

SANTA CLARA UNIVERSITY  
THE JESUIT UNIVERSITY IN SILICON VALLEY



the relationship of  
**religion and science**

tesp 83  
oliver putz

## the class

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Title           TESP 83 – The Relationship of Religion and Science  
Professor       Oliver Putz  
Quarter         Spring 2015  
Times           MWF 11:45 AM – 12:50 PM  
Room           Kennedy Hall 306  
Office hour     W 1:00-2:00 PM or by appointment at Kenna Hall 323E  
Phone          (408) 554-4035  
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### Course Description

Public perception of the relationship between religion and science is one of an irreconcilable opposition. Accordingly, one has to choose sides in what has long been perceived as a cultural war with faith on one side and reason on the other. In this course, we will assess this curious intersection more carefully. We will consider challenges to this common "myth" and explore the possibility of a fruitful dialogue instead of an insurmountable conflict. To that end, the course will first establish underlying metaphysical presuppositions and methodological perspectives found in both, religion (specifically theology) and the natural sciences, before investigating how the two can indeed relate. We will examine how specific scientific theories (e.g., theory of evolution) and data can be related to theological doctrines (e.g., doctrine of creation). The course will also seek to assess the ethical dimensions of this conversation, especially when it comes to issues of modern technology and its challenges.

Students seeking RTC 2 credit must have completed RTC 1.

### Course Learning Goals and Objectives

According to Santa Clara University's Core Curriculum guidelines, level-2 courses in Religion, Theology, and Culture should support "Complexity, Critical Thinking, and Religious Reflection." By the end of the class students will be able to

- analyze complex and diverse religious phenomena (e.g., theological systems and other cultural expressions of religious beliefs).
- integrate and compare several different disciplinary approaches to a coherent set of religious phenomena.
- clarify and express beliefs in light of their critical inquiry into the religious dimensions of human existence.

For this class these objectives translate into the following specific objectives:

By the end of the course students will be able to

- assess contemporary religious proposals on how to relate religion and science.
- bring religious insights and scientific theories into a meaningful dialogue.
- articulate their beliefs in light of a meaningful and constructive analysis of the relationship of religion and science.

## course requirements

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### Readings

The texts for this class will be available on our Canvas course website, from where they should be downloaded. Students are expected to study the texts in detail! Always be prepared to offer a brief summary of the text and ask at least three specific questions regarding the position laid out therein. You should be able to state clearly the underlying question of the text and the thesis the text tries to argue. **All readings are relevant for the midterm and final exam!** All readings should be brought to class on the day assigned. Please bring hard copies; lap top computers, tablets, or smart phones are not permitted in class.

### **Class Participation (20% of final grade)**

The quality and success of this class depends largely on student participation. Obviously this means that it is in your own and your classmates' interest to come to class prepared (all required readings done and questions or comments prepared) and open to constructive dialogue. I will evaluate your participation throughout the course at the end of the quarter. You can earn up to ten points for regular participation in the class conversation.

Attendance at all class meetings is mandatory. Please make sure you are on time to class. More than two unexcused absences and/or repeated tardiness will result in a lower final grade (0.5 points per absence or late appearance).

### **Brief Responses to Readings (20% of final grade)**

Throughout the quarter you will submit six brief responses to the assigned readings on days indicated in the syllabus (due April 6, 13, 20; May 4, 11, 18). The brief responses consist of three questions and a brief comment on the assigned texts and are to be handed in at the beginning of class. Please keep a copy to use in class.

### **Midterm and Final Exams (30% of final grade each)**

The midterm and final exams will be taken in class on the dates indicated in the syllabus. Each test will consist of short-format essay and objective questions. In preparation for the tests students are expected to comprehensively review all assigned readings, lectures, and discussions up to the date of the exam.

