

SCIENCE AND RELIGION: HISTORICAL AND CONTEMPORARY PERSPECTIVES

Course Number: Senior Seminar 490:

Institution: Maryville College

Instructor: D. Andrew Crain, Ph.D.

Brief Course Description

The fields of science and theology have had a bittersweet relationship over the past 2 millennia. The goal of this course is to expose students to the interactions between science and religion in Western culture. The course will begin with a historical perspective, presenting brief examples of science in a dominantly “religious” age and religion in a dominantly “scientific” age. Then, contemporary thoughts on the interaction between science and religion will be examined, primarily by reading the works of modern scientists and theologians. Finally, students will research a historical or contemporary topic and explain the interactions of science and religion in that topic (examples include genetic engineering, the human genome project, effect of prayer on medical healing, etc.). On completing this course, students should have a broad understanding of the ways in which science and religion interact.

Course Objectives

The objectives of the proposed course are:

1. To explore the historical interaction between science and religion as it occurred during periods when religion (pre- Renaissance) or science (post-Renaissance) was the primary cultural force.
2. To explore the interaction of science and religion on contemporary topics.
3. To examine the way that theologians and scientists characterize knowledge about science and religion’s interactions.

4. To examine the differences and similarities in the approaches taken by scientists and theologians as they examine our existence.

5. To refine oral communication skills that enable effective comprehension, analysis, and expression.

Course Evaluation

Discussion Participation and Attendance (20%).

The success of this senior seminar depends on the contributions of all class members and, thus, both attendance and participation are of paramount importance. You are allowed two unexcused absences. Each absence in excess of this will result in a 10% reduction in your attendance grade.

Written Reflections on Readings (50%).

For each reading, students will submit a typed, one page response to the reading. This response should summarize the information learned and the questions that the reading raised. Grades will be on a 10-point scale.

Student Presentations (30%)

Each student will be part of a group of three that researches and presents information on a contemporary topic. The students will emphasize the modern influence of science and religion on our current perspective of the topic. Presentations will be evaluated on (1) thoroughness of topic coverage, (2) effectiveness of communication, and (3) ability to stimulate and facilitate discussion of the topic.

Pedagogical Philosophy

Both student and professor will actively engage in the pursuit of knowledge. Most class periods will include both presentation of the material by the professor (~60% of the time) and class discussion of the material (~40%). The students will use this 60/40 ratio when they give class presentations (during Part 3 of the course, see Course Calendar below). Using this method, active learning of the students and the professor will be modeled.

Students will read the assigned reading for each class before arriving at class. At the beginning of class, students will submit a typed, one-page response to the reading. This response should summarize the information learned and the questions that the reading raised. Such a method will generate thought prior to class and will allow fruitful classroom discussions.

In addition to classroom presentations and discussions, the students will participate in one interactive classroom activity. The activity will be a mock trial of John Scopes. This will allow the students to do extensive research into the cultural perspectives surrounding the trials.

Reading List

Available for purchase in the Maryville College bookstore:

(1) Barbour, I.G. 2000. *When Science Meets Religion*. New York, HarperCollins.

(2) Haight, J.F. 1995. *Science and Religion: From Conflict to Conversation*. New York, Paulist Press.

(3) Larson, E. 1997. *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion*. Cambridge: Harvard University Press.

Supplementary Materials Available in the Maryville College library:

Science and Spirit. Journal published 6 times a year. Located in Journal collection.

Ebert, J.D. 1999. *Twilight of the Clockwork God: Conversations on Science and Spirituality at the End of an Age*. San Francisco. Council Oak Books.

Goldberg, S. 1999. *Seduced by Science*. New York. New York University Press.

Gould, S.J. 1999. *Rocks of Ages: Science and Religion in the Fullness of Life*. New York. Ballantine Books.

Harrison, P. 1998. *The Bible, Protestantism, and the Rise of Natural Science*. New York: Cambridge University Press.

Haught, J. 2001. *God After Darwin*. Westview Press.

