

Science, Religion, and Values

Institution: St. Francis University

Instructor: Rosemary Bertocci

SYLLABUS

WEEK 1: THE RELATIONSHIP BETWEEN SCIENCE AND RELIGION.

The goal is to examine and differentiate positions on ways of relating science and religion in order to establish a starting-point for discussion. The main perspectives Dr. Bertocci will introduce are:

A. Barbour's representative figures for conflict, independence, dialogue, and integration.

B. Gould's NOMA (respectful noninterference), with emphasis on historical reasons for conflict.

C. Marty's sine qua non for communication and interaction: (a) differentiate modes of inquiry and discourse, (b) promote a mutual respect across disciplines, and (c) recognize that the consciences of scientists and theologians demand "a lifelong changing in behavior" (*conversatio morum*) to match "a lifelong changing in intellect" (*conversatio intellectus*).

D. McGrath's account of interaction, with focus on its historical, theological, philosophical, and scientific aspects, and an explanation of the "anthropic principle."

E. Templeton's introduction to humility theology, characterizing foundations for future research.

F. Lonergan's generalized empirical method, offering a key to unified science: Scientists and authentic theologians follow the same pattern of cognition – experiencing, questioning, direct insight, conceiving or formulating, reflective questioning, reflective insight, judging (with ongoing revision of judgments). Lonergan differentiates (a) authentic appropriation of authentic tradition, (b) unauthentic appropriation of unauthentic tradition, (c) authentic appropriation of unauthentic tradition, and (d) unauthentic appropriation of authentic tradition.

Required Reading:

Barbour, Ian G. "Ways of Relating Science and Religion." *Religion and Science: Historical and Contemporary Issues: A Revised and Expanded Edition of Religion in an Age of Science*. HarperSanFrancisco, 1997.

Danaher, William J. "Lonergan and the Philosophy of Science." *Australian Lonergan Workshop*. William Danaher (ed.). University Press of America, 1993.

Gould, Stephen J. "Historical Reasons for Conflict." *Rocks of Ages: Science and Religion in the Fullness of Life*. The Ballantine Publishing Group, 1999.

Marty, Martin E. "The Voices of Theologians and Humanists." *How Large is God?* John Templeton (ed.). Continuum, 1997.

McGrath, Alister E. "Religion: Ally or Enemy of Science" and "Case Studies in Science and Religion." *Science and Religion: An Introduction*. Blackwell Publishers, 1999.

Templeton, John M. "Introduction." *How Large is God?* J. Templeton (ed.). Continuum, 1997.

(A) Barbour – former professor of Physics, Religion, and Bean Professor of Science, Technology and Society at Carleton College – surveys representative figures for four main ways to relate science and religion: conflict, independence, dialogue, and integration. Barbour puts forward reasons for supporting Dialogue and certain versions of Integration.

(B) Gould – Alexander Agassiz Professor of Zoology and professor of geology at Harvard – offers historical and psychological reasons for conflict. Gould argues for "respectful noninterference," the Principle of NOMA – "Non-Overlapping Magisteria" (from the Latin magister, teacher) – to represent a domain of authority in teaching. The net, or magisterium of science, covers the empirical realm: what the universe made is of (fact) and why it works this way (theory). The magisterium of religion extends over questions of ultimate meaning and moral value (see 5-6).

(C) Marty – Fairfax M. Cone Distinguished Service Professor of the History of Modern Christianity (University of Chicago) and senior scholar at the Park Ridge Center for the Study of Health, Faith and Ethics – calls for a conversational model for interaction. "Conversing has something in common with love and friendship, art and play. Those who enter the game may bring conviction, but they also become aware of their own relativity in the face of the other. No one surrenders the claim or demand of integrity but only of exclusive validity. Here life is actually enacted, lived *sub specie moris*, where there is 'a genuine and unqualified recognition of other selves'" (196, Marty quotes Oakeshott).

(D) McGrath – molecular biophysicist and theologian – introduces main themes and issues. McGrath distinguishes historical, theological, philosophical, and scientific aspects of interaction, and offers a list of "case studies": Barbour, Coulson, Pannenberg, Peacocke, Polkinghorne, Teilhard de Chardin, and Torrance.

(E) Templeton – trustee of Princeton Theological Seminary and co-founder of the John Templeton Foundation – explains "The Theology of Humility": (1) Humility Theology is centered in an infinite God. (2) It encourages creativity and progress. (3) It recognizes diversity and constant change as hallmarks of our universe. (4) It encourages research into spiritual subjects such as love, prayer and thanksgiving in what might be seen as a kind of "experimental theology" (4).

(F) Lonergan – a Jesuit theologian – identified the structure of human cognitional process common to all occurrences of human knowing. Lonergan argued that all methods are simply specialized applications of the one basic structure that is common to all occurrences of knowing; in any specialized method it is possible to identify the key

features of that structure. William Danaher – coordinator of the Australian Lonergan Workshops [1985, 1987, 1989] – explains Lonergan’s model of cognition.

Suggested Reading:

- Anderson, Craig B. “Two Realms and Their Relationships.” *Science*. Oct. 99: 907-8. (www.sciencemag.org.) Anderson critiques three books: Gould, Stephen Jay. *Rocks of Ages: Science and Religion in the Fullness of Life*. The Ballantine Publishing Group, 1999; Goldberg, Steven, *Seduced by Science: How American Religion Has Lost Its Way*. New York University Press, 1999; and Goodenough, Ursula. *The Sacred Depths of Nature*. Oxford University Press, 1998.
- Bunk, Steve. “Is Science Religious?: Why do these often opposing pursuits engender similar emotions?” *The Scientist*. Nov. 99. Bunk – a contributing editor for *The Scientist* – argues that science can never be a religion, because it has no faith, which is belief without evidence. Religion, like art, will illuminate the revelations of science.
- Krauss, Lawrence. “An Article of Faith: Science and Religion Don’t Mix.” *The Chronicle of Higher Education*. Nov. 99. Krauss – chairman of the physics department at Case Western Reserve University – writes that overemphasizing the commonality between science and religion is “dangerous.”
- Larson, Edward and Witham, Larry. “Scientists and Religion in America.” *Scientific American*. Sept. 99. Larson – Pulitzer Prize winner and Richard B. Russell Professor of History and Law at the U. of Georgia – and Witham offer a survey recording the state of the debate/relationship regarding scientists’ views of religion.
- Polkinghorne, John. *Science and Theology: An Introduction*. Fortress Press, 1998. Polkinghorne presents a clear and insightful model for interaction between science and religion.

WEEK 2: COSMOLOGICAL / EMPIRICAL RELIGIOUS QUESTIONS.

This section directs students away from cosmological questions toward empirical (religious) questions. The goal is to dialogue about definitions of “religion” and to differentiate them and definitions of religious experience. Drs. Rohlf (Religious Studies Professor) and Bertocci will invite arguments and counter-arguments regarding the following issues.

- A. Are the biblical creation myths (Gen. 1-11) scientific?
- B. Does the bible address empirical (religious) questions, i.e.,
 1. Questions about our existence;
 2. Questions about evil and suffering;
 3. Questions about liberation;
 4. Questions about purpose.
- C. Is the theory of evolution more than an hypothesis?

D. What is religion? What is religious experience?

1. "Religion is practical experience at its fullest" (Oakeshott, Marty).
2. "Religion is that which grows out of, and gives expression to, experience of the holy in its various aspects" (Otto).
3. "Religion is the state of being grasped by an ultimate concern, a concern which qualifies all other concerns as preliminary and which itself contains the answer to the question of the meaning of our life" (Tillich).
4. "Religion is the belief in an ever-living God, that is, in a Divine Mind and Will ruling the Universe and holding moral relations with mankind" (Martineau).
5. "The essence of religion consists in the feeling of an absolute dependence" (Schleiermacher).
6. "Religion is an institution consisting of culturally patterned interaction with culturally postulated superhuman beings" (Spiro).
7. "Religion is what an individual does with his solitariness" (Whitehead).
8. "Religion is the recognition of all our duties as divine commands" (Kant).
9. "The religious is any activity pursued in behalf of an ideal end against obstacles and in spite of threats of personal loss because of its general and enduring value" (Dewey).
10. "Religion is comparable to a childhood neurosis" (Freud).
11. "Religion is the projection of human desires onto an imaginary objective plane (Feuerbach).
12. "Religion is the sign of the oppressed creature. ... It is the opium of the people. ... Religion is only the illusory sun which revolves around man as long as he does not revolve around himself" (Marx).
13. "A religion is a structured set of cultural and social phenomena concerning ultimacy [ultimus, source, telos, sufficient reason, etc.] including beliefs, rituals, ethics/morals, normative texts" (Rohlf).
14. "A genuine first hand religious experience ... is bound to be a heterodoxy to its witnesses, the prophet appearing as a lonely madman" (William James).
15. "Religious experience" is conscious experience on the level of values. Religious experience happens on the deliberative level; one goes beyond the cognitive self-transcendence of knowledge and the interiority of self-reflection to the moral self-transcendence of responsibility and self-consciousness. Being in love with God is the height of religious experience (Lonergan).

