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# Science, Spirituality, and Climate Change

LEONISA ARDIZZONE

As our planet sits on the brink of catastrophe, humanity's efforts to address climate change remain woefully inadequate. In the United States, a small yet vocal group of people still debate if climate change is real, all while wildfires tear through California, unprecedented heat waves bludgeon the Pacific Northwest, unnatural rainfall patterns have challenged farmers in the northeast, and hurricanes and superstorms clobber the entire eastern coast. There is greater awareness and acceptance of climate change and its impacts on a global level, thankfully. Countries and international organizations are discussing how to address the devastation before we hit the point of no return; a point which is perilously close. We are already seeing forced migration due to rising sea-levels, loss of homes and habitats due to extreme weather patterns, and numerous environmental justice issues - food scarcity, poor air quality, contaminated water - directly correlated with climate change.

Almost daily, I vacillate from hope to despair as I consider the world I am leaving to my own daughter. As a scientist turned science educator, turned eco-minister, I see the perils of climate change and ask myself: how did we let it get this far? A cursory glance at the data on climate change proves that we are no longer talking about a theoretical problem, but a concrete and immediate danger. I have long believed in the power of science and data to invite people into the climate change action agenda. More recently, within my role as a Unitarian Universalist minister and interfaith theologian, I am convinced that a spiritual component must be part of our climate work whether as a means of inspiration, action, or sustenance. Religious leaders must be involved in conversations on how they can use the power of the pulpit to be voices for change. Thus, my work brings together scientific knowledge and spiritual calling. I frame it with this quote: Science provides us with the evidence, our faith calls us to act.

My climate change work is grounded in peace education, which uses Johann Galtung's (1988) three types of violence as a starting point. Structural Violence is the violence and oppression embedded in and

perpetuated by institutions, manifesting as racism, sexism, heterosexism, patriarchy, poverty, etc. Each of these are deliberately designed to deny the full humanity and dignity of people and other living things. Structural Violence is reinforced by Cultural Violence, the tools and mechanisms by which people are indoctrinated into a structural violence mindset, such as schools and organized religions. Religion, in particular, is an aspect of culture that legitimizes the use of violence. Finally, Direct Violence, involves actors committing direct harm against people, organisms, and planet Earth herself.

We need to raise awareness and promote analysis of these forms of violence so that Root Causes can be identified, addressed, and hopefully counteracted. Only through this deracination can we begin to see the structures and practices that dehumanize, alienate, marginalize, and oppress. Facilitating this deracination requires critical pedagogy, grounded in the Freirean model of problem-posing/problem-solving, utilizing interdisciplinary analysis, multivariate lenses, and research/learning connected to agency, action, and liberation.

The presence of these forms of violence in cultural and economic norms has created and exacerbated the effects of climate change. To address the issue, we must commit to confronting and dismantling them. Peace education methodology and core values put forth by Betty Reardon (1988) remind us that planetary care, sustainability, environmental justice are all components of peace. Utilizing the three Core Values of Peace Education—Planetary Stewardship, Humane Relationship, and Global Citizenship—transformational work can be done in community settings such as schools, universities, activist organizations, and places of worship.

Each of these three values can be viewed through a spiritual lens allowing participants to imbue them with deep personal meaning. In so doing, participants develop spiritual practices to fully live into these values and sustain their work. These values provide a framework for knowing, learning, and acting to address the climate crisis. Every opportunity for learning should have as an underlying value the care of the Earth, or Planetary Stewardship. We are all responsible for stewarding the planet and the interconnected web of life that exists on it. Science and education can help us fulfill this value, using it to guide informal education, community efforts, and religious programs, in order to compensate for the injustice of formal education. Planetary Stewardship helps mitigate the effects of structural, cultural, and direct violence as they show up in a culture that views the planet as a commodity to be exploited.

Humane Relationship refers to how we relate and interact with members of our community on both a local and global scale. To be in humane

relationship, we must see and honor the inherent worth and dignity of all beings and act in accordance with their human rights. Humane Relationship diminishes the violence triplets by inviting us into mindful, compassionate relationships via authentic communication.

Global Citizenship allows us to see ourselves as part of a global system, not merely as an individual or member of an exclusionary definition of community. If, as Carl Sagan is famous for saying, “We are all star stuff” then it would serve us well to see ourselves as citizens of the cosmos and thus, to live with a sense of responsibility to all inhabitants of the cosmos, not only those who think or look like us. A mindset of Global Citizenship can counteract the triple manifestations of violence by expanding our understanding of the human condition and the nature of interdependent existence.

