

**Ecotheology: A Marriage between Secular Ecological Science
and Rational, Compassionate Faith**

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Introduction

The global environmental crisis is a challenge for all humanity, one whose likely consequences have long been described by environmental scientists. Over the last decade, secular activists have urged religious organizations to be, or become, involved in the world-wide effort by all thinking people, of any faith or none, to find workable ways to avert the various possible disasters predicted. The World Council of Churches (through its programme on 'Justice, Peace and the Integrity of Creation') and the international Anglican Communion (through its Fifth Mission Statement), among others, have responded. As they stand, however, pronouncements of these and similar bodies comprise an incompatible mixture of contemporary scientific and religious environmental concern set against a biblical background that had no such concern. The intellectual basis of Christian concern for *nature as beloved of God* is not at all the same thing as the concern of secular environmental ethicists for the *intrinsic value of nature in and for itself*. Still less is it anything to do with the 'production of a conservation output' (Hartley 1997: 481), advocated by market-oriented economists. Church-based environmental activism would be less effective if it worked independently of secular environmental agencies, yet such a partnership introduces contradictions between secular concepts of nature conservation *for its own sake* and traditional theological understandings of creation as to be valued *for God's sake*. Therefore, public exhortations by religious organizations, taken at face value, are unlikely to succeed, especially if addressed to secular audiences.

The environmental crisis certainly is relevant to churches, because it is fundamentally a *moral* issue: it concerns the process of reaching communal decisions about the allocation between competing groups of common resources in short supply, such as finance for conservation, access to forests, fisheries, clean water, clean air, and so on. The relevant context for understanding the moral dimensions of environ-

mental protection must include contemporary biological and philosophical knowledge because we need to understand what decisions are required, and the origin and nature of the ethical context of those decisions, as well as the reasons why so many people ignore the interests of the environment on which we all depend.

Elsewhere (King 1999) I have explored in more detail some ways in which the insights of secular science are relevant to the development of ecotheology as a recognizable discipline, one that might also help Christians make a constructive contribution to the secular debate on the environmental crisis. For example, from economics we can learn why the current free-market model is so subversive and why management of environmental common property is so difficult; from game theory, why the personal restraint for which green activists plead is often not rational, except within the context of stable community life; from primatology, what are the evolutionary and social bases of morality and intelligence; from anthropology, how the combination of intelligence and socially mediated morality as a conditional strategy has coaxed our primate and tribal human ancestors over time from rampant xenophobia through cautious trading of goods and ideas through to the philosophical analysis of true human ethics. The biological account of the origin and general operation of morality is very different from the theological and philosophical one, but is backed by a large and growing body of empirical evidence. It must be considered by any moral exhortation intended to be credible to non-Christians. The Christian understanding of true altruism (charity) remains a matter that goes beyond biology and into the realms of grace.

In this paper I concentrate on one example of church-based environmental concern, the Anglican Fifth Mission Statement. I argue that an updated Christian theology of creation, and wider adoption of the Fifth Mission Statement and similar documents, could arm the churches to play a leading role in the environmental debate. Rational, passionate and updated Christianity could make a real contribution to developing some solution to the environmental crisis, to the extent that any solution is possible – otherwise, it will remain, as in the past, part of the problem.

The Origins of Environmental Concern among Christians

For Christians, there are many different aspects to the environmental crisis. I concentrate here on three, all worrying. First is the challenge to our beliefs. There have been many attempts to understand the full implications of natural science for traditional theology, not all equally

fruitful (Barbour 1997: 97). We do not have to deny the value and enduring truth of many older traditions (Morton 1989: 24), but at the same time we do have to allow for the fact that the relevant sciences (anthropology, evolutionary biology, ecology) are fast-moving international disciplines, and we must participate in the current debates. Christians have constantly to resist the temptation to 'domesticate' the debate, because, says John Reader:

It is far easier and safer to try to contain the challenge of 'green' theology within existing boundaries than to be open to the possibility that what it really requires is a complete re-think of traditional Christian attitudes...most of the material that has been published so far has gone for the safe option, that of reinterpreting our existing language... what is needed is something new and as yet undeveloped. If Christians are to share in that process of development they will need to ..be prepared to let go of ideas from the past that are no longer adequate (Reader 1992: 4).