Required Reading:

- Hendel, Ronald S. "Teaching Creation in Kansas." Bible Review. Feb. 00: 12.
- McGrath, Alister E. "Creation and the Sciences." Science and Religion: An Introduction. Blackwell Publishers, 1999.
- Pope John Paul II to the Pontifical Academy of Sciences: "Truth cannot contradict truth." Oct. 96. (<http://www.christusrex.org/www1/pope/vise10-23-96.html>).
- Rohlf, Francis H. "Religious Experience." Grace and Religious Experience: Toward a Lonerganian-Whiteheadian Synthesis. Dissertation. Duquesne University, 1998.
- Templeton, John M. How Large is God? Templeton, John M. (ed.). Continuum, 1997, (Each student selects two articles with the goal of covering all of the articles).
- The Pontifical Biblical Commission. "The Interpretation of the Bible in the Church." Origins. CNS Documentary Service. Jan. 94.

(A) Hendel – a biblical exegete – poses the question, What would happen if we actually taught the biblical creation story in the science classroom? His one-page “thought experiment” is useful for showing how dangerous it is to mix Biblical myths with science.

(A) and (B) In “The Interpretation of the Bible in the Church,” the Pontifical Biblical Commission (PBC) asserts that fundamentalist interpretation is “dangerous”; e.g., a creationist reading of the Genesis 1-11 myths is “intellectual suicide.” These texts were “never meant to be scientific nor historical.” Over-against fundamentalist modes of interpretation, the PBC declares that the historical-critical method is indispensable. This method (1) recognizes the historical processes, which gave rise to biblical texts, diachronic processes that were often complex and involved a long period of time; (2) operates with the help of scientific criteria that seek to be as objective as possible; (3) employs the same procedures to examine biblical texts as it would any other ancient text. The PBC also advocates synchronic methods to be used in conjunction with the diachronic, historical-critical method: rhetorical analysis, narrative analysis, semiotic analysis, analyses based upon Jewish traditions, feminism, liberation theology, and sociological, anthropological, and psychological approaches, etc.

(A) and (B) McGrath examines the belief that God created the world, by presenting (1) major themes in the concept of creation; (2) a theological analysis of creation; (3) three main ways of conceiving the creative action of God: emanation, construction, and artistic expression; (4) views of creation and time; (5) perspectives on creation and ecology; and (6) creation and the laws of nature or “regularity and the laws of nature.”

(A) and (B) In *How Large is God?* scientists and other scholars put forward perspectives on the question put forward in the title. Each student is required to select two articles (in addition to Marty’s).

(C) In “Truth cannot contradict truth,” Pope John Paul II asserts that “new knowledge has led to the recognition of the theory of evolution as something more than an hypothesis.” Consideration of the methods used in science and religion makes it possible to reconcile these two points of view. John Paul calls for “a rigorous hermeneutic for the interpretation” of biblical texts, as put forward by the PBC in “The Interpretation of the Bible in the Church” (see above).

(C) Rohlf presents a Lonerganian-Whiteheadian perspective on grace as actual possibility.

Suggested Reading:

Bandstra, Barry L. *Reading the Old Testament: An Introduction to the Hebrew Bible*. Wadsworth Publishing Co., 1995. Bandstra offers a study of biblical texts, utilizing the historical-critical method and other scientific and literary methods.

- Barbour's section on "biblical literalism" in *Religion and Science: Historical and Contemporary Issues*; reconsider chapter 4.
- Chilton, Bruce. "The Fundamentals of Fundamentalism." *Bible Review*. Dec. 96: 19, 54. Chilton – an exegete focused on Jewish-Christian relations – explains why fundamentalism is so rampant in America. He argues that Americans, as opposed to Europeans, "seek definitive answers, and the claim of infallibility – either for the pope or for the Bible – seems to suit that need" (19).
- Livingston, James C. *Anatomy of the Sacred: An Introduction to Religion*. Second Ed. Macmillan Publishing, 1993, 4-6. Livingston puts forward definitions of "religion."
- Pennock, Robert T. *Tower of Babel: The Evidence Against the New Creationism*. The MIT Press, 2000. Pennock – a philosopher – "compares the views of the new creationists with the old and reveals the insubstantiality of their arguments. One of Pennock's major innovations is to turn from biological evolution to the less-charged subject of linguistic evolution, which has strong theoretical parallels with biological evolution both in content and in the sort of evidence scientists use to draw conclusions about origins."
- Twersky, Isadore and Ethel Deikman. "Rabbi Sholomo Yitzhaqi." *The Encyclopædia Britannica*. Twersky – Littatuer Professor of Hebrew Literature and Philosophy at Harvard – and Deikman explain that scientific biblical exegesis and commentary emerged with Rabbi Shlomo Yitzhaqi (Rashi) in 1040-1105. Rashi combined both literal and nonliteral methods of interpretation in commentaries on the Bible, particularly on Bereshith and the Talmud. Rashi's exegetical method influenced Christian bible study "from the 12th-century Victorians to the Franciscan scholar Nicholas of Lyra (c. 1270-1349), who, in turn, was a major source of Martin Luther's Bible work."

WEEK 3: RELATING BIOLOGY, PSYCHOLOGY AND RELIGION. This section identifies the key problems for exploring the relationships between evolutionary biology, psychology, and religion, and explains theories of evolution and natural selection. Drs. Keating (Professor of Biology) and Bertocci will address questions, such as:

- A. What are the main issues to address in relating biology, psychology, and religion? What is Neo-Darwinism?
- B. What is the evolutionary process? What is natural selection? How did these theories develop? What methods are used to measure the effects of natural selection? Why and in what way are probability formulas used to measure the effects – absolute and relative values – of natural selection?
- C. What is the character of evolution and natural selection? Are there right/wrong theories of natural selection? Did humans "evolve from apes"? What distinctions are essential for understanding positions on adaptations, byproducts, and genetic drift?
- D. How will discoveries, such as the DNA sequence of the human genome, effect the theory of evolution?

Required Reading:

- Ayala, Francisco Jose. "The Theory of Evolution." *The Encyclopædia Britannica*.
- Collins, Francis S. and Jegalian, Karin G. "Deciphering the Code of Life." *Scientific American*. Dec. 99: 86-91.
- Gould, Stephen Jay. *Full House: The Spread of Excellence from Plato to Darwin*. Three Rivers Press, 1996.
- McGrath, Alister E. "Issues in Science and Religion." *Science and Religion: An Introduction*. Blackwell Publishers, 1999.
- Pinker, Steven. *The Language Instinct: How the Mind Creates Language*. HarperPerennial, 1994.

(A) McGrath identifies central issues for relating not only physics (e.g., "the anthropic principle"), but also biology and psychology to religion. McGrath provides clear explanations of Dawkins' "Neo-Darwinism," Feuerbach's, Freud's, and Jung's perspectives on religion as "a human projection," and James' (biologically-rooted) *Varieties of Religious Experience*.

(B) The *Encyclopædia Britannica* offers an extensive bibliography on the theory of evolution (and current updates are available for the online version). Ayala – a biologist – presents the theory of evolution, addressing: (1) the historical development of the theory, (2) types of evidence for it, viz., fossil records, structural similarities, embryonic development and vestiges, and molecular biological evidence, (3) the evolutionary process, (4) the dynamics of genetic change, (5) the operation of natural selection on populations, (6) the concept of species, (7) the origin of species, (8) genetic differentiation during speciation, (9) the reconstruction of evolutionary history, (10) molecular evolution, etc. The articles also introduce theories and hypotheses on the genome and evolutionary psychology.

(C) Gould puts forward a commonsense analogies to argue that contrary to popular opinion, progress and increasing complexity are not characteristic of evolution; variety and diversity are accurate measures of progress.

(C) Pinker – professor and Director of the Center for Cognitive Neuroscience at MIT – offers diagrams and a concise commentary on right/wrong theories of natural selection, arguing that "the fundamental problem of evolution is 'complex design,' and that natural selection 'is the only alternative' to divine creation that can explain the evolution of a complex organ like the eye." Moreover, Pinker distinguishes his position on adaptation, byproducts, and genetic drift from those of Chomsky, Gould, and Lewontin, arguing that "the mainstream in modern evolutionary biology is better represented by biologists like Williams, John Maynard Smith, and Ernst Mayr, who are concerned with the design of whole living organisms" (342-360). Pinker develops his perspective from a theory on universal grammar. Pinker argues that the principle underlying grammar is an example of a "discrete combinatorial system" (the genetic code in DNA is another discrete combinatorial system).