A peace education framework brings science and faith into a necessary dialogue to address pressing environmental catastrophes. For those who consider themselves religious or have an active spiritual life, spiritual beliefs and/or emotional urges to do the ‘right thing’ for the planet are valuable and necessary, but are good intentions enough? Those driven by science and data may find that people will not start caring about the planet simply because they are scared by facts and images. Scientists may also not be able to reach those that don’t understand or believe the evidence-based information being shared with them. Rather, the minds and hearts of the public must be equally engaged in solving, or at least lessening, this crisis.

Responses to climate change show that technological advancements and political-economic shifts are necessary for continuous change. However, there is a difference between addressing climate change and transforming the underlying behaviors to a) allow mass support of these necessary changes, b) sustain the efforts of those advocating and working for change, and c) transform global society in such a way that makes changes lasting and impactful. While technology is central, spirituality should be its companion. Our current situation is calling for a fundamental shift in how we live on the planet. The spiritual component will allow us to reimagine our relationship to the planet, to one another, and to other global citizens who may be impacted by climate change more quickly and more devastatingly. Simply, we need to cultivate compassion, generosity, and empathy. Furthermore, addressing climate change through a spiritual lens will help to address the inevitable despair many feel about the crisis, by grounding our actions in something greater than ourselves. This spiritual component need not be theological or religious. In fact, organized religion as a form of cultural violence holds partial responsibility for our current situation. Religions that place humans at the top of a hierarchy,

support a notion of “dominion” over life on Earth, and/or support(ed) mass genocides of indigenous people are a Root Cause of the problem. As such, religion itself cannot hold the answer to the climate crisis. However, a sense of spirituality, grounded in connection, is something quite different. My current working definition of spirituality is: a personal connection to that which is greater than yourself. It’s ambiguous in form—this connection could be to nature, God, gods, Buddha, love, the collective, wonder, the ineffable, or a call to change the world through good works. What matters is how this spirituality manifests in how we act and live our lives. Spiritual people often take part in some form of self-improvement through reflection. Led by the feeling of connection spirituality generates, they seek to do good in the world by helping others or working for justice, peace, equity, and environmental health. The spirituality discussion gets muddy because of the tension in relation to religion. Crucially, one can be spiritual without being religious and vice versa. Religion - if we go to the root word - is about being bound together, being tied to one another or a specific community by a shared belief system. This need not include god or creed or dogma - as is the example of Unitarian Universalism - rather focusing on an identifiable commonality. Within any religious system, we may all have our own forms of spirituality and our own connections to the divine or holy or unknown (or whatever you’d like to call it), which gives us our path and our callings.

Recently, the Fetzer Institute completed a national study in the United States entitled “What does spirituality mean to us?” Even while membership in organized religion is in decline, their findings demonstrate that spirituality is on the minds of many Americans. To wit, eight out of ten consider themselves spiritual and six in ten aspire to be more so. The report adds, “Human beings yearn for a spirituality that will root us in the love, courage, and hope that we need to build our lives and communities. We believe that people’s inner experiences of spirituality and their outer social lives long to be connected” (Fetzer 2021, 3). Simply, spirituality can serve to help us find a greater purpose, and perhaps that purpose is addressing climate change.

Gus Speth, Environmental Lawyer and co-founder of the Natural Resource Defense Council is known for saying in 2009, “I used to think the top environmental problems were biodiversity loss, ecosystem collapse, and climate change. I thought that with 30 years of good science we could address those problems. But I was wrong. The top environmental problems are selfishness, greed, and apathy and to deal with those we need a spiritual and cultural transformation - and we scientists don’t know how to do that.” Perhaps the spiritually minded can help.

