

Paper Title: The Science and Religion Dialogue: At the Heart of Humanistic Education and Global Development

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Abstract:

The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.

- Isaac Asimov

We have learned to fly the air like birds and swim the sea like fish, but we have not learned the simple art of living together as brothers.

- Martin Luther King, Jr.

Our paper responds to the question, “is the science and religion dialogue a particular and idiosyncratic academic sidelight or does it cut to the heart of liberal, humanistic education” with a resounding yes to the latter. We contend that the science and religion dialogue not only provides energizing lifeblood to liberal, humanistic education, it recovers and revitalizes the classical humanist understanding of the university as the principal institution in which humanity’s most challenging scientific and technological developments, social and political questions, and spiritual and ethical concerns may be systematically investigated, creatively reflected upon, and publicly discussed. In light of contemporary global social, political, scientific, ecological, and religious realities, the value of recovering and revitalizing this understanding is vital.

We share the view articulated in the epigraphs from Isaac Asimov and Martin Luther King, Jr. that our spiritual and moral development lags tragically behind our scientific and technological development. While science and technology allow us to accomplish things that were until only recently the stuff of science fiction, we have as yet to learn to live as a global community in peace and justice.

In no small measure our ability to learn this lesson requires diverse religious traditions to overcome polarizing discourses and social balkanization by finding and forging common moral, ethical, and spiritual ground. In an age characterized by increasing global interdependence, continuing religious conflict, and revolutionary developments in science and technology, we are challenged to construct a global culture that affirms religious diversity, encourages peaceful relations among persons and nations, and possesses the scientific literacy and ethical wisdom essential to ensuring that science and technology are utilized to enhance our shared conditions of life.

We argue that the science and religion dialogue makes a fundamental contribution to achieving these goals. This dialogue not only enriches our definition of what it means to be educated by preparing individuals to respond

wisely to the varied challenges we face as global citizens, it also provides a local forum in and global network through which scientific researchers from around the world and representatives of the world's religious traditions may share their ideas in a spirit of openness, generosity, and appreciation.

Drawing from our successful experience teaching a cross-disciplinary course entitled "Faith and Life Science" at Virginia Commonwealth University, coordinating a Local Society Initiative forum series on science and religion, and integrating our respective areas of expertise as a social psychologist and scholar of religion, we will elaborate on the claims we make regarding the importance of the science and religion dialogue and describe some of the pedagogical strategies we use to ensure this dialogue fosters creative ways of responding to religious difference, scientific and technological innovations, and the social and ecological challenges we share as citizens of the world.

Biographies:

J. Brian Cassel: J Brian Cassel, PhD is a systems analyst at the Massey Cancer Center, and an adjunct professor in religious studies. With colleagues Wood and Quillin, he created the "Faith and Life Sciences" course at VCU in 2002. His doctorate is in social-personality psychology, and he wrote his dissertation on altruism and AIDS volunteers. He has also worked as an analyst and program evaluator in HIV/AIDS, and has taught social and health psychology, research design, clinical outcomes evaluation, and a new Honors Program course on "the social psychology of morality and justice". His research interests include bioinformatics, altruism, the death penalty, and the social construction of sin.

Mark Wood: Mark Wood, Ph.D. is an associate professor and coordinator of religious studies at VCU. Professor Wood teaches courses on religion, ethics, and society. He has published articles on religious studies, education, and democracy. His book on social philosopher Cornel West explores these issues in the context of the movement for democratic globalization. He has taken students to Cuba and Italy on summer study abroad programs. Dr. Wood is an advocate for VCU's community engaged learning program and education for social responsibility.

Paper Text:

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At the Heart of Humanistic Education and Global Development**

The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.

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We have learned to fly the air like birds and swim the sea like fish, but we have not learned the simple art of living together as brothers.

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The science and religion dialogue not only provides energizing lifeblood to liberal, humanistic education, it recovers and revitalizes the humanist ideal of the university as the principal institution in which humanity's most challenging scientific and technological developments, existential and social questions, and spiritual and ethical concerns may be systematically investigated, creatively explored, and publicly discussed. The science and religion dialogue educates citizens to engage thoughtfully, creatively, and ethically in discussions and in the processes of making decisions regarding the use of science and technology and in matters related to societal development. Moreover, because the science and religion dialogue brings persons from around the world into conversation with each other, it also contributes greatly to the education of persons who are capable of thinking and acting as responsible citizens in their local communities and as citizens of the world. In doing this it also fosters the development of a cosmopolitan culture that affirms religious diversity and strives to discover universal values to guide our shared development. In light of contemporary global economic, ecological, political, scientific, and religious realities, thinking and acting as wise citizens of the world has never been of greater importance. Indeed, the science and religion dialogue is not only vital to recovering and reinvigorating the humanist model of education, fostering global democratic citizenship, and a global culture of goodwill, but also to addressing the urgent socioeconomic and ecological challenges we must address if we are to survive, let alone flourish, as human beings.

Chemist and science fiction writer Isaac Asimov and theologian and human rights advocate Martin Luther King, Jr. lamented throughout their lives that our moral and spiritual development lagged behind or at minimum was tragically out of step with our technological and scientific development. "We have guided missiles," said King, "and misguided men." Now, some years after their passing, our circumstances seem to have changed very little. We seemingly lack the ethical wisdom to utilize the earth's precious bounty and our own creative powers in a manner that guarantees all human beings enjoy robust natural and social conditions of existence. Though the estimated cost of achieving the United Nations Millennium Development Goals is relatively insignificant—indeed, it is trifling when compared to the sum of money that U.S. citizens alone spend every year on cosmetics, alcohol, and pet food—we have so far been unable to arrange

our relations with each other and the earth in such a way that we eradicate poverty, let alone ensure all persons may flourish in a manner guaranteeing future generations will be able to do the same. While science and technology allow us to accomplish feats that were until only recently the stuff of science fiction, we have as yet to learn to live as a global community—as one family, to borrow from King—in peace, dignity, and justice.

Unlike the scientific challenge of genetic engineering, stem cell research, and cloning, poverty, as well as hunger, disease, ecological degradation, and alternatives to war appear to present problems that exceed our ability to solve, an appearance that provokes many of us to consider the unpleasant possibility that such problems are an inescapable, albeit tragic, consequence of the basically self-oriented nature of human beings and/or of the morally indifferent nature of our universe. Philosophical misanthropes and social Darwinists have adopted and casually promoted such a view, sometimes even passing it off as a scientifically accepted fact, and in so doing have contributed in no small part to the perpetuation of dreadful realities.