(D) Francis Collins – Director of National Institutes of Health's National Human Genome

Research Institute (NHGRI) since 1993 – and Karin Jegalian (MIT biology Ph.D.) diagram the “tree of life,” illustrating an evolutionary picture of the relationships among all living things. They argue that “once the DNA sequence of the human genome is known, scientists will be able to compare the information to that produced by efforts to sequence the genomes of other species, yielding a fuller understanding of how life on the earth evolved” (90).

Suggested Reading:

McGrath, Alister E. “Models and Analogies in Science and Religion.” *Science and Religion: An Introduction*. Blackwell Publishers, 1999. McGrath puts forward models and metaphors that depict reality in the natural sciences and religion, focusing on physics and distinctions put forward by Barbour.

Pinker, Steven and Paul Bloom. “Natural Language and Natural Selection.” *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. J. Barkow, L. Cosmides and J. Tooby (eds.) Oxford University Press, 1992. Pinker and Bloom argue against Chomsky that language is an adaptation rather than a byproduct of evolution. Moreover, they assert that “the ability to use a natural language belongs more to the study of human biology than human culture.” Pinker and Bloom demonstrate that “there is every reason to believe that language has been shaped by natural selection as it is understood within the orthodox ‘synthetic’ or ‘neo-Darwinian’ theory of evolution” (451-452).

WEEKS 4 AND 5: A NEW HEURISTIC PRINCIPLE –

CONSILIENCE/ISOMORPHISM. This section puts forward a new principle to relate theories and hypotheses in evolutionary biology and psychology to religion. Dr. Bertocci will focus on the following topics:

A. Wilson’s theory of consilience. Wilson’s position on method, and the relation between the natural sciences and the humanities. Wilson’s goal: to advance concern about population problems and quality of life. Wilson prescinds from an explicit statement of what probability theory reveals.

B. Lonergan’s Generalized Empirical Method, which provides structures and procedures for all fields of inquiry. More specifically, Lonergan asserts that there is isomorphism between Thomist and scientific thought. (Isomorphism: “Two sets of terms, say A, B, C ... and P, Q, R ... are said to be isomorphic if the relation of A to B is similar to the relation of P to Q, the relation of A to C is similar to the relation of P to R, the relation of B to C is similar to the relation of Q to R, etc., etc. Isomorphism, then, supposes different sets of terms; it neither affirms nor denies similarity between the terms of one set and those of other sets; but it does assert that the network of relations in one set of terms is similar to the networks of relations in other sets” [“Isomorphism of Thomist and Scientific Thought,” 133]).

C. Lonergan specifically addresses probability theory, asserting that probability theory includes the premise that the concrete diverges from the statistical, non-systematically

(thus no concrete, individual outcome [whether from religious or scientific insight] can be anticipated absolutely; though it can be predicted within statistical parameters). Thus, statistical probabilities condition theories and hypotheses.

D. A new heuristic principle: Lonergan's insight about isomorphism applies to certain contemporary theories and hypotheses on biological processes and religious processes.

1. Isomorphism between theories and hypotheses (expressions of insight) in scientific and religious thought is grounded in the human mind as a faculty of understanding.
2. Specific isomorphic relations can be identified. Judgments are required as to whether theories and hypothesis about specific processes (discovered by scientists) and specific processes (discovered by theologians) are isomorphic.

Required Reading:

Wilson, Edward O. *Consilience: The Unity of Knowledge*. Knopf, 1998.

Lonergan, Bernard, S.J. "Isomorphism of Thomist and Scientific Thought." Vol. 4 of *Collected Works of Bernard Lonergan*. R. Croken, F. Crowe, and R. Doran (eds.). University of Toronto Press, 1996.

_____. "Method." *Method in Theology (MT)*. The Seabury Press, 1972.

(A)Wilson – biologist and Pellegrino U. Research Professor at Harvard – argues that on-going human existence depends upon a consilience of knowledge applied to global issues, particularly the population issue. Wilson developed the theory of consilience from William Whewell's synthesis in *The Philosophy of the Inductive Sciences* (1840): "The consilience of induction takes place when an induction, obtained from one class of facts, coincides with an induction, obtained from another different class. This consilience is a test of the truth of the theory in which it occurs" (9). While often portrayed as a "reductionist," Wilson rejects this categorization, declaring, "I am an empiricist. On religion I lean toward deism but consider its proof largely a problem of astrophysics" (263), thus, a cosmological issue.

(B)In "Method," Lonergan defines a "method" as a normative pattern of recurrent and related operations yielding cumulative and progressive results. He asserts that a method/model "is a framework for collaborative creativity," offering a key to unified science. Through the self-knowledge, the self-appropriation, the self-possession that result from making explicit the basic normative pattern of the recurrent and related operations of human cognitional process, it becomes possible to envisage a future in which all workers in all fields can find in his method common norms, foundations, systematics, and common critical, dialectical, and heuristic procedures. Lonergan's argues that there is a dimension to being human, where "we emerge as persons, meet one another in a common concern for values, seek to abolish the organization of human living on the basis of competing egoisms and to replace it by an organization on the basis of [human] ... perceptiveness and intelligence, ... reasonableness, and ... responsible exercise of freedom" (10).

(B) In “Isomorphism of Thomist and Scientific Thought,” Lonergan argues for an isomorphism between Thomist and scientific thought with the qualification that “by scientific thought is meant the thinking of the scientist as a scientist and not all the excursions of scientists into philosophy.” Lonergan points to the potential for isomorphism: (1) Scientists and theologians begin from questions or problems concerning sensible data. (2) Their inquiries issue in abstract definitions or invariantly expressed hypotheses that respectively stand in need of judgment or verification because of the absolute significance of fact. (3) They are modest in their claims to definitive knowledge. (4) They anticipate similar structures in what is to be known through affirmed definitions and verified hypotheses. (5) They know that certainty regards not the changing content of theories but the permanent structure of method (133).

(B) In “Insight in Science,” William Danaher (referring to the first 5 chapters of *Insight*) puts forward diagrams to explain Lonergan’s view of scientific method as a “cyclic process” that employs logical and non-logical operations.

Suggested Reading:

Lonergan, Bernard, S. J. *Insight: A Study of Human Understanding* [1957, 1958]. New ed.: F. Crowe and R. Doran (eds.). Vol. 3 of *Collected Works of Bernard Lonergan*. University of Toronto Press, 1988.

This is a workbook for studying insight, the primary term in Lonergan’s heuristic structure. Lonergan’s aim is to invite readers to self-appropriation of the dynamic structure that is immanent and operative in all aspects of their knowing. By considering specific examples taken from several fields of human knowledge, Lonergan leads his reader to discover: (1) direct insight that grasps intelligibility in the presentations of sense and imagination, whether in science or in common sense; (2) inverse insight that grasps that, in a sense, there is no intelligibility to be grasped from certain data; (3) identifying insight that discovers a unity-identity-whole in data; (4) reflective insight that ascertains that the conditions for a prospective judgment have (or have not) been fulfilled; (5) introspective insight that grasps intelligibility in the data of consciousness; (6) basic philosophic insights that articulate the structure of knowing, the meaning of ‘being,’ and the elements of objectivity; (7) metaphysical insights that work out the implications of a basic isomorphism between knowing and known, that acknowledge that the truly known is being, and so that greet being as intrinsically intelligible. (8) genetic insights that specify the operators of development; (9) dialectical insights that press for coherence between performance and content and so reverse what is incoherent with the basic positions on knowing, being, and objectivity; (10) practical insights that size up situations and, when moral, grasp what possibly it would be good for one to do; (11) limit insights that grasp one’s own incapacity for sustained development on the basis of one’s own resources; (12) religious insights that discern the gift of a higher integration; (13) theological insights that employ analogies to ground a few stuttering words about transcendent mystery.

_____. “Method in Catholic Theology.” Vol. 6 of *Collected Works of Bernard Lonergan*. R. Croken, F. Crowe, and R. Doran (eds.). University of Toronto Press, 1996. Lonergan proposes five precepts for method: (1) understand, (2) understand

systematically, (3) reverse counter-positions (4) develop positions, (5) accept responsibility and judgment.

E.O. Wilson. "Integrated Science and the Coming Century of the Environment." *Science*. Mar. 98: 2048-2049. This abbreviated piece parallels Wilson's argument for the theory that he explicates in *Consilience*: "The time has come to look at ourselves closely as a biological as well as cultural species, using all the intellectual tools [hard sciences, social sciences, and humanities] we can muster" (2049).

WEEK 6: EVOLUTIONARY/ ECOLOGICAL CHALLENGES. The aim is to promote awareness of global challenges in order to clarify what the new principle (see above, Weeks 4 and 5) addresses. Bertocci will focus on specific topics whereby scientists, public policy makers, and theologians have observed the inter-relatedness of all life, particularly, human and non-human populations, potable water, and economics.