While I believe spirituality and climate change are intrinsically connected, religion and climate change prove trickier to link. Research has shown (Pew 2014) that while 50% of people believe global climate change is directly connected to human activity, that number decreases based on religious affiliation. In their research, McPhetres and Zuckerman (2018) found that “religiosity is negatively related to science knowledge and is associated with more negative attitudes toward science” (17), and “religiosity is associated with less interest in science and the belief that science is less important.” These “attitudes are related to somewhat lower levels of science literacy and less trust in scientific sources of information” (18). Similarly, Sherkat’s (2011, 1134) research showed that “sectarian Protestants, Catholics, and people with fundamentalist beliefs in the inerrancy of the Bible have significantly lower levels of scientific literacy when compared with secular Americans”. Religion and science remain at odds in certain faith traditions. Since science is the medium that provides the evidence and responses to climate change, this division must be addressed. More than fifty years ago, Pierre Teilhard de Chardin made the effort to “lay before both the world of science and the world of religion the controversial proposition that there is and can be no real opposition between the two. Each needs the other” (Aller 1967, 16). But to get to that place of needing each other, we need to reexamine, reconsider, and reformulate certain doctrines through the analytical lens of science content and scientific process while also honoring spiritual components.

In 2010, the Pew Research Center found that 81% of United States adults, including those who identified with a religious tradition, “favored stronger laws and regulations to protect the environment” (Pew 2010, 32). Only 14% “opposed them.” Interestingly, when asked if their religious beliefs and church attendance influenced their support for the environment, only 6% said “religious beliefs have had the biggest influence on what they think about tougher laws to protect the environment.” (Pew 2014, 32) Through analysis of their data using the Climate Change Concern Index, PRRI researchers Cox, Navarro-Rivera, and Jones (2014) developed three categories of how people perceive Climate Change. By analyzing a series of questions that connected religious/spiritual beliefs and practices with perceptions of climate change, people were sorted into Believers, Sympathizers, and Skeptics. White Evangelical Protestants are “more than likely than any other religious group to be climate change Skeptics” while Americans who report having a higher frequency of “spiritual experience” are more likely to score high on the “Climate Change Concern Index” thus making them Believers. Clearly, something in their spiritual experiences is increasing or supporting their belief in and concern about climate change. Interestingly, “most Americans who attend

religious services at least once or twice a month hear little from their clergy leader about the issue of climate change” (Cox et al. 2014, 4). Almost 60% of respondents say their clergy leader rarely or never mentions climate change. This is not surprising, but I see this as an opportunity for big change, because, as their research states, people whose clergy leader does speak “at least occasionally about climate change” are more likely to be Believers in climate change and demonstrate greater concern. (4) The connection between the pulpit and concern/action cannot be underestimated.

For the past few years, I have taught a course (Science, Spirituality and Peace Education: Addressing Climate Change) at Vassar College and led workshops for religious leaders (Ecology as Scripture) attempting to create learning spaces where science and spirituality meet in our discussion and calls to action on climate change. As previously stated, in order to facilitate the paradigm shift needed to ameliorate the effects of climate change, we need a fundamental shift in how we live, which requires a fundamental shift in how we relate to the planet, ignited by a desperately needed spiritual awakening.

My course at Vassar examines global responses to climate change through the lens of peace education, world religions, and spirituality. We explore the science of climate change and how polarizing the topic can be in no small part due to variations in educational practices and religious influences. We examine how different religious and spiritual traditions conceive of nature, stewardship, and climate change and their “call” to address it. Finally, we engage with case studies of real environmental efforts grounded in spiritual practice. The course is constructivist in nature, so students and I co-create the learning experiences and spiritual practices. Their interests generally drive the second half of the course where we deep dive into various action-oriented, spiritually-grounded efforts. Our explorations include indigenous spiritualities, the Abrahamic traditions, Eastern religions, and work of the growing category spiritual-but-not-religious. For the culminating project students develop and implement an action project, examples of which have included short films, concerts, workshops built on poetry, nature, and meditation, research projects, and K-12 curriculum. Due to the spiritual and reflective nature of the course, the students are able to articulate fears and concerns for the future, including uncertainty, rage at older generations, and even skepticism on whether they should even be imagining having children. These existential wonderings are transformed through the spiritual practice we do in the course. The combination of more scientific information about climate change and spiritual resistance leads to spiritual awakening and a strong sense of agency.

Working with religious professionals is predictably a bit different. Young people at an elite liberal arts college are well aware of the climate crisis. However, not all religious folks are as convinced. Thus, I created these workshops for a few reasons: a) to increase knowledge and understanding of climate change in an interactive and impactful way; b) to reconnect leaders with nature to help them become re-inspired (or simply inspired) to care for all of creation; c) give them the tools and methods to bring evidence, impacts, and possibilities of climate change to all aspects of congregational life; and d) inspire them to take action, using the core teachings of their own religious traditions, with joy, love, and zeal.