Other contemporary theologians agree: 'What is needed now', says Ruth Page, in *God and the Web of Creation*, 'is not another skirmish on the green fringes of belief but a rethinking of fundamental doctrine' (Page 1996: xiv).

Second is the challenge to our comfortable lifestyles. Although the probable consequences of the environmental crisis are well publicized in the Western world, and the statistics get more alarming every year, few people are willing to face the unpleasant fact that, sometime quite soon, it will no longer be possible to carry on with our lives on the assumption that the future will be a more or less logical extrapolation of the present. Profound lifestyle changes, especially in Northern countries (the places where such changes will have the greatest ecological impact), are highly unpopular (McFague 1993: 3), and so are not talked about. The necessary task, adds McFague (1993: 17), is to get people to see that it is not enough merely to change our lifestyles; we must achieve the historically unprecedented task of changing what we value.

Third is the perceived (but illusory) conflict between the demands of the poor and of nature. Some theologians and left-leaning activists are concerned that attention to environmental concerns will divert scarce resources away from the more immediate issues of poverty and hunger (Hallman 1994), or that environmentalism is a luxury of affluent Northern societies:

The exploitation of nature and the exploitation of other human beings are inseparable; they reflect a common set of cultural values and a common framework of economic and political institutions . Despite the significant legislation it has produced, the conservation movement has

been limited in its long-run effects because it has tended to think of nature and man apart from this social context. Its victories are at best stop-gaps in the face of the population explosion and burgeoning industrial pollution. The movement has often been supported by relatively privileged groups, people who could afford hunting and fishing or vacations in National Parks. Conservationists have usually assumed that no fundamental changes in our society are needed. Like John Muir in the last century, they have often scorned the city and instead have urged escape from society and its problems into the beauty of the wilderness. (Barbour 1972: 159-60)

There is resentment that the Northern nations, having ruined their own environments, now want to hamper development in the South so as to protect their own lifestyles. So people still ask whether money spent on environmental protection would be better diverted to social programmes (Daly and Cobb 1990: 377). Or, picking up Barbour's point, they see conservation as a hobby for the wealthy, since only those who had money could afford to worry about dolphins (Granberg-Michaelson 1992: 9). But McFague's description of nature as 'the new poor' (McFague 1993: 166) neatly underlines the link between environmental and social concerns. Christians do not have to make a choice between caring for the poor among human societies and valuing the natural world as the handiwork (however interpreted) of God; the two duties are done together when we challenge the ruling economic paradigm that threatens both.

Ecumenical Background

The first and basic requirement for the health of the *oikoumene*, the whole inhabited earth, is that it be habitable (Rasmussen 1996: 91). 'Habitat' or 'household' is the core meaning of all three 'eco' words—ecology, economy and ecumenism, and all three meanings meet in the wider implications of church-based environmental activism. So it is entirely appropriate that the first glimmerings of interest in ecological matters as a legitimate concern of the Church can be dated to an address given by Joseph Sittler to an ecumenical organization, the World Council of Churches (WCC) in New Delhi in 1961 (Williamson 1992: 93). He pointed out that, ever since Augustine, Western Christendom has been unable to connect the realm of grace with the realm of nature. By then, the Greek idea of a dualistic split between the spiritual and the temporal had largely replaced the holistic attitude of the Hebrews. That, plus the hard lives of ordinary people, encouraged the conclusion that redemption has to be visualized as an escape from the cosmos of natural and historical fact.

However, this attitude is isolated between, and inconsistent with,

both the biblical concepts that preceded it and the modern, secular European ideas that have followed it. For the Hebrews, creation was to be understood as the scene of God's sovereign activity, not a prison of evil to be escaped (Simkins 1994). And to modern ears the Augustinian formulation is untrue to the organic character of biblical language, and unintelligible in the present state of human knowledge and experience. Rather, in modern times we can again insist that the natural world is not simply 'the stage on which the larger drama of history is played, but has a key role in that drama itself' (Granberg-Michaelson 1994: 98).