A. Promoting awareness of global evolutionary challenges and demonstrating that an either/or answer is inadequate to the questions they precipitate, Should we structure the world for the good of humans? or Should we structure humans for the good of the earth? Bertocci will invite students to consider questions, such as, What is the main challenge in our current global situation? Is it population? (vis-a-vis Wilson) ecology? morality? economics? Can these challenges be viewed in a matrix?

B. Answers to global challenges, such as, (1) the Zero Population Movement; (2) the Gaia hypothesis; (3) the socialist revolution argument (e.g., Andre Gorz, *Ecology as Politics*); (4) Al Gore's new central organizing principle – fuller understanding of the nature of both democracy and private property and the relationship between the two; (5) Pope John Paul II's call to recognize the principles (a) that "world peace is threatened not only by the arms race, regional conflicts and continued injustices among peoples and nations, but also by a lack of due respect for nature, by the plundering of natural resources and by an progressive decline in the quality of life" and (b) that the ecological crisis is a grave moral matter for all; (6) The "Index of Sustainable Economic Welfare (ISEW)," and Wackernagel and Rees' practical approach to determining humanity's impact on the Earth: Measuring and visualizing a fair earthshare.

Required Reading:

Gore, Al. "A New Common Purpose." *Earth in the Balance: Ecology and the Human Spirit*. Reprint ed. Plume, 1993.

Pope John Paul II, "The Ecological Crisis: A Common Responsibility for the Celebration of the World Day of Peace." [1990] <http://listserv.american.edu/catholic/church/papal/papal.html>.

Wackernagel, Mathis and William Rees. *Our Ecological Footprint: Reducing Human Impact on the Earth*. New Society Publishers, 1996.

(A) and (B). Senator (now vice-president) Gore "argues that the engines of human civilization have brought on imminent catastrophe, and that only a worldwide

mobilization can save the earth for future generations.” Gore analyses environmental crises along political, scientific, and economic lines, and puts forward democratic principles and practical solutions. He argues for (1) information access; (2) instilling obligation; (3) spotlighting victims; (4) stopping corruption (pollution) – corruption is “an ecological problem; (5) stopping evil (corruption and social injustice); and (7) effective third world economic development.

(A). and (B). Pope John Paul II puts forward two principles as solutions to the global challenge: (1) no peaceful society can afford to neglect respect for life, and (2) no peaceful society can afford to neglect the fact that there is an integrity to creation. John Paul II argues that the ecological crisis is everyone’s responsibility – “When the ecological crisis is set within the broader context of the search for peace within society, we can understand better the importance of giving attention to what the earth and its atmosphere are telling us: namely, that there is an order in the universe which must be respected, and that the human person, endowed with the capability of choosing freely, has a grave responsibility to preserve this order for the well-being of future generations.” John Paul also cites his Apostolic Letter, *Inter Sanctos*, where he proclaimed St. Francis of Assisi the patron of those who promote ecology.

(A). and (B). Wackernagel – holding a doctorate from the School of Community and Regional Planning at the U. of British Columbia and working for the Earth Council in Costa Rica – and William Rees – Professor and Director of the School of Community and Regional Planning at U.B.C. – provide charts, illustrations, and mathematical formulas to present an approach to carrying capacity, “strong” sustainability, resource use, waste disposal, etc.: Measure the human ecological footprint. Calculate the resources required to sustain households, communities, regions, and nations.

Suggested Reading:

- Asimov, Isaac and Frederik Pohl. *Our Angry Earth*. Tom Doherty Associates, 1991.
Asimov and Pohl argue that many technological developments have led to the destruction of the earth’s ecology, and they offer pragmatic solutions to ecological problems. Asimov’s position is distinct from Pohl’s in one respect. Asimov does not regard humans as higher than any other life form; Pohl argues for a quality place for human life (particularly for his grandchildren).
- Daly, Herman E. and John B. Cobb Jr. *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future*. Beacon Press, 1989. Daly and Cobb propose that GNP should be transformed into an Index of Sustainable Economic Welfare (ISEW), a measure that does everything GNP (or GDP) does, but counts negative effects on communities and ecosystems as minuses instead of pluses. Further, increasing GNP is not useful; it has nothing to do with improving actual economic welfare.
- Pimm, Stuart L. and John H. Lawton. “Planning for Biodiversity.” *Science*. Mar. 98: 2068-2069. Pimm – in the Dept. of Ecology and Evolutionary Biology (U. Tennessee) – and John Lawton –at the NERC Centre for Population Biology – argue the importance of taxonomy and knowledge of which species live where in order to promote conservation efforts.

Petit, Charles W. "Polar Meltdown: Is the heat wave on the Antarctic Peninsula a harbinger of global climate change? U.S. News & World Report. 28 Feb. 00: 65-74. Petit argues that Palmer Station provides a lesson for all regarding what rapid global warming does to landscape and wildlife: "One doesn't need a Ph.D. to see that things are changing fast around here" (65). (<http://www.usnews.com>).

Schmidheiny, Stephen, Federico J.L. Zorraquin, and The World Business Council. Financing Change: The Financial Community, Eco-Efficiency, and Sustainable Development. MIT Press, 1998. This text explains "eco-efficiency" and argues for the value of business (and other community) partnerships, appropriate taxation and regulation.

Thomas, R. Karl and Kevin E. Trenberth, "The Human Impact on Climate," Scientific American. Dec. 99: 100-105. Thomas (director of the NCDE) and Kevin Trenberth (director of the NCAR) argue for long-term climate monitoring – particularly the United Nations Framework Convention on Climate Change – to address global warming and deforestation issues.

The United Nations Framework Convention on Climate Change and Kyoto Protocol updates are available at www.unfccc.org/.

Van Jaarsveld, et. al. "Biodiversity Assessment and Conservation Strategies." Science. Mar. 98: 2106-2107. Van Jaarsveld and colleagues argue that the assumptions of surrogacy, on which so much conservation planning is based, are not supported.

The following cites provide information on population and ecological issues:

<http://www.populationaction.org/index.html>; <http://www.wri.org/>;

<http://www.cnie.org/>; <http://www.med.harvard.edu/chge/>;

<http://www.conservatin.org/>; <http://escsp.si.edu/default.htm/>.

Opposing Viewpoints Pamphlets, "Are global resources being depleted?" Greenhaven Press, 1998. "How serious is air and water pollution?" Greenhaven Press, 1996. "Should endangered species take priority over jobs, development, and property rights?" Greenhaven Press, 1996.

WEEKS 7 AND 8: SCHEMATA FOR THE GOOD AND VALUES.

The goal is to explain how the new principle (see above, Weeks 4 and 5) can transform our understanding of "religious perspectives," "the 'natural' loss of values," "what is good," and "levels of value." Drs. Neeley, Esq. and Bertocci will offer schemata and practical scenarios.

A. Bertocci presents a critique of religious perspectives that have led people to focus on (a) "other-worldly" concerns (b) strictly subjectivist (voluntarist [see Johnston]) values, (c) ideals that are virtually impossible to attain, and (d) no particular goods or particular ends.

1. Bertocci uses Pinker's analogy to show that there is isomorphism between Pinker's theory of language acquisition and Lonergan's theory of decline, which depicts unauthentic appropriation of religious values. Just as misunderstanding words leads to inaccurate categorization, misinterpreting religious formulations often leads to their categorization as "laws" that infringe on privacy:

a. Pinker explains the way language changes over time using an analogy to the children's

game “Broken Telephone” (or “Chinese Whispers”). Pinker describes this game: “[A] child whispers a phrase into the ear of a second child, who whispers it into the ear of a third child, and so on. Distortions accumulate, and when the last child announces the phrase, it is comically different from the original. The game works because each child does not merely degrade the phrase, which would culminate in a mumble, but reanalyzes it, making a best guess about the words the preceding child had in mind.” Pinker writes, “This is how irregular forms, in particular, come down to us. Most of the forms were originally created by rules, but a later generation never grasped the rules and instead memorized the forms as words” (47-48).

b. Lonergan claims that the causes of decline are (a) an egoistic disregard of others, (b) loyalty to one’s own group matched by hostility to other groups, (c) concentrating on short-term benefits and overlooking long-term costs. Decline distorts and discredits progress.

c. Noting that there is an isomorphic relationship between Pinker’s theory of language acquisition and Lonergan’s theory of decline allows one to grasp three insights (1) the identifying insight that misappropriating values is “natural”; (2) the inverse insight into natural values, that is, that the natural qua natural will not reveal values; and (3) the philosophical/religious insight that we need a new schema for “the natural,” such as (a) Natural – concerns the essence of a being in relation to activities. Doing the natural is doing that which is consistent with human nature. (b) Unnatural – concerns that which contradicts the essence of a being regarding its activities. (c) Non-natural— concerns that which is contrary (differing from), but not contradictory to, the essence of a being regarding its activities; the unnatural must be viewed as a sub-category of the non-natural. (d) Co-natural – concerns that which corresponds, builds upon, extends, sublates (transforms) that which is natural. God’s grace is co-natural; grace builds upon nature. (e) Super-natural – concerns that which transcends the nature of a being, absolutely. The supernatural (God’s actual graces) transforms the natural, making the supernatural co-natural. This schema presents the supernatural as necessary for values.

