire classique d'histoire naturelle*, ed. J. B. G. M. Bory de Saint-Vincent., (Paris: Beaudoin, 1827), 332-344, 529-534. [In French]

Li, Shang-Jen. 2004. The Nurse of Parasites: Gender Concepts in Patrick Manson's Parasitological Research. *Journal of the History of Biology* 37 (1):103-130.

**Feb. 28: Social Progress/Development/Differentiation**

Judith Schlanger, "The Childhood of Mankind," *Diogenes* 73 (1971): 39-69

Herbert Spencer, "Progress: Its Law and Cause" *The Westminster Review* 132 (1857): 245-67.

Arno Wouters, "Marx's Embryology of Society," *Philosophy of the Social Sciences* 23 (1993): 149-79.

Betz, H. K. "How does the German Historical School Fit?" *History of Political Economy* 20:3 (1988): 409-30.

**March 7: Project Parade**

**[March 14: Spring Break]**

### **March 21: Governing the (Cell) State**

- Andrew Reynolds, "The Theory of the Cell State and the Question of Cell Autonomy in Nineteenth and Early-Twentieth Century Biology." *Science in Context* 20:1 (2007): 71-95.
- Andrew Reynolds, "Ernst Haeckel and the Theory of the Cell State: Remarks on the History of a Bio-Political Metaphor," *History of Science* 46 (2008): 123-52.
- Laura Otis, "Virchow and Koch: The Cell and the Self in the Age of Miasmas and Microbes," Chapter 1 in Otis, *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science, and Politics* (Johns Hopkins, 1999), 8-36, 175-79.
- Rudolph Virchow, "Atoms and Individuals" (1859), in *Disease, Life and Man: Selected Essays by Rudolf Virchow*, ed. Leland J. Rather (Stanford: Stanford U. Press, 1958), 120-41.

### **Supplementary:**

- Renato Mazzolini, *Politische-Biologische Analogien im Frühwerk Rudolf Virchows* (Marburg: Basilisken-Presse, 1988).
- F. W. Coker, *Organismic Theories of the State: Nineteenth Century Interpretations of the State as Organism or as Person* (NY: Columbia, 1910)
- Laura Otis, "The Metaphoric Circuit: Organic and Technological Communication in the Nineteenth Century," *Journal of the History of Ideas* 63 (2002\_): 105-128
- Iwan Rhys Morus, "'The Nervous System of Britain'" Space, Time, and the Electric Telegraph in the Victorian Age," *British Journal for the History of Science* 33 (2000): 455-75.
- Scott F. Gilbert, "Cellular Politics: E. E. Just, Richard Goldschmidt, and the Attempts to Reconcile Embryology and Genetics," in *The American Development of Biology*, ed. R. Rainger, K. Benson, J. Maienschein (Philadelphia: University of Pennsylvania Press, 1988), 311-346.

### **March 28: Defending the (Social) Body**

- Ed Cohen, "Incorporating Immunity, or The Defensive Poetics of Modern Medicine," chapter 4 in *idem, A Body Worth Defending: Immunity, Biopolitics, and the Apotheosis of the Modern Body* (Durham: Duke University Press, 2009), 206-268.
- Kirill Rosshanov, "Taming the Primitive: Elie Metchnikov and His Discovery of Immune Cells," *Osiris* 23 (2008): 213-229.
- Emily Martin, "Toward an Anthropology of Immunology: The Body as Nation-State," *Medical Anthropology Quarterly*, 4(4), 1999: 410-426

### **Supplementary:**

- Andreas Musolff, *Metaphor, Nation and the Holocaust: The Concept of the Body Politic* (Routledge, 2010)
- Moira Howes, "Maternal Agency and the Immunological Paradox of Pregnancy," in *Establishing Medical Reality: Essays in the Metaphysics and Epistemology of Biomedical Science*, ed. Harold Kincaid and Jennifer McKittrick (Springer 2007), 179-198.

#### **April 4: Community**

Lynn K. Nyhart, "Teaching Community via Biology in Late Nineteenth-Century Germany," *Osiris*, 2002, 17: 141-170. *Science and Civil Society*, ed. Lynn K. Nyhart and Thomas H. Broman.

Gregg Mitman, *The State of Nature: Ecology, Community, and American Social Thought, 1900-1950* (Chicago, 1992), 1-88.

#### **Supplementary:**

Douglas R. Weiner, "Community Ecology in Stalin's Russia: 'Socialist' and 'Bourgeois' Science," *Isis* 75 (1984): 684-696.

Thomas C. Leonard, "American Economic Reform in the Progressive Era: Its Foundational Beliefs and Their Relation to Eugenics," *History of Political Economy* 41 (2009):109-141.

#### **April 11: Ecological and Social Systems**

Sabine Brauckmann, "The Organismic System Theory of Ludwig von Bertalanffy (1926-1937)," *Biologisches Zentralblatt* 115 (1996): 197-205

Mitman, *The State of Nature*, 146-168.

Robert Redfield, "Introduction," in idem, ed., *Levels of Integration in Biological and Social Systems* (1942)

Peter J. Taylor, "Technocratic Optimism, H. T. Odum, and the Partial Transformation of Ecological Metaphor after World War II," *Journal of the History of Biology* 21 (1988): 213-244

#### **Supplementary:**

Robert H. Wheeler, "Organismic logic in the history of science," *Philosophy of Science* 3 (Jan. 1936), 26-61.

Kurt Jax, "Holocoen and Ecosystem: On the Origin and Historical Consequences of Two Concepts," *Journal of the History of Biology* 31 (1998): 113-142.

Ludwig von Bertalanffy, "Outline of General System Theory," *British Journal for the Philosophy of Science* 1 (1950): 134-65.

Robert Redfield, ed., *Levels of Integration in Biological and Social Systems* (Biological Symposia, vol. 8) (Lancaster, PA: Jaques Cattell Press, 1942).

#### **April 18: Editing Workshop (please post papers by Wed. April 13)**

#### **April 25: Social and Cultural Systems, 1940s-1970s**

David Ingram, "Talcott Parsons: Systems Theory," ch. 9 in idem, *Habermas and the Dialectic of Reason* Yale U Pr. 1987), 135-148

Talcott Parsons, "The Present Status of "Structural-Functional" Theory in Sociology." In Talcott Parsons, *Social Systems and the Evolution of Action Theory* (Free Press, 1977), 101-.

William H. Sewell Jr., "Geertz, Cultural Systems, and History: From Synchrony to Transformation," *Representations* No. 59 (1997): 35-55.

Clifford Geertz, *The Interpretation of Cultures*, selections TBD.

**May 2: The Collapse of Bio-Social Analogizing? Wrap-Up**

Peter A. Corning, "Holistic Darwinism: The New Evolutionary Paradigm and Some Implications for Political Science," *Politics and the Life Sciences*, 2008, 27(1): 22-54.

Roger D. Masters, "Historical Change and Evolutionary Theory: From Hunter-Gatherer Bands to States and Empires," *Politics and the Life Science*, 2008, 26(2): 46-74

**May 9: Research paper due. Please submit an electronic copy to the L@UW Drop-box, and a hard copy along with the drafts edited by your peers to my mailbox.**