We suggest, however, proceeding according to a different vision, one that is inspired by the hope expressed in humanity's great spiritual traditions, the powers embodied in our scientific and technological achievements, and the optimistic spirit that animates the Metanexus Institute and all persons around the world involved in the science and religion dialogue and who are committed to building a truly generous world community for all. We believe the science and religion dialogue does much to assist in the shared human project of rendering our inability to live in peace and justice a condition of the past. Indeed, we assume that despite the bad news and there is plenty for sure, we are closer than ever to achieving this and many other inspiring humanitarian goals. As dark as the days often are, there is much light in our present situation, light made brighter by the efforts of scientists and religious leaders everywhere who are committed to working together to better understand each other and address our shared human concerns.

Arranging our relations with each other and the earth in a manner that makes it possible for us to develop in a socially and ecologically responsible manner requires, among other accomplishments, that representatives of the world's religious traditions overcome that which divides them by finding and forging an agenda to uplift humanity and replenish and sustain the larger creation to which we, along with other creatures, belong. It also requires diverse religious traditions and science to forge a relationship that enables each to be enriched by the other, such that science, which, as George F.R. Ellis writes, tells us “what is,” and religion, which tells us “what ought to be,” fruitfully support each other and in so doing provide us with the intellectual and ethical resources required to make wise decisions regarding the development and application of science and technology.¹

The science and religion dialogue provides an important forum through which we may, then, overcome not only that which divides religious traditions from each other, too often violently so, but also that which keeps science and

¹ p. 1.

religion from enjoying more fruitful relations. We are challenged to build a global culture that affirms religious diversity, encourages non-violent relations between persons, communities, and nations, and possesses the scientific literacy and ethical wisdom necessary to solve the difficult and in many cases worsening problems of poverty, hunger, homelessness, ecological degradation, and war that prevent human beings from living together in dignity, peace, and justice.

I. Globalization and the Science and Religion Dialogue

Dr. Susan Greenfield, director of Oxford's Centre for the Science of the Mind, contends that we can only understand the way the mind functions if we understand the context within which minds exist. To understand how the brain functions we must explore not only 'correlates of consciousness—what happens in the brain, what kind of landscape there is chemically that matches up with certain feelings and certain sensations' but also the "cultural context of that correlation between brain and behavior."² In a like manner, to understand the nature, significance, and value of the science and religion dialogue it is useful to understand the global context within which this dialogue takes place.

We are living in the midst of one of the most dramatic periods of transformation in human history. The globalization of our social, political, economic, cultural and spiritual relations is radically extending and deepening the degree to which we depend on each other for our existence as individuals and as members of diverse communities and nations. Virtually every aspect of our personal life, from the food we eat to the energy we consume, clothes we wear, and entertainment we enjoy, is made possible by global networks of communication and transportation, and relations of production, distribution, and consumption. It would be virtually impossible to identify a single aspect of our life that is not the fruit of the combined labor of many persons, most of whom we never meet and know little, if anything about. Indeed, our capacity to act responsibly as members of the human family is in no small measure diminished by our lack of knowledge regarding the nature of life for persons stretching around the world whose own labor and life make our life possible.

The expansion and deepening of global relations of cooperation has profoundly enriched the lives of human beings around the world. Products of all kinds are now readily available in markets from one corner of the world to the other. The internet enables us to maintain relatively inexpensive and regular communication with family members, colleagues, and friends from around the world. As a result of the internet and other forms of global communication, we are now more aware of and responsive to conditions of life for persons in other parts of the world than we ever have been as a species. Sir John Templeton notes that "the worldwide outpouring of support for the victims of the Indian Ocean tsunami is a manifestation of what theologians call agape love—a pure, unlimited love for every human being."³ But this love could not have been so effectively expressed without the benefit of the global communication systems that brought

² See Keller.

³ p. 5.

images of suffering into our homes and hearts and allowed us to contribute money and other resources to the relief effort. Modern air, sea, and land transportation systems that made it possible to send food, water, medical supplies, and people to alleviate suffering and rebuild the lives of millions. Humanity's response to the Tsunami disaster demonstrates the good that results when such values as compassion, justice, dignity, and agape love inform our efforts.

Globalization has greatly facilitated worldwide recognition of our common humanity and our mutual obligation to uplift one another. It has dramatically accelerated the development of cosmopolitan culture by bringing more people from around the world into more frequent contact with each other, both electronically and face-to-face. In this way, globalization is slowly weakening nationalist, racial, ethnic, and religious forms of prejudice that depend on, as all forms of prejudice do, ignorance regarding the nature of those persons whom are subjected to prejudice.

It is not accidental that the development of the philosophy of human rights, a philosophy most importantly expressed in the 1948 United Nations Declaration of Human Rights, and its growing international acceptance and institutionalization by nations around the world have occurred at the same time as the spectacular expansion of our global interdependency and recognition of the universal character of human concerns, needs, aspirations, and values. Indeed, globalization has accelerated the pace at which we recognize each other as *human beings*; a fact that may at first glance seem like stating the obvious until we consider that for a good portion of history the vast majority of human beings have not been fully or, at times, even partially recognized *as* human beings. Today, however, the idea that every person ought to enjoy equal rights and freedoms, and, even more, that all persons ought to enjoy relatively equal access to the social and natural resources required to develop their individuality is becoming a universally recognized principle of human interaction and development. Indeed, this humanitarian principle is central to cosmopolitan culture, fueling the worldwide movement to build social, political, and economic institutions that ensure human rights become a reality for all.

A Divided Human Family

Though globalization has extended and deepened cooperative relations of global interdependence, fostered the development of cosmopolitan culture, and encouraged the universal recognition of human rights, it is also true that the tremendous benefits of globalization have been and remain, to say the least, unequally shared. Indeed, on balance it's not so clear that the positive gains outweigh the terrifying realities of poverty, disease, hunger, ecological devastation, terrorism, and war.