B. Neeley – a philosopher and lawyer – explains that “The Constitutional Right to Privacy,” applies to personal decisions relating to marriage, procreation, contraception, family relationships, child rearing and education. Neeley will cite cases such as, *Griswold v. Connecticut*, *Olmstead v. US*, *Eisenstadt v. Baird*, *Roe v. Wade*, *Carey v. Population Services International*, *New Orleans v. Dukes* to show the growth of the U.S. privacy issue and to distinguish standards of judicial review. The Supreme Court has traditionally adopted two basic tests to determine whether the government may lawfully interfere with an individual’s conduct: (1) The “rational basis test,” that is, whether the state has a “rational basis” for its restraint upon individual liberty – that the decision is not completely arbitrary; (2) “Strict scrutiny analysis,” that is, when there is an overriding end, (a) it is necessary to advance a compelling state interest or (b) the law must be the least restrictive means available.

C. Bertocci presents schemata on “the good” and “values.”

1. Lonergan’s schema on “the human good,” which differentiates and explains the relationship between three ends: particular goods, the good of order, and terminal values can be expanded with insights into isomorphic relations between theories from the natural

sciences and theories from religion. It will include explicit statements on ecological concerns under the heading “terminal values.”

2. Lonergan’s schema for differentiating vital, environmental (social and cultural), personal (terminal), moral and religious levels of value can be modified with insights into isomorphic relations between theories from the natural sciences and theories from religion. The proper ordering of values requires judgments about theories that apply in particular situations; that is, an individual/ a community/ a nation, must make judgments about the application of theories, e.g., how to deal with “cheaters” (see below), etc.

3. Tracy’s position on “intuitions of the good” invites students to reflective insights about religious values regarding the human, other species, and the earth. Tracy’s and Johnston’s arguments provide a framework for philosophies/theologies that include creation in their theories of salvation and redemption.

D. Neeley and Bertocci will engage in dialogue and dialectic about “The Constitutional Right to Privacy,” particularly regarding procreative issues in view of global ecological and population concerns.

Required Reading:

Lonergan, Bernard, S .J. “The Human Good” Method in Theology. The Seabury Press, 1972.

Johnston, Carol. The Wealth or Health of Nations: Transforming Capitalism from Within. The Pilgrim Press, 1998.

Sunstein, Cass. “The Constitution and the Clone.” Clones and Clones: Facts and Fantasies About Human Cloning. M. Nussbaum and C. Sunstein (eds.). W.W. Norton & Co., 1998.

Tracy, David. “Human Cloning and the Public Realm: A Defense of Intuitions of the Good.” Clones and Clones: Facts and Fantasies About Human Cloning. M Nussbaum and C. Sunstein (eds.). W.W. Norton & Co., 1998.

(A)Johnston – a theologian and economist – presents an historical overview of the development of capitalism to critique Western voluntarism, its religious source, the economic theories that emerged from it, our resultant inability to distinguish levels of value, and an authentic religious perspective. Johnston asserts that the notion of “the absolute freedom of God to do exactly as God pleases,” (as arbitrary judge) – which insisted that whatever God chooses must be good, simply because God chose it” – “was a powerful impetus to thinking of value solely in terms of subjective choice in general.” Consequently, “value as dependent solely on individual choice was applied to human choices and enshrined in Western culture most powerfully through individual utility theory in neoclassical economics.” Johnston explains that “the power of this doctrine has been so great that it has become very difficult to talk about any comparison of value – even between two persons, let alone the ‘common good’ of a community. As long as value is believed to be wholly subjective, human rights are a matter of social whim, and human and natural communities cannot be defended” (128-129).

(B)Sunstein – Karl N. Llewellyn Distinguished Service Professor of Jurisprudence (U. of Chicago) – presents a case study of cloning to clarify the legal issues at stake.

(C) Lonergan assembles “the various components that enter into the human good.” He explicates the interconnection, and distinction of levels of values: (1) capacity, need, operation, cooperation, particular good; (2) plasticity, perfectibility, development, skill, institution, role, task, the good of order; and (3) liberty (self-determination), orientation, conversion, personal relations, and terminal values. Lonergan argues that one promotes progress by being attentive, intelligent, reasonable, responsible in all one’s cognitional operations and actions. He asserts that a religion that promotes self-transcendence to the point, not merely of justice, but of self-sacrificing love, will have a redemptive role in human society inasmuch as such love can undo the mischief of decline and restore the cumulative process of progress (see 27, 51, 55).

(C) Tracy – a theologian – argues that we must be open to visions of the human good from (1) the Jewish tradition in its extraordinary and unbroken defense of the reality of human embodiment for authentic humanity, (2) the Catholic social justice tradition, with its sense that the human person is intrinsically relational, (3) the remarkable insights of the Taoist traditions, especially on the body; (4) the unparalleled wisdom of the Buddhist traditions, especially on our relationships to non-human creatures and our need to cease clinging to our possessive egos; (5) the clarity of the Confucian tradition and its exceptional insight into our responsibilities to past and future generations; (6) the rich complexity of the Hindu traditions on the reality of the erotic in all spiritual quests for humanity; (7) the wisdom of such indigenous traditions as our own native American spiritual traditions on our human selves in community not only with our fellow humans but also with nature and the cosmos (see 200-202).

Suggested Reading:

Lonergan, Bernard, S.J. “The Analogy of Meaning.” Vol. 6 of *Collected Works of Bernard Lonergan*, R. Croken, F. Crowe, and R. Doran (eds.). University of Toronto Press, 1996. Lonergan differentiates: meaning as constitutive of human communication, everyday language, intersubjective meaning, incarnate meaning, symbols, artistic meaning, literary meaning, technical meaning, meaning as constitutive of human potentiality, meaning as constitutive of human knowing, meaning as constitutive of human living, and meaning in theology.

Perry, Michael J. *The Idea of Human Rights: Four Inquiries*. Oxford University Press, 2000. Perry – Distinguished Chair in Law at Wake Forest University – explores the idea of human rights in four interrelated essays: (1) “Is the Idea of Human Rights Ineliminably Religious,” (2) “Rights Talk: What does It Mean? And Is It Problematic?” (3) “Are Human Rights Universal?” and “The Relativist Challenge and Related Matters?” (4) “Are Human Rights Absolute? The Incommensurability Thesis and Related Matters?”

Pinker, Steven. *Words and Rules: The Ingredients of Language*. Basic Books, 1999. In addition to a comprehensive study to distinguish regular and irregular verb patterns, Pinker describes the way we acquire language, and the way language develops over time.

Posner, Eric A. and Richard A. "The Demand for Human Cloning." *Clones and Clones: Facts and Fantasies About Human Cloning*. M Nussbaum and C. Sunstein (eds.). W.W. Norton & Co., 1998. The Posners limit this article to a consideration of the demand for human cloning. They ask, "Who will want to take advantage of this procedure, and with what effects: In economic terminology, [they] ... focus on the private benefits and social costs of human cloning" (258).

WEEK 9: THE GENOME: FREEDOM AND DETERMINISM.

The goal is to promote insight into human behavior and values, in view of genetic determinism. Drs. Keating, Rohlf and Bertocci will team-teach.

A. Keating and Bertocci engage in dialogue and dialectic about:

1. Donald Pfaff's model. Reasoning in a simple-minded fashion 'from the gene on out' will not work because of (a) pleiotrophy and redundancy of causal relationships between genes and behavior, and (b) complex dependencies;
2. Concepts from Dean Hamer's and Peter Copeland's account of *Living with our Genes*;
3. "Deciphering the Code of Life," an article discussed earlier (see above).

B. Keating, Rohlf and Bertocci engage in dialogue and dialectic about:

1. What is the relationship between genes and behavior?
2. Matt Ridley's *Genome*, focusing on the last chapter, "Free Will," where Ridley presents a view compatible with the philosophical position, "relative indeterminism."

C. Rohlf presents a Lonerganian-Whiteheadian argument on causality and freedom, taking into account the determinism of genetic processes.

D. Rohlf and Bertocci put forward isomorphic relationships between theories about specific mechanistic processes and religious processes, e.g., genetic determinism and actual possibilities (specific graces).

Required Reading:

Collins, Francis S. and Jegalian, Karin G. "Deciphering the Code of Life." *Scientific American*. Dec. 99: 86-91.

Pfaff, Donald, W. "Genes and Brain Function: An Introduction." *Genetic Influences on Neural and Behavioral Functions*. D. Pfaff, W. Berrettini, H. Wade, T. Joh, and S. Maxson, (eds.). CRC Press, 1999.

