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Recommended Citation

Schaefer, Jame, "Environmental Degradation, Social Sin, and the Common Good" (2010). *Theology Faculty Research and Publications*. 224.

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Environmental Degradation, Social Sin, and the Common Good

Jame Schaefer

WHILE REPORTS OF ENDANGERED SPECIES, pollutants and toxins in the environment, problematic nuclear and other hazardous wastes, and threats to the biosphere have been highlighted occasionally by the media for many years, recent attention has focused on changes that humans are forcing on the global climate. Indicators of these changes and dire predictions of adverse future effects have been identified periodically by the Intergovernmental Panel on Climate Change (IPCC), a collaborative effort of more than a thousand scholars amassed by the World Meteorological Organization and the United Nations Environment Programme to assess the latest scientific, technical, and socioeconomic studies so that well-informed decisions can be made to mitigate these effects.

Theologians also need to make some decisions, decisions that focus on ways in which we can contribute to the interdisciplinary dialogue that has emerged over the phenomenon of human-forced climate change. Since religions have the capacity to guide adherents in demonstrating the behavior needed to orient their lives toward the subjects of their worship, scholars of the world religions can identify teachings that might be helpful in addressing why some climate change-forcing behaviors should be avoided while others should be initiated.

Catholic theologians have much upon which to draw when addressing the damage that humans are causing one another, other species, and our planetary home. The data upon which we can rely span the Bible (the primary texts of our tradition), teachings over

the centuries by eminent theologians who are revered in the Catholic tradition,¹ documents issued by the church magisterium, a growing array of theological reflections informed by scientific findings, and discussions of ethical imperatives pertaining to the natural environment. When read through an ecological lens, this rich combination of sources can be helpful and meaningful for addressing ecological degradation generally and human-forced climate change specifically.

Before discussing promising sources in the Catholic theological tradition, I summarize in the first section of this essay indications of change that humans are forcing on the global climate with emphasis on how the poor and vulnerable are affected. Two subsequent sections explore sequentially the sinfulness of individual and collective human actions that are thwarting the common good of God's Earth. These "social sins" demonstrate failure to love one's neighbor, violate Catholic social teaching's preferential option for the poor, and require our considering the "planetary common good." In the final section, I identify some basic commitments that must be made to reconcile with God for degrading Earth, point to some strategies aimed at mitigating the adverse effects on the climate that humans are forcing, and draw from Thomas Aquinas's understanding of cooperating grace that is available to embrace and implement these strategies. Implementing them will demonstrate our love for God by loving our neighbors in the most expansive sense, by showing our utmost concern for the poor and vulnerable humans and other constituents of Earth, and by striving to assure a sustainable and life-flourishing planet.

Environmental Degradation and Climate Change

Indicators of environmental degradation are abundant: the decline of biological diversity; the degradation and destruction of wetlands, coral reefs, forests, grasslands, and other ecological systems; pollutants and toxicants emitted into the air, flushed into waterways, and spread on the land; experimental and inadequately safeguarded technologies that decimate, injure, and genetically alter living entities and render areas uninhabitable for decades; highly radioactive and other hazardous wastes that accumulate without acceptable

long-term solutions for disposal and isolation from the biosphere; relatively benign wastes that become problematic because of their sheer volume stemming from the prevailing throwaway mentality, especially in industrially developed countries; urban sprawl accompanied by increased automobile use that spews hydrocarbons into the air;² and "greenhouse" gases³ produced by burning coal to generate electricity.

Adverse Effects of Human-forced Climate Change

Carbonic and nitrous compounds emitted into the air are highly problematic today because they are causing significant changes in the global climate.⁴ While climatologists have found evidence to suggest that some extraterrestrial and terrestrial factors are primarily responsible for most of the past episodes of changes in Earth's climate,⁵ these factors cannot account for the changes in the climate occurring today and predicted for the future.⁶ A plethora of scientists have looked for other possible causes and have concluded that human input of carbonic and nitrous compounds into the atmosphere is responsible. The largest growth in greenhouse gas emissions between 1970 and 2004 came from energy production, other industries, and transportation, while residential and commercial buildings, forestry (including deforestation) and agriculture sectors grew at a lower rate.⁷ Thus, we are "forcing" changes in our climate that exceed the effects caused by natural factors.⁸

Among these changes are increases in the average global air, land, and ocean temperatures in the Northern Hemisphere,⁹ which are causing decreases in snow cover and thickness of sea ice, widespread melting of snow and ice,¹⁰ rising sea level,¹¹ precipitation increases in eastern parts of North and South America, northern Europe, and northern and central Asia, precipitation declines in the Sahel (the narrow band of semi-arid land south of the Sahara Desert), the Mediterranean area, southern Africa, and parts of southern Asia,¹² changes in frequency and/or intensity of weather events over the last fifty years,¹³ and increase in intense tropical cyclone activity in North America.¹⁴

These recent changes in the climate have adversely affected physical systems. For example, glacial lakes have enlarged and increased in numbers as glaciers and ice melts.¹⁵ Ground instability has increased in permafrost regions while rock avalanches have increased

in mountain regions.¹⁶ Increased runoff is occurring in many glacier and snow-fed rivers. And lakes and rivers have warmed in many regions causing changes in the thermal structure of bodies of water and degraded water quality.¹⁷

Effects on biological systems are also significant. Within land systems, spring events (e.g., leaf unfolding and bird migration and egg laying) are occurring earlier, and ranges in plant and animal species are shifting upward.¹⁸ Within marine and freshwater systems, rising water temperatures are causing higher levels of salinity, shifts in ranges of algal, plankton, and fish abundance, earlier fish migrations in rivers, and stresses on coral reefs.¹⁹ The loss of coastal wetlands and mangroves is attributed to a combination of climate changes and human adaptations of these ecological systems.²⁰

Adverse effects on human health from forced climate changes have also been detected. Among these are increased heat-related mortality in Europe, changes in infectious disease vectors in parts of Europe, and earlier onset of and increases in seasonal production of allergenic pollen in high and mid-latitudes of the Northern Hemisphere.²¹

Predictions of Future Effects

Scientists conclude that these and other effects will increase even if the emission of greenhouse gases is kept constant at levels that were recorded at the beginning of the twenty-first century. Continued greenhouse gas emissions at or above levels during the year 2000 would cause further warming and induce many changes in the global climate system during the twenty-first century that would "very likely" be larger than those observed during the twentieth century.²² Among these changes are shrinking sea ice in the Arctic and Antarctic,²³ hot extremes in temperature, heat waves and heavy precipitation in high latitudes,²⁴ more intense tropical typhoons and hurricanes,²⁵ and increased flooding of coastal regions.