### **Critical Essay (30% of final grade)**

You will write a 7-10 page critical essay (typed, double-spaced, not counting references) on one of five topics listed below. The essay should adhere to the following structure:

- a. Introduction: The introduction should give the background to your study. It is here that you present to the reader the problem and the resulting question that you will address in your essay. The Introduction should end on a clear one-sentence statement of intent and should be formulated accordingly. For example: "The aim of the present paper is to show that..." or "I will argue that..." (0.5-1 page)
- b. Scientific findings: In this section you will lay out the scientific theories and data relevant to the particular intersection of religion and science. For example, if you write on the intersection of evolutionary biology and creation theology, this is where you present the relevant information on evolutionary biology. (≈2.5 pages)
- c. Religious views: Here, you will present theological doctrines forwarded by a particular religious scholar or tradition. In the example given for the previous section this would imply theological positions on creation. (≈2.5 pages)
- d. Potential relationship between the two: Describe here a proposal offered by one of the scholars we studied on how religious and scientific views relate to one another. For example, in an essay on evolution and creation analyze Karl Rahner's proposal of active self-transcendence. (≈2.5 pages)
- e. Reflection of the relationship: Present here your thoughts on the proposed relationship you reviewed in section d in light of your thesis statement given in section a. It is here that you present your own point of view on whether or not the proposal you discuss is convincing or not, what its strength and weaknesses are, and in how far the approach affects your own beliefs. (≈2.5 pages)
- f. Bibliography: List the literature you have referenced in the paper's footnotes.

Headline each section accordingly and, if necessary or otherwise helpful, use sub-headlines within each section. Writing should be in Standard English and must demonstrate a good, formal, clear writing style. The format of the paper must follow the Turabian or MLA Style Sheet. Pages should be

numbered and contain the student's name in a footer. I will **not** accept electronic submission of the outline or the final paper!

You can choose your paper topic from one of these five broad themes:

1. Relating Religion and Science
2. Galileo, Darwin, and Other Historical Issues
3. Biology and Theology
4. Physics and Theology
5. Ethical Questions in Religion and Science

Your paper should have at least 10 and no more than 30 references. The only permissible literature is peer-reviewed texts (e.g., journal articles, published books, etc.). Gray literature (e.g., patents, technical reports from government agencies or scientific research groups, working papers from research groups or committees, and white papers) can also be used. Popular media, such as websites, newspaper articles, TV shows, etc., do not count as academically sound resources. They can be occasionally used to raise a question or make a point about public perception of issues, but not to substantiate an argument! Popular references do not count towards the needed 10 to 30 academic references of your paper.

An outline of the paper is due on **Friday, May 8**. It should be page-numbered and have your name in the footer. Your outline should feature (i) a clear one-sentence question statement, (ii) a clear one-sentence thesis statement, (iii) the main points of your argument (as far as you can assess prior to completing your research and writing), (iv) your possible conclusion, and (v) a bibliography of at least five academic references.

Please add a note on your paper title page if you want your paper back. I will neither add marginal notes and comments nor write an evaluation unless you are planning on collecting your essay after the quarter.

The Critical Essay is due on **Friday, May 22**.

## grade scale

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A = 96-100%	C = 66-69%
A- = 90-95%	C- = 60-65%
B+ = 86-89%	D+ = 56-59%
B = 80-85%	D = 50-55%
B- = 76-79%	D- = 46-49%
C+ = 70-75%	F = 45 or less

## classroom etiquette

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Cell phones are to be turned off during class. Should you expect an important call (e.g., due to family related medical emergency), set your phones to the silent mode and, if necessary, exit the room quietly.

Classes are merely 65 minutes long, so do use the restroom facilities either before or right after, but not during class.

Finally, conduct yourself with the necessary academic professionalism. Treat your colleagues with respect regardless of their opinions, argue your point of view rigorously, yet not dismissive of other ideas, and without question abstain from ridiculing any of your classmates!

## academic integrity

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Academic integrity is an absolute requirement: "Engaging in any form of academic dishonesty, such as plagiarism (representing the work or ideas of others as one's own without giving proper acknowledgment), cheating (e.g., copying the work of another person, falsifying laboratory data, sabotaging the work of others), and other acts generally understood to be dishonest by faculty or students in an academic context subjects a student to disciplinary action." (Santa Clara University Academic Integrity Protocol, <http://www.scu.edu/studentlife/resources/upload/Academic-Integrity-Protocol-Documen.pdf>) Such disciplinary actions may include failing the class.

Please review the section on Academic Integrity in the Undergraduate Bulletin 2013-14, pages 412-414. Also, review the following websites for information on academic integrity: <http://law.scu.edu/bulletin/academic-integrity-policy/>; <http://www.plagiarism.org>; <http://owl.english.purdue.edu/owl/resource/589/1/>




## course schedule

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### I. INTRODUCTION

The first part of the class will offer a brief introduction into the somewhat strained relationship between religion and science as it is commonly perceived. We will trace back the problem historically and identify some of the underlying questions that need to be addressed in order to newly evaluate the relationship of the two ways of exploring reality.