Ridley, Matt. *Genome: The Autobiography of a Species in 23 Chapters*. HarperCollins, 2000.

Rohlf, Francis H. "Causality and Freedom in Lonergan." *Grace and Religious Experience: Toward a Lonerganian-Whiteheadian Synthesis*. Dissertation. Duquesne University, 1998.

(A) Pfaff – researcher on "The Mouse and Human Genome Projects – provides useful figures and charts that identify the various types of causal routes (direct, indirect and complex dependencies) for genetic influences on brain function and behavior. Pfaff also

presents criteria for a systematic analysis and criteria for proof (parallel to pharmacology), asserting that rigorous and systematic organization of genetic information requires: “(a) a clear delineation of the axiomatic biological need served by any given brain function; (b) use of a ‘geometric’ type of logic – a comprehensive list of neuronal operations essential for that brain function; and (c) a deduction of how a given gene product serves either the development or the adult performance of one or more of those neuronal operations” (1-2, 10).

(B) Matt Ridley puts forward, in story form, a description of how a gene provides data for telling a history of our species. He explains the function of genes and describes how they determine us. Beyond an investigation of the applications of genetics, therapies, and eugenics, Ridley poses the question of freedom and determinism. His argument is that determinism sets parameters for outcomes; determinism is not equivalent to inevitability.

(C) Fran Rohlf – a systematic theologian – presents an historical, philosophical, theological approach to the causality/freedom issue. He demonstrates that Lonergan’s view of freedom (*mutatis mutandis* of Aquinas [Aristotle]) can be described as moderate indeterminacy.

Suggested Reading:

Collins, Francis S. “Medical and Societal Consequences of the Human Genome Project.” *New England Journal of Medicine*. Jul. 99: 28-37. This is the Shattuck lecture.

Cooke-Deegan, Robert. *The Gene Wars: Science, Politics and the Human Genome*. W. W. Norton & Co., 1996.

Hamer, Dean and Peter Copeland. *Living with Our Genes: Why They Matter More than You Think*. Anchor Books: Doubleday, 1998. Hamer – the Chief of Gene Structure and Regulation at the National Cancer Institute’s Laboratory of Biochemistry with a lab at the National Institutes of Health – and Peter Copeland put forward cutting edge research in molecular genetics. They propose speculative arguments about the relationship between genetic structure and behavior in an attempt to shed light on some perplexing aspects of behavior and personality.

Hubbard, Ruth and Elijah Wald. *Exploding the Gene Myth: How Genetic Information Is Produced and Manipulated by Scientists, Physicians, Employers, Insurance Companies, Educators*. Revised ed. Beacon Press, 1997.

Peacocke, Arthur. *Playing God? Genetic Determinism and Human Freedom*. Routledge, 1997.

Peters, Ted (ed.). *Genetics: Issues of Social Justice*. Pilgrim Press, 1998.

Rajan, T.V. “Is It Your Karma – In New Clothes?” *The Scientist*. Feb. 00. Rajan – Boehringer-Ingelheim professor and chair of the Dept. of Pathology – writes a rhetorical, opinion piece cautioning that we should pay attention to some of the implications of genetic fingerprinting.

The National Human Genome Research Institute: <http://www.nhgri.nih.gov/HGP/>.

The Department of Energy on the Human Genome Project: www.ornl.gov/hgmis/.

WEEK 10: HOW THE MIND WORKS. This section addresses the question, “In what ways has the mind been shaped by natural selection?” Drs. Clark and Bertocci will team-teach:

A. Clark focuses on Alwyn Scott’s “stairway” model, which cuts across boundaries, incorporating particle physics, chemistry, cell biology, neuroscience, psychology, sociology, and mathematics.

B. Bertocci complements Clark’s presentation with models from psychology, the natural sciences, computer science, and religion (theology) – particularly, Edelman’s mental “bootstrapping,” Damasio’s “evolution of self-awareness,” Pinker’s “cognitive-emotional model,” Whitehead’s “theory of symbolic reference,” Lonergan’s “model of cognition,” and Chisholm’s “evolutionary ecology model” to put forward isomorphic relationships between processes described in the natural sciences and religion, e.g., bootstrapping, language acquisition, and judgment.

Required Reading:

Chisholm, James S. “The Nature of Value” and “Representing Value.” *Death, Hope and Sex: Steps to an Evolutionary Ecology of Mind and Morality*. Cambridge University Press, 1999.

Damasio, Antonio R. “How the Brain Creates the Mind.” *Scientific American*. Dec. 99: 112-117.

Edelman, Gerald M. *Bright Air, Brilliant Fire: On the Matter of the Mind*. Penguin Books, 1992.

Pinker, Steven. *How the Mind Works*. W. W. Norton and Co., 1997, chapters 1-4.

Scott, Alwyn. *Stairway to the Mind: The Controversial New Science of Consciousness*. Copernicus, 1995.

(A) Scott – professor of Mathematics at the U. of Arizona and the Institute of Mathematical Modeling at the Technical U. of Denmark and founding director of the Center for Nonlinear Studies at the Los Alamos National Laboratory – evaluates conflicting concepts of the brain and mind and presents a hierarchical view of mental organization, using the symbol of a stairway.

(B) Edelman – 1992 Director of the Neurosciences Institute and Chairman of the Dept. of Neurobiology at the Scripps Research Institute, who received the Nobel Prize for Physiology/ Medicine – argues that consciousness arose as the expression of a specific trait based on genetic and environmental influences (a phenotypic property) at some point in the evolution of species.

(B) Damasio – distinguished professor and head of the Dept. of Neurology at the U. of Iowa College of Medicine and adjunct professor at the Salk Institute for Biological Studies in San Diego – demonstrates that “an evolution of self” rewards (self) awareness is clearly a survival advantage. Damasio attempts to refute philosophical notions, especially “intentionality,” claiming that “the private, personal mind, precious and

unique, indeed is biological and will one day be described in terms both biological and mental” (115-117).

(B)Pinker develops a model of the human mind from language analysis and computer modeling that combines the computational theory of mind – that the lifeblood of the psyche is information rather than energy – with the modern theory of evolution, which calls for reverse-engineering the complex design of biological systems (see 176).

(B)James Chisholm – Associate professor of Anatomy and Human Biology at the U. of W. Australia – explores the nature of value and the way humans represent value. Chisholm approaches the issue of development in terms of parental strategies for secure attachment and the development of the capacity for empathy.

Suggested Reading:

Bownds, M. Deric. *The Biology of Mind: Origins and Structures of Mind, Brain, and Consciousness*. Fitzgerald Science Press, 1999. (<http://mind.bocklabs.wisc.edu>).
Bownds – U. of Wisconsin (Biology) – puts forward a textbook for both science and non-science majors. Bownds basic premise is that “each of us is a society of minds that emerge from our evolutionary history and from the way our brains form as we grow up in a particular natural ecology and cultural setting.” He argues that there is an urgency to understand how our minds work in that “the human mind may be driving itself to extinction” (xi).

WEEK 11: EVOLUTIONARY PSYCHOLOGY. This section demonstrates that one must recognize the issues that human evolution has prepared us to confront if we are to utilize our human potential for values not only at vital and social levels, but also at personal and religious-global levels. Bertocci will present the following:

A. Tooby and Cosmides’ position that humans have developed specific mechanisms for mate selection, language acquisition, family relations, and cooperation, etc. Tooby and Cosmides denounce The Standard Social Science Model to introduce the Integrated Causal Model. They invite discussion about the relationship between nature and nurture (genes and culture), nullifying dichotomizations.

B. Buss answers to the questions, What is evolutionary psychology? What are its historical origins? Buss focuses on the development of Inclusive Fitness Theory – the mathematical-biological theory of preference – methods and criteria, and hypotheses that follow: Male and Female long-term and short-term mating strategies, Cooperative Alliances, Aggression, and Parent-Offspring Conflict.

C. A practical discussion referring to Garrett Hardin’s allegory, “The Tragedy of the Commons.” The allegory is a useful starting-point for discussion about the relationship between evolutionary psychology and personal and religious-global level values because:

1. It offers an existential perspective on ecological problems, addressing the question, In what ways are adaptationist strategies religious issues/ problems/ challenges?
2. It describes what will naturally happen if one ascribes only to particular goods and

vital level values.

3. It illustrates that the tendency to prefer ourselves (that to “put two cows in the field” or “cheat” (see below) is “natural,” and phenomenologically [at least] identical to the religious dilemmas described in notions such as original sin, personal sin, self-centeredness, and concupiscence).

4. It depicts the tendency to choose lesser goods over greater goods, or, in Lonergan’s terms, to choose the apparently good over the truly good.

5. It can be used to demonstrate that the “natural” proclivity to choose particular goods and vital level values square with Inclusive Fitness Theory, that is, the tendency to choose the good of “me and mine” over the good of all.