In creating an interfaith initiative, the diversity of beliefs that people bring to the table can be both exhilarating and daunting. By using peace education pedagogy, though, we get to a place where we look at assumptions, root causes, patterns, and commonalities to move us into a “future-oriented” mindset. We focus on the balance between scientific evidence and spiritual and religious beliefs to move us toward generating actions - personal, congregational, communal, global - that we can take to address climate change.

To facilitate this shift in perspective, I developed a four-point method that provides faith leaders with methodology to shift into an ecological and action-oriented lens. The “Four E’s model” starts with Entry (Theology/Spiritual Grounding). Many organized religions or spiritual groups often start with a teaching from a sacred text and sometimes this text is assigned (as from an annual lectionary). Thus, the reading chosen for Entry sets the stage for what may be a transformational encounter with scripture. Next, is Empathy (Eco-theology), which applies an ecology or eco-theology lens, one that sees the interrelationship between religion and nature to analyze or exegete the passage/teaching. How does this teaching connect to an Earth-based ethic? Is there a connection or underlying learning that can be drawn out that relates to climate change content or related themes of caring for creation? Third is Evidence (Global Climate Change data). In this third step, the theology and eco-theology find relevant climate change data and/or examples to make the connection impactful. In essence, clergy, religious educators, or faith leaders will become science educators for a moment and use the data to illustrate the real-world connection to theological teaching. And the final step is Engagement (Accountable Action Steps), where leaders inspire their listeners to take an action - small or big, ideally something that is directly and specifically related to the evidence provided. The process can be iterative, and the steps may change order or overlap, but I believe this is an impactful way to begin the process of integrating science and spirituality in religious settings.



Members of the larger faith community are already part of the effort to address climate change, and many utilize The Earth Charter as a foundational document for their global efforts. The Earth Charter states “we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny” (2000, Preamble) and provides sixteen principles including respecting Earth and the diversity of life, protecting ecological systems, moving toward patterns of production and consumption that safeguard the Earth, and supporting education that fosters a greater understanding of ecological sustainability, to name just a few. To demonstrate the commitment toward an interfaith collaboration, a statement was drafted at the Interfaith Summit on Climate Change in 2014 which said:

As representatives from different faith and religious traditions, we stand together to express deep concern for the consequences of climate change on the earth and its people, all entrusted, as our faiths reveal, to our common care. Climate change is indeed a threat to life, a precious gift we have received and that we need to care for. We acknowledge the overwhelming scientific evidence that climate change is human-induced and that, without global and inclusive action towards mitigation and unless fully addressing its fundamental causes, its impacts will continue to grow in intensity and frequency. At the same time, we are ready to dialogue with those who remain skeptical... We recognize that these effects disproportionately affect the lives, livelihoods, and rights of poorer, marginalized, and therefore most vulnerable populations, including indigenous peoples. When those who have done the least to cause climate change are the ones hardest hit, it becomes an issue of injustice. Equitable solutions are urgently needed. Therefore, as faith leaders, we commit ourselves to the promotion of disaster risk reduction, adaptation, low carbon development, climate change education, curbing our own consumption patterns, and reducing our use of fossil fuels. Based on our spiritual beliefs and our hope for the future, we commit to stimulating consciences and encouraging our peers and communities to consider such measures with urgency. (UNFCCC 2014)

Currently, the capitalist paradigm encourages us to live rather mindless lives based on unbridled consumption, convenience, and disposability. Thus, our relationship with the Earth is one of extraction, exploitation, and exhaustion. To shift this, to shift to an understanding that Earth is a living, breathing, complex organism, or an intricate web of life in which humans are a small part, or the key member of an extended and intricate family, we must recalibrate how we think about and interact

with living things. The urgency of climate change is calling us into a different and deeper relationship with all aspects of the Earth. While we enter this deeper relationship with the Earth, we are also called to reimagine our relationships with one another, our local and global community, including people and other living beings that we may never encounter. Incorporating the voices of youth, indigenous people, and those hit hardest by climate change is imperative, as we all have a role to play in addressing climate change. To sustain our work and open our hearts and minds to collaborative efforts, we need good science, and we need transformative spirituality.

## RECOMMENDED READINGS

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