The Historical Roots of Our Ecologic Crisis

Lynn White, Jr.

A conversation with Aldous Huxley, not infrequently put me on the receiving end of an unforgettable monologue. About a year before his lamented death he was discoursing on a favorite topic: Man's unnatural treatment of nature and its sad results. To illustrate his point he told how, during the previous summer, he had returned to a little valley in England where he had spent many happy months as a child. Once it had been composed of delightful grassy glades; now it was becoming overgrown with unattractive brushy growth because the rabbits that formerly kept this growth under control had largely succumbed to a disease, myxomatosis, that was deliberately introduced by the local farmers to reduce the rabbits' destruction of crops. Being something of a Philistine, I could be silent no longer, even in the interests of great rhetoric. I interrupted to point out that the rabbit itself had been brought as a domestic animal to England in 1176, presumably to improve the protein diet of the peasantry.

All forms of life modify their contexts. The most spectacular and benign instance is doubtless the corn polyp. By serving its own ends, it has created a vast undersea world favorable to thousands of other kinds of animals and plants. Ever since man became a numerous species he has affected his environment notably. The hypothesis that his fire-drive method of hunting created the world's great grasslands and helped to exterminate the monster mammals of the Pleistocene from much of the globe is plausible, if not proved. For 6 millennia at least, the banks of the lower Nile have been a human artifact rather than the swampy African jungle which nature, apart from man, would have made it. The Aswan Dam, flooding 5000 square miles, is only the latest stage in a long process. In many regions terracing or irrigation, overgrazing, the cutting of forests by Romans to build ships to fight Carthaginians or by Crusaders to solve the logistics problems of their expeditions, have profoundly changed some ecologies. Observation that the French landscape falls into two basic types, the open fields of the north and the bocage of the south and west, inspired Marc Bloch to undertake his classic study of medieval agricultural methods. Quite unintentionally, changes in human ways often affect nonhuman nature. It has been noted, for example, that the advent of the automobile eliminated huge flocks of sparrows that once fed on the horse manure littering every street.

The history of ecologic change is still so rudimentary that we know little about what really happened, or what the results were. The extinction of the European aurochs as late as 1627 would seem to have been a simple case of overenthusiastic hunting. On more intricate matters it often is impossible to find solid information. For a thousand years or more the Frisians and Hollanders have been pushing back the North Sea, and the process is culmi-

nating in our own time in the reclamation of the Zuider Zee. What, if any, species of animals, birds, fish, shore life, or plants have died out in the process? In their epic combat with Neptune the Netherlanders overlooked ecological values in such a way that the quality of human life in the Netherlands has suffered? I cannot discover that the questions have ever been asked, much less answered.

People, then, have often been a dynamic element in their own environment, but in the present state of historical scholarship we usually do not know exactly when, where, or with what effects man-induced changes came. As we enter the last third of the 20th century, however, concern for the problem of ecologic backlash is mounting feverishly. Natural science, conceived as the effort to understand the nature of things, had flourished in several eras and among several peoples. Similarly there had been an age-old accumulation of technological skills, sometimes growing rapidly, sometimes slowly. But it was not until about four generations ago that Western Europe and North America arranged a marriage between science and technology, a union of the theoretical and the empirical approaches to our natural environment. The emergence in widespread practice of the Baconian creed that scientific knowledge means technological power over nature can scarcely be dated before about 1850, save in the chemical industries, where it is anticipated in the 18th century. Its acceptance as a normal pattern of action may mark the greatest event in human history since the invention of agriculture, and perhaps in nonhuman terrestrial history as well.

Almost at once the new situation forced the crystallization of the novel concept of ecology; indeed, the word 'ecology' first appeared in the English language in 1873. Today, less than a century later, the impact of our race upon the environment has so increased in force that it has changed in essence. When the first cannons were fired, in the early 14th century, they affected ecology by sending workers scrambling to the forests and moun-
tains for more potash, sulfur, iron ore, and charcoal, with some resulting erosion and deforestation. Hydrogen bombs are of a different order: a war fought with them might alter the genetics of all life on this planet. By 1285 London had a smog problem arising from the burning of soft coal, but our present combustion of fossil fuels threatens to change the chemistry of the globe's atmosphere as a whole, with consequences which we are only beginning to guess. With the population explosion, the carcinoma of planless urbanism, the new geological deposits of sewage and garbage, surely no creature other than man has ever managed to foul its nest in such short order.

There are many calls to action, but specific proposals, however worthy as individual items, seem too partial, palliative, negative: ban the bombs, tear down the billboards, give the Hindus contraceptives and tell them to eat their sacred cows. The simplest solution to any suspect change is, of course, to stop it, or, better yet, to revert to a romanticized past: make those ugly gasoline stations look like Anne Hathaway's cottage or (in the Far West) like ghost-town saloons. The "wilderness area" mentality invariably advocates deep-freezing an ecology, whether San Gimignano or the High Sierra, as it was before the first Kleenex was dropped. But neither statism nor prettification will cope with the ecologic crisis of our time.

What shall we do? No one yet knows. Unless we think about fundamentals, our specific measures may produce new backlashes more serious than those they are designed to remedy.

As a beginning we should try to clarify our thinking by looking, in some historical depth, at the presuppositions that underlie modern technology and science. Science was traditionally aristocratic, speculative, intellectual in intent; technology was lower-class, empirical, action-oriented. The quite sudden fusion of these two, towards the middle of the 19th century, is surely related to the slightly prior and contemporary democratic revolutions which, by reducing social barriers, tended to assert a functional unity of brain and hand. Our ecologic crisis is the product of an emerging, entirely novel, democratic culture. The issue is whether a democratized world can survive its own implications. Presumably we cannot unless we rethink our axioms.

The Western Traditions of Technology and Science

One thing is so certain that it seems stupid to verbalize it: both modern technology and modern science are distinctively Occidental. Our technology has absorbed elements from all over the world, notably from China; yet everywhere today, whether in Japan or in Nigeria, successful technology is Western. Our science is the heir to all the sciences of the past, especially perhaps to the work of the great Islamic scientists of the Middle Ages, who so often outdid the ancient Greeks in skill and perspicacity: al-Razi in medicine, for example; or Ibn-al-Haytham in optics; or Omar Khayyam in mathematics. Indeed, not a few works of such geniuses seem to have vanished in the original Arabic and to survive only in medieval Latin translations that helped to lay the foundations for later Western developments. Today, around the globe, all significant science is Western in style and method, whatever the pigmentation or language of the scientists.

A second pair of facts is less well recognized because they result from quite recent historical scholarship. The leadership of the West, both in technology and in science, is far older than the so-called Scientific Revolution of the 17th century or the so-called Industrial Revolution of the 18th century. These terms are in fact outmoded and obscure the true nature of what they try to describe—significant stages in two long and separate developments. By A.D. 1000 at the latest—and perhaps, feebly, as much as 200 years earlier—the West began to apply water power to industrial processes other than milling grain. This was followed in the late 12th century by the harnessing of wind power. From simple beginnings, but with remarkable consistency of style, the West rapidly expanded its skills in the development of power machinery, labor-saving devices, and automation. Those who doubt should contemplate that most monumental achievement in the history of automation: the weight-driven mechanical clock, which appeared in two forms in the late 14th century. In craftsmanship but in basic technological capacity, the Latin West of the later Middle Ages far outstripped its elaboration, sophisticated, and esthetically magnificent sister cultures, Byzantium and Islam. In 1444 a great Greek ecclesiastic, Bessarion, who had gone to Italy, wrote a letter to a prince in Greece. He is amazed by the superiority of Western ships, arms, textiles, glass. But above all he is astonished by the spectacle of waterwheels sawing timbers and pumping the bellows of blast furnaces. Clearly, he had seen nothing of the sort in the Near East.

By the end of the 15th century the technological superiority of Europe was such that its small, mutually hostile nations could spilt oil over all the rest of the world, conquering, looting, and colonizing. The symbol of this technological superiority is the fact that Portugal, one of the weakest states of the Occident, was able to become, and to remain for a century, mistress of the East Indies. And we must remember that the technology of Vasco da Gama and Albuquerque was built by pure empiricism, drawing remarkably little support or inspiration from science.

In the present-day vernacular understanding, modern science is supposed to have begun in 1543, when both Copernicus and Vesalius published their great works. It is no derogation of their accomplishments, however, to point out that such structures as the Fabrica and the De revolutionibus do not appear overnight. The distinctive Western tradition of science, in fact, began in the late 11th century with a massive movement of translation of Arabic and Greek scientific works into Latin. A few notable books—Theophrastus, for example—escaped the West's avid new appetite for science, but within less than 200 years effectively the entire corpus of Greek and Muslim science was available in Latin, and was being eagerly read and criticized in the new European universitatis. Out of criticism arose new observation, speculation, and increasing distrust of ancient authorities. By the late 13th century Europe had seized global scientific leadership from the faltering hands of Islam. It would be as absurd to deny the profound originality of Newton, Galileo, or Copernicus as to deny that of the 14th century scholastic scientists like Buridan or Oresme on whose work they built. Before the 11th century, science scarcely existed in the Latin West, even in Roman times. From the 11th century onward, the scientific sector of Occidental culture has increased in a steady crescendo.

Since both our technological and our scientific movements got their start, acquired their character, and achieved
world dominance in the Middle Ages, it would seem that we cannot understand their nature or their present impact upon ecology without examining fundamental medieval assumptions and developments.