Predictions beyond the twenty-first century are more dire, even if greenhouse gas concentrations are constrained to current levels. Continuing to add current concentrations of greenhouse gases to the atmosphere would cause the sea level to rise for centuries due to the time scales associated with climate processes and feedbacks.²⁶ Prompted by the melting of glaciers and ice sheets on polar

lands, the rising sea level would flood coastlines and inundate low-lying areas, the greatest effects of which will be in river deltas and low-lying islands.²⁷ Increasing atmospheric concentrations of greenhouse gases, especially carbon dioxide, will also further acidify the oceans.²⁸

The survival of some species will also be threatened. According to the chairperson of the Intergovernmental Panel on Climate Change, approximately "20–30 percent of the species assessed in 2007 would be at increased risk of extinction if the global average temperature increase exceeds 1.5 to 2.5 degrees Centigrade," while an increase that exceeds about 3.5 degrees Centigrade suggests "significant extinctions" (40–70 percent of species assessed) around the planet.²⁹

Also at risk are ecological systems whose ability to adapt to flooding, drought, wildfires, insect infestations, ocean acidification, and other disturbances caused by climate changes, particularly when these disturbances are combined with other drivers of ecological degradation, including land use changes, pollution, and overexploitation of natural sources. Major changes in the structure and function of ecological systems are anticipated with predominantly negative consequences for biological diversity and for water, food supply, clean air, and other goods.³⁰

Adverse effects on ecological systems also put *Homo sapiens* at risk. According to the chairman of the Intergovernmental Panel on Climate Change, human-forced climate changes will have "serious effects on the sustainability of several ecosystems and the services they provide to human society."³¹ A major anticipated effect on people is a decrease in the availability of water in the mid-latitudes and semi-arid areas of the planet. While an increase in water availability is anticipated in the moist tropics and at high latitudes, people in the Hindu-Kush, Himalaya, and Andes mountain ranges where more than one-sixth of the world's population currently lives will experience difficulty in obtaining the water they need, as will people in the Mediterranean Basin, western United States, southern Africa, northeastern Brazil, and other semi-arid areas. In already poverty-stricken Africa, between 75 million and 250 million people will be exposed to increased water stresses by the year 2020, including limited access to potable water.³²

Food scarcity will also be exacerbated in many areas by the year 2020 due to a decline in crop productivity caused by changes in the global climate. Effects on crop productivity are particularly problematic in seasonally dry and tropical regions where it is projected to decrease with small local temperature increases of 1–2 degrees Centigrade. Yields from rain-fed agriculture in some African countries could be reduced by up to 50 percent.³³ While initial slight increases in crop productivity are projected at mid to high latitudes where the local average temperature rises from 1 to 3 degrees Centigrade, productivity is expected to decrease subsequently.³⁴ The same pattern of an initial increase in crop productivity followed by a decrease is anticipated globally.³⁵

Millions more people are projected to experience yearly floods by the year 2080 due to sea level rise. Particularly vulnerable are mega-deltas of Asia whose major cities, including Shanghai, Dhaka, and Kolkata, cities on the coast, and cities in river flood plains where settlements, industries, and businesses are closely linked with climate-sensitive resources.³⁶ Small islands off Asia and Africa are especially vulnerable. Within these at-risk areas, poor communities will be most affected³⁷ because their sensitivity to the adverse effects of climate change is exacerbated by their poverty, food scarcity, malnutrition, and inaccessibility to other necessities of life. Adding to their impoverished circumstances, the poor are especially vulnerable to debilitating trends in economic globalization, regional conflicts, and diseases, including HIV/AIDS.³⁸

The health of millions of people is also at risk as the global climate changes. Malnutrition, deaths, diarrhea and other diseases, injuries due to extreme weather events, and increased frequency of cardio-respiratory diseases caused by higher concentrations of ground-level ozone in urban areas are included in these projections.³⁹ While residents in temperate areas may benefit initially by fewer deaths from cold exposure and combinations of other factors,⁴⁰ any benefits will be outweighed by the negative health effects of rising temperatures, especially in developing countries.⁴¹ Poor people are most vulnerable to adverse health effects caused by forced climate change. Education, health care programs, and public health initiatives are crucial for shaping healthy populations to prevent more adverse effects.⁴²

When accepting the 2007 Nobel Peace Prize on behalf of the Intergovernmental Panel on Climate Change, Chairman Rajendra Pachauri underscored the equity implications of climate change and how they will affect some of the poorest and most vulnerable communities of the world:

One of the most significant aspects of the impacts of climate change, which has unfortunately not received adequate attention from scholars in the social sciences, relates to the equity implications of changes that are occurring and are likely to occur in the future. In general, the impacts of climate change on some of the poorest and the most vulnerable communities in the world could prove extremely unsettling. And, given the inadequacy of capacity, economic strength, and institutional capabilities characterizing some of these communities, they would remain extremely vulnerable to the impacts of climate change and may, therefore, actually see a decline in their economic condition, with a loss of livelihoods and opportunities to maintain even subsistence levels of existence.⁴³

Pachauri also called attention to the potential conflicts resulting from human-forced climate change and lamented the IPCC's failure to provide directions for mitigating them. He expressed concern about conflicts that may arise when access to clean water, food availability, stable health conditions, ecosystem resources, and secure settlements are disrupted by changes in the climate.⁴⁴ A major potential source of conflict that the IPCC chairman identified is the migration and movement of people from one area to another.⁴⁵ Though usually temporary and often from rural to urban areas in response to floods, famine, and warfare, the migration and movement of people from adverse impacts of climate change may become highly problematic for them, for the people of the regions to which they are relocating, and for efforts to establish a peaceful global society. To address these potential threats, Pachauri urged conducting an "in-depth analysis of risks to security among the most vulnerable sectors and communities impacted by climate change across the globe."⁴⁶

From Social Sin to Planetary Sin

These indicators of environmental problems generally and human-forced climate change particularly have significance for how we think about ourselves as God's faithful people and how we demonstrate our faith. Much has been written about "sin" by leaders and scholars of Catholic and other Abrahamic traditions who generally consider sin a personal offense against God in which we abuse the freedom given to us by failing to love God and others.⁴⁷ Much more has been written about different kinds of sin, all of which point to the personal culpability of the individual.

