

# ENCOUNTERS OF SCIENCE AND RELIGION

Course Number: Religious Studies 3NN3

Institution: McMaster University, Department of Religious Studies

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“When we consider what religion is for [humanity] and what science is, it is no exaggeration to say that the future course of history depends upon the decision of this generation as to the relations between them.” (A. N. Whitehead)

## CALENDAR DESCRIPTION:

A study of contemporary encounters of science and religion, (a) in light of their historical background, focusing on (b) comparisons of their respective methods, aims, and points of conflict and possible collaboration and (c) two religious doctrines common to Judaism, Christianity, and Islam--i.e., creation and providence--in light of selected modern natural sciences.

## TEXTS:

**Required texts**, readings from which serve as common basis for discussion:

Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: Harper San Francisco, 1997) [hereafter *RSHC*]

Arthur Peacocke, *Theology for a Scientific Age* (London: SCM Press Ltd., 1990, 1993) [hereafter *TSA*]

**Supplementary readings**, occasionally assigned to augment assigned readings, and always useful to students wishing to explore in depth particular issues for a term paper or special interest, are to be found in: John C. Robertson, *Encounters of Science and Religion: Selected Readings* (McMaster University Courseware, 1998). [hereafter *Coursepk.*]

**Other supplementary texts**, some mentioned below, are placed on reserve under this course name and number in the reserve reading room of Mills Memorial Library. [hereafter: *Rsrv.*]

## SYLLABUS AND OUTLINE

Each week there will be 2 lectures and 1 tutorial discussion around the following topics, questions, and readings. Each lecture will begin with a brief recapitulation of the past lecture, so as to maintain continuity, and will end with opportunity for questions. The

questions addressed by each lecture are shown below. They will also serve to guide tutorial discussions.

## I. INTRODUCTION

January 1999

1.5

**Introduction.** I will explain, according to my understanding, the meaning and abiding relevance of Whitehead's remark, "When we consider what religion is for [humanity] and what science is, it is no exaggeration to say that the future course of history depends upon the decision of this generation as to the relations between them." (Science and the Modern World [1925], p. 162) I will indicate how this course will try to respond to this challenge.

## II. HISTORICAL BACKGROUND TO THE PRESENT

1.7-12

**Galileo and Newton.** Continuities and discontinuities between the medieval and the new scientific worldviews. What role did the biblically inspired mental habits play in the development of Western science (M. Foster) and what was novel and challenging in modern developments? What do we make of H. Butterfield's contention that the rise of modern science "outshines everything since the rise of Christianity and reduces the Renaissance and Reformation to the rank of mere internal displacements within . . . medieval Christendom"? What was the main difference between the experience of nature in Newton and in medieval Aristotelian thinking?

*Required Reading:*

A.N. Whitehead, "Religion and Science," *Science and the Modern World*, 161-171 [Coursepk.]

*Supplementary Reading:*

J. Hedley Brooke, "Science and Theology in the Enlightenment," *Religion and Science: History, Method, Dialogue*, ed. W.M. Richardson and W.J. Wildman (1996), 7-28 [Coursepk.]

Martin Heidegger, "The Experience of Nature in Aristotle and Newton," *What is a Thing?* (1967), 80-95 [Coursepk.]

1.14-19

**Darwin.** What is the difference between development within and of species? Is nature a “blind watchmaker”? What were the special Darwinian challenges to biblical authority, natural theology (especially the “design argument”), and human self-esteem? What is the difference between Darwin and social Darwinism? Is it possible to reconcile belief in divine providence and evolutionary theory? The various theological responses. (We will note in passing the complexity of the historical record and the fluidity of the fronts between religion and science as there were both opposition and accommodation to Darwin in both scientific and religious communities.)

*Required Reading:*

Barbour, “Biology and Theology in the Nineteenth Century,” *[RSHC]*, 49-76.