#### 1. Monday, March 30: Introduction to Class

-  The first day of class will give an introduction into the structure as well as the main objectives of the class. We will talk about the goals, objectives, and requirements of the class.
- 
  - Class organization.
  - Student requirements.
-  • Syllabus.

#### 2. Wednesday, April 1: What is the Problem?




-  After talking about the requirements, we will talk about some of the underlying questions of religion and science as an academic field of research. This will include a brief historical overview, a rough outline of the current dialogue between the two disciplines, the overall approach of the class to the intersection of religion and science. We will ask the question of the relationship between the two disciplines: is it a war, a debate, a conversation?
- 
  - Underlying questions.
  - Historical issues.
  - Recent problems.
  - Overview of the current dialogue between religion and science.
-  • Christopher Southgate and Michael Poole, "Section A: Outline of the Debate," in *God, Humanity, and the Cosmos: A Textbook in Science and Religion*, 1<sup>st</sup> edition (London: Trinity Press, 1999).

**Friday, April 3: Good Friday. No class!**

## II. ANALYSIS OF THE INTERLOCUTORS




Before we can address the issue of their relationship, we will have to examine what religion and science are. In particular, we will explore whether we are dealing with two disciplines and, if so, what their specific metaphysical and methodological presuppositions are. What exactly is science, what religion? And how are they done? Are they diametrically opposed or do they perhaps share structural similarities? To answer these questions we will turn to the philosophy of religion and to the philosophy of science.

### 3. Monday, April 6: What is Science?




-  The unit will establish the metaphysical foundations of the natural sciences. Scientists assume the universe to be intelligible and that empirical inquiry into natural phenomena gives us objective knowledge of reality. The underlying assumption is that scientific theories have ontological correlates in nature and apply universally.
- 
  - The metaphysical foundations of the natural sciences.
  - The distinction between epistemological and ontological aspects of the scientific endeavor.
  - The difference between “explanation” and “understanding.”
  - The difference between deductive and inductive reasoning.
-  • Alfred North Whitehead, “The Origins of Modern Science,” in *Science and the Quest for Reality*, edited by A.I. Tauber (New York: New York University Press, 1997), 53-69.

**Brief Response 1 due today!**

### 4. Tuesday, April 8: The Scientific Method – Of Science And Pseudoscience




-  Can scientific theories be distinguished from non-scientific or pseudo-scientific theories? Philosopher of science Karl Popper asked this question at beginning of the 20<sup>th</sup> century and offers an intriguingly simple solution to the problem of a potential demarcation. As Ellis and Silk’s recent opinion piece in the scientific journal *Nature* suggests, Popper’s principle of falsifiability is still held dear by many scientists today.
- 
  - Principles of empirical research.
  - Differences between falsification, induction and deduction.
  - The status of “objective knowledge” in light of human historicity and methodological implications.
  - The limits of the scientific enterprise.
-  • Karl Popper, “Science: Conjectures and Refutations,” [Edited version] in *Introductory Readings in the Philosophy of Science*, edited by E.D. Klemke, R. Hollinger, and A.D. Kline, revised Edition (Buffalo: Prometheus Books, 1988), 19-27.
- George Ellis and Joe Silk, “Defend the Integrity of Physics,” *Nature* 516: 321-323 (2014).

### 5. Friday, April 10: The Scientific Method – Paradigms and Anything Goes

-  Popper’s proposal did not stay unchallenged. Thomas Kuhn offers an historical analysis of how science advances and proposes the idea of paradigm shifts, while Paul Feyerabend finds an overly reductionistic view of reality dangerous and insists that anything goes.
- 
  - Normal science.
  - Paradigms.
  - Paradigm shifts.
  - Anything goes.
-  • Thomas Kuhn, “The Route to Normal Science,” in *The Structure of Scientific Revolutions*, 3<sup>rd</sup> edition (Chicago: University of Chicago Press, 1996), 10-22.




- Paul Feyerabend, "How to Defend Society Against Science," in *Introductory Readings in the Philosophy of Science*, edited by E.D. Klemke, R. Hollinger, and A.D. Kline, revised Edition (Buffalo: Prometheus Books, 1988), 34-44.

#### 6. Monday, April 13: What is Religion?




-  Now that we have a better idea of what science may (or may not) be it is time to turn our attention to religion. What might be its metaphysical presuppositions? How can religion be studied?
- 
  - Religion as a universal human phenomenon.
  - Definitions of religion.
  - Studying religion.
  - Religious studies versus theology.
-  • Craig Martin, *A Critical Introduction to the Study of Religion* (London: Routledge, 2014), 1-18.