In recent decades, some moral theologians have turned their attention to the social dimensions of sin. Latin American bishops and liberation theologians prompted much of this focus when responding to people in their midst who were struggling to survive under oppressive regimes and repressive socioeconomic structures.⁴⁸ Bishops and theologians continue to strive for a more comprehensive understanding of human sinfulness and to identify wrongly ordered patterns of human behavior that have become institutionalized. When these patterns of behavior become institutionalized, moral theologian Margaret Pfeil contends rightly, people tend to "succumb to a kind of moral blindness whereby they participate in their societal institution or system without realizing that their actions, both of commission and omission, contribute to structures of sin."⁴⁹ Eventually, the phrase "social sin" emerged in magisterial teachings of the church and in the works of moral theologians, though bishops and popes have underscored personal sin as the root of social sin.

In the *Catechism of the Catholic Church*, the bishops of the United States describe "sin" as "a personal act" for which the individual is responsible. However, they continue,

[W]e have a responsibility for the sins committed by others when *we cooperate in them*:

- by participating directly and voluntarily in them;
- by ordering, advising, praising, or approving them;
- by not disclosing or not hindering them when we have an obligation to do so; [and]
- by protecting evil-doers.⁵⁰

Thus, the bishops teach, "sin makes men accomplices of one another and causes concupiscence, violence, and injustice to reign among them."⁵¹ From the bishops' perspective, at least implicitly, sin becomes a cooperative endeavor that can involve many.

Sin also gives "rise to social situations and institutions that are contrary to the divine goodness," the bishops contend. "These 'structures of sin' are expressions and effects of personal sins that lead their victims to do evil in their turn. Thus, in an analogous sense, structures of sin constitute a sin of society, a 'social sin.'"⁵²

When judging structures of sin in society as socially sinful, United States Catholic bishops were following the teachings of the late Pope John Paul II, who named and explained "social sin" in *Reconciliatio et paenitentia* (On Reconciliation and Penance), an apostolic exhortation issued in 1984.⁵³ According to the pope, a social sin has three dimensions:

1. an individual's personal sin that affects others;
2. an offense against God because the individual offends his or her neighbor — an offense that applies to every sin against justice in interpersonal relationships that is *committed* or *omitted* either by the individual against the community or by the community against the individual, against the rights of the human person, against the freedom of others, against the dignity and honor of one's neighbor, and against the common good, which includes "the whole broad spectrum of the rights and duties of citizens";
3. a relationship among various human communities that do not accord with God's plan for justice in the world and freedom and peace between individuals, groups, and peoples.⁵⁴

While these social sins may appear anonymous, the pope continued, they are rooted, nevertheless, in personal sin:

Whenever the church speaks of situations of sin or when [she] condemns as social sins certain situations or the collective behavior of certain social groups, big or small, or even of whole nations and blocs of nations, she knows and she proclaims that such cases of social sin are the result of the accumulation and concentration of many personal sins... of

those who cause or support evil or who exploit it; of those who are in a position to avoid, eliminate, or at least limit certain social evils but who fail to do so out of laziness, fear, or the conspiracy of silence, through secret complicity or indifference; of those who take refuge in the supposed impossibility of changing the world and also of those who sidestep the effort and sacrifice required, producing specious reasons of higher order. The real responsibility, then, lies with individuals.⁵⁵

Interestingly, John Paul II prefaced his description of social sin with an explanation that human sin constitutes a refusal "to submit to God," resulting in the destruction of the person's "internal balance" and causing "contradictions and conflicts" to arise. He underscored his thinking that the individual who commits a social sin damages his or her relationship with others *and with the created world*:

Wounded in this way, man almost inevitably causes damage to the fabric of his relationship with others and with the created world. This is an objective law and an objective reality, verified in so many ways in the human psyche and in the spiritual life as well as in society, where it is easy to see the signs and effects of internal disorder.⁵⁶

From a Catholic, Christian perspective, should acts that accelerate the extinction of species, degrade the air regimes, landmasses, and waterways, and threaten a life-sustaining climate be categorized as "social sins"? Are they social sins because so many of the problems we are causing are adversely affecting our neighbors near and far in the present? Are they social sins because our actions will inevitably affect our neighbors in the future who have not caused these adversities either directly or indirectly? Are they social sins because the poorest and most vulnerable people are most susceptible to being adversely affected by environmental degradation generally and by human-forced climate change particularly? Are they social sins because degrading the natural environment violates the common good of humanity by threatening the internal integrity of God's Earth?

While we can respond positively to each of these questions, we can ponder whether or not "social sin" is the best category for

acts that threaten other species, destroy their habitats, disrupt the functioning of ecological systems, and force changes to the biosphere's climate. Pope John Paul II's recognition that social sin "almost inevitably causes damage to the fabric of [our] relationship with others and with the created world"⁵⁷ opens to another category for thinking about the sinfulness of ecological degradation as damaging our relationship with Earth, its ecological systems, and other species. That we are damaging Earth by forcing changes in the global climate cannot be ignored. By damaging it, we are thwarting the life-sustaining capability of our planet, our temporal home that we share with other species, their habitats, and ecological systems.

