Paper Title: A New Center for Science, Religion and Ethics in Boston
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Abstract:
The Boston Theological Institute has facilitated discussions with scientists from local colleges and universities towards creating a Center for Science, Religion, and Ethics and to serve students, faculty, colleges, and church-goers in the northeast. The Center opens this fall with colloquia, research, and publications concerned with science and religion.

Central to the need for a Center for Science and Religion in Boston is an evolving recognition that despite courses on science in the divinity schools and seminaries, and wide-ranging religious studies in the colleges, the two communities seldom talk together regarding their primary missions, i.e. preparation for ministry on the one hand and scientific and technological research on the other hand. Yet, issues as disparate as cosmology and pastoral care are shaped by the possibilities of this dialogue.

Boston is blessed with world-renown leadership in both communities. Beginnings of collaboration occurred with the Center for Faith and Science Exchange (now InterFASE) started in the 90s by Rev. Barbara Smith-Moran. The mission of InterFASE has developed to promote the dialogue between science and religion to people of faith by conducting discussion groups at local churches. The strong and enthusiastic interest generated by these courses is a clear indication of the need to address the questions and concerns of people of faith and provide broader ministerial training to do so. Rev James Miller whose science and religion credentials include work with the AAAS DoSER group agrees. He observes, "Most main line churches, in their ministerial practice, do not prepare churchgoers to understand scientific issues which touch upon theology". Furthermore he says, "None of the major science-religion centers deals with the issues where the rubber meets the road, namely, how such issues bear upon pew-sitters lives." Miller insists, "The relevance of science to religion has to be infused, not just talked about in ministerial preparation." Owen Gingerich, Research Professor of Astronomy and History of Science Emeritus at Harvard University, has suggested to us that this is a niche which a Center such as we are proposing needs to fill.

In the colleges, many scientists and teachers have personal religious traditions. They have students who ask questions leading beyond the space-time continuum restraints of much science teaching. They wonder how others of some religious faith help their students address such questions.

Kirk Wegter-McNelly, Assistant Professor of Theology at Boston University School of Theology observes that, "Both science and religion are implicated in many of the most controversial social issues of our time, such as the manipulation of the human genome and the teaching of evolutionary theory. Those who are spearheading the establishment of a new 'science and religion' center in Boston rightly see the urgent need for sustained collaborative work on these issues. They are also keenly aware of the vast potential for such collaboration that lies within the resources of the member schools of the Boston Theological Institute (BTI)… the time is ripe for the establishment of such a center in Boston."

Biographies:
Rodney Petersen has been Executive Director of the Boston Theological Institute since moving to the Boston area from Switzerland in 1990. In addition to this work with the BTI, he teaches in both the member schools and overseas. He teaches in the areas of history and ethics, currently focusing on issues of religion and conflict. Together with BTI colleagues these courses have taken students to various regions of the world in order to understand and film ways in which faith communities are implicated in regional violence and how they can be avenues of reconciliation. He is an ordained minister in the Presbyterian Church, U.S.A., serving on several of their committees and served for seven years as the pastor of the Allston Congregational Church (U.C.C.). He is the author and editor of two books that have grown out of the science and religion dialogue, *Consumption, Population, and Sustainability*, 2000 (with Audrey Chapman and Barbara Smith-Moran) and *Earth at Risk*, 2000 (with Donald Conroy).

Prior work included teaching at Trinity Evangelical Divinity School (Deerfield, Illinois), Webster University (Geneva, Switzerland), and with the Fédération des Institutions établies à Genève (FIIG). He also worked with churches in France and Eastern Europe, primarily Romania.

He is a member of the Board of Directors of the Massachusetts Council of Churches, the Massachusetts Commission on Christian Unity, the Lord's Day Alliance of the USA, the Refugee Immigration Ministry, Sec/tres. American Society of Missiology (Eastern Fellowship), and numerous other academic and ecclesiastical organizations.

Frank Villa is the Administrator of the Certificate program in Science and Religion. He works with students at the nine BTI schools who wish to enhance their pastoral education by developing special science and theology literacy through various courses of study leading to the Certificate. His duties include editing The Shoreline, the BTI newsletter in Science and Religion. He will be developing several colloquia to foster the science/religion dialogue for the member schools and community at large.