Medieval View of Man and Nature

Until recently, agriculture has been the chief occupation even in "advanced" societies; hence, any change in methods of tillage has much importance. Early plows drawn by two oxen, did not normally turn the sod but merely scratched it. Thus, cross-plowing was needed and fields tended to be squarish. In the fair light soils and semiarid climates of the Near East and Mediterranean, this worked well. But such a plow was inappropriate to the wet climate and often sticky soils of northern Europe. By the latter part of the 7th century after Christ, however, following obscure beginnings, certain northern peasants were using an entirely new kind of plow, equipped with a vertical knife to cut the line of the furrow, a horizontal share to slice under the sod, and a moldboard to turn it over. The friction of this plow with the soil was so great that it normally required not two but eight oxen. It attacked the land with such violence that cross-plowing was not needed, and fields tended to be shaped in long strips.

In the days of the scratch-plow, fields were distributed generally in units capable of supporting a single family. Subsistence farming was the presupposition. But no peasant owned eight oxen: to use the new and more efficient plow, peasants pooled their oxen to form large plow-teams, originally receiving (it would appear) plowed strips in proportion to their contribution. Thus, distribution of land was based no longer on the needs of a family but, rather, on the capacity of a power machine to till the earth. Man's relation to the soil was profoundly changed. Formerly man had been part of nature; now he was the exploiter of nature. Nowhere else in the world did farmers develop any analogous agricultural implement. Is it a coincidence that modern technology, with its ruthlessness toward nature, has so largely been produced by descendants of these peasants of northern Europe?

This same exploitive attitude appears slightly before A.D. 830 in Western illustrated calendars. In older calendars the months were shown as passive personifications. The new Frankish calendars, which set the style for the Middle Ages, are very different: they show men coercing the world around them—plowing, harvesting, chopping trees, butchering pigs. Man and nature are two things, and man is master.

These novels seem to be in harmony with larger intellectual patterns. What people do about their ecology depends on what they think about themselves in relation to things around them. Human ecology is deeply conditioned by beliefs about our nature and destiny—that is, by religion. To Western eyes this is very evident in, say, India or Ceylon. It is equally true of ourselves and of our medieval ancestors.

The victory of Christianity over paganism was the greatest psychic revolution in the history of our culture. It has become fashionable today to say that, for better or worse, we live in "the post-Christian age." Certainly the forms of our thinking and language have largely ceased to be Christian, but to my eye the substance often remains amazingly akin to that of the past. Our daily habits of action, for example, are dominated by an implicit faith in perpetual progress which was unknown either to Greek-Roman antiquity or to the Orient. It is rooted in, and is indestructible apart from, Judeo-Christian teleology. The fact that Communists share it merely helps to show what can be demonstrated on many other grounds: that Marxism, like Islam, is a Judeo-Christian heritage. We continue today to live, as we have lived for about 1700 years, very largely in a context of Christian axioms.

What did Christianity tell people about their relations with the environment?

While many of the world's mythologies provide stories of creation, Greco-Roman mythology was singularly incoherent in this respect. Like Aristotle, the intellectuals of the ancient West denied that the visible world had had a beginning. Indeed, the idea of a beginning was impossible in the framework of their cyclical notion of time. In sharp contrast, Christianity inherited from Judaism not only a concept of time as nonrepetitive and linear but also a striking story of creation. By gradual stages a loving and all-powerful God had created light and darkness, the heavenly bodies, the earth and all its plants, animals, birds, and fishes. Finally, God had created Adam and, as an afterthought, Eve to keep man from being lonely. Man named all the animals, thus establishing his dominion over them. God planned all of this explicitly for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes. And, although man's body is made of clay, he is not simply part of nature; he is made in God's image.

Especially in its Western form, Christianity is the most anthropocentric religion the world has seen. As early as the 2nd century both Tertullian and Saint Irenaeus of Lyons were insisting that when God shaped Adam he was foreshadowing the image of the incarnate Christ, the Second Adam. Man shares, in great measure, God's transcendence of nature. Christianity, in absolute contrast to ancient paganism and Asia's religions (except, perhaps, Zoroastrianism), not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends.

At the level of the common people this worked out in an interesting way. In Antiquity every tree, every spring, every stream, every hill had its own genius loci, its guardian spirit. These spirits were accessible to men, but were very unlike men; centaurs, fauns, and mermaids show their ambivalence. Before one cut a tree, mined a mountain, or dammed a brook, it was important to placate the spirit in charge of that particular situation, and to keep it placated. By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects.

It is often said that for animism the Church substituted the cult of saints. True; but the cult of saints is functionally quite different from animism. The saint is not in natural objects; he may have special shrines, but his citizenship is in heaven. Moreover, a saint is entirely a man; he can be approached in human terms. In addition to saints, Christianity of course also had angels and demons inherited from Judaism and perhaps, at one remove, from Zoroastrianism. But these were all as mobile as the saints themselves. The spirits in natural objects, which formerly had protected nature from man, evaporated. Man's effective monopoly on spirit in this world was confirmed, and the old inhibitions to the exploitation of nature crumbled.

When one speaks in such sweeping terms, a note of caution is in order.
Christianity is a complex faith, and its consequences differ in differing contexts. What I have said may well apply to the medieval West, where in fact technology made spectacular advances. But the Greek East, a highly civilized realm of equal Christian devotion, seems to have produced no marked technological innovation after the late 7th century, when Greek fire was invented. The key to the contrast may perhaps be found in a difference in the totality of piety and thought which students of comparative theology find between the Greek and the Latin Churches. The Greeks believed that sin was intellectual blindness, and that salvation was found in illumination, orthodoxy—that is, clear thinking. The Latins, on the other hand, felt that sin was moral evil, and that salvation was to be found in right conduct. Eastern theology has been intellectualist. Western theology has been voluntarist. The Greek saint contemplates; the Western saint acts. The implications of Christianity for the conquest of nature would emerge more easily in the Western atmosphere.

The Christian dogma of creation, which is found in the first clause of all the Creeds, has another meaning for our comprehension of today's ecologic crisis. By revelation, God had given man the Bible, the Book of Scripture. But since God had made nature, nature also must reveal the divine mentality. The religious study of nature for the better understanding of God was known as natural theology. In the early Church, and always in the Greek East, nature was conceived primarily as a symbolic system through which God speaks to men: the sun is a sermon to sluggards; rising flames are the symbol of the soul's aspiration. This view of nature was essentially artistic rather than scientific. While Byzantium preserved and copied great numbers of ancient Greek scientific texts, science as we conceive it could scarcely flourish in such an ambience. However, in the Latin West by the early 13th century natural theology was following a very different bent. It was ceasing to be the decoding of the physical symbols of God's communication with man and was becoming the effort to understand God's mind by discovering how his creation operates. The rainbow was no longer simply a symbol of hope first sent to Noah after the Deluge: Robert Grosseteste, Friar Roger Bacon, and Theodoric of Freiberg produced startlingly sophisticated work on the optics of the rainbow, but they did it as a venture in religious understanding. From the 13th century onward, up to and including Leibnitz and Newton, every major scientist, in effect, explained his motivations in religious terms. Indeed, if Galileo had not been so expert an amateur theologian he would have got into far less trouble: the professionals resented his intrusion. And Newton seems to have regarded himself more as a theologian than as a scientist. It was not until the late 18th century that the hypothesis of God became unecessary to many scientists.

It is often hard for the historian to judge, when men explain why they are doing what they want to do, whether they are offering real reasons or merely culturally acceptable reasons. The consistency with which scientists during the long formative centuries of Western science said that the task and the reward of the scientist was "to think God's thoughts after him" leads one to believe that this was their real motivation. If so, then modern Western science was cast in a matrix of Christian theology. The dynamism of religious devotion, shaped by the Judeo-Christian dogma of creation, gave it impetus.

An Alternative Christian View

We would seem to be headed toward conclusions unsalutary to many Christians. Since both science and technology are blessed words in our contemporary vocabulary, some may be happy at the notions, first, that viewed historically, modern science is an extrapolation of natural theology, and, second, that modern technology is at least partly to be explained as an Occidental, voluntarist realization of the Christian dogma of man's transcendence of, and rightful mastery over, nature. But, as we now recognize, somewhat over a century ago science and technology—hitherto quite separate activities—joined to give mankind powers which, to judge by many of the ecologic effects, are out of control. If so, Christianity bears a heavy burden of guilt.

I personally doubt that disastrous ecologic backlash can be avoided simply by applying to our problems more science and more technology. Our science and technology have grown out of Christian attitudes toward man's relation to nature which are almost universally held not only by Christians and neo-Christians but also by those who fondly regard themselves as post-Christians. Despite Copernicus, all the cosmos rotates around our little globe. Despite Darwin, we are not, in our hearts, part of the natural process. We are superior to nature, contemptuous of it, willing to use it for our slightest whim. The newly elected Governor of California, like myself a churchman but less troubled than I, spoke for the Christian tradition when he said (as is alleged), "when you've seen one redwood tree, you've seen them all." To a Christian a tree can be no more than a physical thing. The whole concept—the sacred grove is alien to Christianity and to the ethos of the West. For nearly 2 millennia Christian missionaries have been chopping down sacred groves, which are idolatrous because they assume spirit in nature.

