Gallatin School 715 Broadway, 501
Fall 2008 Gene Cittadino

K10.0038

FIRST YEAR SEMINAR: SCIENCE AND SOCIETY

Our culture has a love/hate relationship with science. On the one hand, science is credited with unraveling nature's mysteries, overcoming superstition, and producing dramatic intellectual and technological achievements that help broaden and deepen our understanding, save lives, reduce labor, and accomplish tasks not even dreamed of by our ancestors. On the other hand, science is blamed for undermining traditional beliefs and practices, for complicating our lives and making them more difficult, for creating harmful technologies, for causing global warming, acid rain, environmental degradation, the threat of nuclear annihilation, and the general alienation of modern life. What role *does* science play in our culture? How does science differ from other ways of knowing? What should an ordinary citizen know about the nature and practice of science? Do scientists have an obligation to pursue research that will benefit the general public?

This course will address these and similar questions through an examination of some classic examples of scientific writing (and thinking) along with works that interpret, criticize, and evaluate scientific knowledge and practice. We will begin by looking at C. P. Snow's classic statement regarding the two cultures, scientific and humanistic, along with a bitter critique by one of his contemporaries. Then we will turn to the writings of three 17th century thinkers--Galileo, William Harvey, and Descartes--concerning the new approach to knowledge that eventually became modern science. We next consider the classic 18th century scientific statement on human races and Stephen Gould's 20th century interpretation, followed by three pieces by Gould on the influence of religion and ideas of progress on theories of earth history. A recent play, ***Einstein's Gift***, will then catapult us into the early 20th century with all sorts of questions regarding the responsibilities of the scientist and the role of science in the modern state. James Watson's frank account of his and Francis Crick's 1953 discovery of the molecular structure of DNA will provide a glimpse of science in action in the mid-20th century. Then we will turn to the controversial Human Genome Diversity Project, the Dover, Pennsylvania, intelligent design trial, and three sessions on contemporary topics organized by small groups of students.

Course requirements. Since this is a seminar, regular attendance and participation in discussions is essential. Written work will consist of several essays (4-6 pages each) based on the readings and discussions. Expect an essay assignment every three or four weeks. From time to time there may be short, ungraded writing assignments as well, in or out of class, from a paragraph to a page in length. Every student must also participate in one of the student-organized sessions, November 17-24. Details to follow.

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Texts. The following are available at the NYU Bookstore and on reserve in the Bobst Library:

C. P. Snow, *The Two Cultures* (Cambridge Univ. Press)
Galileo Galilei, *Sidereus Nuncius,* trans. A. Van Helden (Univ. of Chicago Press)
William Harvey, *On the Motion of the Heart and Blood in Animals* (Prometheus Books)
René Descartes, trans. Donald Cress, *Discourse on Method* (Hackett)
James Watson, *The Double Helix* (Simon & Schuster)
Vern Thiessen, *Einstein's Gift* (Playwrights Canada Press)
Jenny Reardon, *Race to the Finish* (Princeton Univ. Press)
Gordy Slack, *The Battle Over the Meaning of Everything* (John Wiley & Sons)

There will be occasional additional readings, mainly brief articles. Details to follow.

Ground rules. Attend all classes, be on time (!), turn off cell phones and other electronic devices *before* entering the classroom, express your opinions but respect your classmates. I take attendance regularly, and I expect you to attend every class barring illness or emergency. It should go without saying, but I'll say it: all written work must be your own; I will thoroughly investigate any suspected instance of plagiarism. That said, these are exciting times and exciting topics; let's enjoy this opportunity to explore these ideas together.

SCHEDULE OF TOPICS AND READINGS

Readings listed immediately under each topic should be completed by the date shown. We will try to keep to this schedule whenever possible, but some changes are likely over the course of the semester. Expect a few additional readings as we go along, depending upon the interests of the group and the direction of class discussions. *Details will follow regarding readings other than the course texts.