While overall global production of wealth has increased steadily over the past 35 years, the gap between the richest 20% and the poorest 80% of human beings, within and between nations, has also steadily increased during this same period. The statistics are numbingly familiar at this point: almost two billion human beings, roughly one in three, exist on less than two dollars each day. Moreover,

an “analysis of long-term trends in world income distribution (between countries) shows that the distance between the richest and poorest countries was about 3 to 1 in 1820, 11 to 1 in 1913, 35 to 1 in 1950, 44 to 1 in 1973 and 72 to 1 in 1992.”⁴ The “assets of the world’s three richest people . . . are more than the combined GNP of all least developed countries on the planet.”⁵ One of those persons, Microsoft CEO Bill Gates, is as a result of his charitable work and spouse’s influence well aware of and remarkably upfront regarding the extent of global poverty. At a Seattle conference on investment opportunities and the digital divide, Gates enlightened his audience.⁶

Mr. Gates: I mean, do people have a clear view of what it means to live on \$1 a day? . . . There’s no electricity in that house, none. So is somebody creating computers that don’t require electricity?

Question [*sic*]: No, but there are solar powered systems.

Mr. Gates: No, there are no solar power systems for less than a dollar a day, honest. You can’t afford a solar power system for less than \$1 a day. You’re just buying food, you’re just trying to stay alive.

Question: There are government and World Bank initiatives to place these systems in these villages. There’s money coming to do this work, and buy this technology.

Mr. Gates: You don’t understand. When people say \$1 a day, that includes every government thing that’s given to them, everything they have shared across that entire village. It includes everything. And there’s no solar power system in there for \$1 a day. There’s just not.

Question: Okay. I mean –

Mr. Gates: You live in a different world.

Of course the person to whom Gates was speaking, like Gates, like all of us, lives in the same world as do persons living on a dollar a day, a world increasingly divided into starving and super-sized. Among the statistics that demonstrate the magnitude of our shared incapacity to satisfy even the most basic of human needs, we note the fact that every day ten times as many persons die, the majority of them children, from preventable diseases and malnutrition as died in the terrorist attacks on September 11th, 2001. Not just 24,000 on September 11th, but 27,000

⁴ See United Nations.

⁵ See Shalom.

⁶ See Gates. This transcript reads awkwardly because statements are designated as “questions.” The conference itself is a stunning reminder that from the point of view of capital poverty is a problem only because it limits wealth accumulation.

on September 11th, 12th, and 13th, and on and on until this day, the day on which you are reading these words.

According to the United Nations 2004 Human Development Report, the infant mortality rate in the least developed nations is more than 100 deaths per 1,000 births and in the most developed nations 6 deaths per 1,000 births. The “gap itself is staggering,” notes historian and human rights scholar Micheline R. Ishay, author of The History of Human Rights, “pointing to the various ills that accompany poverty, which in turn affect the rights of the most vulnerable people in societies. While legal recognition of children’s rights should be considered a first step, it cannot be a substitute for real international efforts to diminish the growing inequality between rich and poor nations”⁷ and, I might add, growing inequality among different communities within the wealthiest nations.

Earth on the Brink

In addition to economic divisions, all evidence suggests that globalization has increased the speed at which our shared natural conditions of life are being degraded. From ozone depletion, global warming, toxic waste emissions, and coral reef bleaching to deforestation, desertification, and species extinction, the biotic community and biological basis of life is everywhere threatened. According to the Union of Concerned Scientists:

In the coming years, the United States and other nations stand to become increasingly stressed by major global environmental changes. These changes—climate change, deforestation and other land-use changes, and the introduction and spread of invasive species—are largely driven by human activities. Left unchecked, these changes will have enormous impacts on society and on forests, wetlands and other ecosystems and their continued ability to provide goods and services essential for human welfare. Moreover, these global changes are closely linked, with one often substantially affecting another. The design of effective socially and ecologically sustainable solutions must take these linkages into account.⁸

At a recent international conference on biodiversity held at the UNESCO headquarters in Paris, French President Jacques Chirac warned that “we are without doubt the last generations to still have the capacity to stop the destruction of living things before an irreversible threshold has been crossed—beyond which the very future of humanity on Earth could be compromised.”⁹ While Chirac’s comments point to the dire nature of our situation and the importance of acting quickly and globally to reverse destructive trends, many environmental organizations paint an even more worrisome portrait of our current situation,

⁷ p. 304.

⁸ See Union of Concerned Scientists.

⁹ See Sachdev.

arguing that we have less than several generations to build an environmentally sustainable mode of global development.

The most recent reports from the World Wildlife Federation, World Resource Institute, Green Peace, Rainforest Action Network, the International Institute for Sustainable Development, the World Conservation Union, and the Friends of the Earth, to name a few of the many organizations concerned with environmental conditions, are darker than somber. All of these organizations echo Chirac's comments that we must act soon and decisively to alter our mode of global development such that we reverse our destructive patterns of production and consumption and construct a mode of development that replenishes and sustains our shared natural conditions of existence and development.

According to a recent study done by 1,300 scientists from 95 countries, representing the most prestigious scientific institutions and associations in the world, "approximately 60 percent of the ecosystem services that support life on Earth—such as fresh water, capture fisheries, air and water regulation, and the regulation of regional climate, natural hazards and pests—are being degraded or used unsustainably." Released on March, 30, 2005, the authoritative report, entitled *the Millennium Ecosystem Assessment*, paints a grave picture of our planet's health and strongly argues that unless we quickly begin to chart a sustainable course of development, the destruction of nature will make achieving the United Nations Millennium Development Goals impossible.¹⁰ As Steve Connor reports, "people should no longer take it for granted that their children and grandchildren will survive in the environmentally degraded world of the 21st century."

Walt Reid, the leader of the report's core authors, warned that unless the international community took decisive action the future looked bleak for the next generation. "The bottom line of this assessment is that we are spending earth's natural capital, putting such strain on the natural functions of earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted," Dr Reid said. "At the same time, the assessment shows that the future really is in our hands. We can reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required are substantial and not currently under way," he said.¹¹

Religious Conflict

In 1903 acclaimed sociologist W.E.B. Du Bois famously contended that the problem of the 20th century is the problem of the color-line. A century later, in the very heart of modernity, four decades after the passage of civil rights legislation, and more than a decade after the abolition of apartheid in South Africa, racism remains a real and in some place growing threat to good relations

¹⁰ See Millennium Ecosystem Assessment.

¹¹ See Connor.

among human beings. And yet, we might say that the problem of the 21st century is not the color line but rather the religion line.