Thus, a more inclusive category is needed. "Planetary sin" seems more appropriate. Whereas the category of *social sin* tends to limit the effects of sin to humans and our interrelationships, the category of planetary sin encompasses all types of sins that injure others, our relationships with them, and, ultimately, our relationship with God. Of course, the adverse effects of human-forced climate change on other species and biological systems also affect our species in one way or another, now and in the future. Nevertheless, referring to actions that cause such pervasive havoc in Earth's functioning as sins of a planetary magnitude is more cogent, and the category of planetary sin can be understood as incorporating social sins that affect other humans in their societal relationships. When viewed from this perspective, planetary sin becomes an all-encompassing category of human sinfulness and underscores our culpability for actions or inactions — commission and omission — that adversely affect more than human constituents of Earth.

A sticky question arises, nevertheless, when attempting to frame the culpability of humans who are enmeshed in the structures of planetary sin. While we must acknowledge our culpability for *planetary sins of omission* when failing to take action in our daily lives that would help mitigate climate change, and we must also acknowledge our culpability for *planetary sins of commission*, whereby we directly and/or indirectly engage in activities that force climate change, to what extent are we culpable for actions that are embedded in the socioeconomic structures of planetary sin (e.g., purchasing packaged foods produced and transported over long distances to their markets and using electricity produced from burning

dirty coal)? At the very least, culpability can be lessened by remaining open to information about the adverse effects of actions we are contemplating, choosing alternatives that are available at all socioeconomic levels in which we are engaged, and urging the increased availability of alternatives that do not cause adversities. Culpability can also be lessened by promoting legislation at appropriate local to international levels that will mitigate the effects of social, economic, and political structures of sin.

Failing to take action, individually and, where warranted, collectively to mitigate harm to humans, other species, and to the air, land, and waters constitutes planetary sins of omission that offend God. These sins offend God because they constitute failures to love our human neighbors — the social aspect of planetary sins. When we fail to love our neighbors, theologian Karl Rahner taught, we are failing to love God.⁵⁸ Our failure to love the poor and vulnerable and to have preference for them in our individual and collective decision making and actions is particularly offensive.

These planetary sins also offend God because they adversely affect God's ongoing creation. Planetary sins offend God, the creator and sustainer of the world, who values the world (as the inspired Priestly writer proclaimed in Genesis 1), who loves the world (as John the Evangelist proclaimed), and who has a purpose for the world that we would be much too presumptuous to identify (as theologian John Haught cautions).⁵⁹

Since humans are so interconnected with other species and abiota in the dynamic web of life, so related to them through the evolutionary process out of which our species emerged from and with them, and so radically dependent upon them for our temporal needs and well-being, we cannot think about the fate of humans apart from the fate of other species, ecological systems, and the biosphere. What affects them, affects us. We are all affected because together we constitute a mutual community that is Earth. We are Earth constituents, and we have a common temporal good — a life-sustaining planet. That our planet retains the capacity of internally sustaining itself as a unity of diverse constituents is our shared common good.

How solid is this notion of the "common good" from an ecological perspective as a mutual good shared by all constituents of Earth? We turn to St. Thomas Aquinas, the great thirteenth century

systematic theologian, for his insight while informing his teachings with current scientific findings.

The Planetary Common Good

While the phrase “the common good” has been used primarily by the teaching authority of the church and by theologians to refer to the common good of people,⁶⁰ Aquinas established an understanding of the common good that was cosmic in scope. We may have lost that sense of the cosmic common good for several centuries, but ecological problems and particularly climate changes we are forcing require its retrieval and consideration today when faced with threats to our planetary common good.

What is the cosmic common good? Aquinas expounded systematically on the goodness of the universe that is demonstrated by the orderly functioning of its constituents in relation to one another. From his understanding of the value that each type of creature brings to this functioning, he glowingly described the unity brought about by their orderly interactivity as the greatest created good,⁶¹ the highest perfection of the created world,⁶² and its most beautiful attribute.⁶³ The order of things to one another is the nearest thing to God’s goodness because every particular good is ordered to the good of the whole.⁶⁴ That some things exist for the sake of others and also for the sake of the perfection of the universe is not contradictory since some are needed by others to maintain the internal integrity of the universe and all things are needed to contribute to its perfection.⁶⁵ When all parts function in relation to one another in innately appropriate ways as intended by God, the universe is indeed perfect, reflects God’s goodness, and manifests God’s glory.⁶⁶

Thus, the good of the whole — the common good — is the internal sustainability and integrity of the universe. From Aquinas’s perspective, God instilled in each creature a natural inclination toward the common good.⁶⁷ Each creature is more strongly inclined to the common good than to itself and that inclination is demonstrated by its operation.⁶⁸ For example, sometimes a creature suffers damage to itself for the sake of the common good.⁶⁹ At the root of this appetite for the common good is the natural inclination each creature has for God, who is the absolute common good of all creatures.⁷⁰

God is the uncreated common good whereas the internal integrity of the universe is its created common good to which all parts, including human creatures, are oriented in their temporal lives. While all parts are inclined toward the common good of the whole, creatures that have a greater capacity to act have a greater appetite for the common good and are inclined to seek to do good for others far removed from them.⁷¹ Human creatures have the capacity to make and execute informed decisions. If the person does not will a particular good for the common good, that willful act is not right.⁷²

Because humans often act incorrectly by not directing their wills toward the common created good and ultimately toward the common uncreated Good, who is God, God cares providentially for humans by offering them grace to help them exercise their wills appropriately in temporal life with a view toward their ultimate goal of eternal life with God.⁷³ God's grace both operates on and cooperates with humans toward their ultimate goal⁷⁴ without interfering in the human exercise of freely making and carrying out decisions.⁷⁵ God's grace operates lovingly on the human spirit so the individual thinks and acts in ways that are conducive to achieving eternal life.⁷⁶ God's grace cooperates with the individual by actively sustaining the innate human capacity to make informed decisions and to choose to act accordingly. God's grace also operates on and cooperates with humans to develop moral virtues that will aid them in exercising their wills appropriately to achieve the common good in this life because they are motivated to achieve eternal life with God.⁷⁷

Nevertheless, all entities that constitute the universe benefit from being moved toward the common good of the whole, Aquinas reasoned.⁷⁸ Using a parallel example of the leader of an army, he maintained that the ordering of all parts to the good of the whole is what a leader of an army does when intending their mutual good.⁷⁹ They all benefit from the ordering of parts to one another, which enables them to function appropriately to bring about the good of the whole.⁸⁰