**Brief Response 2 due today!**

#### 7. Wednesday, April 15: Theology – The Science of Faith

-  Here we will ask how theology differs from religion. The unit will seek to establish the metaphysical foundations of theology. By doing so, it will try to establish theology as the science of faith. In other words, theology is an epistemological undertaking and in this sense differs significantly from religion insofar as the latter can involve ontological perspectives.
- 
  - *Fides quaerens intellectum*.
  - Theology as a science.
  - Faith as ultimate concern.
  - Experiences and their interpretations vis-à-vis personal and general revelation.
-  • Brennan R. Hill, Paul Knitter, and William Madges, *Faith, Religion and Theology: A Contemporary Introduction*, revised and expanded edition (New London: Twenty-Third Publications, 1997), 285-311.




#### 8. Friday, April 17: Theological Method

-  This unit addresses the methodological underpinnings of the theological project. How is theology progressing from the starting points we established in the previous unit ("What is Theology?")? How does theology view experiences and reflect upon them?
- 
  - Types of theological methods.
  - Experience as a methodological starting point.
  - Special revelation as a methodological starting point.
  - Specific teachings of a religious tradition (e.g., Catholic Magisterial teaching) as a methodological starting point.
  - The difference between "authority" and "power."
  - The differences between dogmatic and fundamental theology (or, in American terms, between systematic and philosophical theology).
-  • Paul Tillich, "The Problem of Theological Method II" *Journal of Religion* 27, no. 1 (1947), 16-26.

### III. WAYS OF RELATING RELIGION AND SCIENCE




After having looked at what characterizes both enterprises we will now move to a closer look at how religion and science have been related to each other. Here, typologies proposed by thinkers like Ian Barbour, John Haught, or Ted Peters have proven quite helpful, which is why we will use them as a starting place for our conversation.

#### 9. Monday, April 20: Religion and Science in Conflict




-  One way the relationship between religion and science can be seen is as an eternal, irresolvable conflict. Such a position requires certain metaphysical assumption, which in themselves might be questionable.
- 
  - Scientific materialism.
  - Biblical literalism.
  - Scientism and scientific imperialism.
- 
  - Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997), 77-84.
  - John Haught, *Science and Religion: From Conflict to Conversation* (New York: Paulist Press, 1995), 9-12.
  - Ted Peters, "Science and Theology: Toward Consonance," in *Science and Theology: The New Consonance*, edited by T. Peters (Boulder: Westview Press, 1998), 13-17.

#### Brief Response 3 due today!

#### 10. Wednesday, April 22: Religion and Science as Independent Endeavors

-  One common way to avoid conflict is to keep the two realms entirely separate. This type of relationship is characterized by the assumption that religion and science are neither contradictory nor reconcilable, but rather two entirely separate intellectual endeavors divided by question and method.
- 
  - Contrasting methods.
  - Differing languages.
  - NOMA principle.
  - Ecclesiastical authoritarianism.
- 
  - Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997), 84-89.
  - John Haught, *Science and Religion: From Conflict to Conversation* (New York: Paulist Press, 1995), 12-17.
  - Ted Peters, "Science and Theology: Toward Consonance," in *Science and Theology: The New Consonance*, edited by T. Peters (Boulder: Westview Press, 1998), 17-18.




#### 11. Friday, April 24: Religion and Science as Conversation Partners

-  Barbour, Haught, and Peters envision yet another, more productive way religion and science can interact. As they see it, a dialogue between equal conversation partners is desirable – and possible. In this section we will explore what such a dialogue would look like.
- 
  - Limit questions.
  - Methodological parallels.
  - Nature-centered spirituality.
- 
  - Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997), 90-98.
  - John Haught, *Science and Religion: From Conflict to Conversation* (New York: Paulist Press, 1995), 17-21.






- Ted Peters, "Science and Theology: Toward Consonance," in *Science and Theology: The New Consonance*, edited by T. Peters (Boulder: Westview Press, 1998), 18-20.