In addition to socioeconomic divisions and ecological degradation, religious conflict tears our human family apart in many places around the world. Fundamentalism has been on the rise and remains a potent threat to the material and spiritual well-being of human beings everywhere. Religious scholar Malise Ruthven notes that for “many Conservative Protestants, Catholics are not Christians, Episcopalians and Unitarians are atheists, Mormonism is a dangerous cult, while Hinduism, Buddhism, and other non-Western religions are Satanic.”¹² And while the individuals and organizations which maintain this exclusionary theological view find themselves, as Ruthven adds, having to make “tactical accommodations with pluralism” to advance their moral, theological, and political agendas, they understand their concept of God, salvation, and God’s commandments as being in principle “non-negotiable, absolute, and unconditional.”¹³

“Fundamentalism,” writes religious scholar Karen Armstrong, “is a global fact and has surfaced in every major faith in response to the problems of our modernity,” a point which is vital to understanding how best to build a world without terrorism.¹⁴ Though not all fundamentalists employ violence in their struggle against the evil of modernization, all fundamentalists understand themselves as spiritual soldiers in this struggle. Benjamin Barber borrows the Islamic concept of *jihad* to describe

a generic form of fundamentalist opposition to modernity that can be found in most world religions ... They fight back, struggling reactively against the present in the name of the past; they fight for their religious conception of the world against secularism and relativism; they fight with weapons of every kind, sometimes borrowed from the enemy, carefully chosen to secure their identity; they fight against others who are agents of corruption; and they fight under God for a cause that, because it is holy, cannot be lost even when it not yet won.¹⁵

Lamentably, fundamentalism shows little sign of diminishment, challenging the ecumenical, pluralist affirming spirit embodied in such assemblies as the World Parliament of Religions and the Metanexus Institute’s sponsored Science and Religion dialogues. The threat of violence is not idle, as we know, and while nations around the world have devoted a great amount of time, energy, money, and persons to combating religious-inspired hostility, terrorism, and violence, the world remains torn by religious conflict.

¹² p. 47.

¹³ *Ibid.*

¹⁴ In Reed, p. 11.

¹⁵ 1996, p. 205.

Globalization and Democracy

As indicated, socioeconomic globalization and international communication has fostered growing interdependence and awareness of our commonalities. With this recognition has come a shared appreciation and commitment to the idea that all human beings ought to enjoy equal civil rights, including the right to be represented, to determine one's own development, and participate in governing our interconnected societies.

What has also become clear is the need for us to rethink what is meant by democracy. As corporations increasingly act across borders and human beings are brought into relationships with each other through global networks of production, exchange, and consumption, it has become increasingly clear that we need institutions that are capable of regulating these relations in a manner that benefits all. Moreover, inasmuch as the policies of any one nation, and especially the most powerful nations, affect the lives and livelihoods of persons living in other nations, the need for rethinking representation beyond the limitations of national borders becomes apparent.

Thomas Hale, special assistant to the Dean at the Woodrow Wilson School of Public and International Affairs at Princeton University, puts the problem this way:

What are the implications for democracy when decisions made in one country start mattering to people who live elsewhere? ... Consider global warming. America creates far more greenhouse gases than any other nation, yet it is other places – places with no influence over American policy – that will face the harshest effects as the sea rises and tropical diseases spread to new regions. ... Similar parochialism can be seen in US agricultural subsidies, Aids medicine patents, and a host of other cases in which US policies impinge sharply on the lives of foreigners, often with negligible benefit to Americans. ... There are good reasons why people outside the United States cannot vote in US elections. After all, critics will contend, the American government is elected to represent Americans. Nonetheless, it is important for advocates of freedom to realise that defining democracy exclusively at the national level can lead to serious problems when political concerns become transnational (2005: Open Democracy).

Increasingly the question is less about whether we ought to construct institutions that make it possible for us to coordinate socioeconomic development on a global scale and more about the nature of the institutions and the interests they serve as they coordinate this development. The World Trade Organization, World Bank, and International Monetary Fund, and World Economic Forum, among other organization and institutions, coordinate much of global development; though the individuals who comprise them are unelected and unaccountable to the populations affected by the decisions they make. What remains to be done is to construct institutions that are genuinely by, of, and for the

people, that make it possible for the demos to express its needs and aspirations and which are concerned above all with ensuring globalization's benefits are widely distributed.

In addition to rethinking the nature of democracy relative to the problem of representation and transnational relations, it has also become increasingly clear that we need to rethink democracy in terms of what kind of control the *demos* enjoys. A growing number of academic scholars and a growing international movement are calling for the creation of institutions that subordinate global socioeconomic planning to the will of the demos. This means extending democratic rule beyond the realm of politics to include the realm of economics so that our productive activities are subject to popular authority and accountable to the people.

The Promise and Peril of Globalization

Benjamin Barber acutely observes, “the internationalization of jobs, production, finance capital, and consumption”; “the transnational character of public health plagues like AIDS, SARS, and the West Nile virus”; “transregional ecological threats like global warming and species extinction”; the globalization of information technology”; and “the spread of nonstate-based systems of crime and terrorism” all mean that “there can be no viable America without the world: no safety for American civilians, no security for American investors, no liberty for American citizens, unless there is safety, security, and liberty for all.”¹⁶

More than ever before the destiny of each of us is linked to the destiny of all. Martin Luther King Jr.'s argument, written on scraps of paper in a Birmingham jail in 1963, that “we are caught in an inescapable network of mutuality, tied in a single garment of destiny” so that “whatever affects one directly affect all indirectly” has never been truer than it is today.¹⁷ Our growing global interdependence and the fact that our problems are increasingly of a global nature makes possible ecumenical conversation and enjoins scientists, religious representatives, educators, and community members to engage in dialogue not only to wrestle with the profound questions of human existence but also with how we might build a humane and generous world community for all persons. Globalization makes possible and invites us to develop, to paraphrase King, an overarching loyalty to humanity, ahead of our own cultural, ethnic, national, and even religious affiliations. The processes of globalization are and will only continue to deepen the interdependent character of our existence. There is no way to reverse this trend and no reason why we should. Rather, we are challenged to build a mode of interdependence that benefits all human beings.

¹⁶ p. 46.

¹⁷ 1986, p. 290.

II. The Science-Religion Dialogue and Democratic Globalization

The science-religion dialogue has made and will continue to make a crucial contribution to building a mode of global interdependence that benefits all human beings.