W Sept. 3 Introductions/Science and society in the 21st century

M Sept. 8 The science wars circa 1960
Snow, *The Two Cultures*, pp. 1-51

W Sept. 10 A humanist responds
*F.R. Leavis, "Two Cultures? The Significance of C.P. Snow"
Snow, "A Second Look," pp. 53-100

M Sept. 15 "Seeing" the Copernican system: Galileo's telescopic discoveries
Galileo, *Sidereus Nuncius,* Introduction by Van Helden, pp. 1-24, and pp. 26-57

W Sept. 17 The Milky Way, the Medicean "stars," and the Church
Galileo, pp. 57-86
*Correspondence: Galileo & Benedetto Castelli, 1613

M Sept. 22 Toward a new view of the body: From Vesalius to Harvey
Harvey, *On the Motion of the Heart and Blood in Animals*, pp. 7-44

W Sept. 24 Valves, pumps, and ancient wisdom: explaining circulation
Harvey, pp. 45-91

M Sept. 29 What's it all mean? Mind, matter, and the new philosophy
Descartes, *Discourse on Method*, parts 1-4 (to p. 21)

W Oct. 1 Outline for a new approach to knowledge
Descartes, parts 5-6 (pp. 22-42)

M. Oct. 6 Enlightened classification? Blumenbach's racial categories revisited
*J.F. Blumenbach, "Five Principle Varieties of Mankind, One Species" (1795)
*Stephen Jay Gould, "Racial Geometry" (1996)

W Oct. 8 Earth history, progress, and providence--3 views: 1690, 1788, 1830
*Gould, "The Reverend Thomas' Dirty Little Planet," "Hutton's Purpose," and "Uniformity and Catastrophe"

M Oct. 13 Columbus Day--no class
Begin reading Thiessen

W Oct. 15 On the uses of knowledge: the life of Fritz Haber
Thiessen, *Einstein's Gift*

M Oct. 20 Science in the fast lane: the discovery of the structure of DNA
Watson, *The Double Helix*, preface-chap. 10

W Oct. 22 Competition, friendship, and reward in science
Watson, *The Double Helix*, chaps. 11-21

M Oct. 27 Victory at what cost?
Watson, *The Double Helix*, chap. 22-epilogue
Film: *The Double Helix*, Part 1 (tentative)

W Oct. 29 Science as the new priesthood?
*Paul Feyerabend, "How to Defend Society Against Science"
*Carl Sagan, "Science and Hope"
Film: *The Double Helix*, Part 2 (tentative)

M Nov. 3 Molecular biology, race, and politics: the Human Genome Diversity Project
Reardon, *Race to the Finish*, chaps. 1 & 2

W Nov. 5 Darwinism, DNA, and anthropology
Reardon, chaps. 3 & 4

M Nov. 10 Whose history, whose categories, whose knowledge?
Reardon, chaps. 5 & 6

W Nov. 12 Conclusion, aftermath, and HGDP's successor
Reardon, chap. 7
Search for "Genographic Project" on the internet

Three student-organized sessions. Every student must participate in one of the following. Each group of students must organize a class session around a contemporary topic of its choice, such as genetically-modified foods, the denial of global warming, alternative energy sources, DNA profiling, etc. More information to follow.

M Nov. 17 Session 1

W Nov. 19 Session 2

M Nov. 24 Session 3

W Nov. 26 (no class)

Return to regular schedule

M Dec. 1 What hath Darwin wrought? Intelligent design and the public schools
Slack, *The Battle Over the Meaning of Everything*, Prologue through chap. 4

W Dec. 3 *Kitzmiller v. Dover Area School District*
Slack, chaps. 5-8
Video: *Judgment Day*, part 1 (or *Flock of Dodos*, to be determined)

M Dec. 8 Materialism, the limits of science, and lying for Christ
Slack, chaps. 9-12
Video: *Judgment Day*, part 2

W Dec. 10 Science and society: Dover and beyond
Slack, chaps. 13-Afterword