Frank has a Masters degree from Andover Newton Theological School with a concentration in science and religion and a B.A from the University of Rochester. He is the recipient of a BTI Certificate in Science and Religion. A former teacher of high school earth science and physics and commercial pilot and flight instructor, he has spent the past twenty-five years in business management in the science industry, specializing in

the design and construction of laboratory facilities. He has developed curricula and taught courses to lay members of many congregations directed at bringing the dialogue between science and religion to people of faith. Frank has concurrent duties as Director of InterFASE, The International Faith and Science Exchange, which broadens the scope of science/religion ministries in local churches.

Dr. Mugur Alexandru Roz has a joint appointment as a Research Fellow in the Health Science and Technology division of Harvard Medical School and Massachusetts Institute of Technology. He is also a Lecturer Professor of Medical Informatics at the "Vasile Goldis" Western University - Arad, Romania.

His main area of research includes biomedical informatics, genetics and computer science, with a particular focus on artificial intelligence techniques applied to genomics data.

Dr. Roz holds a Medical Doctor's Degree and a PhD degree in Biomedical Informatics from Timisoara University, Romania. He is the author of five books and more than fifty articles on various biomedical informatics topics.

Courtland S. Randall is a Research Scholar at the University of the South, Sewanee. He directs The William G. Pollard Program, which is active there and elsewhere to extend the influence of that physicist, priest, and pioneering educator. Randall has long experience in the conduct and management of communications, public relations, marketing and training work involving scientific, technical, commercial, institutional, and governmental activities. He has developed and managed information, education and training centers in several technical fields, working as a senior scientist with Science Applications International Corporation (SAIC), Oak Ridge Associated Universities, the Century 21 Exposition in Seattle, and MIT. He established two major science museums, directed one of them, and founded a national organization, (Association of Science-Technology Centers) which now works with more than one thousand institutional members. He is a writer and speaker with an educational background in mathematics, physics and government.

Paper:

Central to the need for a Center for Science, Religion, and Ethics in the Greater Boston area is an evolving recognition that despite wide-ranging religious studies in the colleges, an increasing number of courses in ethics and the humanities in our schools of technology, and courses on science in the divinity schools and seminaries, the two communities seldom talk together regarding their primary missions, i.e. preparation for ministry on the one hand and scientific and technological research on the other.[1] Yet, issues as disparate as cosmology and pastoral care for ministry and issues of ethical

[1] Many of these schools that had led the way at the end of the nineteenth century in the separation of the study of science from theological considerations, or the larger "truths" they had once sought, now find themselves wrestling with issues of worldview and ethics that point in a new way for the necessity of the cross-disciplinary dialogue envisioned in this paper. See the work of Jon H. Roberts and James Turner, *The Sacred and the Secular University* (Princeton: Princeton University Press, 2000).

sensitivity for research and technology are shaped by the possibilities of this dialogue. The two communities seldom talk and when they do, they rarely speak directly to each other. The dialogue between science and religion can only be fruitful when both disciplines contribute to and benefit from it. Firm guidelines will serve this end. They include, but are not exclusive to the following:

- Acknowledgement and adherence to the established laws of modern science
- Healthy respect for the contributions and epistemology of both disciplines, and
- Avoidance of absolute certitude or dogma in the conversation.

Section One: Serendipitous Creativity[2]: Religion and Science in Dialogue Concerning Cosmology, Evolution, and Human Experience

Mystery and awe in the workings of nature can provide the common ground that unites some scientists and theologians. We know more from a cosmological perspective than ever before, yet we are confronted with mystery at subatomic and macro astronomical levels of perception. In the last century, contemporary science outgrew the prevailing paradigm (Thomas Kuhn) for early modern and modern cosmological understanding. Alfred North Whitehead is among those who finds in the end of the Cartesian and Newtonian period the possibility of a reconsideration of the separation of scientific (or physical) cosmology and moral cosmology, attaching religious expressions to the latter. Any perception of a reintegration of humanity into nature – possible now with the shift from modern to postmodern science – needs to be considered for the ways in which it reopens questions of moral cosmology.

Four areas are among those that mark out the impact of developments in physics over last century and give shape to different moral cosmologies. The rediscovery of time through relativity theory, the rediscovery of the observer through quantum theory, the rediscovery of complexity through chaos theory, and a sense for the mystery of the origin of the universe in "Big Bang" cosmogony – these four areas map new fields of dialogue between science and religion. The anthropic nature of the universe opens further possibilities for moral cosmology(ies), a reconnection with the original sense of cosmology, (in Greek 'the knowledge of the *kosmos*'), a field that analyzes both the order of the physical universe (the '*ouranos*') and that of humanity (the '*polis*'). Here is a question worthy of discussion in the dialogue between scientist and theologian: what makes the universe a *kosmos*, a harmonious, well-ordered whole? One answer suggests that physical objects are intelligible to the human mind, and henceforth open to a numeric analysis. Moral cosmology(ies), on the other hand, asks whether nature is embedded in a larger framework of analysis and open to a variety of perceptions.