Aquinas insisted that God intends all creatures to cooperate for the good of the whole. In the operations of nonintellectual creatures, harmony and actions that are conducive to the realization of the common good almost always prevail because they are directed by God to achieve their purposes according to their natures.⁸¹ Creatures who are gifted with the ability to think and to exercise their

wills freely are also intended to will the common good.⁸² As Legrand observed from Aquinas's teachings, no part of creation or type of creature is excluded from God's intention that all cooperate, combine, or harmonize within the order of the universe, an order established by God to maintain its internal functioning through which it achieves the good that is common to all.⁸³

When Aquinas contended that creatures cooperate in securing the common good, he was not only thinking about creatures cooperating among themselves within the hierarchy of creatures to assure their mutual sustainability in this life as God intends. He also considered the inter-cooperation of creatures as cooperating with God. He insisted that creatures who are endowed with greater capacities to act (e.g., to reason and make informed decisions) are intended to cooperate with God in acquiring the good of the whole universe. Unless more endowed creatures cooperate in procuring the good of less capable creatures, the abundance of goodness would be confined to an individual or only a few.⁸⁴ The good of many is better than the good of an individual, he continued, and the good of the universe as a whole is best because it is more representative of God's goodness.

Furthermore, according to Aquinas, goodness becomes common to many through the cooperation of more capable creatures.⁸⁵ More capable creatures are expected to cooperate in seeking the good of others. Creatures cooperate with one another for the good of the whole, Aquinas maintained, because they are related to God as their creator. God ordered creatures to one another to achieve their internal common good of sustaining themselves as an integral whole. In one of his most succinct treatments of this subject, he explained that the entire universe of interconnected parts achieves its purpose when all parts function in relation to one another in ways that are appropriate to the innate characteristics of each part.⁸⁶ Their *created* common good is the good of the whole order of creatures functioning in appropriate, relational ways to sustain themselves as intended by God while aiming toward eternity with God, who is the *uncreated* common good of the entire universe. Furthermore, functioning in these relational ways best manifests God's goodness and gives glory to God.⁸⁷

As French contends astutely, Aquinas's concept of the common good provides a "cosmological-ecological principle" for his ethical

system,⁸⁸ which is helpful today when viewed from the perspective of environmental degradation in general and human-forced climate change in particular. The good sought in common would be the good of ecological systems of which humans are integral actors who rely on other interacting biota and abiota for their health and well being. This ethical framework of the common good for addressing environmental issues also appeals to Longwood, who recognizes the need to remain cognizant of human existence in the "complex and subtly balanced system of the web of life" in which all parts function to maintain the quality of the integrated whole.⁸⁹

How can the planetary common good be sought? Basically, the internal flourishing of Earth can be sought by humans making a commitment in solidarity with one another to function in solidarity with all constituents of Earth. That our species is interconnected materially with other species cannot be denied in light of evolutionary and molecular biological findings. That our species is interconnected with other species, the land, air, and water in ecosystems is well documented by ecosystem science. Yet a commitment to solidarity with them and the systems within which humans are integral actors requires more. A commitment to solidarity with other species, abiota, and systems also requires our valuing them intrinsically for themselves outside of their usefulness to us, striving to understand how species and abiota relate to one another, and valuing their interrelationships. Furthermore, a commitment to solidarity assumes a foremost concern for the poor, who are most vulnerable to environmental degradation in general and the adverse effects of human-forced climate change in particular.

Reconciliation to Achieve the Planetary Common Good

How should we commit ourselves to the planetary common good? As Pope John Paul II urged, we should commit ourselves with "a firm and persevering determination." Three related commitments are needed.

1. *A commitment to examine our personal attitudes and actions in relation to others — other humans now and into the future, other species, ecological systems, and the biosphere — with the aim of*

discerning how we are contributing to the degradation of Earth generally and to climate change specifically in our social, economic, and political activities. We need to view ourselves realistically, as constituents among other diverse constituents in the dynamic web of existence who eschew any sense of sovereignty over others, who recognize their distinctiveness, who are open to opportunities for making informed decisions about how to function in ways that achieve the planetary common good, and who execute these decisions firmly.

2. *A commitment to draw upon our individual spiritual and moral capacities to bring about our conversion to the planetary common good out of love for God and love for our neighbors when "neighbor" is understood in the most expansive and altruistic sense to include other species and biological systems.* We need to develop in ourselves individually and collaboratively the moral virtues of prudence, justice, moderation, fortitude, and solidarity motivated by love for God and love for our neighbors. We need to discern practices and policies that are conducive to the planetary common good. We need to implement these policies and practices with a firm sense of justice for all to obtain what they need to sustain their lives. We need to be particularly concerned about the poor and vulnerable humans who are most affected by environmental degradation generally and human-forced climate change particularly, and we must show preference to their well-being so they are able to cope with changes that are affecting them. We also need to be concerned about and give preference for other species whose existence is threatened since they are, as theologian Sallie McFague characterizes them, the "new poor" of our planet.⁹⁰

3. *A commitment to act individually and collaboratively for the planetary common good to remedy the structures of planetary sin that thwart the internal sustainability of Earth.* Following the principle of subsidiarity, we need to work concurrently at all levels of decision making to minimize the adverse effects that our actions are causing. Mitigating strategies are needed in our homes, in our places of employment, in our schools, in our industries, in our recreational activities, and in our governments. We need to implement strategies that we can control directly while advocating strategies that need to be implemented by employers and policy-makers at various levels of governance. We need to think and act both locally and globally in

light of the dire predictions through promising means of thwarting these predictions. While local and national decisions on strategies aimed at mitigating climate changes may be difficult and advocates favoring these strategies must be well-informed and persistent, decisions made at the international level may be even more difficult as nations protect their self-interests amid complicating contexts of economic instability and terrorist activities. Their cooperation to seek the planetary common good is absolutely vital,⁹¹ especially in light of the high degree of confidence that IPCC specialists have in environmentally effective, cost-effective, equitably distributable, technologically diffuse, and institutionally feasible strategies that may reduce global greenhouse gases.⁹² And, we need to persist in urging nations to focus on promising strategies that aim to achieve the mutual good of all people.