D. Bertocci will diagram isomorphic relationships between specific theories about evolutionary (mechanistic) processes and religious processes, particularly, theories of aggression, just war theory (Aquinas), and civil disobedience. Bertocci concomitantly will distinguish:

1. Vital and social levels (war for the acquisition of resources);

2. The moral level of limiting conditions for war ([a] good reason; [b] proportionate to the evils anticipated; [c] all peaceful measures must be evidently exhausted; [d] rulers must be morally certain they are in the right; [e] declaration to lawful authority; [f] only a defensive war can be justified; [g] unjust means must be avoided); and

3. The personal and religious level (justice through nonviolent resistance, e.g., Gandhi, Martin Luther King, Jr., resistance to apartheid).

Required Reading:

Buss, David M. *Evolutionary Psychology: The New Science of the Mind*. Allyn and Bacon, 1999, chapters 1-8.

Cosmides, Leda and John Tooby. “The Psychological Foundations of Culture.” *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. J. Barkow, L. Cosmides and J. Tooby. (eds.). Oxford University Press, 1992.

(A) U. of California professors Tooby (Anthropology) and Cosmides (Psychology) put forward The Integrated Causal Model (ICM) to demonstrate that the nature-nurture (genetics/culture) debate is moot; the real issue is the character of evolved mechanisms. Tooby and Cosmides assert that “the human psychological architecture contains many evolved mechanisms that are specialized for solving evolutionarily long-enduring, adaptive problems, and these mechanisms have content-specialized, representational formats, procedures, cues, and so on. These richly content-sensitive evolved mechanisms tend to impose certain types of content and conceptual organization on human mental life and, hence, strongly shape the nature of human social life and what is culturally transmitted across generations.”

(B) Buss – Harvard and U. of Texas professor focused on the study of human motivation following evolutionary principles, and fellow at the Center for Advanced Study in the Behavioral Sciences (Palo Alto) – puts forward a comprehensive textbook on evolutionary psychology. The text is historical in that Buss underlines the scientific movements leading to evolutionary psychology; it is critical in that he points up common

misunderstandings of evolutionary psychology; and it is scientific in that Buss cites a multitude of studies to support current theories and concepts. Buss examines six main topics: (1) Foundations of Evolutionary Psychology, (2) Problems of Survival, (3) Challenges of Sex and Mating, (4) Challenges of Parenting and Kinship, (5) Problems of Group Living, and (6) An Integrated Psychological Science.

Suggested Reading:

de Waal, Frans B. M. "The End of Nature versus Nurture." *Scientific American*. Dec. 99, 94-99. Twin studies reveal that nature/nurture is a false dilemma.

Shermer, Michael. *How We Believe: The Search for God in an Age of Science*. Freeman, 1999. Shermer – the publisher of *Skeptic Magazine* – seeks to explain how and why people have made particular belief choices. He addresses 3 main questions: "(1) Why people believe in God; (2) the relationship of science and religion, reason and faith; and (3) how the search for the sacred came into being and how it can thrive in an age of science" (xiii).

WEEK 12: COOPERATIVE ALLIANCES, TIT-FOR-TAT AND "ALTRUISM." This section explicates specific insights that the new "isomorphic" principle (see above, Weeks 4 and 5) offers to perspectives cooperative alliances, as applied to global challenges. Bertocci will invite students to reflect on:

A. "Altruism" described in evolutionary psychology – design features that aid the reproduction of other individuals despite the altruist incurring costs, and adaptationist reasons why humans form cooperative alliances.

B. The distinction between "gross cheaters" and "subtle cheaters" and the mental "equipment" necessary to detect global "cheaters." "Tit-for-tat" is the appropriate a response to both types of "cheaters."

C. The isomorphic relationship between the theory of "tit-for-tat" and religious theories of lex talionis and Mt 5.38ff reveal for global challenges.

1. At vital and social levels "tit-for-tat" is for survival, reproduction, and rigorous justice;
2. At the moral level lex talionis is a compensatory principle, that is, its purpose is the prevention of greater penalties than would be just;
3. At the personal and religious levels lex talionis gives way to charity, mercy, and loving the enemy, that is, Mt 5.38ff exhorts Christians to cede their lawful rights for the sake of charity, peace and justice.

D. What should third-world nations do if first-world nations are "cheating" them? Would it be "religious" or "just" if people in the third world were to withhold the resources that are ecologically costly? raise prices? refuse to buy goods from industrialized nations?

1. Isomorphism between processes reveals a new form of religious sublation (transformation) for first- and third- world relations. In view of the inequity in the relationship between first- and third- world nations, people in the third world must engage in "tit-for-tat," including "forgiveness"; that is, strategies that inspire attentive, intelligent, reasonable and responsible action for the environment.

2. Attention to isomorphic relationships allows for altruistic alliances based on personal and religious values, such as (a) solidarity with all life, (b) the common good, (c) the principle of subsidiarity, (d) a new declaration of rights, (e) the principle that the ecological crisis is a grave moral matter for all (see Pope John Paul II, above).

Required Reading:

Buss, David M. *Evolutionary Psychology: The New Science of the Mind*. Allyn and Bacon, 1999, chapters 9-12.

Huffman, H.B. "Lex Talionis." *The Anchor Bible Dictionary*. D. N. Freedman (ed.). Doubleday, 1992. Vol. 4: 321-322.

Ridley, Matt. *The Origins of Virtue: Human Instincts and the Evolution of Cooperation*. Penguin Books, 1996.

(A) Buss explains Reciprocal Altruism, cooperation, reciprocation and social exchange (Tooby & Cosmides [1992]), the theory of Iterated Prisoner's Dilemma and Contingent Reciprocity (Axelrod [1984] and Trivers [1985]) the development of Social Contract Theory (Bahrick, Bahrick & Wittlinger [1975], Gardner [1974], Cutting, Proffitt & Kozlowski [1978], de Waal [1982], Tooby & Cosmides [1992] and Pinker [1996]) and The Banker's Paradox (Tooby & Cosmides [1996]).

(B) Ridley – a former science editor, Washington correspondent and US editor for "The Economist" – provides a commonsense understanding of basic evolutionary strategies that follow from "tit-for-tat" strategies, based on computer models.

(C) Huffman explains the Lex talionis, the law of tit-for-tat ("life for life, eye for eye, tooth for tooth, hand for hand, foot for foot, burn for burn, wound for wound, stripe for stripe" [Ex 21.24]). He argues that in view of the "Bible's interest in compensation to the injured party, as opposed to physical punishment of the guilty party, it seems likely that the reference to equivalency was intended even originally as a statement of principle. The injured party was probably seen as better served by compensation than by mere punishment." Huffman also shows the ways biblical law relate and contrast to The Laws of Hammurapi (## 116, 210, 230; cf., Middle Assyrian Laws ## A 50-52), which illustrate the vicarious talion, in which someone responsible for the death of a citizen's son or daughter has his son or daughter put to death. Also the Laws of Hammurapi (## 196-205) – possibly reflecting Amorite cultural influence - provide for vicarious talion as well as talion within classes (322).

(D) Catholic Social Justice Teaching. In 1961 – Pope John XXIII's Encyclical: *Mater et Magistra* ("Mother and Teacher") explicitly attached itself to the *Rerum Novarum* of Leo XIII in calling for justice and the common good as the norms of social conduct. In 1963 – Pope John XXIII's Encyclical: *Pacem in Terris* ("Peace on Earth") formulated a social philosophy for peace within communities and between nations. The Second Vatican Council advanced the Principle of Solidarity: The opening statement in preface to *Gaudium et Spes* (Pastoral Constitution on the Church in the Modern World) reads: "The joy and hope, the grief and anguish of the [people] of our time, especially of those who

are poor or afflicted in any way, are the joy and hope, the grief and anguish of the followers of Christ as well. Nothing that is genuinely human fails to find an echo in their hearts.”

Suggested Reading:

“Gaudium et Spes.” Vatican Council II: The Conciliar and Post Conciliar Documents.

Austin Flannery, O.P. (ed.). The Liturgical Press, 1975.

“Pacem in Terris,” Pope John XXIII, Encyclical Letter, 1963.

WEEKS 13 AND 14: A MILIEU OF VALUE.

The goal of the last section is to explain the process of reception of religious values.

Bertocci will present:

A. A. N. Whitehead’s theory of symbolic reference and Karl Rahner’s “theology of the symbol.” A clear analysis of symbolism would go far in demonstrating how we consciously appropriate different levels of values and express them through symbol and formulation. Through symbols we give expression to insights that intelligence discovers in sublating the vital level and, further, create data for developed formulations concerning “the good,” virtue, justice, and life for others and the world.