What we do about ecology depends on our ideas of the man-nature relationship. More science and more technology are not going to get us out of the present ecologic crisis until we find a new religion, or rethink our old one. The beatniks, who are the basic revolutionaries of our time, show a sound instinct in their affinity for Zen Buddhism, which conceives of the man-nature relationship as very nearly the mirror image of the Christian view. Zen, however, is as deeply conditioned by Asian history as Christianity is by the experience of the West, and I am dubious of its viability among us.

Possibly we should ponder the greatest radical in Christian history since Christ: Saint Francis of Assisi. The prime miracle of Saint Francis is the fact that he did not end at the state, as many of his left-wing followers did. He was so clearly heretical that a General of the Franciscan Order, Saint Bonaventura, a great and perceptive Christian, tried to suppress the early accounts of Franciscanism. The key to an understanding of Francis is his belief in the fact that man is neither merely for the individual but for man as a species. Francis tried to depose man from his monarchy over creation and set up a democracy of all God's creatures. With him the ant is no longer simply a homily for the lazy, flames a sign of the thrust of the soul toward union with God; now they are Brother Ant and Sister Fire, praising the Creator in their own ways as Brother Man does in his.
Later commentators have said that Francis preached to the birds as a rebuke to men who would not listen. The records do not read so: he urged the little birds to praise God, and in spiritual ecstasy they flapped their wings and chirped rejoicing. Legends of saints, especially the Irish saints, had long told of their dealings with animals but always, I believe, to show their human dominance over creatures. With Francis it is different. The land around Gubbio in the Apennines was being ravaged by a fierce wolf. Saint Francis, says the legend, talked to the wolf and persuaded him of the error of his ways. The wolf repented, died in the odor of sanctity, and was buried in consecrated ground.

What Sir Steven Runciman calls “the Franciscan doctrine of the animal soul” was quickly stamped out. Quite possibly it was in part inspired, consciously or unconsciously, by the belief in reincarnation held by the Cathar heretics who at that time teemed in Italy and southern France, and who presumably had got it originally from India. It is significant that at just the same moment, about 1200, traces of metempsychosis are found also in western Judaism, in the Provençal Cabbala. But Francis’ held neither to transmigration of souls nor to pantheism. His view of nature and of man rested on a unique sort of pan-psychism of all things animate and inanimate, designed for the glorification of their transcendent Creator, who, in the ultimate gesture of cosmic humility, assumed flesh, lay helpless in a manger, and hung dying on a scaffold.

I am not suggesting that many contemporary Americans who are concerned about our ecologic crisis will be either able or willing to counsel with wolves or exhort birds. However, the present increasing disruption of the global environment is the product of a dynamic technology and science which were originating in the Western medieval world against which Saint Francis was rebelling in so original a way. Their growth cannot be understood historically apart from distinctive attitudes toward nature which are deeply grounded in Christian dogma. The fact that most people do not think of these attitudes as Christian is irrelevant. No new set of basic values has been accepted in our society to displace those of Christianity. Hence we shall continue to have a worsening ecologic crisis until we reject the Christian axiom that nature has no reason for existence save to serve man.

The greatest spiritual revolutionary in Western history, Saint Francis, proposed what he thought was an alternative Christian view of nature and man’s relation to it: he tried to substitute the idea of the equality of all creatures, including man, for the idea of man’s limitless rule of creation. He failed. Both our present science and our present technology are so tainted with orthodox Christian arrogance toward nature that no solution for our ecologic crisis can be expected from them alone. Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not. We must rethink and reeducate our nature and destiny. The profoundly religious, but heretical, sense of the primitive Franciscans for the spiritual autonomy of all parts of nature may point a direction. I propose Francis as a patron saint for ecologists.
Chapter 11

The Wealth of Nature

Donald Worster

The United States thrived economically in the nineteenth and twentieth centuries largely because it had unleashed so fully the entrepreneurial energies of its people. The landscape was a vast one, and traditional social constraints, in place back in Europe, often withered and even disappeared. It was a country with plenty of room and little sense of history; it was a culture of arrested adolescence, propelled by the yearning, as William Kittredge so aptly put it, to own it all.

If that lack of history and historical awareness has aided enterprise, it has stood as an obstacle to the emergence of a more settled, rooted culture. It has been hard for Americans to see clearly where they have been, to spot the cultural errors they have made and identify the paths they have chosen not to take.

Few historians have worked harder to clarify these truths than Donald Worster, who teaches in his native state at the University of Kansas. In the following selection, adapted from The Wealth of Nature: Environmental History and the Ecological Imagination, Worster probes the cultural origins of our environmental predicament. He finds them largely in the seventeenth and eighteenth centuries, the age when a new worldview gained power, a view that Worster terms materialism. In its economic and scientific forms, materialism purged nature of mystery and inherent value; it embraced a progressive, linear view of change; and it exalted human desires and maximum economic productivity. Once mysterious and God-crafted, nature became mere inert matter, valuable only insofar as it was useful to humans and available for humans to manipulate at will. Worster identifies the need for a new worldview, a more
The Wealth of Nature

residential production of the planet: that is, nearly one-half of all the energy fixed by photosynthesis on the land. We are harvesting it, drastically reorganizing it, or losing it through urbanization and desertification in order to support our growing numbers and even faster growing demands. In addition, much of the remaining 60 percent is profoundly affected by the pumping and burning of fossil fuels, the spreading about of so many chemicals new to evolution, the accelerating interventions into the water cycle, the atmosphere, the climate.

That impact is sure to increase, as more than ever we seek to turn the earth into wealth. The United Nations now projects that world population will grow to more than eight billion by 2025, then go on to ten billion before it stabilizes toward the end of the next century, so that the present heavy impact on ecosystems has only just begun. One-fourth of the world's total stock of plant and animal species are at risk of being eliminated in the next twenty years. About half of the rain forests in tropical areas have already been lost to deforestation, and an additional area the size of Kansas is being lost every year to clear-cutting for timber, cattle grazing, and other uses. The increased burning of fossil fuels is beginning to raise atmospheric carbon dioxide levels so rapidly that global shifts in climate appear imminent. Those are some of the costs forcing the public to re-evaluate the ends and means of wealth.

Suddenly, we humans are waking up to the massive influence we are having on the planet in the pursuit of greater production and are beginning to wonder whether the wealth is excessive and how long it can last. We are beginning to fear that we cannot really manage this enormous productive apparatus that we have superimposed on nature. The earth has begun to look like a savings and loan office six months after bankruptcy: the furniture disappearing, the water cooler empty, the looks on the faces of the office staff blank or bewildered...
The environmental crisis that has emerged over the last half century, though unprecedented in scope and complexity, is not the first in history. The human past reveals a long chain of crises stemming from a lack of knowledge or foresight, though typically before the modern era they were highly localized. The migrants from Asia, for instance, who entered North America some 30,000 to 40,000 years ago had no idea, as they stalked and slaughtered the hairy mammoths gathering around a waterhole, that they would one day run out of easy meat and then would have to make drastic changes in their weapons and hunting targets. I am sure too that the ancient Mesopotamians never imagined, as they dug their irrigation ditches to raise crops in the desert, that one day they would find those ditches filling with silt and their fields poisoned with salt. Much of human history appears as a succession of ecological surprises, many of them tragic, that communities have encountered on their way to dinner or a warm bed.

From our own vantage today it might seem that all those past people of history failed to achieve some enduring method of getting a living from the earth because they were ignorant of how the natural world works. Had the Pleistocene hunters had a few of our computer-armed population biologists advising them, had the Mesopotamians had the advantage of modern hydraulic engineering, no surprises would have happened. Those folks lived in illiterate, irrational times, in contrast to our state of enlightenment.

But if all that was lacking in the past was scientific understanding, then we men and women of the late twentieth century surely ought to be beyond almost all possibility of ecological surprise and failure. Somebody has calculated that one out of every two scientists who ever lived is alive today. We ought, therefore, to have enough of them around, and enough laboratories and research programs, to manage our relations supremely well with the natural world, so well that we could leave all fear of failure behind us. This ought to be the age of absolutely reliable control, when human life runs along in a steady course, when the earth hums like a Japanese factory, when no one ever sweats and no one ever has to worry about their children getting skin cancer.

Perhaps the single most impressive lesson of history, however, is that, despite all our scientific expertise, all our investment in productive machinery, all the wealth we have acquired, we still have not escaped from the inadequacy of our knowledge. On the contrary, each year we encounter greater ecological steering problems than before, which we are unprepared to handle. And this managerial crisis threatens to go on increasing in seriousness well into the next century.

In 1967, when the phrase "environmental" or "ecological crisis" first began to appear widely in the press, the distinguished medievalist Lynn White, Jr., presented a historical analysis of our predicament that deserves to be read and reread regularly by the world's policy makers, though I will argue in a moment that it was ultimately an unpersuasive analysis. White doubted that we could resolve the crisis by "applying to our problems more science and more technology." In fact, trying to resolve it without understanding its roots, as our technicians seemed to be doing, ran the risk of making it even worse. He was not advocating that we do nothing unless we can do something grandiose, nor was he unsympathetic toward the technicians pressured to find some immediate, pragmatic solutions. But as a historian he saw in the crisis some larger cultural challenges that too often scientists, engineers, economists, politicians, and others had not even studied, let alone understood, and he insisted that addressing those larger challenges must be part of any lasting resolution of the crisis.