Conclusion

As people of faith in God, who continually self-communicates to us, we can be confident that God's grace is available to us to keep these commitments. We need to remain open to receiving God's grace and to cooperating with God by working to overcome planetary sins and by seeking the common good of all Earth's constituents. By opening to, receiving, and cooperating with God's grace,⁹³ we will be fortified to support and act on adaptation and mitigation strategies that are aimed at minimizing the adverse effects of human-forced climate change.

Some adaptation strategies may be effective (e.g., moving away from coasts and flood plains, retrofitting and building dwellings that can withstand extremes in temperatures and weather phenomena), though these strategies must be carefully planned and executed to avoid catastrophic events (e.g., mass migrations) and to help people for whom these strategies are problematic (e.g., the elderly, the infirm, and the poor, for whom we must show preference). While little information is available about the costs and effectiveness of adaptation measures, many studies have focused on mitigation strategies⁹⁴ that are aimed at reducing greenhouse gas emissions in all sectors of the economy and society. The IPCC's Working Group III enumerates benefits that can result from greenhouse gas reduction strategies, including health co-benefits, local

economic benefits in the form of development, poverty alleviation, employment, energy security, and local environmental protection.⁹⁵

The possibility that changes in behavior patterns can contribute to mitigating human-forced climate change should encourage us to initiate actions in our own homes, places of employment, and local communities. Changes in consumption patterns, changes in occupying buildings, changes in our modes of transportation, and changes in business practices are changes that each of us can make individually and in collaboration with others. Thus, we need not feel helpless in practice. Nor should we feel helpless as we contend with our present and face our future, bolstered by our confidence in God to grace our commitments to mitigate the adverse effects of human-forced climate change and move cooperatively toward the planetary common good—a life-sustaining and flourishing planet.

Notes

1. For promising patristic and medieval concepts that are ripe for retrieval, reconstruction, and application to ecological problems, see Jame Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic and Medieval Concepts* (Washington D.C.: Georgetown University Press, 2009).

2. Summarized from scientific reports in *ibid.*, 203–11.

3. The primary “greenhouse” gases include carbon dioxide, methane, nitrous oxide, and ozone, which trap heat within the lower atmosphere (troposphere) of our planet.

4. Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report, Contribution of Working Groups I, II, and III to the Fourth Assessment Report*, ed. Rajendra K. Pachauri and Andy Reisinger (Geneva: Intergovernmental Panel on Climate Change, 2008); hereafter IPCC, *Climate Change 2007: Synthesis Report*. This report is also accessible from www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.

5. Extraterrestrial factors include solar output, Earth-Sun geometry, and interstellar dust, while terrestrial factors from oceans, the atmosphere, and land include volcanic emissions, mountain-building, continental drift, atmospheric chemistry, atmospheric reflectivity, land reflectivity, and atmosphere/ocean heat exchange. See discussion at “Factors that influence the Earth’s climate,” *PhysicalGeography.net*, www.physicalgeography.net/fundamentals/7y.html (accessed September 9, 2009).

6. IPCC, *Climate Change 2007: Synthesis Report*.

7. Ibid., 36.

8. A succinct overview of conclusive evidence pointing to anthropogenic causes of climate change is provided in the IPCC's *Climate Change 2007: Synthesis Report*.

9. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 3.2, 3.4, 5.2 Average Arctic temperatures have increased at almost twice the global average rate in the past hundred years. Land regions have warmed faster than the oceans. Observations since 1961 show that the average temperature of the global ocean has increased to depths of at least three thousand meters and that the ocean has been taking up over 80 percent of the heat being added to the climate system. New analyses of balloon-borne and satellite measurements of lower- and mid-tropospheric temperature show warming rates similar to those observed in surface temperature. Working Group II concluded from more than 29,000 observational data series collected in 75 studies showing significant changes in many physical and biological systems that more than 89 percent are consistent with the direction of change expected as a response to warming. This report is also accessible from www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf.

10. According to Working Group I, at 3.2, 4.5, 4.6, 4.7, 4.8, 5.5 in IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, decreases in snow and ice extent are also consistent with warming (Figure 1.1). Satellite data since 1978 show that annual average Arctic sea ice extent has shrunk by 2.7 [2.1 to 3.3] percent per decade, with larger decreases in summer of 7.4 [5.0 to 9.8] percent per decade. Mountain glaciers and snow cover on average have declined in both hemispheres. The maximum areal extent of seasonally frozen ground has decreased by about 7 percent in the Northern Hemisphere since 1900, with decreases in spring of up to 15 percent. Temperatures at the top of the permafrost layer have generally increased since the 1980s in the Arctic by up to 3 degrees Celsius.

11. IPCC, *Climate Change 2007: Synthesis Report*, 30. See also Working Group I, 4.6, 4.8, and 5.5 in *Summary for Policy Makers* on the consistency of increases in sea level with global warming (Figure 1.1). Global average sea level rose at an average rate of 1.8 [1.3 to 2.3] millimeters per year over 1961 to 2003 and at an average rate of about 3.1 [2.4 to 3.8] millimeters per year from 1993 to 2003. Whether this faster rate for 1993 to 2003 reflects decadal variation or an increase in the longer term trend is unclear. Since 1993 thermal expansion of the oceans has contributed about 57 percent of the sum of the estimated individual contributions to the sea level rise, with decreases in glaciers and

ice caps contributing about 28 percent and losses from the polar ice sheets contributing the remainder. From 1993 to 2003 the sum of these climate contributions is consistent within uncertainties with the total sea level rise that is directly observed.

12. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 3.3 and 3.9.

13. For example, cold days, cold nights, and frosts have become less frequent and/or have changed in intensity over most land areas while hot days, hot nights, and heat waves have become more frequent. See IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 3.8 and 3.9.

14. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 3.8, from observations since 1970.

15. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 1.3.

16. Ibid.

17. Ibid., 15.2.

18. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 1.3, 8.2, and 14.2.

19. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 1.3. However, separating climate change stresses on coral reefs from other stresses (e.g., overfishing and pollution) is difficult.