*Supplementary Reading:*

C. Welch, “Dispelling Some Myths about the Split Between Theology and Science in the Nineteenth Century,” *Religion and Science . . .*, 29-40 *[Coursepk.]*

A. Hunter Dupree, “Christianity and the Scientific Community,” *God and Nature: Historical Essays on the Encounter Between Christianity and Science*, eds. D.C. Lindberg and Ronald Numbers (1986), 351-368 *[Rsrv.]*

### **III. THE PRESENT:**

#### **THEOLOGICAL AND SCIENTIFIC ENTERPRISES, THEIR DISTINCTIVE QUESTIONS AND METHODS**

1.21-2.2

What are the distinguishing questions asked by the two disciplines? (I suggest that it is best to think of the two as dynamic and open-ended activities of inquiry rather than essentialistically, that is, as clearly defined bodies of belief). What does Barbour mean by “critical realism”? How do community, tradition, paradigms, models, imagination, insight, and testing function in both enterprises? Various meanings of “objectivity” and “subjectivity” and the role of both in both disciplines considered. Do both scientific and theological thinking participate in a sort of (usually fruitful) “hermeneutic circle”? What makes this “circle” productive and not vicious?

*Required Reading:*

Barbour, *[RSHC]*, 106-164.

*Supplementary Reading:*

Barry Barnes, *T.S. Kuhn and the Social Sciences* (1982), 41-64 *[Rsrv.]* (on paradigms)

Stephen Toulmin, *Human Understanding* (1972) (see index under “Kuhn,” “paradigm” and “revolution” [vs. evolutionary change]). [*Rsrv.*]

A. Peacocke, [*TSA*], 1-24.

#### **IV. SCIENCE AND RELIGION: WAYS OF RELATING**

2.4-9

Discussion of Barbour’s suggested four ways of relating science and religion, analysis and critique. What are the chief weaknesses and strengths of each approach? My reasons for agreeing with Barbour’s preferences. You are encouraged to identify and express your own preference and explain why you favour it. Or perhaps you would like to try to develop a fifth way if none of the four satisfies.

*Required Reading:*

Barbour, [*RSHC*], 77-105.

*Supplementary Reading:*

W.B. Drees, “Naturalism and Religion,” *Zygon*, 32 (4), 525-541. [*Coursepk.*]

Nancy Murphy, “Postmodern Apologetics on Why Theologians Must Pay Attention to Science,” *Religion and Science . . .*, 105-120. [*Coursepk.*]

A. Peacocke, [*TSA*], 1-24.

#### **V. SUBSTANTIVE ISSUES TODAY: CREATION AND PROVIDENCE IN A SCIENTIFIC AGE**

##### ***A. Creation and Big Bang***

2.11-15

We are dealing here with questions of origins in several senses including the idea of a first moment in time and its mystery and meaning. We will begin with the Big Bang theory. What is this theory and what is its status in contemporary astrophysics?

*Required Reading:*

Barbour, “Astronomy and Creation,” [*RSHC*], 195-220.

*Supplementary Reading:*

John Polkinghorne, *Science and Creation* (1988) [*Rsrv.*]

## 2.16-19

A consideration of the Biblical basis for the doctrine of *creatio ex nihilo* and the notion of there being a first moment in time before which there was only God. Does the Bible teach *creatio ex nihilo*? What is the difference between *ex nihilo* and “out of something” (*ex quodam praeexistente*)?

*Required Reading:*

Genesis Chaps. 1-2; Job 38-42 and Ps. 89:1-14.

Gerhard von Rad, “The Problem of the Hexateuch” (1966), 131-143 [*Coursepk.*]

*Supplementary Reading:*

Jürgen Moltmann, “God the Creator,” *God in Creation* (1985), 103-118 [*Coursepk.*]

## 2.19-23

“Modern science seems to expose the concept of creation as a myth” (C.F. von Weizsäcker, *The Relevance of Science* [1964], 26). (More precisely a “cosmogonical myth.”) If this is so, why is it so? And what is a “cosmogonical myth”? How does the biblical cosmogonical myth compare with others, e.g., the Babylonian *Epic of Creation*, Hesiod’s *Theogony*, Plato’s *Timaeus*, and the Icelandic *Edda*? If myths are not literally true must they be literally false? What other sort of truth, if any, might they be? What is the importance of this sort of truth?