Hellman, H. 1998. *Great Feuds in Science: Ten of the Liveliest Disputes Ever*. New York. John Wiley & Sons, Inc.

Johnston, G.S. 2000. *The Galileo Affair. Pamphlet of the Catholic Church*. Princeton: Scepter Press.

Miller, K.R. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York. Cliff Street Books.

Moore, J.A. 1999. *Science as a Way of Knowing: The Foundations of Modern Biology*. Cambridge, MA, Harvard University Press.

Peters, T. 1990. *Cosmos as Creation: Theology and Science in Consonance*. Edited by T. Peters. Nashville. Abingdon Press.

Polkinghorne, J. 2000. *Faith, Science, and Understanding*. Yale University Press.

Polkinghorne, J. 1998. *Belief in God in an Age of Science*. New Haven, Yale University Press.

Raymo, C. *Skeptics and true believers: the exhilarating connection between science and religion*. New York. Walker and Co.

Ruse, M. 2001. *Can a Darwinian be a Christian?* New York: Cambridge University Press.

Willer, R.A. 1998, *Genetic Testing and Screening: Critical Engagement at the Intersection of Faith and Science*. Minneapolis: Kirk House.

In addition to these readings, there are many other supplementary texts on the topic available in the Maryville College library. From the Maryville College library website (<http://library.maryvillecollege.edu>) please search under the Library of Congress subject heading of "Religion and Science."

Course Calendar and Annotated Syllabus

Part 1: History of the Interactions between Science and Religion

Science in an Age of Religion

Meeting 1 (August 30):

Introduction to the course

We will discuss the course goal, objectives, and format. A video introduction to cultural perspectives on science and religion will be given, and we will discuss the student's perceptions of science and religion.

Meeting 2 (September 4)

Aristotle and St. Augustine's views of Nature

Western science can be traced back to Greece, when Aristotle molded our philosophy of modern science. We will study this Greek view of nature and how it influences modern thought.

St. Augustine was central in the early Catholic movement to emphasize scriptural interpretation rather than biblical literalism. Also, Augustine held that all wisdom can be found in the Bible, thus de-emphasizing science. We will study St. Augustine's influence on religion and science in the first millennium. Also, we will examine the characteristics of religious inquiry.

Assigned Readings:

Chapter 2, Aristotle and the Greek View of Nature and Pages 61-66 in

Moore, J.A. 1999. *Science as a Way of Knowing: The Foundations of Modern Biology*. Cambridge, MA, Harvard University Press.

Meeting 3 (September 6)

Introduction of Protestantism

The introduction of protestant perspectives will be examined. In the early centuries of the first millennium, nature itself was seen as a set of symbols that pointed to spiritual truths. Empirical truths were substituted for by allegories. The Protestant reformation brought a turn away from natural interpretation and a turn toward biblical literalism. Simultaneously, the study of nature turned empirical, and natural "laws" were sought. While this shift was by no means abrupt, we see a trend in moving from the spiritual interpretation to the natural interpretation of the world as the 17th century approached. We will study this progression and explore the relationship between the scientific and religious mode of inquiries.

Introduction from:

Harrison, P. 1998. *The Bible, Protestantism, and the Rise of Natural Science*. New York: Cambridge University Press.

Meeting 4 (September 11)

The Case of Galileo

The condemnation of Galileo by the Catholic Church is often used as evidence that the pursuit of truth becomes possible only after science "liberates" itself from the shackles of religion. We will explore this thesis, examining (1) Galileo's claims, (2) the indictment of Galileo, and (3) the current perspective of the Catholic Church.

Chapter 1, Urban VII versus Galileo – An unequal contest in

Hellman, H. 1998. *Great Feuds in Science. Ten of the Liveliest Disputes Ever*. New York, John Wiley & Sons.

Johnston, G.S. 2000. *The Galileo Affair. Pamphlet of the Catholic Church*. Princeton: Scepter Press.