"Human ecology," White pointed out, "is deeply conditioned by beliefs about our nature and destiny—that is, by religion." He argued that the environmental crisis emerged, not just yesterday, but over the long sweep of Western civilization. Specifically, it was the outgrowth of the Judeo-Christian religious heritage, going all the way back to the time of Moses but emerging most aggressively
in the Middle Ages. “By destroying pagan animism,” White wrote, which had taught humans a respect for the power and spirit dwelling in the natural world, “Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects.” The Western religious tradition saw humans as the only species of moral significance on the earth and thereby sanctioned the uninhibited use, the misuse, even the wholesale extermination of the rest of the living world for the sake of satisfying human needs. Modern science and technology inherited from that religious tradition an attitude of indifference toward the intrinsic value of other forms of life, an attitude of militant anthropocentrism. To focus all the blame on contemporary technology for the crisis was to miss that profound moral conditioning that determined how technology was developed and used. The modern crisis, in other words, could not be explained as a mere deficiency in managerial skill among the technicians. More and better job training for them would not be enough, nor more and better tools. Rather, all people needed to think in less anthropocentric terms about our place in nature. We had to confront the powerful moral influence of Christianity and find an alternative relationship with the earth if human ecology was to escape its mounting crisis.

Historians like Lynn White never make things easier for others, for they tend to give big, abstract answers to questions that most people hope are concrete, uncomplicated, and quickly solvable. Couldn’t we just recycle newspapers, we want to ask. Couldn’t someone just give us a list of “fifty simple things we can do to save the earth”? No, White would have answered, we’ve got to do much more than that—do nothing less than reinvent our religion. We’ve got to think about the burdens of history, the deep, complex trap that traditional culture has left us in; we’ve got to question the ways we have learned to react to the world around us. It’s a tough project.

As a fellow historian, I share White’s ambition to dig deeply into the past to illuminate the present. But it seems to me that we don’t have to look so far back as the Book of Genesis, nor do we have to indict the entire Christian heritage for our situation. We have a much shorter and distinctly modern cultural history to understand and fix. . . .

I believe the most important roots of the modern environmental crisis lie not in any particular technology of production or health care—the advent of medical inoculations, for example, or better plows and crops, or the steam engine, or the coal industry, all of which were outcomes more than causes—but rather in modern culture itself, in its world-view that has swept aside much of the older religious outlook. Let us call this modern culture by a simple name but think about it as a complex phenomenon: the world-view of materialism. It has two parts, economic and scientific, so intertwined and interdependent that even now historians have not fully probed their intellectual linkage. Together, the two parts forced a powerful cultural turn as important as what Karl Jaspers has called the “Axial Period” of human history, which occurred in the sixth and fifth centuries B.C., when so many of the world’s great religious and philosophical systems took form—Confucianism, Buddhism, the pre-Socratics in Greece, the Old Testament prophets. I see this new world-view—“post-Axial” we might call it—taking over western Europe in the seventeenth and especially the eighteenth century A.D., after a long spawning period, and manifesting itself in many so-called revolutions, including the Scientific, the Industrial, the Capitalist, all of which were only surface manifestations of a more fundamental change of thought.

For the biophysical world the more immediately significant impact came from the materialism that was economic. I mean the view that improving one’s physical condition—i.e., achieving more comfort, more bodily pleasure, and especially a higher level of affluence—is the greatest good in life, greater than securing the salvation of one’s soul, greater than learning reverence for nature or God. It encompasses the view that any individual’s or society’s success is best judged in terms of the number of their worldly possessions and their economic productivity. In current parlance, I mean
worshiping the god of GNP. All through earlier history there were individuals who lived by a materialistic standard, but we cannot find any whole culture where materialism defined the dominant system of values until we arrive at the modern age, which is emphatically, unabashedly materialist in its ultimate goals and daily strategies.

This materialist revolution was also notable, I have hinted, for its secularism. That is, it was not motivated primarily by religious motives or visions; in fact it undertook to free people from a fear of the supernatural and tried to direct attention away from the after-life to this-life and to elevate the profane over the sacred. This secularized culture came to supersede not only Judeo-Christianity but almost all the other traditional religious and ethical systems of the world—not entirely but enough to make them secondary, marginal influences. A growing secularism put religious feelings on the defensive, even invaded the very core of religious expression, subverting and distorting it into many strange new forms, so that today we can find unembarrassed Hindu gurus buying fleets of Rolls-Royces or Protestant television evangelists selling glitzy condos in a religious theme park.

Materialist culture was also progressive. It repudiated the attitude toward time in traditional mentality, where preserving ancient, well-established cycles of nature and culture was considered one of the highest duties. Now, duty meant moving oneself and one’s society ahead, escaping the patterns of the past, throwing off the dead weight of tradition. We call this the idea of progress and, though it has a moral or spiritual aspect, we think of progress mainly as an endless economic or technological improvement on the present. Take the materialist core out of progressivism and it loses most of its appeal, its power over the imagination, its driving force.

And then, appearing as a third characteristic, this new world-view of materialism armed itself with an all-sufficing, elegant, self-reliant mode of thought called rationalism, which was supposed to take the place of authority or spiritual revelation. Rationalism taught a new confidence in the ability of human reason to discover all the laws of nature and turn them to account. It emphasized the inherent capability of average men and women to discover the right principles of action, or at least to discover their own enlightened self-interest and act accordingly. This new rationalism urged people to overcome their self-doubt and humility and strike out on their own. Pride, lust, gluttony, envy, selfishness, and greed all vanished as sins or were redeemed from their sordid past by the alchemy of reason and thus—extraordinary transvaluation!—became acceptable as the very engines of progress.

I have said that there are two dimensions to materialism as a world-view: economic and scientific. The latter is absolutely essential to the former, and may even be the prerequisite for its existence. This other materialism is the philosophy that nature is nothing but physical matter organized under and obeying physical laws, matter rationally ordered but devoid of any spirit, soul, or in-dwelling, directing purpose. On this view of nature converge many of our modern university departments of learning along with our extra-academic institutions of research and development, governmental bureaucracies, and multinational corporations, all of which tend to approach nature as nothing more than dead matter.

Historians of ideas point to the French philosopher René Descartes as the chief prophet of scientific (or mechanistic) materialism, for it was he who laid the foundations for the modern mechanistic perspective in both physics and biology. One of Descartes’s main assumptions was that animals and plants are mere machines, constructed from material particles and somehow arranged to conform with the mathematical laws of motion: mere clocklike apparatuses, capable of complex behavior but lacking souls. In a way that no truly traditional Christian, believing in the sanctity of God’s creation, could share, Descartes looked on nature simply as raw material to be exploited by the human brain. The aim of modern science, he argued, is to “know the power and action of fire, water,
air, the stars, the heavens and all the other bodies in our environment, as distinctly as we know the various crafts of our artisans; and we could use this knowledge—as the artisans use theirs—for all the purposes for which it is appropriate, and thus make ourselves, as it were, the lords and masters of nature. It is a dream that resonates down through the centuries, promising an intellectual conquest of mind over matter that knows no bounds.

Descartes did his most influential work in the second quarter of the seventeenth century, but even before him, in the first quarter of that century, another philosopher of science, the Englishman Francis Bacon, made even more explicit the link between the two halves of modern materialism. Scientific materialism, Bacon promised, would provide the means for improving the human economic estate—harnessing ideas to practical ends, thereby making us all rich beyond counting. Through active science, he promised, we could do more than sit passively in a seat of honor over the rest of creation, as Genesis had allowed; we could become creators ourselves, turning the rest of creation into power and wealth, using our reason to enlarge “the bounds of Human Empire, to the effecting of all things possible.”

Thus this new world-view—a materialistic outlook that was secular, progressive, and rational—stole onto the European scene, fought against the declining power of the Church and feudal order, and eventually won over the leading minds of the era. This world-view was carried along in the minds of Europeans invading the New World, conquering and exploiting its riches. They had the vast treasure room of Africa in their sights too, and soon would open up India for the new empire of commerce and reason, founding trading posts at Bombay in 1661 and Calcutta in 1691. Everywhere they came upon civilizations of stunning beauty, but always it was a beauty embedded in outworn religious and philosophical systems, which put the highest human value on the immaterial and spiritual. Those backward foreign peoples all seemed to be slogging along in

ignorance of the great material possibilities that lay around them—the potential of their lands to produce inexhaustible wealth.

All these ideas have been so often and so well studied that it seems a little trite to insist on them here, yet even today the profound environmental consequences in that shift to materialism, or even the very fact of the shift, are not understood widely enough, nor do many people, in reading about the disappearance of tropical rain forests or the disposal of toxic wastes, stop to realize that these current problems have their roots in a cultural turn that began centuries ago and often in a land far away.

Such cultural shifts do not, of course, come full-blown from the mind of a single man or woman, but rather indicate deep, nearly simultaneous shifts in the minds of thousands, even millions, of people—whole civilizations suddenly taking off in unison like a flock of geese migrating to the north country, wheeling and dipping in close formation as though wired together. A single great mind, however, can reveal the general direction in which the flock is flying and draw the map that others are following by instinct. The individual who more than any other served that function for the rising materialist world-view was an English-speaking philosopher and scientific economist, Adam Smith. I nominate him as the representative modern man, the most complete embodiment of that cultural shift; and recommend that it is he, not Moses, whom we must understand if we are to get down to the really important roots of the modern environmental crisis. Robert Heilbroner has spoken almost irreverently of “the wonderful world of Adam Smith,” but in his time Smith was indeed a wonderful visionary, as he remains for many today who are just now discovering his logic and perspective. So how did Adam Smith look on the world around him? Where did nature fit into his thinking? What were the long-term
implications that his ideas had for the natural order of Planet Earth?

