

I690/H699 Cybernetics and Revolution: International Histories of Science, Technology, and Political Change

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Class Times: W 1:00-3:30
Room: Info 001

Class Description

Norbert Wiener used the term cybernetics for studies of communication and control in the animal and the machine. Cybernetics brought together ideas from biology, psychology, math, computation, and engineering and looked for underlying commonalities in areas as diverse as neurology, electronics, and the study of social systems. Historical studies of cybernetics often cite the research activity that took place in the United States during 1940s and 1950s as the peak moment of this interdisciplinary field. However, these ideas also took root in other parts of the world, where they intertwined with other national histories and political ideologies. This class will bring an international perspective to the study of cybernetics. Different geographical, political, and cultural contexts shaped the language, content, and application of cybernetic science outside of the United States. Cybernetics also offered new ways for imagining social and political change. The class will study individuals such as Norbert Wiener, Ross Ashby, Stafford Beer, Humberto Maturana, and Viktor Glushkov, among others. Since most histories of cybernetics are set in the United States and Western Europe, special attention will be given to the evolution and application of cybernetic ideas in Latin America.

Required Reading

Paul Edwards, *The Closed World*
Andrew Pickering, *Sketches of Another Future* (unpublished manuscript, copies will be distributed in class)
Norbert Wiener, *The Human Use of Human Beings*
Slava Gerovitch, *From Newspeak to Cyberspeak*
Katherine Hayles, *How We Became Posthuman*
Steve Heims, *The Cybernetics Group*
Fernando Elichirigoity, *Planet Management*
Stafford Beer, *Designing Freedom* (available online)

Optional Reading

Flo Conway and Jim Siegelman, *Dark Hero of the Information Age: In Search of Norbert Wiener the Father of Cybernetics*
David Mindell, *Between Human and Machine*
Humberto Maturana and Francisco Varela, *The Tree of Knowledge*
Thomas Hughes and Agatha Hughes, *Systems, Experts, and Computers*
James Beniger *The Control Revolution*
Donella Meadows, *Limits to Growth*

Additional articles and readings will be made available through Oncourse.

Unpublished Works

Students will have the opportunity to read several works that are not yet in print. These works should not be distributed or shared outside of class without the explicit permission of the author.

Grading

Students are expected to complete all reading assignments and attend classes.

Each week students will write a brief summary (~2 pages, double spaced) of the required readings. These summaries should state the argument of the assigned texts, their strengths and weaknesses, and propose two topics for class discussion. These summaries must be posted on Oncourse *and* emailed to the professor by 10am the day of class. By the end of the semester we will have built an online repository of student summaries. Students will also lead at least one class discussion.

In addition, students will select one book from the optional reading section of the syllabus and complete an 800 word book review. Students may also choose to review a book not on the syllabus with prior approval from the instructor. Students will give an in class presentation of their selected book toward the end of the semester.

At the conclusion of the semester, students will submit a brief ten page essay on an assigned topic that will allow them to synthesize the course readings from the semester.

Participation (discussion + weekly summaries) 50%

Book review 20%

Final Essay 30%

History Students

History students will receive 4 credits for this class. They will be required to submit a second book review, a 15-page essay, and lead an extra class discussion.

Schedule

1. Sept 3 Introduction and Overview

2. Sept. 10 The Origins of Cybernetics (class rescheduled; Medina out of the country)

Secondary Sources:

Heims, *The Cybernetics Group*, ch 1, 2, 11

Geof Bowker, "How to be Universal: Some Cybernetic Strategies, 1943-70," *Soc. Stud. Sci.* 23 (1993): 107-27.

Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," *Critical Inquiry*, 21 (1994): 228-266.

Primary Sources:

Wiener and Bigelow, "Behavior, Purpose, and Teleology," *Philosophy of Science*, Vol. 10, No. 1 (Jan., 1943): 18-24

Optional:

David Mindell, *Between Human and Machine*, MIT Press

3. Sept. 17 Cybernetics and Control

Secondary Sources:

Paul Edwards, *The Closed World*, MIT Press

Donna Haraway, "The Biological Enterprise: Sex, Mind, and Profit from Human Engineering to Sociobiology," in *Simians Cyborgs and Women: The Reinvention of Nature*, pp. 43-68.