## 12. Monday, April 27: Integrating Religion and Science

-  For some, like Thomas Aquinas or Ian Barbour, the aim of relating religion and science is not merely a fruitful dialogue, but an integration of both into one worldview grounded in a comprehensive metaphysics. We shall explore this idea in today's class.
- 
  - Natural theology.
  - Theology of nature.
  - Systematic synthesis.
- 
  - Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997), 98-105.
  - John Haught, *Science and Religion: From Conflict to Conversation* (New York: Paulist Press, 1995), 21-25.
  - Ted Peters, "Science and Theology: Toward Consonance," in *Science and Theology: The New Consonance*, edited by T. Peters (Boulder: Westview Press, 1998), 20-21.




## 13. Wednesday, April 29: Midterm Exam

-  In preparation for today's Midterm Exam, a comprehensive review of all lectures and readings is necessary!
- 
  - Philosophical and methodological foundations of the natural sciences.
  - Philosophical and methodological foundations of religion/theology.
  - Types of relationships between religion and science.
- 
  - All readings up to this point.



## IV. HISTORICAL ISSUES IN RELIGION AND SCIENCE


Before we look at the status quo of the contemporary research in religion and science we will investigate the history of the relationship between the two fields. Is it really true that they were at odds with each other, diametrically opposed and hopelessly irreconcilable? Did the rift between them occur with the Scientific Revolution? These are some of the questions that will guide the fourth part of this class.

## 14. Friday, May 1: Greek Origins, Medieval Contributions, and Scientific Revolutions

-  In this section we will try to terrace the history of the relationship between religion and science up to the scientific revolution in the seventeenth century. In particular, we will try to answer the question whether the two perspectives have always been at odds.
- 
  - Aristotlian change.
  - Scholasticism.
  - Copernicus.
  - Scientific revolution.
- 
  - Ian Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997), 3-32.




## 15. Monday, May 4: The Galileo Case

-  We begin with the Galileo case. Legend has it that Galileo broke with Aristotelian physics and was punished severely for it by the Inquisition. We will explore whether Galileo truly abandoned what came before and disagreed with his critics on what made good science.
- 
  - Galileo and the Catholic Inquisition.




- Loss of Aristotelian physics.
-  • William E. Carroll, "Galileo and the Inquisition," *Journal of Religion and Society* 1 (1999), 1-19.

**Brief Response 4 due today!**

**16. Wednesday, May 6: Charles Darwin's Theory of the Evolution of Species and its Reception**

-  In this section we take a look at the reception of Charles Darwin's theory of evolution by means of natural selection. Was Victorian England really outraged because the theory contradicted the Genesis account of human creation? Did theologians really fight Darwinism on all fronts, as common opinion has it?
- 
  - Darwin and Natural Selection.
  - Reception of Darwin.
-  • John Hedley Brooke, "Darwin and Victorian Christianity," in *The Cambridge Companion to Darwin*, 2<sup>nd</sup> edition, edited by Jonathan Hodge and Gregory Radick (Cambridge: Cambridge University Press, 2009), 197-218.

**17. Friday, May 8: Of New Atheists and Anti-Evolutionary Biblical Literalists**


-  The conflict between religion and science, which developed at the closing of the nineteenth century, came to its fullest in the twentieth century. It is this conflict Ian Barbour characterizes in his first category of interaction. Today we will take a closer look at "New Atheism" on the one hand, and at biblical literalism on the other.
- 
  - God as scientific hypothesis.
  - Science as the only way to the truth.
  - Reading the Scriptures literally.
  - The Bible as the only reliable truth.
- 
  - Richard Dawkins, *The God Delusion* (Boston: Mariner Books, 2006), excerpts.
  - Ken Ham, *The Lie: Evolution*, 25<sup>th</sup> Anniversary Edition (Green Forest: Master Books, 2012), excerpts.

**Outline for Critical Essay due today!**

**IV. DIALOGUES IN RELIGION AND SCIENCE**

In this final part of the class we will look at current issues in religion and science and how they are being addressed by researchers in the field. Here now, the focus lies on specific questions that arise in the intersection of religion with physics, biology, and technology. For example, we will ask how Big Bang cosmology and creation theology can be related productively to one another. Similarly, we will investigate whether it is possible to construct a theology of becoming that equally takes seriously traditional creation theology as well as modern evolutionary biology. Finally, we will take a look at the ethical implications of some recent technological achievements through a lens of moral theology.