A large homely fellow with a bad twitch and an absent-minded air, Smith was a most unlikely looking leader for any intellectual revolution. He was born in 1723 in the seaside town of Kirkcaldy, directly across the Firth of Forth from Edinburgh, where he grew up among fishermen and smugglers with the smell of salt air in his nostrils. After university studies in Oxford, a teaching post in Glasgow, and travels as a gentleman's tutor in France, he returned home in his mid-forties to Kirkcaldy and, living unmarried with his mother, devoted himself to writing his great book, The Wealth of Nations, published in that revolutionary year 1776. Although he is described as one who liked to take long solitary walks along the seashore, he never actually expressed any love of the sea or admiration of its beauty, never seems to have watched with any interest a gull hovering in the air, a crab scurrying over the rocks, the tide moving in and out. And though he lived in a Scotland that had severe ecological problems caused by overgrazing, deforestation, and soil depletion, he never considered how the Scots might change their land-use practices and become better stewards of their patrimony. And though many of his contemporaries were enthusiastic naturalists—it was a fabulous age of natural history, including the remarkable Gilbert White of Selborne, Carolus Linnaeus of Sweden, comte Georges-Louis Leclerc du Buffon of France—Smith seems to have lived his entire life utterly oblivious of the nature around him. He set out to revolutionize the study of human economics in total disregard of the economy of nature.

What Smith knew and thought about was the expanding life of commerce and industry, the rising class of businessmen, the mind of the entrepreneur, the factory system of production, most of which was found far from Kirkcaldy. Instead of moving to the very centers of commerce where he could make great bundles of money for himself, he chose to stand aside and observe, to see how it was done by others, and to help his nation, Great Britain, figure out how wealth had been and might be gained. Ironically, he was a humanitarian, a disinterested materialist who celebrated the amoral pursuit of self-interest.

The secret to increasing the wealth of nations turned out to be rather simple, though it took Smith an enormous body of text to reveal it. A nation that seeks wealth, he concluded, must establish a "system of natural liberty" in which "every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest in his own way, and to bring both his industry and capital into competition with those of any other man, or order of men. Note that Smith called this system "natural," for he believed it was in harmony with the laws of human nature. It is natural, he believed, for humans to want, above all else, to increase their material comforts, to add to their sum of riches by "trucking, bartering, and exchanging one thing for another." If that truly is the way all people naturally behave, then a society or culture would itself be most natural when it allowed, or even encouraged, people to enjoy as much freedom as possible in pursuit of their acquisitive natures. Smith did add what is overlooked by many of his later disciples: that a society may also rightfully restrain those human natures in the interest of social justice, but such restraint should not interfere too much with private freedom. To attempt to legislate a general benevolence, he believed, would be to try to overturn the laws of nature.

So little did Adam Smith consider what most people, then and now, mean by nature—the flora and fauna, the soil and water—that we cannot really speak at length about his philosophy of the subject. This much can be said: he did not conceive that the non-human realm lays any obligations on humans. What Christians called the Creation, what their religion required them to respect as the handiwork of God, had become for the economist quite value-less in and of itself. Value, in his view, is a quality that humans create through their labor out of the raw materials afforded by nature. A thing has value only when and if it serves some direct human use
to the United States and Japan (the bulk of Smith’s library now resides in Tokyo). So also in the nations that have followed, however faithfully or not, the teachings of Karl Marx, including the late Soviet Union. Marx may have been a sharp critic of the Smithian model of promoting economic growth through market freedom, but like Smith he was emphatically a materialist: secular, progressive, and rationalistic to the core, a fierce critic of all the traditional religions, all forms of pagan animism or Christian superstition, all reverence toward the earth. Marx and the Marxists were radicals for social justice, but they had the goal of material abundance firmly in mind too and were devoted to the modern world-view.

Now every economy in history, from that of the Bushman of Australia to that of global capitalism, has tried to extract resources from nature and turn them to human advantage. But no economy finds those resources in a void; they all must come out of a larger order or system. We can call that larger order “the economy of nature,” following the lead of Smith’s neglected contemporaries, the eighteenth-century naturalists. In this light every economy that humans have devised must appear as only a dependent economy, deriving from that greater one. We have not invented nature’s economy; we have inherited it through cons of evolution. We learn to take things out of it for our own use and circulate them for a while within our little economy, turning forests into houses and books before yielding them to rot and mildew. The human economy requires for its long-term success that its architects acknowledge their dependence on the greater economy of nature, preserving its health and respecting its benefits. By this standard every modern economy, whether built on the principles of Adam Smith or Karl Marx, is an unmitigated disaster.

Once we acknowledge that the economy of nature is real and indispensable, then this entire modern way of thinking appears in a withering light as overweening pride in inadequate intelligence and skill. Living by overconfident materialism, people come to believe that they can create all the fertility they need by adding to

("value in use") or can be exchanged for something else that has value ("value in exchange"). One of Smith’s most influential predecessors, John Locke, declared that “the intrinsic natural worth of anything consists in its fitness to supply the necessities or serve the conveniences of human life.” He meant that nothing in the unimproved natural world has any intrinsic worth—a worth in and of itself—but only an instrumental worth, measured by whatever human uses it can serve. Likewise for Smith, nature is only instrumental and has worth or value only to the extent it has been “improved” by human labor.

The wealth indicated in The Wealth of Nations does not include any of the material benefits that humans derive from unimproved land: the air and water that sustain life, the process of photosynthesis in plants, the intricate food chains that we draw on for sustenance, the microorganisms that decompose rotting carcasses and return them to the soil. In a passage from the chapter “The Employment of Capitals,” Smith does refer passingly to a “nature” that “labours along with man” in agriculture, adding fertility to the soil just as servants and domestic animals add their labor to improving the master’s property. “Though her labour costs no expence,” he writes, “its produce has its value, as well as that of the most expensive workman.” In another passage dealing with Columbus’s discovery of the New World, he indicates that “the real riches of every country” are “the animal and vegetable products of the soil,” but then adds that Columbus found little wealth on his voyages but cotton and gold, dismissing even the Indian corn, yams, potatoes, and bananas the Italian brought back to Europe as unimportant economically. . . . Unimproved nature was for Smith a “vulgar” show, unworthy of a great man’s interest . . . .

* * *

The worldly philosophy of Adam Smith has become the dominant one in all the industrial nations, from Great Britain and Germany
the soil a bag of chemicals, that they can create any amount of wealth out of the most impoverished landscape, that they can even create life itself in a glass tube. To be sure, human artifice has improved our power over the elements, suggesting that nature's economy does not set rigid or fixed limits to our existence. But now we are learning that we cannot use that power as safely as we thought. We cannot anticipate all the consequences of our ingenuity, and greed, no matter how rationalized, remains the root of evil and self-destruction.

If my argument is right and the environmental crisis is really the long-preparing consequence of this modern world-view of materialism, economic and scientific, then it makes no sense to blame any of the traditional religions of the world. Religion, on the whole, acted to check that materialism, to question human arrogance, and to hold in fearful suspicion the dangerous powers of greed. Religion, including Christianity, stood firmly against a reductive, mechanistic view of the world. It pointed to a subordinate and restrained role for humans in the cosmos. And, most importantly for the sake of the biosphere, it taught people that there are higher purposes in life than consumption.

The ecological crisis we have begun to experience in recent years is fast becoming the crisis of modern culture, calling into question not only the ethos of the marketplace or industrialism but also the central story that we have been telling ourselves over the past two or three centuries: the story of man's triumph by reason over the rest of nature. But having presented that argument, I cannot now recommend that we slip backwards in time and solve the crisis by reading the Bible or Koran again. It is not possible, or even desirable, to try to go back to a pre-modern religious world-view. We cannot so simply undo what we have become. For this reason I must once more disagree with Lynn White, who proposed that the world convert to the religious teachings of St. Francis of Assisi, the famous thirteenth-century Italian monk who embraced the plants and animals as his equals and beloved kinfolk. The idea of making

Franciscans of everyone in the world would be an ethnocentric and anachronistic solution to the modern dilemma.

So what can we do? What is the solution to the environmental crisis brought on by modernity and its materialism? The only deep solution open to us is to begin transcending our fundamental world-view—creating a post-materialist view of ourselves and the natural world, a view that summons back some of the lost wisdom of the past but does not depend on a return to old discarded creeds. I mean a view that acknowledges the superiority of science over superstition but also acknowledges that all scientific description is only an imperfect representation of the cosmos, an acknowledgment that is the foundation of respect. I mean the view that all consumption beyond a level of modest sufficiency is pathological in both a personal and an ecological sense; like any kind of gluttony it deserves pity, not approval. I mean the view that greed is always a vice, not a virtue, that unlimited economic growth or "development" has become a fanatical drive against the earth. Whether such a viewpoint might first appear in the most advanced industrial societies, where so many people have begun to have doubts about the world they have made, or in the least advanced, where most people are still converting to the modern notions, though with many doubts of their own, I cannot say; only that such a post-materialist culture must appear somewhere in embryonic form and spread eventually, as the doctrines of Adam Smith have done, to the farthest corners of the earth.
On Comparing Religions in the Anthropocene

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I. Observations on the Functions of Religions

Whatever may be the correct way to understand their origins and development, the major religions aspire to providing their members with solutions to many problems, and they aspire to satisfying many needs. For example, the religious traditions offer explanations in certain important areas of enquiry. Thus they propose answers to questions such as these: Why is there a universe? Why do we exist? What sort of beings are we? What will become of us after we die? The proposed answers to such fundamental questions as these constitute the descriptive or cognitive part of religion.