Liberal Humanist Education

The science and religion dialogue enriches our definition of what it means to be educated by preparing individuals to respond and engage thoughtfully, ethically, and creatively as we respond to the challenges we face. Recovering and revitalizing the liberal humanist educational model is of particular importance in light of the growing standardization of public education (the S.O.L.-ification of education) and continuing reorganization of education to serve primarily corporate interests. As market forces exercise increasing influence over curricular and programmatic development, the humanist ideal of the university as a place that enables students and faculty to think critically and creatively about the meaning of existence has been increasingly diminished.

The impact of the market-driven organization of higher education affects scholarship in a variety of ways. For example, when universities form partnerships with private investors the latter frequently impose contractual obligations that restrict the freedom of scientists to share the results of their findings and in some cases to publish their results. As Steven Rosenberg, of the National Cancer Institute, indicates, “the ethics of business and the ethics of science do not mix well.” In addition to imposing restrictions on the exchange of information, corporations fund research that is likely to result in the production of profitable commodities, even while research into non-profitable areas may address social and environmental problems that need to be addressed to ensure the universal well being of the human community.¹⁸

The market driven allocation of university resources is evident in the upsizing of programs with close ties to profit-making industries (e.g. marketing, engineering, business, and the life sciences), and downsizing of programs that do not hold as much pecuniary promise (e.g. the humanities and social sciences). James Engell and Anthony Dangerfield point out that between 1970 and 1994 the number of students graduating with B.A.’s in English, foreign languages, philosophy, and religious studies declined overall, even as the total number of B.A.’s awarded to students increased. “Test what you will,” Engell and Dangerfield conclude, “the humanities’ vital signs are poor.”

It is in this within this context that the science and religion dialogue is taken place. By creating public forums and global networks through which psychologists, biologists, physicists, philosophers, humanities scholars, and representatives of diverse religious traditions communicate with each other and the public, the science and religion dialogue not only fosters interdisciplinary conversation and raises awareness regarding issues of significant existential and

¹⁸ See Silverstein.

public import, it also encourages us to think beyond the limits proscribed by our respective disciplines, locations, and experiences. The science and religion dialogue helps us to see beyond ourselves and to appreciate the complex nature of reality and the nature of our relationship to the global community. It supports the development of our capacities to think critically (and thereby to investigate, analyze, and judge the validity of truth claims), to make ethical judgments (and thereby to determine what is good, right, and just), to investigate the world and present our findings to others (and thereby to comprehend and educate fellow citizens), to appreciate beauty (and thereby to create environments that allow human beings to flourish), and to imagine alternative realities (and thereby to envision more humane ways of living). To the extent that developing these capacities is essential to living as responsible citizens, then downsizing the humanities means that our capacity to live as such is being diminished.

At our most recent public forum on sexual behavior and orientation, we brought together a geneticist from the VCU Massey Cancer Center, a psychologist from the American Psychological Association, an English and Women's Studies professor, and three representatives from the Christian tradition representing a broad range of views on sexual ethics. Our first public forum on stem cell research featured an expert on genetic research and in vitro fertilization, a political scientist, and representatives from Islam, Catholicism, and Judaism. Almost 200 community members joined us in our discussions. Every member on these two panels commented on how our discussions provoked them to think beyond the boundaries of their discipline, to think in terms of being a participant in a conversation about how we should live together in a manner that is mutually affirming.

The science and religion dialogue recovers and revitalizes the liberal, humanist ideal of the university as a place where, to paraphrase Dr. Tom Huff, vice-provost for Life Sciences at Virginia Commonwealth University, we ask the "big questions" about the nature of existence as well as the nitty-gritty questions about how we ought to live. By assembling representatives of the biological, physical, and social scientists, humanities scholars, and religious representative, the science and religion dialogue creates a mode of knowledge production and dissemination that is not only dynamically interdisciplinary but also that enables us to think critically and make wise ethical judgments about a range of locally and globally consequential matters. It also empowers us to imagine how we might address these issues in a manner that responds to the needs of the entire human family.

By recovering and revitalizing the liberal, humanist ideal of the university, the science and religion dialogue puts the universe, in all its dynamic interconnectedness, particularity, beauty, and complexity, back into university education, and in so doing encourages the development of citizens who can act as thoughtful and compassionate citizens.

Global Democratic Culture

By bringing scientists and religious leaders together makes it possible not only for each to respond to such questions but also for such questions to be

addressed philosophically and practically; that is, religious representative can pose such questions as a way of provoking deeper thinking about the nature of our relationships to each other, other living creatures, and the earth, and scientists can pose such questions in terms of the kinds of changes we would can make with regard to such things as energy production, transportation, and food production, to live in a manner that truly celebrates creation and that ensures that present and future generations can enjoy creation.

The science and religion dialogue provides local forums and builds an global network through which social scientists, life scientists, humanists, theologians, lay persons, educators, ethicists, and citizens may share their ideas with each other in a spirit of openness, generosity, and appreciation. In doing so, the science and religion dialogue fosters the development of a mode of engagement that emphasizes active appreciation, listening, and cooperation to find solutions to local and global problems that are mutually satisfying. It creates a democratic citizenry and a culture that nourishes this citizenry.

In this respect, the science and religion dialogue is doing much to lay the cultural foundation for constructing representative institutions that ensure a mode of development that is responsible to the entire global community. The science and religion dialogue not only contributes a great deal to our awareness regarding conditions of life for persons around the world, it also contributes much to developing our capacity to emotionally identify with and respond to the suffering, struggles, hopes, and dreams of those with whom we share the world. We are increasingly capable of shedding tears not merely for “our own,” as if by “our own” we meant only those who shared our color, gender, sexual orientation, ethnicity, nationality, or faith, but rather with our fellow human beings and even, more, all other creatures with whom we share this wondrous blue-green, white-capped planet.

The science and religion dialogue provides precisely the kind of public space in which we may pose questions such as that posed by Tanya Berrett, a program associate with Earth Ministry, in her keynote address to individuals attending the “Celebrating the Wonder of Creation” conference held in May of 2004 Alaska Pacific University: “What would it mean to live in ‘right’ relationship with other members of this [world] house and as if it were owned by God and not as our own property to do with [it] as we please?”¹⁹

Referring to the “Universal Reason: Science, Religion, and the Foundations of Civil Society” initiative, Metanexus director William Grassie puts the matter very well when he writes that “the science and religion dialogue is precisely the kind of citizen diplomacy that the world needs today.”²⁰ Such diplomacy is not merely an alternative to the method of imposing democracy and human rights by force it is, we maintain, the only method that can ensure that whatever democracy is developed is supported by the demos. In this respect, the science and religion dialogue makes a significant contribution to the creation of the kind of democratic culture that is necessary to build global democracy.