Pop religion comes in many forms – as does philosophical and ethical ignorance. Both bear long-term consequences for social nihilism which renders philosophical reflection and theology impotent as science devolves into "mere" technology at the risk of a debilitated ethics. We confront mystery in both science and religion and share in the

[2] Gordon Kaufman, *In Face of Mystery: A Constructive Theology* (Cambridge: Harvard University Press, 1993)

need for spiritual capital to find coherence. The need for social cohesion requires this dialogue. In order to develop policy for common life, some measure of consensus around accepted ideas is necessary. There is a need to talk in the face of mystery and in recognition of each others' categories of understanding and of mystery.

A determined effort is needed to bring these two disciplines into dialogue. Neither is going away, yet each can yield to the temptation to follow its own epistemology while ignoring the other. But there is much to be learned from a cooperative analysis of a mysterious universe that is revealing itself to be more amazing in its complexity than ever conceived. To wit: How does our collective vision of the universe contribute to a deeper understanding of its workings? How does this vision contribute to a quest for human meaning and purpose? How does this vision inform the impending ethical questions thrust upon us? Theology, a synthesizing science, has entered a period of de-construction as many previous assumptions grounded in a formerly privileged situation have fallen away. Christian communities, as is true of other religious groups, are growing world-wide, but not always in ways controlled by academic elites. As this trend continues, how can science and theology work in concert to provide a more cohesive world-view and a better understanding of the place of humankind in creation?

Section Two: Religion and Science in Dialogue Concerning Ethics

Recent debate over the use of embryonic stem cells has drawn public attention to the profound moral questions underlying public policy. Virtually all public policy issues involve important moral questions, although they might not all be as emotionally charged today as issues like abortion, capital punishment, and stem cell research. Another is our contemporary ecological crisis, related to issues of alternative sources of energy. In all these issues, policy confronts the science, ethics, and world view (or religion) that shapes public policy. These topics are not just subjects of science and technology. The environmental battleground is really about its effects upon humanity in relation to the web of life, issues that take us deep into religious and world view discussion. Embryonic stem cell research and end-of-life dilemmas raise questions about the sanctity and uniqueness of human life. These issues and the effort to understand the world in which we live and its inherent value are factors that draw together the scientific community and people of faith. Humankind, the web of life, and planet earth, all in symbiotic relation, need the analysis of both disciplines to achieve a future that is not only sustainable, but thriving.

That the scientific enterprise and a life of faith have much in common is the operating premise from which Ian Hutchinson writes. While post-modernism has opened the perspectives of many for a new orientation to science and religion, it has not always had a salutary effect upon a conception of the unity of knowledge or of truth in a more abstract sense. In distinction from much of post-modernism today, neither scientists in general nor persons of traditional Jewish or Christian faith understand knowledge to be merely a social construct. While science and faith may differ in method and substance, each requires the other. Science without religion may lose its ethical guide. Religion

without science lacks substance and the contextual resources with which to understand the world and guide its science. When a technological "fix" is unavailable for technology-generated dilemmas, science is drawn into dialogue with such disciplines as economics and politics, the human factors that propel us into a debate over the appropriate courses of action. Our religious understanding and attitude contribute to this dialogue because they shape our conception of the world and the legitimacy of its institutions and social arrangements.[3] An institution that exists for the primary purpose of fostering such ethical discussions outside the emotional glare of media motivated by crisis and the need to sell news can allow deep and difficult debate to wrestle with questions based on epistemology and reason, rather than polarizing certitude.

What is factual is undeniably true. But truth often exists beyond fact as is expressed in values and solutions to ambiguous life situations. Are there examples of undeniable and universal morality? How are these situations evaluated and how do the lessons learned apply to ethical dilemmas? The array of factual data around issues of the environment, to name only one ethical issue, draws us to questions of value: issues of ecojustice, patterns of population ethics and over consumption. The environmental anthropologist, Timothy Weiskel asks why, if we are aware of the crisis, are we unable to act more consistently and forthrightly? His question draws us to the division between the world of facts and values. It reflects a continuing divide between the languages of science (facts) and of religion (values) in western culture.[4] The ecological predicament draws attention to this division as no other single issue does because of its holistic nature. The issue of stem cell research will do so as well as we face an aging population in western societies. Concerned scientists and enlightened theologians working in concert in a supportive and non-adversarial environment can make strides towards determining value-laden ethical actions and initiate action towards worthy solutions.