The religions also aspire to providing a guide to behavior. They specify how people ought to live, what is important in human life, how we ought to treat others, and what we owe others. The religions also typically provide an analysis of why we sometimes fail to do what we ought to do and of what it will take to rectify us so that we will do what we ought to do. The relevant defect that is thought to account for our failures may be, for example, sin, ignorance, or delusion. So there is both identification of a problem and specification of a solution. The religions also typically aspire to providing guidance, assistance, and encouragement that will help us to do what—it is claimed—we should do. It seems plain, too, that in matters of behavior, many of the traditions ask from their adherents more than they are inclined to give. So it is not surprising that the religions often aspire to challenging people and to shaking them up, urging them to reexamine their attitudes, outlook, dispositions, and so on. To lay some of my cards on the table right away, what I will propose, in effect, is that the religions themselves need to be challenged and shaken up. The upshot of what I am saying is that the religions need to reexamine their own attitudes, perspectives, and practices in some important respects.

In any case, that the religions have a behavioral function seems uncontroversial and unexceptionable. One aspect of this behavioral component is that

1. I use the term “behavioral” rather than the term “prescriptive” to refer to the relevant function. Being prescriptive, or providing guidance, is an important part of the behavioral function, but only a part. I include in this function other ways in which a religion might be relevant to how people behave. For example, it might provide unique reasons, or encouragement, to do what one ought to do. Or it might provide a helpful perspective on what it is for human beings to have an obligation. I look at some moves of this sort later in the essay. In the discussion that follows, I will be considering matters that pertain to the descriptive and the behavioral functions of religion. The religions certainly fulfill additional functions in addition to these two. For example, the religions also typically have a therapeutic function; they legitimize social and political arrangements; they sacralize important family and communal events; and they provide a sort of social glue that helps to unite groups. There is much to say about each of these functions, but I cannot pursue this area of inquiry here.


4. Another way in which I am narrowing the topic is that I am focusing on present and future relevant prospects for the religions rather than on past performance. For discussion of one set of historical issues, see Lynn White Jr., “The Historical Roots of our Ecological Crisis,” Science 155 (1967): 1203–7; Donald Worster, The Wealth of Nature: Environmental History and the Ecological Imagination (New York: Oxford University Press, 1993); and Michael Northcott, The Environment and Christian Ethics (Cambridge: Cambridge University Press, 1960), chap. 2. The historical record is of course a subject of interest, but it may be a poor guide to the capacity of the traditions to deal with problems that were not as much as imagined in earlier periods or to relevant resources that it could now deploy. That being said, studies of what the traditions have already accomplished since the global problems under discussion here have become apparent are relevant, and I will touch on such matters toward the end of this essay. It is also important to bear in mind that even if all attempts to blame religion of any sort for our current crises were wrongheaded—as would be the case if the real culprit, the factor that actually gives rise to the current problems under discussion is, say, market forces that encourage people to want, and to think they should have, more and more, with no end in sight—the religions might still have an important role. For example, they might help people to resist the harmful forces that are the main cause of these crises.
It is, I suppose, possible that a religious tradition would take the position that it has nothing much to contribute to solving a major contemporary problem such as the one I will probe. But this is not typically the way in which the religious traditions proceed. Rather, they propose to be relevant, to have something to say. Indeed a religion may even aspire to providing a comprehensive and complete roadmap for all of human life, with directions for how to act in all situations. If the members of a tradition that has this aspiration to be comprehensive are persuaded of the magnitude, seriousness, and urgency of global environmental problems, they will expect to find solutions to these problems within their own resources, indeed solutions that are superior to those to be found elsewhere. Probably they will feel that if people would just pay attention to the relevant teachings and live as those teachings recommend, our environmental problems, and indeed all other problems that arise from human behavior, would be solved. When such an aspiration is present, it is especially reasonable to inspect the relevant tradition with a view to seeing what they have to offer.

II. The Goal of Good Planetary Citizenship

There is little point in asking for help with getting somewhere, or in evaluating routes that might get us there, unless we have a clear idea of where we want to go. If we are to consider whether the religions can help us to respond to the currently pressing problem of global environmental destruction, we need an idea of what the problem is and of what it would be to solve it, so that we know what it is we should be striving for in this area.

The relevant goal is, I think, best understood as having two interconnected parts. The first part is fairly uncontroversial and consists in the requirement that we avoid various destructive effects of current human activity, such as major global loss of biodiversity and habitat, harmful changes in the earth’s climate, and excessive use of resources.

In sketching the second, and more controversial, part of the goal, I will draw on the work of Baird Callicott and Karen Mumford. What we should be aiming for, as they see it, is a combination of what they call “ecological health” and what they call “ecological integrity.”

Ecological health is preserved when two conditions are met. First, processes of nature such as water purification, nitrogen fixation, soil stabilization, nutrient retention and recycling, and the production of clean air, are operating normally.

A second element in a healthy ecosystem is resilience, or the ability to cope with disturbance. Ecological integrity, on the other hand, is preserved when there is ecological health and, in addition, the historic species composition of the biotic community remains intact. So we are to think of the world around us as consisting of, on the one hand, areas we occupy and use and, on the other hand, biodiversity preserves. Ecological health is to be preserved or restored in the former areas. In these areas in which ecological health is the goal, we may substitute for one or more of the original components crops or animal species from which we will benefit, but in doing so we must maintain the health of the ecosystem, in the sense that its important natural processes continue. It is never acceptable to violate ecological health to any significant extent. In the latter “set aside” areas or biodiversity preserves, integrity is to be preserved or restored.

As far as possible, we should leave these biodiversity areas alone.

This proposal does not include any unrealistic or implausible assumptions about the best landscapes and ecosystems being ones that are free of people. Yet it has a central place for the idea that some landscapes and ecosystems should be more or less free of the human presence. Also, the idea of maintaining or restoring integrity in certain areas need not be based on any false assumptions about there being wild areas that are untouched by human influence. By now the human influence is everywhere on the planet.

Henceforth I will refer to the two-part goal I have just outlined as the “environmental goal,” and to someone who promotes this goal as a “good planetary citizen.” Good planetary citizenship requires, among other things, understanding what animals, birds, insects, and plants are locally indigenous and what are their characteristics, habits, and needs; where these locally indigenous species are still flourishing; what might be done to enable them to flourish more widely; what are the local drainage patterns; and much more besides. I will assume without further discussion that the account of this goal I have just sketched is correct, though there is in fact no agreement about the details.


7. As a sketch of part of what we should be aiming for, what Callicott and Mumford are proposing is basically plausible, in my view. But it raises a host of questions. I will mention five of these here, but I will not pursue any of them, given the main purpose of this essay. First, Callicott and Mumford say that ecological integrity is preserved only if the historic species composition and structure of the biotic community remains intact. But what is the historic species composition and structure of a biotic community? For one thing, how far back in history should you go? Prior to human settlement? Prior to agriculture? Prior to the industrial era? And so on. Second, how much of the planet should be devoted to biodiversity preserves, and how much may be exploited (in a way that preserves health)? Third, is the idea
We hardly need reminding that humanity is failing miserably to achieve this two-part goal. Indeed, so serious are our collective failures in this regard, so evident and so widespread are the consequences of human activity, and so extensive are the changes we are making in the world around us—by adding carbon to the atmosphere, altering the nitrogen cycle, exterminating other forms of life, and in general modifying almost all of earth’s ecosystems—that our age is now being referred to as “the Anthropocene,” the Age of Man. It is the scale of the harm that requires that all of our institutions that have any capacity to contribute in this area should do so, and especially those that aspire to providing moral leadership. And the religions certainly have this aspiration. Yet Bron Taylor probably is correct when he writes that “[despite] occasional and increasing expressions of environmental concern by practitioners of the world’s major religious traditions, most of these traditions view their environmental responsibilities as, at most, one of a variety of ethical responsibilities. Clearly, environmental duties receive far less attention than what are considered to be religious duties and other, more pressing, ethical obligations.” Undoubtedly it is a complicated matter to say what obligations matter most. However, even if we are completely unsure how important is the environmental goal relative

of integrity only relevant on a very large scale, or should we think in terms of small-scale hands-off spaces all around us? Fourth, Callicott and Mumford say that as far as possible, we should leave the biodiversity preserves alone. And they say that we should minimize harm in the human areas. What are the important considerations that might permit exceptions to be made so that integrity or health may be compromised somewhat in particular situations, and how much harm can be permitted in such situations? For discussion of the foregoing and related issues, see J. Michael Scoville, “Environmental Values, Animals, and the Ethical Life” (PhD diss., University of Illinois, 2011), chap. 1. Fifth, and most important, there is the question of whether the environmental goal, as stated, is comprehensive enough. In particular, what about, say, the promotion of environmental justice or of animal welfare? My approach here is to acknowledge that there are significant goals and concerns that are reasonably classified as environmental but that are independent of the two-fold goal, as stated. We can therefore imagine a yet more comprehensive specification of all relevant goals and concerns and indeed a full account of the relationships among them, of what outweighs what, and when, and so on. (To connect this point with the last one: some of these additional considerations might feature in an account of when health or integrity might legitimately be compromised.) But my view is also that any more comprehensive analysis that is plausible will feature prominently the two-part goal as specified here. Hence even if we had a full account of how the religions would be relevant to the achievement of any such more comprehensive goal, the issue of whether, and to what extent, the religious traditions serve to promote or to obstruct achievement of the two-part goal, as stated, would be of vital significance.