¹⁹ Cited in Keller.

²⁰ p. 2.

The Global Soul

Closely related to what has been described in the previous two sections, the science and religion dialogue aids in the work of discerning those values that we share in common as human beings and thereby in the work of developing what might be described as our global soul. Thus, in addition to recovering the humanist ideal of education, and fostering a mode of engagement that privileges democratic deliberation, debate, and discussion, the science and religion dialogue also does much to achieve productive relations among religious traditions by helping persons of different faith traditions to identify principles and values they share as well as to converge around the achievement of practical social, political, economic, and ecological goals. Social and natural scientists, and scholars in the humanities play a key role in this work by providing knowledge about the social, cultural, and natural conditions of life we share and challenges we face and thereby clarifying the issues that we may work together to address.

Indeed, we have been struck by the number of times that individuals representing different religious traditions have expressed recognition of holding common positions and being guided by similar values on a variety of topics. In our discussion of the status of embryos and stem cell research we were struck by the degree to which Muslim, Christian, and Jewish representative shared in common a concern that the medical technologies and therapies derived from scientific research on genetics be available to all persons, rather than, as is so often the case today, being available only to those persons who can afford to purchase them.

The intense focus on fundamentalism, religiously inspired violence, and the war on terror have, we believe, distracted us from recognizing that humanity is currently undergoing a transformation in spiritual thought and practice that is far more powerful than is fundamentalism and has the potential to render the need to wage war against fundamentalist inspired terror obsolete. How soon this potential is realized has everything to do with our efforts to advance this revolution, a revolution which is being significantly advanced through science and religion dialogues around the world.

The science and religion dialogue enables us to discover, share, and celebrate the values we hold in common as human beings. In addition to compassion, love, justice, stewardship, peace, the dignity of all persons, and the goodness of all creation, our faith traditions affirm the importance of placing concern for others on equal footing as, if not even higher than, concern for oneself, to subordinate our need for personal convenience, instant gratification, and egoistic fortification by a concern to improve life for those with whom we share the earth. To act in this manner is to act in harmony with the universal values embedded not only within our respective religious traditions but also codified in international human rights conventions such as the United Nations Declaration of Human Rights and ethical codes of conduct that guide scientific research.

Nobel laureate Shirin Ebadi powerfully articulated what might be called our developing global soul at the most recent gathering of the Parliament of

World Religions in Barcelona, Spain. Ebadi, a citizen of Iran, “called on faiths from around the world to unite under a common political belief system. ... ‘It’s absurd that every religion has its own standard of human rights,’ Ebadi said. ‘If we carry on this way, we’ll have as many declarations of human rights as there are religions in the world, which will destroy the Universal Declaration of Human rights.’”²¹ The Parliament of World Religions, journalist Levitin writes, “looked like an intergalactic Woodstock. Rainbow-patterned dresses and satin pants draped like curtains around the bodies of American spiritualists, while stiff, gray tunics engulfed the Easter, slight-bodied followers of Shinto Zen. People drifted between conferences, rooms in flowing garments, jewelry that jingled and round Sufi hats. Jains and a smattering of new-age cultists sported slippers and starched, white cotton shirts and pants; and a pastel array of robes and togas covered the monks, Krishnas and other participants.”²² Amidst the diversity of sacred symbols, sacred texts, and ritualistic practices, participants were unified around four themes: refugees, Third World debt, access to clean drinking water and religious violence. In addition, representatives of diverse faith traditions were guided by a shared concern to advance the United Nations Millennium Development Goals, including the eradication of poverty and hunger, and promotion of health care, education, gender equality, and environmental protection.

In every one of these cases, science plays a key role by informing communities of faith about the nature and causes of these problems and what can be done to address them. By convening scientists and religious leaders, community members may learn not only about what different religious traditions have to say regarding the Millennium Development Goals but also about what may practically be done to accomplish these goals. In this respect, the science and religion dialogue is particularly fruitful for the full development of a global humanitarian culture that is capable not only of identifying with those who suffer but also acting effectively to alleviate that suffering and, optimally, acting effectively to create relations that do not cause as much suffering in the first place.

What is especially heartening is the movement toward the articulation of what might be called a shared global spiritual culture, one that affirms the right of religious expression as well as, and as important, the creation of social and natural conditions that make it possible for individuals and communities around the world to flourish. Like the World Parliament of Religions, which, as conference attendee Pamela Chaddock notes, helps us to overcome “the dogmas that keep religions closed within their own faiths, and to find a common denominator among them,”²³ the science and religion dialogue helps us discover that, as George Ellis explains, “the great world religions have a common core of ethical values that can be used to provide guidance on practical issues in science,”²⁴ as

²¹ Cited in Levitin.

²² *Ibid.*

²³ *Ibid.*

²⁴ Cited in Oord.

well as guidance on how we may organize our relations with each other and the earth so as to ensure that all persons may fully enjoy the great benefits of global interdependence.

III. Expanding the Dialogue

Finally, we suggest that the conflict between science and religion is in no small measure due to their being structured by the operations and outcomes of capitalism. While the historic and well-known conflict between science and religion is partly due to the intrinsic nature of their fundamental epistemological, methodological, and ontological assumptions, this conflict is today more profoundly the result of economic imperatives that prevent science from being guided by a vision of what is good for all of humanity and by uneven development that fuels religious hostility. The conflict between science and religion is a consequence of their mutual subordination to and deformation by the operations of corporate power and the institutionally legalized and culturally sanctioned structure of anarchic global competition for market-share and drive to accumulate wealth.

Corporations, possessing the legal fiction of personhood, are not only notoriously short-sighted, they are structurally organized and encouraged to operate without regard for the larger social and environmental effects of their decision making. Indeed, acting on behalf of the environment and human beings are increasingly viewed as obstacles to economic growth, i.e., the accumulation of more wealth.