20. IPCC, *Climate Change 2007: Synthesis Report*, 33. See also *Summary for Policy Makers*, Working Group II, 1.3, 1.

21. IPCC, *Climate Change 2007: Synthesis Report*, 33. See also *Summary for Policy Makers*, Working Group II, 1.3, 8.2, and 8.ES.

22. IPCC, *Climate Change 2007: Synthesis Report*, 45.

23. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 10.3, Figure 3.2.

24. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Table 3.2. In most subtropical land regions, decreases are likely, thus continuing current trends, as reported by Working Group I, 3.3, 8.3, 9.5, 10.3 and 11.2–11.9.

25. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 3.8, 9.5 and 10.3. Continuing the broad pattern over the last fifty years, extra-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. WGI 3.6, 10.3, SPM.

26. IPCC, *Climate Change 2007: Synthesis Report*, 46. See also *Summary for Policy Makers*, Working Group I, 10.4, 10.5 and 10.7.

27. R. K. Pachauri, Chairman, IPCC, "Acceptance Speech for the Nobel Peace Prize Awarded to the Intergovernmental Panel on Climate Change (IPCC)," Oslo, Norway, December 10, 2007. Accessible from www.ipcc.ch/graphics/speeches/nobel-peace-prize-oslo-10-december-2007.pdf. Hereafter, Pachauri, "Acceptance Speech."

28. IPCC, *Climate Change 2007: Synthesis Report*, 52.

29. IPCC Chairman, Rajendra Pachauri, Opening Session of the World Economic Forum, Davos, Switzerland, January 23, 2008, www.ipcc.ch/graphics/speeches/pachauri-davos-january-2008.pdf. Hereafter, Pachauri, World Economic Forum.

30. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 4.4, Box TS.6.

31. Pachauri, "Acceptance Speech."

32. Ibid.

33. Ibid.

34. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 5.4.

35. Ibid., and 5.5.

36. Pachauri, World Economic Forum. See also IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 6.3, 6.4, 7.1, 7.3, 7.4 and 7.5.

37. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 7.2, 7.4 and 5.4.

38. Pachauri, "Acceptance Speech."

39. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group I, 7.4, Box 7.4, and Working Group II, 8.2 and 8.4.

40. Ibid.

41. IPCC, *Climate Change 2007: Synthesis Report, Summary for Policy Makers*, Working Group II, 8.4, 8.7, and 8ES.

42. Ibid., 8.3.

43. Pachauri, "Acceptance Speech."

44. Ibid.

45. Ibid.

46. Ibid.

47. United States Catholic Conference, *Catechism of the Catholic Church* (Washington D.C.: United States Catholic Conference, 1994) #387, 97. Other nuances of this definition of "sin" included in the *Catechism* are sin as an offense against reason, truth, and right conscience, sin as a failure in genuine love for God and neighbor caused by a perverse attachment to certain goods (#1849), and sin as an offense against God

that sets oneself against God's love and turns one's heart away from God's love (#1850).

48. Margaret R. Pfeil, "Social Sin: Social Reconciliation?" in *Reconciliation, Nations and Churches in Latin America*, ed. Iain Maclean (Burlington, Vt.: Ashgate, 2006), 171–89 at 172.

49. Ibid.

50. United States Catholic Conference, *Catechism of the Catholic Church* (Washington, D.C.: United States Catholic Conference, 1994), #1868–69, 457.

51. Ibid.

52. Ibid.

53. John Paul II, *Reconciliatio et paenitentia*, Apostolic Exhortation, December 2, 1984, www.vatican.va.

54. Ibid.

55. Ibid.

56. Ibid.

57. John Paul II, *Reconciliatio et paenitentia*.

58. Karl Rahner, "Reflections on the Unity of Love of Neighbour and the Love of God," in *Theological Studies* 6, trans Karl-H. and Boniface Kruger, 231–49 (New York: Crossroad, 1982).

59. John 1:3; John F. Haught, *Science and Religion: From Conflict to Conversation* (New York: Paulist, 1995), 180–82.

60. David Hollenbach, S.J., *The Common Good and Christian Ethics* (Cambridge UK: Cambridge University Press, 2002).

61. Aquinas, *Summa contra Gentiles* 2.39; see further 2.44, 2.45, 3.69, and 3.144. Also see *Summa theologiae* 1.15.2 and 1.22.1–2.

62. Aquinas, *Summa contra Gentiles* 2.45; see further 2.44.

63. Aquinas, *Summa contra Gentiles* 3.71. The universe cannot be any better than it is, he wrote in *Summa theologiae* 1.25.6 ad 3, because of the most beautiful order given to things by God. As John H. Wright concludes in *The Order of the Universe in the Theology of St. Thomas Aquinas* (Rome: Apud Aedes Universitatis Gregorianae, 1957), 87, the universe is "God's masterpiece" with its excellence found in the ordered harmony of its parts.

64. Aquinas, *Summa contra Gentiles* 3.64 and 112. See also *Summa theologiae* 1.47.2. The integrity of all created beings is described in *Summa contra Gentiles* 2.45 as the ultimate and noblest perfection in things which in turn are ordered to the ultimate uncreated good who is God.

65. Aquinas, *Summa contra Gentiles* 3.112.

66. Aquinas, *Summa theologiae* 1.65.2. The interactive order of all things created by God is the greatest perfection and the most beautiful attribute of creation because it reflects the goodness and wisdom of God,

Aquinas wrote in *Compendium theologiae* 102. Also see *Summa contra Gentiles* 2.42; and *Summa theologiae* 1.2.3, 1.4.2, and 1.13.2.

67. For example, see Aquinas, *Summa theologiae* 1/2.109.3 and 2/2.26.3.

68. Ibid. 1.60.5; see further 2/2.26.3 ad 2.

69. Ibid. 2/2.26.3; he pointed specifically to citizens who suffer losses to their own property and themselves personally for the sake of the common good of their community.

70. Ibid. 1.60.5 ads 3–5; see further 2/2.26.3.

71. Aquinas, *Summa contra Gentiles* 3.24. Also see *Summa theologiae* 1.57.2.

72. Aquinas, *Summa theologiae* 1/2.19.10; his understanding of what is right is based ultimately on an action's being directed toward finality in God.