8. For a brief summary of why this name is apt see The Economist, May 28, 2011, 11, 81–83.

to other goals, we can still consider how the religions compare in terms of the extent to which they promote it; and that is my topic here. 10

So can the religions help us to achieve the environmental goal? Almost everything I have to say by way of addressing this question involves considering whether the religions can help by virtue of their descriptive and behavioral functions.

III. An Obstructive Role

Though there is some good news to come, I will begin with some bad news, probing various ideas that enjoy some currency in the religious traditions and that can constitute barriers to good planetary citizenship. These are all examples of ways in which religions, fulfilling their descriptive function, present interpretations of how things are that can influence behavior. I will mention a number of interconnected ideas, most of which actually are associated with one or more of the monotheistic traditions, in particular, and some of which have already been much discussed in the literature. What follows are important examples of potentially obstructive ideas, but they are just examples, and I do not mean to imply or insinuate that the monotheistic traditions are more problematic than their nontheistic counterparts. Naturally my concern here is with the effects that such ideas can have and not with their plausibility or their history, though I will make the odd comment about their plausibility.

In some strands of monotheism, we find the idea that God created the earth for human beings, first and foremost. We are the special species, the species whose interests are much more important than the interests of any other species, perhaps even the species that is the point of the existence of the whole planet, or even of the whole cosmos. What is going on with human beings is therefore the central drama in history, and the rest of the world, and even perhaps everything else, exists as something like a prop or set of props in a drama in which human beings are the central characters. Moreover, because of our special status, human beings should exercise dominion or mastery over the world, controlling and subduing it.

In what senses humans are special obviously is a matter of controversy, and the matter can not be pursued here. However, confidence about our being special may blind us inappropriately to the situation and interests of members
of other species. And thinking that we are the species whose interests really matter is a possible barrier to good planetary citizenship given, in particular, the emphasis on preserving indigenous forms of life that is part of the idea of integrity. The point has to be made carefully since a purely anthropocentric approach may provide adequate reason to protect other species. Nevertheless, the idea that we alone are the important species can render invisible to us a set of possible reasons for taking ecological integrity, in particular, as seriously as we should take it.

The idea that human beings are the really important species is sometimes combined with an otherworldly idea that what is most important about what is occurring on this earthly scene is the process of getting as many of us as possible into heaven, or ensuring that we achieve some other putative ideal future state. Everything else is understood to be a backdrop to this process. Hence much of what is important, much of what matters, is not even to be found in this life but rather is located in an afterlife. So we should not be too preoccupied with earthly things. From this perspective, “humanity’s real home does not lie among the rest of creation but rather with God in heaven... [Humans]’ most important relationship is the vertical stretch to the divine rather than horizontal ties to other people or creatures.”

11. The danger is that these ideas will lead people to think that concern about this world is misplaced and a distraction. Essentially the same criticism may be leveled at the Hindu idea that the world is illusion (maya) or at any religious framework that either downplays the significance of our earthly sojourn or does not take the physical world seriously enough.

Here is another potentially harmful theme. Some versions of some religions, including Islam and Christianity, suggest that the world is going to end soon, that this is preordained. This idea can be obstructive in that it can lead people to believe that since environmental destruction that will be complete and all-consuming is divinely preordained and even imminent, this is something that one can do not much about. The further thought is that if the curtain is coming down soon, why worry about the characters and props and so forth that are currently on stage? Why should we be concerned about, say, the imminent loss in the wild of the tiger or the orangutan?

Another religious motif that can be obstructive is the idea that there is an ideal future, a goal of history, toward which events are taking their course, and that will involve a new creation or at any rate a new earth. According to this view, nature as we know it is not to be preserved and is to be replaced by something better, an improved model. This is sometimes understood to be a world without predation, even a world without death. The obvious danger is that an expectation of an inevitable future that involves new forms of life and new relationships among them could have the result that nature as we currently encounter it, with its current forms of life and current relationships, will be considered less worthy of preservation. Advocates of some Christian variations on these eschatological themes actually see environmental destruction as something to be welcomed, being a harbinger of the rapture.

12. Another potentially problematic idea is provided by a certain interpretation of the notion that “He’s got the whole world in His Hands.” What this says, or at least what it can be interpreted as saying, is that since there is a deity who is much wiser than we are and who has the entire situation under control, everything is fundamentally all right. People who worry about environmental destruction are, from this perspective, assuming responsibility for matters for which they do not need to assume responsibility, carrying a burden they do not need to carry, and worrying unnecessarily. It may seem, too, that this assumption of responsibilities beyond our station involves an element of presumptuousness on our part. The danger in any case is that this sort of faith may make for excessive optimism and hence insufficient concern about our current developing disasters. For if the situation is under providential protection, perhaps there is no need to be concerned about, say, the imminent demise in the wild of the tiger and the orangutan and, in general, the current major global loss of biodiversity. Nor is there reason to be concerned about climate change, no matter what people who know what they are talking about tell us about the dangers. Likewise, to turn to another theme, the belief that whatever

happens is in accordance with the will of God may lead believers in God to acquiesce inappropriately in states of affairs that could have been avoided if they, and others, were to have the wisdom and determination to avoid them.

Closely related to the idea that we should have faith that the world is under providential protection is the idea that it is arrogant or inappropriate or even presumptuous to think that we could seriously damage the earth. Hence, it is contended, any apparent evidence that we are doing so is deceptive.16

So there are a number of potentially obstructive motifs; and this list could be extended. But as we consider their significance, we need to avoid simplification and overstatement. For one thing, there are any number of other beliefs that may in practice mitigate the potentially harmful effects of such elements. (There may of course also be factors that exacerbate any such harmful effects.) The relevant traditions may by this point be well aware of any such potentially obstructive elements they contain and, in light of the current widespread recognition of the harmful effects of human activities, they may have at hand contemporary environmentally informed critiques of such elements—critiques in whose development the relevant traditions may have unearthered, and may have deployed, internal resources that counterbalance any that have been recognized to be obstructive.

For example, a potentially obstructive idea might be rendered harmless in practice if, for example, someone who endorses it also believes that she has a divinely imposed obligation to care for the earth or to be a good steward of the earth, and if she gives the latter belief priority in her thinking. Or someone

difficulty for anyone who is not concerned, or who is less concerned than he otherwise would be, about loss of biodiversity, for example, because he believes, on faith, something along the lines of “He’s got the whole world in His hands,” where he takes this to mean that God would not permit the mass extirpation of species. Optimism about these matters based on faith that “He’s got the whole world in His hands” would be completely misplaced, given what we know about the history of life on earth. I suppose there may be some who think that even if such disasters occur, and perhaps even if the sun were to set entirely on this earthly stage, God would still have the whole world in His hands. But in what sense would this be so? Is there a sense that leaves out the nurturing, protecting, preserving connotations of protecting something in your hands? If it is this world that is “in His hands,” then we have some idea of what being “in His hands” will consist in and what its consequences for this world will be. To say that all is well with the world if we wipe out half of the currently existing species is like saying that all is well with your family even if you just lost most of your relatives in a tragedy. It is unclear what is being said.

16. This potentially obstructive move flies in the face of the obvious fact that we cause all manner of damage to the world around us, not to mention the fact that we engage in genocide and all manner of cruel behavior. What would be the theological justification for thinking that we can not cause profound environmental damage? However it goes without saying that this idea, like others discussed, can have obstructive effects even if it is not plausible.

who thinks that history will culminate in a new earth might think that the new earth will come into existence at an unknowable point in the future that may be very far away, that what we should be aiming for here and now should not be defined in terms of the ultimate destination for history, and that we currently have an obligation to take care of the earth as we now find it.17 Or a tradition may take the position that even if the world were going to end soon, and even if we knew that to be so, we should protect it as if it were going to last forever.18

Again, someone who thinks that “He’s got the whole world in His hands” may actually be galvanized by this belief into activity, lifted out of what would otherwise be crippling pessimism and hopelessness about the situation and, in particular, such a person may make a determined effort to ensure that all will be well by setting out to serve as the very mechanism that will bring it about that this will be so. In this way, the idea that “He’s got the whole world in His Hands” may have an empowering effect. Hence while a theistically based belief that all will be well—whatever exactly it consists in—might, on the one hand, be combined with a passive and quietist acquiescence in ecological destruction, it might on the other hand be combined with an energetic effort to prevent that destruction.

Again, in the biblical tradition the idea of dominion has often been qualified in this way: if human beings are appointed as planetary rulers to whom a certain amount of authority has been delegated, we are not the final authority, and whatever use it may be appropriate for us to make of the world around us, the world, and indeed everything that there is, exists for the greater glory of God. In addition the dominion idea obviously has existed side by side with the idea of stewardship: if humans are to subdue the earth, we are also to replenish it and to be caretakers who protect, preserve, defend, and cultivate it, and who are not to be careless about it.

Lastly, a potentially obstructive motif may turn out not to be definitive of a tradition but instead be associated only with one strand thereof. Thus, David Haberman says that the idea that the world is an illusion is not common to all forms of Hinduism, is to be found only in Advaita Vedanta thought, and indeed only in one strand of Advaita Vedanta.19 Yet in spite of all of

17. Actually, what we see exhibited here are two ways in which potentially harmful motifs can be neutralized. This can occur in a sweeping sort of way or in a motif-specific sort of way. The last two sentences exemplify these possibilities, respectively.


these qualifications, elements such as those mentioned can serve as barriers to achievement of the environmental goal.