By the action of scientists working independently, the divide between the descriptive language of religion or of science is not quite so clear cut as it once was. Movement towards a thaw is occurring between the practitioners of these languages. Some years ago chemist and philosopher Michael Polanyi began to show us one way to begin to bring the sciences into conversation with religion.[5] Despite their own skepticism

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[3] Ian Barbour, "Technology and Theology," in *Bulletin of Science, Technology & Society*, vol. 16, nos. 1-2 (1996): 4-7. See additional issues of this journal which draws in relation to each other issues of technology and justice. Among the increasing number of theorists drawing attention to this relationship is John B. Cobb, Jr., *Sustaining the Common Good. A Christian Perspective on the Global Economy* (Cleveland, Ohio: The Pilgrim Press, 1994).

[4] Writing some years ago C. P. Snow argued that one of the salient problems of our age is non-communication between the "literary" culture and the "scientific" culture, failure to understand each other's language and orientation. He added that their fracture constitutes a grave social threat and stressed the importance of drawing together the two cultures. See *The Two Cultures: And a Second Look -- An Expanded Version of the Two Cultures and the Scientific Revolution* (Mentor MP 557, 1964).

[5] Michael Polanyi argues for a holistic approach to knowledge, understood tacitly, and unknown by looking simply at component parts, in *Personal Knowledge* (New York: Harper Torchbooks, 1964), and *The Tacit Dimension* (Garden City: Doubleday Anchor, 1967). Parallel and additional perspective on the construction of reality is seen in Michael A. Arbib and Mary B. Hesse, *The Construction of Reality* (Cambridge: Cambridge University Press, 1986).

in different directions, both astrophysicist Stephen Hawking[6] and astronomer Robert Jastrow[7] have pointed to another through recent developments in astrophysics. Such discoveries as the Big Bang and contemporary debate over the nature of evolution have driven physicist Freeman Dyson to ask whether the universe knew we were coming.[8] Another physicist, Paul Davies, says that science has advanced to the point where formerly religious questions can now be seriously tackled by scientists.[9]

For positive action to occur, these two languages must relate to each other.[10] Theologian John F. Haught helpfully develops his typology in relation to a number of different scientific disciplines and issues.[11] Arguing for "consonance," in a strong or weak sense whereby science and theology, if not in harmony, at least mark out a common domain of questions, Ted Peters argues that this perspective alone allows both science and theology to carry out a cross-disciplinary conversation within a common world of meaning.[12] Seeking a consonant voice in emerging technology-related questions is a pressing issue today. The typologies of such persons as Barbour, Haught, Peters, or Polkinghorne help to map out the terrain.[13] A venue that provides a continuation of this discussion and debates applications to real social problems, particularly among the rich environment for science and theology in the Boston area, can be ground-breaking in its conclusions.

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[6] Theorizing on the basis of the big bang Stephen Hawking argues that while the universe might not be eternal, so also it might not have had a clear temporal beginning, in *A Brief History of Time: From the Big Bang to Black Holes* (New York: Bantam Books, 1988), pp. 140-141.

[7] Robert Jastrow writes that although many astronomers would have preferred it otherwise, the big bang theory appears to support the biblical doctrine of creation, in *God and the Astronomers* (New York: W. W. Norton and Co., 1992; 2nd ed.), p. 116. On theories of consonance, see Gerald L. Schroeder, *Genesis and the Big Bang* (New York: Bantam Books, 1990).

[8] Freeman Dyson, *Infinite in All Directions* (New York: Harper and Row, 1988), p. 298.

[9] Paul Davies, *God and the New Physics* (New York: Simon & Schuster, 1983); and *The Mind of God: The Scientific Basis for a Rational World* (New York: Simon & Schuster, 1992).

[10] For example, a new openness is seen in Roman Catholicism since the Second Vatican Council declared the natural sciences to be free from ecclesiastical authority, calling them autonomous disciplines. See the message of His Holiness Pope John Paul II, in *Physics, Philosophy and Theology: A Common Quest for Understanding*, eds. John Russell, William Stoeger, and George V. Coyne, Vatican Observatory, Vatican City State, 1988), p. M1.

[11] John F. Haught, *Science and Religion. From Conflict to Conversation* (New York: Paulist Press, 1995).