Religion in an Age of Science

Meeting 5 (September 13)

Evolution: The Scopes Trial, Part 1

No topic better illustrates the apparent dissonance between religion and science better than the Scopes trial that took place in Dayton, Tennessee in 1925. While the trial is viewed as the primary example of the complex and harsh relationship between science and religion, the “warfare” mentality of the trial may not be justified. In today’s class, we will watch the 1999 version of *Inherit the Wind*. As you will see, the media’s version of the trial and the realities of the trial are very different.

Chapter 1 in

Larson, E. 1997. *Summer for the Gods: The Scopes Trial and America’s Continuing Debate Over Science and Religion*. Cambridge: Harvard University Press.

Meeting 6 (September 18)

Evolution: The Scopes Trial, Part 2

Today, we will examine the cultural context that lead to the trial.

Chapter 4 in

Larson, E. 1997. Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion. Cambridge: Harvard University Press.

Meeting 7 (September 20)

Evolution: The Scopes Trial, Part 3

Discussion of the interaction of science and religion as evidenced during the Scopes trial.

Chapters 6 and 7 in:

Larson, E. 1997. Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion. Cambridge: Harvard University Press.

Part 2: Modern Thoughts on Science and Religion

Meeting 8 (September 25)

Four Different Views of Science and Religion

Ian Barbour's criteria for examining the interaction of science and religion will be presented. Students will be asked to provide examples of the 4 types of interactions: conflict, independence, dialogue, and integration.

Chapter 1: 4 Views of Science and Religion in

Barbour, I.G. 2000. When Science Meets Religion. New York, HarperCollins.

Meeting 9 (September 27)

Overlapping or Non-Overlapping Magesteria?

Steven J. Gould, a modern evolutionary biologist, presents his ideas that religion and science are both necessary and important parts of a “full life.” However, Gould sees the two as incompatible, with science being confined to exploration of natural matters and religion relegated to spiritual matters. Gould terms the interaction as non-combative, yet non-overlapping. This is an example of Barbour’s independence category.

Readings from:

Gould, S.J. 1999. *Rocks of Ages: Science and Religion in the Fullness of Life*. New York. Ballantine Books.

Meeting 10 (October 2)

Is Science a Religion?

Richard Dawkins is one of modern science’s most vocal opponents of religious inquiry. We will examine his views on the interaction of science and religion. Dawkins writing fits into Barbour’s “conflict” category.

Reading:

<http://www.humanist.net/publications/humanist/dawkins.html>

Meeting 11 (October 4)

Thoughts on Creation, Part 1

Using Barbour’s criteria, we will explore the influences of science and religion on our understanding of creation. Also, we will examine the thoughts of modern cosmologist Brian Swimme. Swimme’s thoughts

are an example of Barbour's integration category, a relationship held by many contemporary cosmologists.

Chapter 2: Astronomy and Creation in

Barbour, I.G. 2000. When Science Meets Religion. New York, HarperCollins.

Cosmology: God and the Quantum Vacuum in

Ebert, J.D. 1999. Twilight of the Clockwork God: Conversations on Science and Spirituality at the End of an Age. San Francisco. Council Oak Books.

Meeting 12 (October 9)

Thoughts on Creation, Part 2

Was the universe Created?

We will examine the way that theologian John Haught assimilates the disperse information of creation.

Chapter 5, Was the Universe Created? in

Haught, J.F. 1995. Science and Religion: From Conflict to Conversation. Paulist Press, New York.

Meeting 13 (October11)

Modern Thoughts on Evolution

Today, we will examine the different perspectives that people have on the question of "Does evolution rule out God's existence?"

Chapter 3, Does Evolution Rule out God's Existence in

Haught, J.F. 1995. Science and Religion: From Conflict to Conversation. Paulist Press, New York.

Meeting 14 (October 16)

Evolution remains a focal and unifying point in every discipline of Biology today, yet it also remains a point of concern and controversy. In this class, we will study the thoughts of a modern biologist that has sought to understand "Darwin's God."

Chapter 2: Eden's Children in

Miller, K.R. 1999. Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution. New York. Cliff Street Books.