B. Pierre Teilhard de Chardin’s explanation of the divine milieu, with focus on Teilhard’s perspective as one that parallels Lonergan’s sense of “disinterestedness”: “The longer I live, the more I feel that true repose consists in ‘renouncing’ one’s own self, by which I mean making up one’s mind to admit that there is no importance whatever in being ‘happy’ or ‘unhappy’ in the usual meaning of these words. Personal success or personal satisfaction are not worth another thought if one does achieve them, or worth worrying about if they evade one or are slow in coming. All that is really worth while is action – faithful action, for the world, and in God. Before one can see that and live by it, there is a sort of threshold to cross, or a reversal to be made in what appears to be men’s general habit of thought; but once that gesture has been made, what freedom is yours, freedom to work and to love! I have told you more than once that my life is now possessed by this ‘disinterest’ which I feel to be growing on me, while at the same time the deep-seated appetite, that calls me to all that is real at the heart of the real, continues to grow stronger” (Letters from a Traveler). Further, the development of habits for virtue (charity, hope, faith, prudence, temperance, fortitude, justice, knowledge, wisdom, counsel, piety, patience, integrity, etc.) allows for new types of sublation.

C. Rosemary Haughton’s explanation of the image of hospitality over/against “disrespect,” showing that change requires stability; thus, religious ideals and values must be re-examined in view of real, concrete experience and gradual, real possibilities.

Required Reading:

Haughton, Rosemary L. Images for Change: The Transformation of Society. Paulist Press, 1997.

Teilhard de Chardin, Pierre. The Human Phenomenon. Sarah Appleton-Weber (trans.). Sussex Academic Press, 1999.

(B) Poet and scholar Sarah Appleton-Weber presents a new translation of a work by Pierre Teilhard de Chardin – a Jesuit, paleontologist and geologist [1888-1948] - through a close study of Teilhard's essays, letters, notebooks and retreat notes, his autobiography and key biographical and interpretive studies. In this work Teilhard argues that what is needed for the universe's unfolding is a new form of human being.

(C) Houghton argues that "disrespect" describes a lack of a working knowledge of how the mind works and in conjunction with the environment. She says that the structures must change and adapt, but this must not be a panic adaptation or an enforced change, and if we use hospitality as our image it will be something that happens because the deepest nature of creatures requires it" (42, 196).

Suggested Reading:

Bertocci, Rosemary Juel. *A Whiteheadian Theory of Symbol for Roman Catholic Theology*. UMI Dissertation Services, 1995. Bertocci argues that Roman Catholic theologians require a method, beyond historical-critical recovery, to analyze symbolism. By recourse to A. N. Whitehead's process metaphysics, this study attempts to put forward a new principle of symbolism, accounting not only for expression, but also reception. Chapter One is a demonstration of the necessity of metaphysics for analyzing symbolism, and of the usefulness of Whitehead's metaphysical theory of symbolic reference for analyzing symbolic reception. Chapter Two is an explanation and expansion of Whitehead's theory of symbolic reference. Chapter Three is an investigation of "The Theology of the Symbol," by Karl Rahner, S.J., using *Hearer of the Word and Spirit in the World*. Chapter Four is a demonstration of the compatibility of Rahner's and Whitehead's metaphysical theories of expression and reception. It also reveals Whitehead's distinctive contribution to a theory of symbolism, and in light of this, contains a more complete principle of symbolism. Chapter Five is a demonstration of the usefulness of Whitehead's theory of symbolic reference. It also contains a presentation of Whitehead's view of expressive symbols and a view of dogma developed from Whitehead's theory of expression. By reconciling and synthesizing Rahner's and Whitehead's theories, this thesis puts forward a metaphysical principle for symbolism that emphasizes both expression and reception. This new principle accounts for symbolism that is both conscious and prior to sensational, conscious awareness and thematic understanding. It can be helpful to theologians: (1) for a self-examination of symbolic appropriation; (2) for examining others' potential symbolic integrations; (3) for recognizing why there are divergent emotions, beliefs, values, and purposes associated with symbols; (4) for offering a new way to appreciate sacramental efficacy, even *ex opere operato*; (5) for asserting the indispensable nature of myth and dogma to symbolic reception.

Johnston, Carol. *The Wealth or Health of Nations: Transforming Capitalism from Within*. The Pilgrim Press, 1998. Johnston asserts that authentic religious "traditions affirm that simply to exist is to have intrinsic value. Once any entity comes into existence, the value realized in the entity is inherent in it and not a function of

anyone else's valuation, even God's. To exist is to be a realization of some measure of concrete value, and it is the discovery and recognition of this value that provides the foundation for human rights and the right of other creatures to exist in healthy natural ecosystems." Johnston, however, does not deny that there are levels of value. "Recognition of intrinsic value does not imply according 'equal rights' to all entities, even if that were possible, which it obviously is not. In any case, that is an individualistic notion. But it does imply that human beings do not have the right so to disrupt ecosystems that other species are destroyed. Because all creatures are internally related, human beings need to share the planet with other human and nonhuman creatures in the context of healthy ecosystems. Because all creatures have intrinsic value, other creatures also have the right to their natural existence. This provides a philosophical and ethical framework to undergird an economics for health that will work to achieve a sustainable use of resources that respects species diversity so that all creatures can flourish together" (128-129).

Landau, Misia. "Human Evolution as Narrative," *American Scientist* 72: 262-268.

Landau, an anthropologist, argues that narrative "is a defining characteristic of human intelligence and of the human species. Related to this assumption ... is the idea that we have certain basic stories, or deep structures, for organizing our experience."

Moltman, Jürgen. *God in Creation: A New Theology of Creation and the Spirit of God*.

The Gifford Lectures 1984-1985. HarperSanFrancisco, 1991. Jürgen Moltmann – a Reformed theologian – puts forward a text developed from the Gifford Lectures, with the goal of leading others "not to go on distinguishing between God and the world, so as then to surrender the world, as godless, to its scientific 'disenchantment' and its technical exploitation by human beings, but instead to discover God in all the beings he has created and to find his life-giving Spirit in the community of creation that they share." Moltmann writes that [t]his view – which has also been called panentheistic (in contrast to pantheistic) – requires us to bring reverence for the life of every living thing into the adoration of God. And this means expanding the worship and service of God to include service for God's creation" (xi-xii).

Tattersall, Ian. *Becoming Human: Evolution and Human Uniqueness*. Harcourt-Brace and Co., 1998. Tattersall – Curator in the Department of anthropology at the American Museum of Natural History – argues that while genetics and evolutionary psychology are relevant to understanding human behavior, these fields are less significant than symbolic reasoning. Tattersall claims that it is in "our notions of God that we see our own human condition most compactly reflected" (202-203).

ASSESSMENT

A. Written Critical Reviews on Reading Assignments (25%): Students will write a one to two-page critical review on each of the required readings. (If there is more than one reading for a session, students will write [at least] one page on each reading.) Each critical review will be assessed in terms of how well the student fulfills the following

criteria: (1) a clear thesis statement of the reading; (2) a statement of the author's rhetorical purpose; (3) a list of the principle arguments put forward; (4) a critique of how well the author argued the thesis; and (5) statement of important questions raised by the reading. Grading for critical reviews will be on a ten point scale: 0 (not turned in); 1-5 (a clear statement of the thesis and rhetorical purpose); 6-7 (a clear statement of the thesis, rhetorical purpose and an outline of the arguments) and 8-10 (a thorough critical analysis and a thought-provoking question).

B. Discussion (10%): Insights and critical analyses of the Reading Assignments will lead to students differentiation and tentative value judgments. Putting forward one's insights and critical analysis prompts all members of the class to new insights. If one cannot prepare the assignment and/or attend a meeting for a legitimate reason, email Dr. Bertocci at rbertocci@aol.com before that session.

C. Discussion Leading (15%): Eighteen of the class sessions of the semester will be devoted primarily to discussion of Reading Assignments. Each student will lead the discussion for one half hour during each of these sessions. The student must prepare an outline and discuss it with Dr. Bertocci during office hours before the class period that s/he will lead.

D. Community-Based Learning (25%): A twenty-hour service-learning project is required. Students must compose a five-page paper on the project, including the following elements: 1. Succinctly state the project. 2. Present research (from five current books, articles) about the project. 3. Point up values associated with the experience and research. The criteria for assessing levels of reflection are: Level One ("C" grade) – The student presents the experience clearly, but fails to show an integration of research and values with his/her major field of study; the values enacted tend to be one dimensional and conventional or unassimilated repetitions of what has been heard in class or from peers. Level Two ("B" grade) – The student demonstrates a beginning ability to interpret research and values for ongoing service-learning; the values enacted evidence reasonable decision-making in light of research related directly to the project. Level Three ("A" grade) – The student presents an integrated view of the project, showing that the student has learned—through the experience, the research undertaken, and values developed—ways to engage in life-long service-learning; the values enacted demonstrate that the student has assumed personal responsibility for the contributions s/he can make within his/her field and in service to others.

E. Final Examination (25%): A comprehensive final will be given.

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