73. Ibid. 1.22.2. Also see *Summa contra Gentiles* 3.112–13 and *De veritate* 1.5.6–7. According to Aquinas, God's special care is needed for individual humans who have the capacity to think about how to act and choose to act, capacities that humans often misuse. This special divine care for individual humans contrasts with God's general care for other species through natural laws embedded in the physical world because nonhuman creatures do not have intellectual capabilities or free will with which to deviate from God's intentions. God's care for individual humans and other species should be considered in relation to Aquinas's teaching in *Summa contra Gentiles* 3.64 that among God's creation God cares most for the order of all things that constitute the universe.

74. Aquinas, *De veritate* 24.11; see further 27.5.

75. This follows Aquinas's rationale that God governs all things to their end through God's eternal law, which God imposed on the universe in the form of natural law; see, for example, *Summa theologiae* 1/2.91.1, 93.1–5, and *De veritate* 5.1.6. On his thinking about rational creatures who are ruled by eternal law and are rulers of themselves to whom God gives grace to seek their ultimate end, see *Summa theologiae* 1/2.109.1 and *Summa contra Gentiles* 3.1.

76. Aquinas, *Summa theologiae* 1/2.110.1.

77. See, for example, Aquinas, *Summa theologiae* 1.111.2 and *De veritate* 27.5. As Jacques Maritain explained in *The Person and the Common Good*, trans. John J. Fitzgerald (New York: Charles Scribner's Sons, 1947), pp. 7–10, when commenting on *Summa theologiae* 2/2.3.2 ad 2, before humans are "related to the immanent common good of the universe, they are related to an infinitely greater good — the separated common Good, the divine transcendent Whole."

78. Aquinas, *Summa theologiae* 1.11.3; see further 1/2.19.10 on how the common good benefits all constituents of the universe. Also see *Summa contra Gentiles* 1.70, 2.41, 3.69.

79. Aquinas, *Summa theologiae* 1/2.9.1.

80. For example, Aquinas, *De potentia Dei* 4.2 ad 29.

81. Aquinas, *De veritate* 5.2.

82. Aquinas, *Summa theologiae* 1.11.3.

83. Joseph Legrand, *L'univers et l'homme dans la philosophie de Saint Thomas*, 2 vols. (Bruxelles: L'Édition Universelle, 1946), 1, 40.

84. Aquinas, *Compendium theologiae* 124.

85. Ibid.

86. Aquinas, *Summa theologiae* 1.65.2.

87. Ibid.

88. William C. French, "Catholicism and the Common Good of the Biosphere," in *An Ecology of the Spirit: Religious Reflection and Environmental Consciousness*, ed. Michael H. Barnes (Lanham, Md.: University Press of America, 1994), 177–94, at 192. While French sees this organizing principle as a promising response to our contemporary ecological morass, he finds it often "overwhelmed" by another organizing principle, which he describes as "the absolute superiority of rational human life over all lesser creatures," a premise for which he sees little room in theological ethics today. However, he does not factor into his evaluation the severe restrictions Aquinas places on how humans function in relation to other creatures because of their mutual relationship to God. See also Robert P. George, "Natural Law, the Common Good, and American Politics," in *The Battle for the Catholic Mind: Catholic Faith and Catholic Intellect in the Work of the Fellowship of Catholic Scholars*, 1978–95, ed. William E. May and Kenneth D. Whitehead (South Bend, Ind.: St. Augustine, 2001), 308–21; and Brian J. Benestad, "How the Catholic Church Serves the Common Good," in *The Battle for the Catholic Mind*, 443–65.

89. Merle Longwood, "The Common Good: An Ethical Framework for Evaluating Environmental Issues," *Theological Studies* 34 (1973): 468–80, at 479–80. I concur with Longwood's astute conclusion: "Our conception of the common good must obviously include the whole biotic community, since the quality and health of human life is integrally tied to the quality and health of the lives of all the other members of the biosphere. There is, after all, only one ecology, not a human ecology on the one hand and a subhuman ecology on the other."

90. Sallie McFague, *The Body of God: An Ecological Theology* (Minneapolis: Fortress, 1993), 165.

91. IPCC, *Climate Change 2007: Summary Report, Summary for Policy Makers*, Working Group III, 13.2.

92. I am completing this essay as representatives of the nations of the world prepare to congregate in Copenhagen for the United Nations Conference on Climate Change in December 2009. While the news is bleak for reaching an international agreement on mitigating strategies and substantive limits on greenhouse gas emissions in December, there is considerable hope for at least establishing a framework for an agreement to be negotiated in the near future. IPCC, *Climate Change 2007: Synthesis Report*, 62 and 68.

93. In *De veritate* 24.11 and 27.5, Aquinas explained that God offers grace to humans to enable their cooperation with God's intention that they seek the temporal good in this life while aiming for eternal happiness. Aquinas used various versions of *cooperator* to convey three other distinct but related types of cooperation: (1) Creatures cooperate by acting or being acted upon according to their God-given natures for their individual and common good in conformity with the orderly world God created and sustains in existence (e.g., *Summa theologiae* 1.61.3, 111.2, 1/2.9.1 and 19.10, *De veritate* 9.2 and 27.5, *Compendium theologiae* 124, and *Summa contra Gentiles* 1.70, 3.21, and 3.69–70); (2) living creatures cooperate with God, their primary cause for existing, by acting as secondary agents on other creatures to carry out God's plan for the universe (e.g., *Summa theologiae* 1.105.5); and, (3) God both operates on and cooperates with humans for their temporal and eternal good (e.g., *De veritate* 27.5 and *Summa theologiae* 1.105.4–5).

94. IPCC, *Climate Change 2007: Synthesis Report*, 56.

95. IPCC's Working Group III focuses on promising mitigation strategies in its extensive detailed report. See IPCC, *Climate Change 2007: Mitigation of Climate Change*, ed. B. Metz, O. R. Davidson, P. R. Bosch, R. Dave, L. A. Meyer (Cambridge: Cambridge University Press, 2007).