**18. Monday, May 11: Divine Action and the Laws of Nature**

-  One problem for many concerned about the intersection of theology and science in particular is the question of how a fully transcendent God could act in a world that seems to operate on clear underlying laws. Is divine action only possible where God suspends the laws of nature? If so, could not what is perceived as a miracle for lack of scientific explanation be explained in the near future once science has advanced far enough? And if so, would this not make God dwindle and eventually disappear? On the other hand, could God act *through* the laws of nature? We will address these questions and discuss some theological proposals regarding divine action in light of the natural sciences.

- ☰ • Counterfactual principle.
- General divine action.
- Noninterventionist Objective Divine Action (NIODA).
- Traction.
- 👤 • Kile Jones, "Falsifiability and Traction in Theories of Divine Action." *Zygon* 45, no. 3: 575-589 (2010).

**Brief Response 5 due today!**

**19. Wednesday, May 13: Suffering in Nature and the God of Love**

- 👤 How can the immense suffering we find in nature be reconciled with the Judeo-Christian notion of an omniscient, omnipotent, and omnibenevolent God? Evolution works by means of natural selection, where the weak fall prey to the strong, where mutations offer occasional hope but more often terrible suffering. Nature experiments dispassionately, randomly changing genetic information, thereby producing new adaptive qualities and cancer or cystic fibrosis alike. For the believer, a difficult question arises: If God knows of all suffering, possesses the power to prevent such suffering, and loves each and every organism infinitely, whence then is evil? This will be the guiding question for this section.

- ☰ • Omnipotence.
- Omniscience.
- Omnibenevolence.
- Parasites.
- Natural selection and suffering.
- Theodicy
- Creativity defense.
- Soul-making
- Love defense.

- 👤 • Oliver Putz, "Love Actually: A Theodicy Response to Suffering in Nature. In Dialogue with Francisco Ayala," *Theology and Science* 7, no. 4 (2009), 345-361.

**20. Friday, May 15: Big Bang Cosmology and *Creatio ex nihilo***

- 👤 It is now generally believed that the universe began expanding from a singularity during the Planck era ( $t = 0$  to  $10^{-43}$  s after the Big Bang began) some 13.8 billion years ago. As of now, physics is unable to describe the universe during the Planck era, but the evidence that the universe started in such a singularity is overwhelming. How are theologians to respond to this insight? Can we say that God created the Big Bang? Is the idea of  $t = 0$  evidence for a *creatio ex nihilo*, a creation out of nothing?



- ☰ • Big Bang.
- Singularity.
- Planck Era.
- Quantum cosmology.
- Anthropic Principle.

- 👤 • William Stoeger, "God, Physics, and the Big Bang," in *the Cambridge Companion to Science and Religion*, edited by P. Harrison (New York: Cambridge University, 2010), 173-189.

**21. Monday, May 18: The Anthropic Principle and Creation Theology**




- 👤 It has been observed that if the major physical constants were only slightly off from their actual values, life as we know it would be impossible. From the fact that life exists, some scholars drew the conclusion that the universe might be fine-tuned for life, in particular

intelligent (human) life. This argument has become known as the anthropic principle, which we will discuss today. Obviously, it has far reaching religious implications.




-  • Strong Anthropic Principle.
- Weak Anthropic Principle.
- Fine-tuning.
- Fundamental physical constants.
-  • George F.R. Ellis, "The Theology of the Anthropic Principle," in *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*, edited by Robert J. Russell, Nancey Murphy, and C.J. Isham (Vatican City State: Vatican Observatory; Berkeley: Center for Theology and the Natural Sciences, 1993), 367-405.

### **Brief Response 6 due today!**

#### **22. Wednesday, May 20: Biological Evolution and Theology**

-  One of the perhaps biggest issues in theology and science today is the relationship of creation theology to evolutionary biology. This is primarily the case due to a public debate in the US that falls square into the conflict model of relating theology and science. Here, we will try another approach. We will take a look at the main claims of both creation theology and evolutionary biology and see whether some type of consonance or perhaps even integration is possible.
-  • Biblical creation story.
- Protology.
- Darwinian evolution.
- Mechanism of biological evolution..
- Active self-transcendence.
- Omega point.
-  • Karl Rahner, *Foundations of Christian Faith: An Introduction to the Idea of Christianity*, trans. by William V. Dych (New York: Crossroads, 1978), 178-193.
- Teilhard de Chardin, "Christianity and Evolution: Suggestions for a New Theology," in *Christianity and Evolution* (San Diego: Harvest Book, 1974), 173-186.