Meeting 15 (October 18)

Evolution and Purpose

One of the main problems that theologians have with evolution is that natural selection implies a lack of purpose. As Nobel Prize-winning theoretical physicist Steven Weinberg wrote, "the more the universe seems comprehensible, the more it also seems pointless." We will examine the theological implications of evolution, as it relates to purpose.

Chapter 8, Does the Universe Have a Purpose in

Haught, J.F. 1995. Science and Religion: From Conflict to Conversation. Paulist Press, New York.

Meeting 16 (October 23)

Today, we will examine the different perspectives that scientists and theologians have on tough questions such as “Do we belong here?”, “Were humans meant to be on earth, or are we simply an accident or random happening”, and “Are humans the pinnacle or a step in the evolutionary process?”

Chapter 6, Do We Belong Here? in

Haught, J.F. 1995. *Science and Religion: From Conflict to Conversation*. Paulist Press, New York.

Meeting 17 (October 25)

Religions are characterized by personal relationships with God. Some argue that as science has progressed and “demystified” the world, there is no room any more for such a personal relationship. Today we will answer the question, “Does science rule out a personal God?”

Chapter 2, Does Science Rule out a Personal God? in

Haught, J.F. 1995. *Science and Religion: From Conflict to Conversation*. Paulist Press, New York.

Meeting 18 (October 30)

Modern Thoughts on Neuroscience and Genetics

Understanding the nature of a human being has long been a goal of both science and religion. For this reason, modern advances in genetics and neuroscience presents issues that are debated in the theological literature [1] and the scientific literature [2]. For instance, scientists are defining a biological basis of spirituality, but does this mean that spirituality is all in our heads?

Begley, S. 2001. *Religion and the Brain*. Newsweek, May 7, 2001. pp. 52-58.

Chapter 5, Genetics, Neuroscience, and Human Nature in:

Barbour, I.G. 2000. When Science Meets Religion. New York, HarperCollins.

Meeting 19 (November 1)

Thoughts on God's Interaction in Natural Processes

By definition, science is the pursuit of knowledge about natural processes. But does God influence or interact with these natural processes? We will examine Barbour's analysis of God's interaction in nature. Students will be asked to formulate examples.

Chapter 6, God and Nature in

Barbour, I.G. 2000. When Science Meets Religion. New York, HarperCollins.

Meeting 20 (November 6)

The Search for Truth: Science AND Religion

Both science and religion have a goal of seeking truth. Polkinghorne refers to the similarity as a "cousinly" relationship between science and religion. As a summary of our examination of science and religion methodologies, we will study Polkinghorne's ideas about how both scientific and religious endeavors seek truth.

Chapter 1, The area of interaction and Chapter 8, The search for knowledge and wisdom in

Polkinghorne, J. 1998. Science and Theology: An Introduction. Minneapolis, Fortress Press.

Part 3: Student Presentations

Meetings 21-28 will be student-led presentations on topics chosen earlier in the semester. These topics will be on contemporary issues that are influenced by both religion and science. At the end of class on

October 2, an introduction to the student-led presentations will be given. At this time each student will be placed in a group of three students (8 total groups), and each group will choose one of the following contemporary issues (or select an approved issue of their own):

- * Animal cloning (including implications to animal conservation and theology)

- * Embryonic Stem Cell Research

- * Human contraception

- * The fate of our universe – does universal expansion mean all life must eternally perish?

- * Human assisted reproduction

- * Preservation of biodiversity and the current ecological crisis.

- * Human (Homo sapiens) evolution

- * The origin and expansion of animal life forms

- * Is space finite?

- * The moral development of children: nature or nurture?

- * Humans as ecosystem managers or ecosystem members?

The groups will circulate readings the class period before their presentation. Class discussion will follow the presentations.

[1] Miller, P. 2000. Editorial. *Theology Today* 57: 291-296.

[2] Cho, M.K., D. Magnus, A.L. Caplan, D. McGee. 1999. Policy forum: genetics. Ethical considerations in synthesizing a minimal genome. *Science* 286: 2089-2090.