The Union of Concerned Scientists recently did a survey of more than 1,400 U.S. Fish and Wildlife Service employees and found that a high percentage of the biologists, ecologists, and botanists, and other science professionals they surveyed "reported political interference in scientific determinations." The survey revealed the following:

- Nearly half of all respondents whose work is related to endangered species scientific findings (44 percent) reported that they "have been directed, for non-scientific reasons, to refrain from making jeopardy or other findings that are protective of species."
- One in five agency scientists revealed they have been instructed to compromise their scientific integrity—reporting that they have been "directed to inappropriately exclude or alter technical information from a USFWS scientific document," such as a biological opinion;
- More than half of all respondents (56 percent) knew of cases where "commercial interests have inappropriately induced the reversal or withdrawal of scientific conclusions or decisions through political intervention;" and
- More than two out of three staff scientists (70 percent) and nearly nine out of 10 scientist managers (89 percent) knew of cases "where U.S. Department of Interior political appointees have injected themselves into

Ecological Services determinations." A majority of respondents also cited interventions by members of Congress and local officeholders.

In short, political interests are significantly interfering with and compromising scientific integrity, making it difficult for this agency and others to do their job. While most, if not all, federal administrations have been prone to using scientific research to suit their own political agendas, the Bush administration's misuse and abuse of science has been, according to the UCS, exceptionally egregious in this regard, prompting scientists from around the country to publish a statement entitled "Restoring Scientific Integrity in Policy Making" in which they condemn the manipulation of research to advance what often seems to be an essentially corporate driven agenda. The document, released on February 18, 2004, now bears the signatures of more than 6,000 scientists, including 48 Nobel laureates. The statement offers detailed accounts of specific cases in which science has been ignored, results that conflict with policy goals deleted or reworded to support those goals, and outright falsifications of research, all of which, the signatories contend, has and will continue to significantly endanger the health, safety and well-being of U.S. citizens and citizens around the world.²⁵

Meanwhile, where corporate interests are not exercising their influence on government agencies charged with protecting the public's health, safety, and well-being, they are often advancing their agendas through the courts. The Alliance of Automobile Manufacturers and the Association of International Automobile Manufacturers filed a law suit against the people of California in an attempt to block legislation requiring automobiles sold in the state to adhere to higher emission standards and to increase their fuel efficiency. The Monsanto Corporation sues farmers around the world for engaging in age old historical practice of saving seeds from their plants for next year's crops so that they will be dependent on Monsanto which owns the intellectual patent on these seeds. Monsanto and Syngenta successfully prevented Minnesota legislators from banning the use of Atrazine, a pesticide that has been linked to cancer, deformities in frogs, and low sperm counts among humans. The pharmaceutical industry, as Carl Elliot notes in an op-ed piece for the February 2005 issue of *Science and Theology News*, "is now one of the most profitable and politically powerful industries in the United States," "can buy politicians to pass industry-friendly legislation [as well as] academic scientists to publish favorable journal articles [and] professional societies and patient support groups to spread the word," in this case, "on the newly medicalized disorders that its interventions are developed to treat. It can even buy bioethicists to dispense with any moral concerns."²⁶ And, when it comes to corporations sacrificing the welfare of human beings and nature to the goal of maximizing profits, we might, though we haven't, bring Enron, WorldCom, Big Tobacco, Halliburton, and the World Bank into the discussion. In

²⁵ To read more on these cases go to:

http://www.ucsusa.org/global_environment/rsi/page.cfm?pageID=1643. For more on the manipulation of scientific research see <http://www.msnbc.msn.com/id/7361346/>

²⁶ p. 5

short, corporations seem increasingly determined, always under pressure from global competitors, to ignore scientific research if it conflicts with the goal of maximizing profits.

In addition, the uneven development intrinsic to capitalist development has done much to exacerbate socioeconomic inequalities that have in turn intensified resource wars around the world. Indeed, what are often articulated and widely represented as conflicts over race, ethnicity, religion, and nationality are almost always fueled by socioeconomic inequalities and at another level battles for control over land, water, oil, and other precious resources. In *World on Fire*, Harvard professor Amy Chau argues “that the global spread of markets and democracy is a principal, aggravating cause of group hatred and ethnic violence throughout the non-Western world.”²⁷ From the conflicts between Jews and Muslims in Palestine and Orthodox Serbians and Muslims in the Balkans to Protestants and Catholics in Northern Ireland and Muslims and Timorese Christians in Indonesia, in every case, these battles are profoundly shaped by the larger socioeconomic context within which they develop and are perpetuated, a context whose dimensions are in no small measure determined by international political, economic, and military forces. Though not the only factor contributing to religious conflicts, as University of Maryland professor Ted Gurr writes, that such “conflicts tend to be more numerous and intense in regions and countries where systematic poverty is greatest.”²⁸ And, inasmuch as poverty shows little sign of diminishing around the world, we can expect conflicts to continue.

The problem, it seems, is that corporations suffer from a kind of structural myopia with regard to the larger life world within which they operate, have their effects, and depend on for their existence. That this is so has less to do with the individuals who operate them (though certainly individual personalities can be more or less greedy or committed to the public good) as it does the structural imperatives to which they are subject.²⁹ That individual politicians, stockholders, corporate executive officers, and employees may care about poverty, the environment, and workers’ rights does not alter in the least that the *structure* of corporate decision-making and the obligations imposed by share holders and global competition for market share make it virtually impossible for CEOs or, for that matter, governments to be responsible to ensuring the public’s welfare.

As a result of being unencumbered by religious values, moral imperatives, and humanitarian principles, corporations regularly let millions of tons of grain rot in silos while tens of thousands of children die every day from starvation,³⁰ invest billions of dollars into the production of horrifying weapons while 1 in 3 human beings live without education, health care, and housing, lobby against the production of generic AIDS medicines while AIDS engulfs the world in horror and suffering, and dump toxic waste into water supply systems while access to clean water is becoming as problematic as is access to healthy food, and produce

²⁷ p.9.

²⁸ p. 359.

²⁹ Loy, p. 100.

³⁰ See UNICEF.

seeds that are sterile to render the world's farmers dependents of corporate benefactors. Indeed, the World Trade Organization, which oversees and in large part regulates global investment, recently declared water to be a want, not a right, thereby clearing the path for it being privately owned and distributed on the basis of who can afford to purchase it; the poor will literally die of thirst. We are clearly a long way from the biblical ideal of creation being for all to share, and deeply out of sink with the scientific community's understanding of what must be done to ensure all persons enjoy access to water and that we maintain sustainable relationships with nature.