[12] Peters identifies sees four "deadends" in the science and religion dialogue: 1) scientism (sometimes called secular humanism) which argues that science provides all the knowledge we need to know, 2) ecclesiastical authoritarianism, 3) scientific creationism, and 4) a "two-language" theory whereby it is argued that science speaks with an objective and public language while religion speaks with an existential and personal language. He offers helpful criticism on each of these positions in Peters, ed., *Cosmos As Creation* (Nashville: Abingdon Press, 1989), pp. 13-19. In his opinion the dialogue between science and theology requires a deepening understanding of the theological implications of scientific knowledge around four themes: 1) a recognition that the world of nature is dynamic and changing, 2) the need for a doctrine of continuing creation (*creatio continua*) to complement the traditional idea of creation out of nothing (*creatio ex nihilo*), 3) the interpretation of scripture in light of current scientific knowledge, and 4) a sense of wonder and speculation about the place of humanity in the cosmos or God's creation.

[13] For further examples, see the work dedicated to the Society of Ordained Scientists by biochemist Arthur Peacocke, *Theology for a Scientific Age. Being and Becoming -- Natural and Divine* (Oxford: Basil Blackwell, 1990); also helpful is Holmes Rolston III, *Science and Religion: A Critical Survey* (New York: Random House, 1987), chs. 4-5; and John Polkinghorne, *Science and the Trinity* (New Haven: Yale University Press, 2004): 1-32.

Need for a continuation of this dialogue is realized in both disciplines. The wall of separation that once stood between the world of facts and that of values is increasingly being chipped away. Ethical questions are being framed by such new sciences as socio-biology, genetics, and the discoveries of astrophysics. The need to draw science more fully into the ethical and conceptual work of theology was underscored by the General Secretary of the World Council of Churches, Philip Potter, in a keynote address at the Conference on Faith, Science and the Future in 1979 at MIT.[14] The emergence of fields like "science studies," grounding the "language" of the sciences in a discipline like anthropology, has focused the attention of science on its embeddedness in larger cultural and political questions, which involve the world of religious understanding and practice.[15] The language of facticity needs values, and a coherent ethic requires all the information that the sciences can muster. Wolfhart Pannenberg is one of a number of theologians who draws these issues together in the search for hypothetical consonance in the description of reality.[16] His theology is an example of how additional perspectives on our Soul Affirmation, "Creation as Beloved of God," are opened up through a dialogue between science and religion.[17]

Pannenberg finds the sciences drawn into a larger framework of intelligibility through the reflective discipline of theology.[18] He writes that increasing attention needs to be given to the relationship between natural laws and the contingency of individual

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[14] Drawing upon ecumenical reflection back to the origins of Life and Work Movement (Stockholm, 1925), Potter stresses the importance of the right use of technology in "Science and Technology: Why Are the Churches Concerned?" in *Faith and Science in an Unjust World.* Report of the World Council of Churches' Conference on Faith, Science and the Future, vol. I, ed., by Roger L. Shinn (Geneva: World Council of Churches, 1980), pp. 21-29. An earlier expression of this concern can be seen in C. F. von Weizsäcker, *The Relevance of Science: Creation and Cosmogony*, Gifford Lectures, 1959-1960 (London: Collins, 1964). Von Weizsäcker writes, "Anyone neglecting to further his theoretical understanding of our complex world as much as he can, will in the long run do more harm than good in his practical efforts" (p. 9).

[15] John Horgan, *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age* (Helix Books/Addison-Wesley, 1996); and compare Gerald Holton, *Science and Anti-Science* (Cambridge, Mass.: Harvard University Press, 1993). See also Antonio R. Damasio, *Descartes' Error. Emotion, Reason, and the Human Brain* (New York: Avon Books, 1994).

[16] Wolfhart Pannenberg, *Toward a Theology of Nature. Essays on Science and Faith*, ed., by Ted Peters (Louisville: Westminster/John Knox Press, 1993). For further examples, see the work dedicated to the Society of Ordained Scientists by biochemist Arthur Peacocke, *Theology for a Scientific Age. Being and Becoming -- Natural and Divine* (Oxford: Basil Blackwell, 1990).

[17] Stephen Toulmin describes different paradigms through which Christian theology has worked in history in its effort to understand nature and its larger cosmology, in "Religion and the Idea of Nature," *Religion, Science, and Public Policy*, ed. by Frank T. Birtel (New York: Crossroad, 1987), pp. 67-78. In North America the following centers and Foundation are among those helping to deepen the science-religion dialogue: The Templeton Foundation, The Center for Theology and the Natural Sciences (Berkeley), The Chicago Center for Religion and Science, The Center for Theological Inquiry, The Faith and Science Exchange (Boston Theological Institute), and The Institute for Religion in an Age of Science.