*Required Reading:*

Carl Friedrich von Weizsäcker, “Cosmogonical Myths” and “Creation in the Old Testament,” *The Relevance of Science* (1964), 26-41 and 42-53.

*Supplementary Reading:*

Mircea Eliade, *Myth and Reality* (1963) [*Rsrv.*]

\_\_\_\_\_, *Cosmos and History: The Myth of Eternal Return* (1954). [*Rsrv.*]

### ***B. Steady State and Continuous Creation***

## 2.25

But a few astrophysicists are not yet convinced by the Big Bang theory, proposing as an alternative a “steady state” theory. While a recent Pope favoured the Big Bang theory, not all theologians do so. Some argue that the doctrine of creation, being metaphysical, is equally compatible with any and all astrophysical theories; others argue that the Biblical

teaching is actually closer to “steady state” theories, favouring the idea of an ongoing, continuous creation. What do you think? Do you think people adhering to a biblically based religion should care about the debate about these two theories?

*Required Reading:*

Barbour, [RSHC], 209-220.

*Supplementary Reading:*

Jaroslav Pelikan, “Creation and Causality in the History of Christian Thought,” *Journal of Religion*, 40, 2 [Coursepk.]

### ***C. Creation’s Other Meaning***

3.2

Some biblical scholars and theologians argue that the doctrine of creation has to do not only with questions of the whence of the world but also with questions of ecology and human partnership with God in the ordering of life. Professor Welker of Heidelberg thinks this. What is his argument? Does a rereading of Genesis 1 and 2 support him?

*Required Reading:*

Michael Welker, “What is Creation?” *Theology Today*, XLVII, 1 (April 1991), 56-71 [Coursepk.]

### ***D. Providence and the Laws of Nature***

3.4

Religious people wish, as a rule, to affirm more than the bare existence of God, as remote first cause or even designer; they also characteristically affirm that God is providential, accompanying and guiding nature, history, and even individuals purposefully. But this belief originated in a pre-scientific age. Is it credible in our scientific age in which we understand nature as law-governed?

3.9

How does modern physics understand the causal structure of nature? Is the intelligibility of nature synonymous with determinism and reductionism? What is quantum theory all about? Chaos theory? (A guest lecturer from the McMaster Physics Department will help us with technical issues here.)

*Required Reading:*

Barbour, "Quantum Theory," [RSHC], 165-176.

*Supplementary Reading:*

John Polkinghorne, *Science and Providence* (1989) [Rsrv.]

3.11-16

Some, while rejecting the idea of God's intruding into (and thus destroying) natural processes, do nevertheless wish to speak of divine providence in terms of a non-intrusive "top-down" causality. What is the meaning and possible significance of this? How is "top-down" causality different from an intrusive sort of divine intervention? Or is it? Why does Peacocke favour it?

*Required Reading:*

Arthur Peacocke, [TSA], 25-54.

*Supplementary Reading:*

John Polkinghorne, *ibid.* (see index) [Rsrv.]

3.18

What do modern biochemistry and evolutionary theory say about the development of life and emergence of persons. What are the religious implications and interpretations? Does this involve a revision of Darwinian evolutionary theory? Explain. A biologist colleague will be our guest today to answer questions.

*Required Reading:*

Barbour, "Biology and Human Nature," [RSHC], 253-276.

*Supplementary Reading:*

A. Peacocke, [TSA], 72-84.

3.23-30

How does A. Peacocke, an Oxford biochemist and Anglican theologian, seek to bring the biological and behavioural sciences and theology into a creative interplay (if not complete harmony)? What do you find most significant about his attempt?

*Required Reading:*

Arthur Peacocke, [TSA], 189-254.

