

TEXTS AND IDEAS :
COMMUNICATION AND CONTROL: A LONG HISTORY OF CYBERNETICS
CORE-UA 400

Teaching Staff:

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office hours:

Recitation Instructors: Jacob Denz, Tyler Harper

Course Description

In 2015, hundreds of scientists and entrepreneurs co-signed a letter warning the human population of a malevolent artificial intelligence on the horizon. The concern of signers like Stephen Hawking and Elon Musk seems borrowed from pulp science fiction. Yet we live in a world where the penetration of technologies into processes usually reserved for the human—work, political order, even intelligence—demands our attention. This condition is the legacy of cybernetics.

Derived from the Greek word for “steersman,” “cybernetics” was an interdisciplinary movement of engineers and management experts, philosophers and scientists. Its goal was to recast the full range of scientific and philosophical knowledge with the aim of studying and guiding organized systems—animals, machines, social bodies. Its leading figures drew on a long history of mostly Western philosophical and scientific thought. This course is an introduction to this discipline and its deep intellectual roots. We will proceed thematically, starting with the key terms “communication” and “control,” and treating such topics as the computer, the system, the animal, intelligence, and emergence. Readings will include early and second-wave cyberneticians like Norbert Wiener, Warren McCulloch, and Ross Ashby, as well as John von Neumann, Heinz von Foerster, and Humberto Maturana and Francisco Varela. We will construe their concerns in terms of a long intellectual history stretching back to Plato, Aristotle, and Hobbes, among others, complementing these readings with science fiction from Isaac Asimov to Ursula le Guin, from Phillip K. Dick to William Gibson.

Course Goals

This course is conceived in the first instance as a course in intellectual history or the history of ideas, presenting detailed attention in lecture and recitation to the way ideas get expressed in complex writing. The goal is to provide students with extensive opportunities to practice textual interpretation and to explore the complexity of ideas through small-group discussion and frequent writing, and to acquaint students with some of the literary and philosophical works that have been most influential in shaping the contemporary world and with significant instances in

which the ideas in these works have been debated, developed, appropriated, or rejected.

Readings and Written Requirements:

All texts must be read by the day they are assigned. Please bring books/reading materials to class on assigned day. You are responsible for changes in the syllabus and extra readings that are announced in class.

The written requirements for the course consist in two in-class examinations as well as four 4-5-page papers, with topics and guidelines to be distributed in advance.

Required Books (available at NYU Bookstore):

Norbert Wiener, *Human Use of Human Beings: Cybernetics and Society* (London: Free Association, 1989)

N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: Chicago, 1999)

Phillip K. Dick, *Valis* (London: Orion, 2001)

Thomas Hobbes, *Leviathan* (Oxford: Oxford, 1998)

Aristotle, *De anima*

Plato, *Phaedrus*

William Gibson, *Neuromancer*

Alexander Bogdanov, *Red Star: The First Soviet Utopia*

Isaac Asimov, *Foundation* (New York: Bantam, 2008)

Ursula Le Guin, *The Left Hand of Darkness*

Daniel Suarez, *Daemon*

Texts on Classes marked ®

Grading:

Grades will be comprised of the following components

- * Each 4-5-page paper (x 4) is worth 10% (=40% total)
- * Midterm examination is worth 20%
- * Final examination is worth 20%
- * Attendance and participation is worth 20%

Attendance:

Attendance at all lectures and recitations is mandatory and will be taken at every meeting. You are allowed 3 absences (excused or unexcused) from the lectures and 1 (excused or unexcused) from recitations; subsequent absences will adversely affect your grade. For all meetings, please arrive on time; an attendance roster will be circulated shortly after the beginning of each class. If you do not arrive at class in time to sign the attendance sheet, you will be recorded as absent. Additionally, if you are seen to leave the lecture room after signing the attendance roster but before the lecture is over, your name will be struck from the attendance roster for that day. Please speak with your recitation instructors *before class begins* if you need to dismiss yourself before the end of lecture. Each lecture will offer the possibility for questions and discussion.

TEXTS AND IDEAS
Core UA-400
Professor Leif Weatherby
® = texts on Classes

Week 1: History and Science: Methods

Session 1:

Introduction, Barthes, “The Structuralist Activity”

Session 2:

Hannah Arendt, “On the Modern Concept of History”®

William Gibson, “The Gernsback Continuum” ®

Week 2: Cybernetics

Session 1:

Norbert Wiener, *Human Use of Human Beings: Cybernetics and Society* (London: Free Association, 1989) (Preface and Chapter 1)

N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: Chicago, 1999) (Chapter 1, “Toward Embodied Virtuality,” pp. 1-25)

Session 2: Phillip K. Dick, *Valis* (London: Orion, 2001) (chapters 1-6), “The Android and the Human”

Week 3: Communication

Session 1:

Ferdinand de Saussure, *General Course on Linguistics* (New York: Columbia, 2011) (chapters 1 and 2, pp. 65-78)®