[18] In making his case for theology as a science in dialogue with the natural sciences, Pannenberg offers a careful analysis of the terms *naturwissenschaften* and *geisteswissenschaften* in *Theology and the Philosophy of Science*, trans. F. McDonagh (Philadelphia: Westminster Press, 1976, p. 72; more fully in his *Systematic Theology* (Grand Rapids: Eerdmans, 1991). See also the early work of David Tracy, *Blessed Rage for Order* (New York: Seabury, 1975); and Bernard Lonergan, *Insight: A Study of Human Understanding* (New York: Philosophical Society, 1958).

events. Arguing in a way that parallels Polanyi's idea of tacit knowledge, Pannenberg finds that scientific formulas, in whichever discipline they may be developed, ignore their contexts. This leads to the mistaken conclusion that the actual course of events is determined by the laws of nature whereas contingency gets ignored. Nature, Pannenberg argues, ought to be understood as historical and natural laws as the uniformities abstracted from contingent events.[19]

History rather than determinacy provides the "gate" for increased traffic between science and religion, notes theologian Ted Peters, adding that this is a space in which both theologians and practitioners of the new sciences are at home.[20] The very existence of the world, its conservation and its governance, are all aspects of this history. To talk about the contingent existence of the world is to raise the question of a creation in time, an idea that resonates with Christian theology (*creatio ex nihilo*). The word "creation" implies derivation and attendant issues of value: Is purpose given or embedded in the natural world? Debate over technology-driven ethics begins here.[21]

Resolution of ethical issues involves governance. Governance is based on factual information and informed consensus. Discussion in the public square involving science and religion is too often unilateral and based on ideological agendas. Attitudes often harden, and rigid positions result in polarizing certainty and unwillingness to compromise. A well-publicized venue that represents reasoned views based on fact and forged by legitimate discussion of well-meaning scientists and theologians can offer new and creative solutions to knotty dilemmas and, equally important, provide an example of the fruitful results of this dialogue. Perhaps such a case is that surrounding current stem cell debate and research. By such a process, the discussion generated in academia sifts into public consciousness and provides the basis for mutual cooperation and ethical resolution. The unique diversity of scientists and theologians in the many academic institutions that characterize the Boston area make this city the ideal site for such a confluence of ideas to occur.

Whether the mystery and awe of the story of creation comes to us from modern cosmology or through religious traditions, or both, scientists and theologians can agree that sentient life, particularly human life, is a rare and remarkable privilege in the universe. The ability to reason, sing, dance, and love is a unique gift, regardless of the means by which it is derived.

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[19] See Pannenberg, "God and Nature," trans. by Wilhelm C. Linss, in *Toward a Theology of Nature*, ed. by Peters, pp. 50-71.

[20] Peters wrties, "To the theologian, the enduring forms of nature right along with single events appear as the contingent product of the activity of a free God." See his introductory essay in *Toward of Theology of Nature*, p. 10.

[21] Lesslie Newbigin, *Foolishness to the Greeks. The Gospel and Western Culture* (Geneva: World Council of Churches, 1986), pp. 65-94. An understanding of critical realism as a place where a philosophy of science and theology might meet is given by W. van Huysteen in *Theology and the Justification of Faith* (Grand Rapids: Eerdmans, 1989), ch. 9; and in Michael Banner, *The Justification of Science and the Rationality of Religious Belief* (Oxford: Clarendon Press, 1990).

Section Three: On Being Human - Religion and Science in Dialogue About World View

The Boston Center can provide an important service by acting as a forum for discussion on what it means to be human. Profound questions with great implications for culture and ethics can be analyzed by minds heavily invested in the various world views. Is the human mind an epiphenomenon of evolved materiality of human neurobiology, as the sociobiologists or the evolutionary psychologists would indicate, or is there some greater spirituality that transcends the biological mechanism? And, more important, what implication does either of these views have for discourse about ethics and real progress in an environment where potentially wonderful technology is developing rapidly on several fronts? Only by bringing together minds interested in rational discussion on these questions can any kind of progress be made in resolving them, or can their reasonable solutions have any impact on public discourse.. Is the best approach to let technology continue unabated and respond to ethical questions as they arise? Or is there a common ground by which pending questions can be systematically explored by trying to foresee future dehumanizing possibilities? How can the discussion be engaged in such a way that both sets of assumptions about human nature can be acknowledged and affirmed? The unique environment in the Boston area that is the home of theologians of many faiths, and scientists of many disciplines, working at the cutting edge of new technology, provides a legitimate forum for exploring these questions.