*Supplementary Reading:*

Arthur Peacocke, *God and the New Biology* (1986) [Rsrv.] (longer and more technical than his TSA but accessible to science students)

Holmes Rolston III, "Life: Religion and the Biological Sciences," *Science and Religion: A Critical Survey* (1987), 81-150 [Rsrv.] (accessible to all)

## **VI. GOD AND NATURE**

### 4.1-6

Barbour, following Whitehead, Hartshorne and others, speaks of process thought and a neo-classical way of conceiving of God. What model(s) does process thought propose for understanding God's interaction with nature? with persons? How does process theism differ from traditional or classical theism? from deism? from pantheism? (Barbour, following Whitehead, is our chief representative of process thought. However it is interesting to note how close Peacocke and Polkinghorne are to process thought, even if their critiques of process thought are to be duly noted.)

*Required Reading:*

Barbour, *RSHC*, "Process Theology," 293-304 and "God and Nature," 305-332.

*Supplementary Reading:*

Austin Farrer, *Reflective Faith* (1972), esp. 192-199 (a moderate critique of process theology from a more classically-oriented philosophical theologian.)

### 4.10-22

The final exam (3 hours), as scheduled by the registrar, falls within this period. (Some review questions and guidelines for exam preparation will be distributed in late March.)

## **METHOD OF TEACHING:**

There will be two lectures and one tutorial per week. Ordinarily I will be lecturing but two McMaster colleagues, a physicist and a biologist, will each make a guest appearance to help us with technical scientific issues, and to dialogue with me/us.

The *tutorials* will be opportunities for discussion of the assigned required readings. Also, each student will assume special responsibility for two tutorials during the term, by reading not only the required text but also from the supplementary text(s) for those sessions so as to provide insights from the latter for the tutorial discussion of the assigned required text (and suggested questions).

## **ASSIGNMENTS:**

1. You are expected to *read* carefully the required readings in the above syllabus and to be prepared to discuss them understandingly and critically on the appropriate days. Because the lectures, tutorials, and readings are conceived as units, required readings must be done on schedule.

For an excellent discussion of what is meant by “careful” reading see Mortimer J. Adler, *How to Read a Book: The Art of Getting a Liberal Education [Rsrv.]* (Don’t be insulted by the title, for it is a sophisticated book.)

2. You will not, of course, be able to read all of the supplementary readings listed. They are given so as to help you pursue particular topics of special interest in more depth.

You are expected, moreover, to submit *two 500 word reading reports* based on the supplementary reading for selected or assigned tutorial sessions, indicating how insights in the supplementary material augment or challenge the required reading for the day.

3. You are expected to submit a *substantial course paper* (of about 2500 words) in which you develop one of your tutorial session reports so as to provide an in-depth exploration of one of the special sub-topics or questions of the course, drawing on the work of several thinkers in addition to the required texts. The paper in final form is due on or before your last tutorial in March.

For your convenience a number of books, relating to our various topics, beyond those listed above, have been placed for this course on reserve in Mills Library Reserve Reading Room. As alternatives to the course paper topics indicated above, you may consider one of these or propose an alternative of your own (must have my approval or your t.a.’s by January 21). Advice available for developing suitable beginning bibliography.

What is the Evidential Force of Religious Experience?

Blind Watchmaker or Providential Deity?

The Anthropic Principle

Can a Scientist Believe in Miracles?

Are our Genes Selfish? Theology and Socio-biology

Chaos Theory and Providence

## **ACADEMIC DISHONESTY:**

McMaster has a quite stringent policy regarding plagiarism. Consult me or your t.a. if you need clarification or guidance as to how to acknowledge indebtedness to the work of others.

**EVALUATION SCHEME:**

20% General tutorial participation, including the two above specified tutorial reports based on supplementary reading(s).

40% Course paper

40% Final exam (*3 hours*)

**OFFICE HOURS:**

My office hours are Fridays, 1:00 - 3:00 p.m. and I am available by special appointment if necessary (Office UH 117).

Your t.a.'s offices and office hours t.b.a. We are happy to talk with you about the course or matters of more general or personal (e.g. grad or professional school, vocation) concern. (Also we usually linger after lectures for a while; if a quick word together would help, catch us then.)