Gregory Bateson, “A Theory of Play and Fantasy” ®

Session 2:

Claude Shannon, “A Mathematical Theory of Communication”®

Roman Jakobson, “Linguistics and Poetics” ®

Week 4: Control

Session 1:

Wiener, *Human Use* (chapter 6, pp. 105-112, and chapter 11, pp. 187-93)

Plato, *The Republic* (Book X)®

James Beniger, *The Control Revolution*, Introduction, pp. 1-31 ®

Session 2:

Thomas Hobbes, *Leviathan* (Oxford: Oxford, 1998) (selections from part 2, “Of Commonwealth”)

B.F. Skinner, short excerpt from *Walden Two*

Week 5: The Control and Post-Industrial Societies

Session 1:

Stafford Beer, *Cybernetics and Management* (pp. 1-61)®

Eden Medina, “The CyberSyn Revolution” in *Jacobin* ®

Session 2:

“The Triple Revolution Manifesto” ®

Daniel Bell, *The Coming of Post-Industrial Society*, “The Axial Age of Technology, Foreword 1999” ®

Week 6: Teleology: Animal and Machine

Session 1:

Aristotle, *De anima* (excerpt)

Georges Canguilhem, “The Problem of Regulation in the Organism and in Society”®

Session 2:

James Clerk Maxwell, “On Governors”®

Samuel Butler, “Darwin Among the Machines”®

Grey Walter, “An Imitation of Life” ®

Norbert Wiener, Julian Bigelow, and Arturo Rosenblueth, “On Behavior, Purpose, and Teleology”

Week 7: Brain/Soul

Session 1:

Warren McCulloch and Walter Pitts, “A Logical Calculus Immanent in the Ideas of the Nervous System”®

Alan Turing, “Computer Machinery and Intelligence”

Ray Kurzweil, youtube clip from “I’ve Got a Secret” 1965

Session 2:

Plato, *Phaedrus*

Hoffman, “The Automata”

Week 8: Logic

Session 1:

Leibniz, “Preface to the General Science,” ® “On the General Characteristic”®

Günther, “The Seetee Mind”®

In-Class Mid Term Exam

Week 9: Computer

Session 1:

Ada Lovelace, “Notes on the Sketch of the Analytical Engine”®

Vannevar Bush, *As We May Think*®

Session 2:

Stewart Brand, “Spacewar: Fanatic Life and Symbolic Death Among the Computer Bums”

William Gibson, *Neuromancer* (excerpt)

Nicole Stenger, “Mind is a Leaking Rainbow”

Soundtrack: Kraftwerk, “Computer Love” “Man-Machine”

Week 10: Systems

Session 1:

Heinz von Foerster, “On Self-Organizing Systems and Their Environments”®

Humberto Maturana and Francisco Varela, “Autopoiesis: The Organization of the Living”®

Recommended:

Hayles, ch. 6, “The Second Wave of Cybernetics: From Reflexivity to Self-Organization”®

Session 2:

Niklas Luhmann, “Contingency as the Defining Feature of Modern Society”®, *watch:* Niklas

Luhmann, “Observer in the Crow’s Nest,”

<https://www.youtube.com/watch?v=qRSCKSPMuDc> (with English subtitles)

Week 11: War

Session 1:

Stanley Kubrick, *Dr. Strangelove*

Friedrich Kittler, “Rock Music: A Misuse of Military Equipment”; “The Artificial

Intelligence of World War—Alan Turing”

Session 2:

John Badham, *War Games*

Vernor Vinge, *True Names*

Timothy C. May, “The Crypto Manifesto”

Week 12: Planet

Session 1:

Heidegger, “The Age of the World-Picture”®

Session 2:

James Lovelock and Lynn Margulis, “Atmosphere Homeostasis by and for the Biosphere: The Gaia Hypothesis”®

Stuart Brand, *The Whole Earth Catalogue* (browse)®

Week 13: *The Future*

Session 1:

John Desmond Bernal, *The World, the Flesh, and the Devil: An Enquiry into the Three Enemies of the Rational Soul*

Isaac Asimov, *Foundation* (New York: Bantam, 2008) (part 1, “The Psychohistorians,” pp. 1-41)

Session 2:

Donna Haraway, *The Cyborg Manifesto*® and *The Biological Enterprise*®

Clynes and Kline, “Cyborgs and Space”

Ursula Le Guin, *The Left Hand of Darkness* (chapters 1-7)

Week 14: *Population and Life*

Session 1:

Thomas Malthus, *Essay on Population* (chapters 1-5, pp. 1-32)®; Donella Meadows et al, *Limits to Growth* (Introduction, pp. 17-25)®

Session 2:

Film: *Logan's Run* (Michael Anderson)

Daniel Suarez, *Daemon* (short excerpts)

Semester Summary / Review for final (as scheduled by NYU: date, time, and room TBA)