What we are suggesting is that capitalist organized international development increasingly presents a significant structural barrier to developing a healthy relationship between science and religion that would enable us to develop in a manner that benefits all human beings and future generations. The problem, in a nutshell, is that our current mode of global socioeconomic development is guided by principles which are opposed to those embodied in the concept of wisdom.

Wisdom (the opposite of short-sidedness and selfishness)

At the heart of all religious traditions is a concern for the well-being of other persons. Wisdom minimally entails an appreciation for the emotional, physical, social, existential, and spiritual needs of all human beings and, we might add, the entire biotic community. To the extent wisdom involves a basic recognition of and rich appreciation for the dignity and worth of all persons and even extending to future generations, and to the extent wisdom encourages us to act in ways that affirm this dignity and worth, acting wisely necessarily conflicts with the short-sighted and self-interested vision that guides the dominant mode of global development. The Iroquois counseled that we ought to act in ways that ensure our children's well-being unto the seventh generation. Or, as King wrote, "No one has learned to live until they can rise above the narrow confines of their individualistic concerns to the broader concerns of humanity . . . to live creatively and meaningfully, our self-concern must be wedded to concern for others."³¹

The work of building social, political, and economic institutions that are guided by the values of compassion, concern for others, community, equality, balance, justice, peace, and stewardship may also be fruitfully conceptualized as the work of building institutions that ensure the cultural, social, and economic rights enshrined in the U.N. Declaration are made inalienable rights and reality for all human beings. The expansion of the concept of human rights beyond civil and political rights, rights which guarantee freedom of association, representation, and expression, to include social and economic rights, rights which guarantee universal access to the resources required to fully develop the human personality, represents a bold leap forward in the history of human rights. To make this leap, to borrow from King, means bridging "the gulf between our scientific [and technological] progress and our moral [and spiritual] progress" such that we

³¹ King, 1956.

might as a result “transform this world-wide neighborhood into a world-wide brotherhood.”³²

As long as the social, political, and economic institutions that structure our productive and consumptive relations reinforce, reward, and result in behaviors that alienate us from each other and the earth, the full realization of the values expressed in our religious traditions will be forever prevented from becoming woven into the fabric of our everyday lives. Putting into practice our most cherished values, the values of compassion, justice, ecological stewardship, love of neighbor, will be forever compromised by socioeconomic institutions that privilege maximizing profits over meeting human needs and accumulating private wealth over ensuring social well-being. Or, as Pope John Paul II explains, “If globalization is ruled merely by the laws of the market applied to suit the powerful, the consequences cannot but be negative.”³³

IV. Taking it to the Next Level

The problems we face in the world are partly due to conflicts between science and faith and the failure to utilize our scientific and technological developments in a manner that benefits all persons. Our moral and spiritual development has, as Asimov and King contended, lagged tragically behind our scientific and technological development. But this conflict and lag are even more profoundly the result of extra-scientific and extra-religious forces that undermine the development of more harmonious and productive relationships between science and religion and sabotage the development of wisdom as a basis for guiding scientific, technological, and social development.

We confront a situation that is both tragic and hopeful. The tragedy is that we can alter our genetics but we haven’t figured out how to ensure that all human beings get sufficient food and water to live, let alone to ensure that all human beings enjoy a minimally standard of life. The hope lies in the fact that accomplishing these goals, goals articulated in the U.N. Millennium Development Goals and represented in the 1948 U.N. Declaration of Human Rights, is in fact rather inexpensive. In his recent publication, The End of Poverty: Economic Possibilities for Our Time, economist Jeffrey D. Sachs reminds us that wealthy nations would have to denote merely 0.7% of their national income to international aid to ensure that the basic needs of all human beings are satisfied. This is, in other words, a relatively insignificant amount of money, one that would hardly change our experience of everyday life and yet would make life possible for hundreds of millions of our family members worldwide.

We do not lack the scientific knowledge or technological capacity to ensure that our world community provides a welcoming home for all persons. Nor do we lack the wealth. As was true almost 40 years ago when Martin Luther King, Jr. wrote his classic books, Where Do We Go from Here: Chaos or Community?, what we lack is the political will to make the changes necessary to accomplish this goal. We, however, are suggesting that we lack the political will not because

³² King, 1986, 620.

³³ Cited in Stanley.

the people of the world don't support these goals but because the institutions that represent them are subject to the anti-social and undemocratic influence of multinational corporations, many of which are more powerful than all but a handful of nations.

It is for this reason that we support the growing movement among individuals involved in the global science and religion dialogue to take on not only questions regarding the nature of human nature, the origins of the universe, and the meaning of life but also questions regarding the nature of democracy, economics, ecology, and human rights.

In a recent letter sent to Local Societies Initiative leaders, Eric Weislogel encourages all of "us in the growing global network focused on the religion and science dialogue to take our work to a new level of relevance and to make a positive and lasting contribution to the world around us" by taking on the growing global problem of human beings having access to clean water; indeed, to any water. We strongly support Prof. Weislogel's call to action and wish to echo Solomon H. Katz, founding President of the Metanexus Institute, who summarizes the contribution we can make to this problem.

The Local Societies Initiative provides a remarkable resource to help with this effort to bring a new level of wisdom, dedication, and values to bear upon the choices that all of us will have to make in the coming years about how we share and respect our water resources. Hence, I am appealing to all of our LSI's to consider how our individual and pooled resources from the religion and science dialogue can help address this problem at both the local, regional, national, and international levels.

We wholeheartedly support this appeal. Indeed, we believe the science and religion dialogue is doing and can do much to address a range of social, political, economic, and ecological problems. It can help us to expand and deepen democracy, foster a global culture that affirms religious diversity, human rights, and non-violent approaches to creating a generous and humane mode of development, and that brings scientific knowledge and ethical insight together to help us act wisely as we respond to the challenges we face as individuals and as members of the larger global community.

William Grassie reminds us that "knowledge without understanding becomes dangerous magic" and "power without wisdom threatens the world with unparalleled tragedies."³⁴ The science and religion dialogue greatly facilitates the harmonization of knowledge and understanding, power and wisdom, and makes a significant contribution to the formation of a global spiritual culture that recognizes the universal dignity and rights of human beings and in so doing moves us toward organizing our relations with each other and the earth in a way that all persons live in peace, dignity, and justice.

³⁴ *Op.cit.* .

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