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Process theologian Marjorie Suchocki, redefines sin as (1) the violation of relationships, (2) the absolutizing of the self and the denial of interdependence, and (3) rebellion against the creation. The challenge of our day is to update Christian liturgy, which celebrates our being “creatures created in the image of God,” with a conscience, so that we will conserve and sacrifice for the good of creation, our children, and their descendents. Science tells us that we can reduce emission greenhouse gases in the future by using passive and active solar energy for heating and by generating electricity with windmills, semiconducting solar cells, and hydropower. Perhaps water’s sacramental power can cleanse us from the unintended consequences of our past sins, give us new vision for the future, with the courage to recognize our interdependence within creation.

The United Nations Environmental Program aims at transforming our fundamental relationship with the earth from one of destruction to redemption by combining our (A) knowledge of earth sciences with (B) the forces of spiritual values.

—Adnan Z. Amin, Director, UNEP¹

Knowledge of Earth Sciences

Can the sacramental power of water cleanse and motivate us to meet the challenges of global warming and flooding? In the past two decades, average temperatures have climbed as much as 7°F in the arctic. “The Big Meltdown” article in *Time Magazine*² reported that sea ice is 40% thinner and covers 6% less area than in 1980. Permafrost is becoming less permanent. The glaciers are retreating as we turn up the heat. If this and the melting of the polar icecaps continue, the sea level will rise and flood low-lying islands and peninsulas, such as Cape Cod and much of Florida. When this happens, the loss of valuable shoreline real estate will motivate us to take drastic measures. Unfortunately, it will take hundreds of years for any such measures to reverse the present trends. Climate models show that global

warming is accompanied by weather extremes, such as excessive flooding and hurricanes.

In February 2001, the United Nations Intergovernmental Panel of Climate Change concluded:

There is new and stronger evidence that most of the warming observed over the last 50 years is due to human activities.³

Every automobile owner is involved. For every 12,000 miles driven, the cumulative carbon dioxide emission in the exhaust is equivalent to the weight of the vehicle. Carbon dioxide is a greenhouse gas: it traps the sun’s heat at the earth’s surface like the glass in a greenhouse. The United States, with only 5% of the world’s population, produces 23% of the world’s carbon dioxide emissions. The United States emission of 6.6 tons of greenhouse gases per person per year is the largest in the world, twice that of Japan, and three times that of Sweden and Switzerland.⁴

In the 20th century, about half of all fossil fuel reserves have been depleted, resources that took hundreds of millions of years to form and are nonrenewable. Since the supply is limited, U.S. citizens can expect recent prices

to continue in the long term. The tripling of oil prices from 1973 to 1980 together with waiting in line to buy gasoline got their attention and caused them to conserve and be more energy-efficient. For example, during this time, the average gas mileage of new passenger cars in the U.S. rose from 15 to 24 miles per gallon. Federal and state tax incentives increased the use of solar hot water heaters.

Since 1980, oil prices have been relatively stable. Americans have responded like a frog in a pot of water: if the water temperature is increased slowly, the frog will not sense danger, but will slowly cook. We are presently "cooking" in a state of complacency, with a false sense of safety. The fuel economy of vehicles has *decreased* from 26 miles per gallon in 1986 to 24 mpg at present, due to increases in light trucks and sport utility vehicles. Can the forces of spiritual values reverse this trend to meet the requirements of the Kyoto Accord that the US decrease its greenhouse gas emissions by 7% before 2010?

The Forces of Spiritual Values

Dr. Martin Luther King, Jr., who earned his doctorate in systematic theology from Boston University in 1955, once said:

Through our scientific genius we have made the world a neighborhood; now through our moral and spiritual development, we must make of it a brotherhood. In real sense, we must learn to live together as brothers, or will perish together as fools.⁵

This statement, referring to the brotherhood between the races, is equally valid for human brotherhood and sisterhood with all the species and the communion with nature and the earth. Science, whose technology has unintentionally caused the environmental crisis, must nevertheless cooperate with religion to solve the problem. Science can give us the know-how, and religion the wisdom, motivation, and moral guidance.

Science says that emission greenhouse gases can be reduced in the future by using passive and active solar energy for heating and

by generating electricity with windmills, semiconducting solar cells, and hydropower. Nuclear power plants do not emit greenhouse gases, although the disposal of nuclear waste remains a challenge. Fusion power, the combining of hydrogen nuclei to form helium and heavier atoms occurs naturally inside the sun, produces no nuclear waste. The problem being researched is how to make a container that does not melt at solar temperatures. New hybrid electric automobiles are more fuel-efficient than the present internal combustion engines. A way to generate energy without carbon dioxide is to explode hydrogen and oxygen; the only product is water. The problem is the safe storage of hydrogen fuel.

The cost of reducing carbon emissions from energy sources was studied by the Lawrence Berkeley National Laboratory.⁶ It concluded that a sense of urgency resulting in the sale of tradable carbon emission permits, conservation, and increased research and development can enable the stabilization of increasing carbon emissions. The carbon emission tax gives an economic incentive to develop and favor nonpolluting sources of energy from the sun and the wind. The tax would also discourage the use of coal, which emits twice as much carbon dioxide as natural gas, as well as the pollutants in acid rain.