Section Four: Religion and Science in Dialogue About Education

In this section we proceed to strategies for education, ministry and the building of sustainable communities attuned to issues of ethics as related to the science and religion dialogue. Education, to bring up or lead forth, implies a shared or accepted conception of fullness or maturation. In this sense education happens in the context of communities which have shared values, values that people believe need to be passed on to others in the same generation or intergenerationally.

To further the science and religion interaction, and to broaden its impact on the public square, education is needed at two levels:

- Professionals in each discipline should develop a working knowledge of the systematics of the other. Ministry students need to understand the scientific method and appreciate the great influence of science and technology on the environment in which their ministry will occur. At the same time, working scientists must develop an appreciation of potential ethical implications of technological advances, and the resources available among theologians and people of faith for discourse on these possibilities.
- Academic discussions can only have a positive impact on society if their results are carried to the public at large. There exist few vehicles by which the general public can be kept informed of these discussions and weigh in on the ethical questions outside the emotional spotlight of ideology. A suitable method must be developed to carry this discussion to the public in a form that is comprehensible and thought-provoking.

Boston is blessed with world-renownd leadership in both religion and science communities. Beginnings of collaboration occurred with the Center for Faith and Science Exchange (now InterFASE) in the 90s as Rev. Barbara Smith-Moran worked first with the Episcopal Church and then collaboratively with the Boston Theological Institute. The mission of InterFASE has developed to promote the dialogue between science and religion to people of faith by conducting discussion groups at local churches. The strong and enthusiastic interest generated by these courses is a clear indication of the need to address the questions and concerns of people of faith and provide broader ministerial training to do so. Rev James Miller whose science and religion credentials include work with the AAAS DoSER group agrees. He observes, "Most main line churches, in their ministerial practice, do not prepare churchgoers to understand scientific issues which touch upon theology". Furthermore he says, "None of the major science-religion centers deals with the issues where the rubber meets the road, namely, how such issues bear upon pew-sitters' lives." Miller insists, "The relevance of science to religion has to be infused, not just talked about in ministerial preparation." Owen Gingerich, Research Professor of Astronomy and History of Science Emeritus at Harvard University, has suggested to us that this is a niche which a Center such as we are proposing needs to fill.

A Center for Science, Religion, and Ethics in Boston would be a source for discussion among leading minds in academia about the interaction of science and religion. This dialogue has inherent value for its own purposes, but the positive results of these discussions can only have cultural impact when brought into the public square. One vision for this Center is to be a leader in generating the discussion at the level of the general public. To do so requires knowledge of the discussion, an awareness of the scientific and theological principles involved, and the ability to accurately translate this knowledge for laypersons so that it is understandable and its implications are appreciated.

Reports from InterFASE, based on its growing experience of carrying the dialogue to local churches, are enlightening. When courses in science and religion are offered in local churches, to the people in the pews, it has been a common result that church leadership reports that the courses are better subscribed than any other adult education offerings at the church. In addition, the attendees are often church members who are outside the mainstream of church involvement. Many are scientists whose trained skepticism dominates their daily activities, and they feel conflicted by their faith participation. Some churches that have advertised these courses in the general public have discovered appeal to people outside their congregation; some have added members whose first contact with the church was such a course offering. What this experience points to is the need, even hunger, of the general public being involved in these discussions. A center such as envisioned in this project would provide a way to fill this need, and a centralized forum that enjoys the respect of the academic community and gives a credible voice to be heard by the general public.

Acting as a consortium of seminaries and schools of theology, the Boston Theological Institute offers a unique Certificate Program in Science and Religion that is

designed to prepare ministers and religious educators to have a working knowledge of established scientific principles in fields of specialization including natural sciences, ecology, neuroscience, and ethics. The certificate is a supplement to traditional education and provides preparation for community interaction from well-informed theologians.

At the same time, in the colleges, many scientists and teachers have personal religious traditions. They have students who ask questions leading beyond the space-time continuum restraints of much science teaching. They wonder how others of some religious faith help their students address such questions. Kirk Wegter-McNelly, Assistant Professor of Theology at Boston University School of Theology observes:

> Both science and religion are implicated in many of the most controversial social issues of our time, such as the manipulation of the human genome and the teaching of evolutionary theory. Those who are spearheading the establishment of a new 'science and religion' center in Boston rightly see the urgent need for sustained collaborative work on these issues. They are also keenly aware of the vast potential for such collaboration that lies within the resources of the member schools of the Boston Theological Institute (BTI)… the time is ripe for the establishment of such a center in Boston.