IV. A Constructive Role

We have seen some bad news along with some reason to be cautious in our estimate of how bad it is. Here, on the other hand, is some good news. There are in fact many ways in which religions can, and do, promote good planetary citizenship. That this is so is exemplified by the project of “mining” the traditions (to use a term first deployed in this context by Baird Callicott, I believe), which is just to say the project of unearthing elements in the traditions that help, or might help, to promote good planetary citizenship—or whatever environmental goal is understood to be worthy of pursuit.

Here there is a vast amount to say and a large number of potentially constructive ideas to be considered. The relevant elements that have been unearthed include ideas that seem to be partial endorsements of the idea of good planetary citizenship, ideas that resonate in some way with this idea or with some aspect of it, and ideas that could help to create a favorable attitude toward pursuing it. Indeed I have just mentioned constructive ideas such as the idea of a divinely imposed obligation to care for the earth and the idea of stewardship.

Here are four additional examples, and again these are just examples: the idea that certain places are sacred, the idea that the world is not ours to despoil, the idea that other animals or other parts of nature are our kin, and the idea that a considerate, compassionate, and merciful attitude should be taken toward all beings that can suffer. Thus the idea that certain places, such as rivers or groves or trees or mountains, are sacred has been endorsed by Indian religions and within Islam. Gary Snyder finds the idea of sacred places in Australian aboriginal religion, in Japanese Shintoism, and in hunting and gathering cultures in much of the world. Dipak Pant comments on the “sacred geography” that is to be found in the Alpine region and in parts of central and southern Europe. This involves an association between various saints and holy figures and particular landmarks such as lakes, rivers, boulders, and mountaintops. The idea that the world is not ours to despoil can be found in many religions including Islam, Christianity, and Hinduism. The idea that other animals or even other parts of nature are our kin has been endorsed by some Native American traditions, by some Australian Aboriginal groups, and by some Christians such as Francis of Assisi and Albert Schweitzer. The idea that attitudes such as kindness, compassion, mercy, and generosity should be displayed toward all beings that are capable of suffering is endorsed by many Christian thinkers. Likewise, in Buddhism we find the idea that compassion, sympathy, and loving kindness should be shown toward all creatures, “timid and steady, long and short, big and small, minute and great, visible and invisible, near and far, born and awaiting birth.” The list of such elements that are friendly to good planetary citizenship and that are to be found in the religious traditions can be extended more or less indefinitely, and their study is an important and burgeoning field.

The connections between the few motifs just introduced and the idea of ecological integrity is a particularly interesting area of investigation. Just by way of example: if we have reason to care about wild animals, perhaps because

20. Another complicating factor is that the religious and environmental themes we have been probing will in practice interact with political and economic factors, among others. For example, a particular religious affiliation in a particular time and place may make a certain political affiliation more likely, and that in turn may make more likely a certain environmental response. The contribution of the relevant religious orientation either to promoting or to obstructing the environmental goal may therefore be difficult to discern. See, e.g., Darren E. Sherkat and Christopher G. Ellison, “Structuring the Religion-Environment Connection: Identifying Religious Influences on Environmental Concern and Activism,” Journal for the Scientific Study of Religion 46, no. 1 (2007): 71–85. It is a lot easier to identify potentially obstructive and potentially helpful ideas than it is to discern what difference they actually make.


we see them as our kin or because we feel we should care about all beings that are capable of suffering, then we have reason to care about the habitat in which they flourish best.

Of course, in considering the significance of potentially constructive themes, one should be just as circumspect as one should be in considering the significance of potentially obstructive themes. Here, too, overstatement and simplification are to be avoided. There may be factors that neutralize (or for that matter reinforce) positive elements, and political and economic factors will interact in practice in complex ways with such elements. Still, there is no denying the presence of such potentially constructive themes.

The religions can also provide various additional mechanisms that can help to keep the goal of good planetary citizenship before the minds of their members. Obviously a hope for reward and a fear of punishment, however construed, could play a role in this context, provided the ideas of reward and punishment are linked appropriately with the idea of good planetary citizenship. More interesting is the proposal that the idea of a moral obligation within, a theistic context can involve taking it seriously in ways that are not otherwise available. This might arise, for example, from the fact that obligations seem to the theist to have the additional dimension of being owed to a being to whom one wishes to be loyal, with the result that a failure to fulfill those obligations has therefore something of the character of a betrayal. For reasons such as these, theists can have an extra reason, or extra reasons, to do what they ought to do—assuming of course that they correctly identify what they ought to do. Such factors can provide a nudge of a certain sort. Obviously my interest here is in the deployment of such elements in support of good planetary citizenship.

George Mavrodes considers another factor that can nudge those who endorse certain religious perspectives toward constructive results—the idea that "reality is committed to morality in some deep way." He expands on this idea as follows: "Perhaps Plato [thought] that goodness, or some such thing related to morality, was an ultimate fact about the world.... The idea of the Good... is [thought by Plato to be] somehow fundamental to what is as well as to what ought to be.... A Platonic man, therefore, who sets himself to live in accordance with the Good aligns himself with what is deepest and most basic in existence.... [Whatever] values a Platonic world imposes on a man are values to which the Platonic world itself is committed, through and through."

The key idea is that moral values are understood to be deeply embedded in


the structure of things. Hence by acting morally, one is aligning oneself with something bigger and grander than the human. This notion of a deeply morally positive reality might be stated in sufficiently general terms that it can even be a unifying factor across a number of religious traditions, both theistic and nontheistic. The result in either case is that in some way reality is more disposed to the fulfillment of obligations than, for example, to their being ignored. When you fulfill your obligations in a morally deep world, you are aligning yourself with an external reality that somehow or other gives expression to the values in accordance with which you are acting.

An example of what this would amount to is provided by the idea of an object of worship of whom moral values—say, benevolence or mercy or forgiveness or justice—are partly definitive. Those values will endure, no matter what. So what believers in such an object of worship are committed to, if they believe that we have an obligation to be good planetary citizens, is the idea that there is an external reality that is congruent with and supportive of fulfillment of this obligation. This too can be an important source of motivation for good planetary citizenship. To see the relevant obligation within, say, a monotheistic framework is to see it in a rather different light.

V. Making Comparisons

Based on everything considered so far, we can say that, at least in theory, religious traditions, and strands within religious traditions, may be compared in terms of their capacity for promoting good planetary citizenship. The comparison would take account of potentially harmful elements and of potentially helpful elements. It would also take account of any additional elements that serve either to neutralize or to enhance the import of elements in either category. At least in theory, each tradition can be assigned a "planetary citizenship score" on the basis of taking all of its relevant factors into account. And, at least in theory, we can ask which tradition has the highest planetary citizenship score.

I say that all of this is the case in theory because any actual attempt to provide a planetary citizenship score or to make such a comparison faces formidable challenges. There is the matter of understanding others, where this involves understanding how they think, and understanding the significance that the various ways in which they think shape their behavior. 29 Providing an overall

score would also require us to combine together on the same scale the various relevant positive and negative elements, along with any mitigating factors in either case, and it is not easy to see how this would work. In addition it would require combining together all of the relevant considerations: after all, all that has been discussed are some examples of potentially positive and negative elements. In addition a thorough assessment in this area would require attention to the ways in which traditions influence each other and borrow from each other. And it would require attention to the ways in which other forces in society (such as economic forces, particular historical situations, the extent to which cultures are open to new ideas or to critical thinking, for example) influence the relevant ideas as well as ways in which those ideas influence behavior.

I do not know how such comparisons would go, especially when you keep in mind that traditions may be able to deploy resources that they have not hitherto deployed. So I make no attempt to say what tradition is best in the relevant respects. And in any case, to come clean on the matter, I am less interested in comparison than in challenging each tradition to subject itself to the relevant sort of self-examination. The evaluation can be engaged in by each of us with respect to the tradition to which we belong, if we do in fact so belong, or with respect to traditions about which we are competent to speak. Each of us can hold accountable the tradition or traditions we know best.

Easier to assess and to compare, however, is what we might characterize as a tradition's "planetary citizenship performance." This would include the grasp of the nature of the problems a tradition exhibits; the extent to which it takes responsibility for addressing these problems; how energetic are its relevant efforts; to what extent promoting the environmental goal is a priority for it; the extent to which it says that good planetary citizenship is important for, and even partly definitive of, respectable membership in the relevant tradition; and how successful the tradition is at drawing the attention of its members to these matters, at promoting a deep understanding of them, and at persuading members to promote the environmental goal. What is to be understood would include the nature of the harmful impact the human presence is having on the planet, which requires information about human population and consumption, climate change, pollution, the global loss of biodiversity, and so on. A tradition's planetary citizenship performance would also include the extent to which it leads the way, providing a model for others.30

30. Max Oelschlaeger proposes that people who live in the United States can unite around the idea of caring for creation, provided that the religions and especially the churches assist them in doing so. Oelschlaeger, Caring for Creation: An Ecumenical Approach to the Environmental Crisis (New Haven, CT: Yale University Press, 1994). He proposes that the religions can promote consensus and solidarity in pursuit of this goal and that they are uniquely well placed to do so. The obvious (and important) comparative criterion that emerges from his project is that we can compare the religions in terms of their willingness to undertake the project of uniting with each other to promote this common goal.