The industrialized countries could reduce carbon emissions at a cost of no more than 2% of the gross national product, according to an estimate of the U.N. Intergovernmental Panel on Climate Change. Science writer Chet Raymo in his column, "Science Musing," writes that "Bush is not looking at the big world" in his administration's formulation of environmental policy. Raymo spends about 2% of the value of his home in the Bahamas for hurricane insurance. He recommends that others do the same, "to protect ourselves against the potentially severe economic and environmental consequences of global warming."⁷

The religious community can motivate people to pursue such a plan. I am hopeful that water's sacramental power can cleanse us from the unintended consequences of

humanity's past sins, give us new vision for the future, and the courage to conserve and sacrifice for the good of future generations. Since all of nature, including water is created by God, it has intrinsic value and should not be exploited. Since human beings were created in the image of God, they are stewards of creation. The story of Noah in Genesis 6 tells that God saw how wicked and evil everyone had become and was so filled with regret for having created them that God destroyed nearly all of living creatures with a Flood. The covenant with Noah after the Flood ended was that God would never do this again. We human beings need to uphold our responsibility in this covenant, by acting as better stewards and reducing the excessive use of carbon-emitting fuels—excessive use that may well result in a second Flood of our own making. We must do this “lest we perish together as fools.”⁵

From a religious perspective, water has intrinsic value and power. Its use in the sacrament of baptism symbolizes cleansing from sins. Process theologian Marjorie Hewitt Suchocki, redefines sin as (1) the violation of relationships, (2) the absolutizing of the self and the denial of interdependence, and (3) rebellion against the creation.⁸ This environmentally responsible interpretation of sin should be incorporated into liturgy as well as religious education. Environmental sin is that of omission—and emission—rather than commission, of ignorance and neglect rather than bad intention. Even when we have been knowledgeable, we have refused to change.

The Interreligious Sustainability Project of Metropolitan Chicago (supported by a grant from the United Church of Christ) is organizing discussion groups called Circles to address this problem. Their goals are (1) to pray, learn, reflect, and act to protect our children's and grandchildren's future, (2) to walk lightly on the earth and cut the use of natural resources

by 10%. About two-thirds of greenhouse-gas emissions come from automobiles. Substantial savings can be achieved by trading an SUV for a gas-electric hybrid Honda Insight (61 mpg) or Toyota Prius (52 mpg). People can move closer to their workplaces, in order to reduce their commuting distance. Additional goals are (3) the creation of “Green Zone” churches whose energy management will serve as models for sustainability, and (4) the creation of effective regional transit systems to reduce traffic congestion and air pollution.

Here in Massachusetts, “Clean Air-Cool Planet”⁹ is building an alliance of institutions, businesses, faith-based organizations, and individuals committed to reducing greenhouse gas emissions. It includes Shaw's Supermarkets, a company that has also reduced its energy usage, as well as the Tufts University Climate Initiative, which is committed to “meet or beat” the targets of the Kyoto Climate Accord. Tufts has accurately determined an emissions baseline and is working to bring its emissions down and to educate students and staff about climate change and energy efficiency. We can contribute by joining with them.

Martin Luther King's activism, as well as the sacrifice of his life for the brotherhood in which he believed, can be a model for what we

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must do to prevent environmental disasters. Anthropologist Margaret Mead has written:

Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.¹⁰

The resurrection power that Christians celebrate at Easter is not so much about dead bodies as about a spiritual transformation and

a "good news" that changed the world. The Resurrection changed the disciples of Jesus from a band of men and women fearing for their lives, transforming them into courageous and sacrificial ministers. Christian faith offers the transformative power for meeting the challenges of *our* moment in history. Part of this challenge must be to update our religious stories and liturgy, which celebrate our being created in the image of God, so that we will conserve and sacrifice for the sake of our children's children and the good of all creation.

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Endnotes:

1. Amin.
2. Linden.
3. United Nations Intergovernmental Panel on Climate Change.
4. United States Environmental Protection Agency.
5. King, p. 4.
6. Koomey. Viewgraphs of this talk can be downloaded from the website, <<http://enduse.lbl.gov/shareddata/CEFJK.short.pp>>. The complete report can be downloaded from
7. Raymo.
8. Suchocki, p. 182
9. See the organization's website: <<http://www.cleanair-coolplanet.org>>
10. Institute for Intercultural Studies.

After receiving his Ph.D. in physics, Paul Carr led the Component Technology Branch of the Air Force Research Laboratory from 1967 to 1995. His lab did research and development on microwave ultrasound, surface acoustic waves, superconductors, and laser-activated antennas. He won a Science and Religion Course Award from the Center for Theology and the Natural Sciences for the philosophy course he designed and taught at the University of Massachusetts, Lowell, called "Science and Religion: Cosmos to Consciousness." Dr. Carr organized the Science-and-Religion Session of the International Paul Tillich Society Conference in New Harmony, Ind., in June 1999, and presented the paper, "Science and Religion: Original Unity and the Courage to Create," which was published in ZYGON: Journal of Religion and Science in June 2001.

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