This center would round out and coordinate some already existing efforts in the Boston area. It would add a venue for ground-breaking discussion. It would assist in promoting the work of the Boston Theological Society's efforts towards pastoral education in science and religion, and assist in packaging the information, based on the InterFASE experience, for broader consumption. The outcome would be to raise the level of awareness of issues at all levels of the science and religion dialogue, from academia to the general public, and to raise the level of public discussion in ethical issues that cross all cultural boundaries

If values have their role in education; if all education is developed in terms of a certain normativity, the questions of ethics call us to develop patterns of training within a holistic epistemology and metaphysics. We are reminded that most ethical issues are less amenable to a technological fix than to a pervasive philosophical approach.[22] This reminds us that the assumptions we bear about ourselves will be translated into those we have about our world. If this is the case then religion, as well as all indigenous knowledge, is a necessary partner in cultural dialogue, not simply an ancillary player.[23] When religion is taken seriously then theology will be considered as necessary a discipline as physics. Theology is the science of religion.

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[22] Nicholás M. Sosa, "The Ethics of Dialogue and the Environment: Solidarity as a Foundation for Environmental Ethics," in J. Baird Callicott and Fernando J. R. da Rocha, eds., *Earth Summit Ethics*, pp. 47-70. See also John Young, *Sustaining the Earth* (Cambridge, MA: Harvard University Press, 1990); and note the eliminative implications of work in artificial intelligence as a relfection on anoher dimension of mechanism in the natural world, in Robert Wright, "Can Machines Think?" *Time Magazine* (March 25, 1996): 50-58.

[23] Mary Evelyn Tucker, "Educating Eco-logically," *Journal of Curriculum Theory* 10.4 (1996): 67-82.

Religious communities are the places where values are worked out in practice. They, like many universities, transcend the ecosystem in their membership and commitment.[24] Even universities are a subset of religious communities as questions, unresolved in worship, are wrestled through in rhetoric and dialectic in schools that are birthed for such purposes. This argument rejects that of Habermas who sees religious communities as cultural backwaters.[25] It also rejects those views that see religion as ministering only to the needs of its adherants.[26] Rather, it follows Charles A. Taylor's idea that individuals work out their identity in communities of discourse.[27] These communities of individuation are enlarged in our conception of the world in which they lie. Society needs its communities of faith for nurturing the larger civil society.[28] The hope grounded in transcendence brought to bear when the environmental crisis, to name one, is considered.

Religious communities can inform - and must be informed by - the technological society in which they are embedded. The clear lesson from this discussion as it is currently reported and too often practiced is that uncompromising certitude leads only to intractable positions and disregard for whatever value comes from the opposing view. A Center for Science, Religion, and Ethics located in a unique area rich with collective knowledge in both fields as exists in Boston can be a vital force for transformation and a catalyst for effective communication and decision-making that acknowledges all viewpoints.

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[24] Ninan Koshy, *Churches in the World of Nations. International Politics and the Mission and Ministry of the Church* (Geneva: WCC Publications, 1994); and see Paul Wapner, *Environmental Activism and World Civic Politics* (Albany: State of New York Press, 1996). Wapaner gives detailed attentioni to the role of transnational environmental activist groups such as Greenpeace, the World Wildlife Fund, and Friends of the Earth.

[25] Jürgen Habermas, *Habermas, Modernity, and Public Theology* (New York: Crossroad, 1992).

[26] See this position as variously represented in the theologies of George Lindbeck, Stanley Hauerwas, and John Millbank. See in Robert N. Bellah, "How to Understand the Church in an Individualistic Society," in R.L. Petersen, ed., *Christianity and Civil Society: Theological Education for Public Life* (Maryknoll: Orbis Books, 1995), pp. 1-14.

[27] Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989); and idem, *The Ethics of Authenticity* (Cambridge, MA: Harvard University Press, 1992).

[28] See the Report by Leslie Lang, *Religion's Role in Preserving the Environment*. A Nationwide Leadership Conference for Catholic, Jewish, and Protestant Seminaries, April 1994 (The American Jewish Committee, Skirball Institute on American Values); and cf. Al Gore, *Earth in the Balance. Ecology and the Human Spirit* (Boston: Houghton Mifflin, 1992).