#### **23. Friday, May 22: The Human Being in Religion and Science**


-  One of the central issues in the contemporary conversation between religion and science is anthropology, the study of the human being in all its forms. What is the human being, where does it come from, and where is it heading? Is humanity still evolving? If so, what is God's role in this ongoing evolution? Is the theological notion of the *tselem Elohim*, the image of God, in which according to at least Judeo-Christian doctrines of creation humanity is created, reconcilable with biological views on human evolution? These are the questions we will discuss today.
-  • Human uniqueness in theology and science.  
Paleoanthropological insights and emergence of religion.
- Nonhuman animals and the divine.
-  • Joshua M. Moritz, "Evolution, the End of Human Uniqueness, and the Election of the *Imago Dei*," *Theology and Science* 9, no. 3 (2011), 307-339.


### **Critical Essay due today!**

### **Monday, May 25: Memorial Day. No class!**


#### 24. Wednesday, May 27: Religion and the Ecological Crisis


 One of the perhaps most important, certainly most pressing questions for scholars in religion and science today is that of how religions should respond to the ecological crisis and what science can gain from religious insights. This question became central almost 50 years ago, when historian Lynn White Jr. argued that the responsibility for the ecological crisis lies square on the shoulders of Judeo-Christian anthropology.


-  • Origin of science.  
• Marriage of science and technology.  
• Theological rationality.  
• Apologetic response.  
• Sacramental response.  
• Eschatological response.

 • Lynn White, Jr. "The Historical Roots of Our Ecological Crisis," *Science* 155, no. 3767: 1203-1207 (1967).  
• John Haught, "Christianity and Ecology," in *This Sacred Earth: Religion, Nature, Environment*, edited by Roger S. Gottlieb (New York: Routledge, 1996), 270-285.


#### 25. Friday, May 29: Issues in Biotechnology


 Another central and pressing ethical question for theology has arisen from the conversation with technology, in particular biotechnology. From assisted reproductive technologies to genetic engineering, to stem cell research and cloning, biotechnology has raised many ethical questions, and moral theologians are weighing in on the issue.

-  • Genetic engineering.  
• Assisted Reproductive Technology.  
• Genetically Modified Organisms.  
• Cloning.  
• Biotechnology and models of God.

 • Celia Deane-Drummond, "Biotechnology: A New Challenge to Theology and Ethics," in *God, Humanity, and the Cosmos: A Textbook in Science and Religion*, 3<sup>rd</sup> edition, edited by Christopher Southgate (London: Bloomsbury T&T Clark, 2011), 390-419.


#### 26. Monday, June 1: Computer Technology and Artificial Intelligence


 Artificial Intelligence and android robots are no longer only the stuff of science fiction novels. Even if computers and/or robots as of yet cannot match R2D2 and Hal, the fields of robotics and AI have advanced quite a bit. Yet, the question whether it will ever be able to construct a machine capable of consciousness and able to pass the Turing test convincingly is still an open one. If indeed such AI would be possible, what are the theological implications? Would a self-conscious machine be also conscious of the transcendent? Would it be in the divine image?


-  • AI.  
• Robots.  
• Image of God.

 • Noreen Herzfeld, "Creating in our Own Image: Artificial Intelligence and the Image of God," *Zygon* 37, no. 2: 303-316 (2002).



#### 27. Wednesday, June 3: Non-Christian Approaches

 So far, our analysis has mainly focused on the Christian tradition. What about other religions? Here, we will take a brief look at some non-Abrahamic perspectives.




-  • Jewish thoughts on religion and science.

- Eastern thought.
  - Hindu metaphysics.
  - Buddhist spirituality.
  - Deep ecology.
-  • Michael Robert Negas and Christopher Southgate, "Some Resources for Theological Thinking on God and the World Outside the Christian Tradition," in *God, Humanity, and the Cosmos: A Textbook in Science and Religion*, 3<sup>rd</sup> edition, edited by Christopher Southgate (London: Bloomsbury T&T Clark, 2011), 255-273.

#### 28. Friday, June 5: Summary and Review

-  In our last meeting we will review the class and come to some conclusive remarks about the possibility of a dialogue between religion and science.
-  • None.

#### 29. Wednesday, June 10: Final Exam

-  In preparation for today's Final Exam, a comprehensive review of all lectures and readings since the Midterm Exam is necessary!
-  • Historical issues in religion and science.  
• Divine action and laws of nature.  
• Physics and religion.  
• Biology and religion.  
• Technology and religion.
-  • All readings from the Midterm Exam to this point.