Optional:

James Beniger, *The Control Revolution*, MIT Press

Agatha Hughes and Thomas Hughes, *Systems, Experts, and Computers*, MIT Press

Movie "The Fog of War"

4. Sept. 24 Cybernetics, Systems Thinking, and Postwar Society

Secondary:

Steve Heims, *The Cybernetics Group*, ch 8

Fernando Elichirigoity, *Planet Management*, Northwestern Press, ch 3, 4, 5, 6

Primary:

Norbert Wiener, *The Human Use of Human Beings*, pp. 112 - 193

Optional:

Conway and Siegelman, *Dark Hero of the Information Age*, 2004

Meadows, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*, 1972.

5. Oct. 1 Cybernetics and British Counterculture

Secondary Sources:

Andrew Pickering, *Sketches of Another Future*, ch 1, 2, 3, 5, 7, 8

Optional:

Movie: Naked Lunch

6. Oct. 8 System Stability and Ultrastability

Secondary:

Andrew Pickering, *Sketches of Another Future*, ch 4

Primary:

Ross Ashby, *Introduction to Cybernetics*, ch 11

Book Review # 1 due

7. Oct. 15 Cybernetics and Management (class rescheduled; Medina out of the country)

Secondary:

Medina, "The Cybernetics of Beer," unpublished book chapter

Primary:

Stafford Beer, *Cybernetics and Management*, Preface, Part I, Part V

Stafford Beer, "The World, the Flesh, and the Metal," *Nature*, (1965).

Stafford Beer, "The Liberty Machine," distributed in class.

Optional:

Andrew Pickering, *Sketches of Another Future*, ch 6

8. Oct. 22 Cybernetics and Chilean Socialism

Secondary:

Eden Medina, "Designing Freedom, Regulating a Nation: Socialist Cybernetics in Allende's Chile," *The Journal of Latin American Studies*, 2006.

Primary:

Stafford Beer, "Status Quo," Unpublished Manuscript.

Stafford Beer, "Cybernetics of National Development," The Zaheer Foundation Lecture, New Delhi, India, 1974.

Optional:

Eden Medina, "Cybernetics for a War Economy," unpublished book chapter

Movie: The Battle of Chile (3 parts)

9. Oct 29 Autopoiesis and Government

Secondary:

Katherine Hayles, "The Second Wave of Cybernetics: From Reflexivity to Self Organization," *How We Became Posthuman*, ch. 6.

Primary:

Humberto Maturana and Francisco Varela, *Autopoiesis and Cognition*, Introduction

Albert Müller and Karl Müller, *An Unfinished Revolution? Heinz von Foerster and the Biological Computer Laboratory (BCL), 1958–1976*, selections.

Stafford Beer, *Designing Freedom*

Optional:

Humberto Maturana and Francisco Varela, *The Tree of Knowledge*

Augusto Salinas Araya, *Ciencia, Estado y Revolución*

10. Nov. 5 The Soviet Anti-Cybernetics Campaign

Secondary:

Slava Gerovitch, *From Newspeak to Cyberspeak*, ch intro, 1, 2, 3

Primary:

Cybernetics: “Misanthropic Pseudotheory” (1953), *Soviet Cybernetics Review* 4:2 (1974): 31-45.

Optional:

David Mindell, Jérôme Segal, and Slava Gerovitch, “Cybernetics and Information Theory in the United States, France and the Soviet Union, *Science as Ideology*, http://www.infoamerica.org/documentos_word/shannon-wiener.htm

11. Nov. 12 Soviet Cyberspeak

Secondary:

Slava Gerovitch, *From Newspeak to Cyberspeak*, ch 4, 5, 6, conclusion

Primary:

A Soviet View of Cybernetics [translation of a 1955 article by Kolman] *Behavioral Science* 4:2 (1959): 132-146.

Optional:

B. N. Malinovsky, *Pioneers of Soviet Computing*, online book, <http://sovietcomputing.com/node/25>

Book Review #2 due (history)

12. November 19 Future Directions

Students will select the reading list

13. Nov. 26 Thanksgiving No Class

14. Dec. 3 Student presentations

15. Dec. 10 Papers due/student presentations