The WCC was founded in 1947, with a largely Protestant background and leadership (Gerle 1995). The attitude to environmental matters of the relevant WCC sub-unit, Church and Society, until New Delhi and also for the next 20 years after it, remained one of low-key, pragmatic instrumentalism. A programme emphasizing the Christian vision of a Just, Participatory and Sustainable Society (JPSS) was established in 1975, in response to a warning from Charles Birch to the Nairobi Assembly that, in ecological terms, the world is a *Titanic* pursuing its collision course with the iceberg (Williamson 1992: 93). Although the concept of sustainability is rooted in the biblical idea of order in creation (Rasmussen 1996: 161), JPSS did not include any idea of protecting creation for its own sake.

That all changed at the Vancouver Assembly in 1983, after Jürgen Moltmann pointed out that the long-established interest of the churches in peace and justice for humans was not enough by itself: there can be no peace and justice for us unless we also protect the natural world. The delegates therefore resolved to call for a new global conciliar process to be established, to covenant for Justice, Peace and the Integrity of Creation (JPIC). Their specific rejection of the previous concept of sustainability in favour of the somewhat woollier and unfamiliar one of 'the integrity of creation' was 'greeted with dismay' by WCC at the time (Gosling 1992: 7). But by then the churches in Germany and parts of Scandinavia and Canada had become heavily involved in environmental issues, and the Pacific churches had long been suffering the effects of nuclear testing. Between them they shocked the Vancouver delegates into a re-evaluation of the entire ecumenical agenda. Hence, although secular concern about nature conservation is by no means new, and research on it is considerably more advanced outside the churches than within them, the Vancouver meeting made the unique contribution of declaring that justice, peace and the integrity of creation are to be seen as inescapably linked.

The reaction of churches around the world varied according to the

current local concerns of each region. For example, the primary concern in the Pacific was the question of anti-nuclear protests; in Africa and Latin America, the unbearable burden of foreign debt; and in southern Africa, apartheid (Gerle 1995: 55). At the first Conference of European Churches, held at Basel in 1989, ancient antagonisms were fading, but only because more urgent problems were rising, to do with the new ecumenical environment. The meeting brought together almost 700 delegates from 120 member churches of the Conference of European Churches, and the 25 Bishops' Conferences of the Council of European Bishops' Conferences. It was the first occasion on which representatives of the Roman and Orthodox churches had officially met since the fifteenth century, and the first ever involving thousands of ordinary people of all the modern European faiths—Roman Catholic, Orthodox and Protestant—who joined the delegates in worship. Hans Kung (1990) called it 'a model contribution', and he listed (pp. 67-69) with approval the unusually frank self-criticisms of the participating churches.

Regional variation in dominant concerns is important and valid, because local communities tend to feel threatened by the lack of recognition of local realities implied by too much emphasis on a global perspective (Gerle 1995). Anyway, the local variation did not obscure the general agreement, at these and at the many other meetings held to discuss the concept of JPIC (listed by Gosling 1992: 15), that the addition of the third term to JPIC—concerning the integrity of creation, should be strongly endorsed. The message was further confirmed by several influential books published during this period, such as *God in Creation* (Moltmann 1985), *Imaging God: Dominion as Stewardship* (Hall 1986) and *Liberating Life* (Birch, Eakin, and McDaniel 1990).

The culmination of all this effort was the definitive JPIC World Convocation held in Seoul in March 1990. The key issues at that meeting were the Southern debt crisis, militarization, the atmosphere and racism. The Final Document, reprinted as an appendix to Niles (1992: 164-90), lists a series of ten affirmations covering the most important issues of justice, peace and world ecology. The affirmations directly relevant to ecotheology, the subject of this paper, were:

7. The creation is beloved of God. We have a responsibility to care for creation, to respect the rights of future generations and to conserve and work for the integrity of creation.
8. The earth is the Lord's. Human use of land and waters should not destroy the life-giving power of the earth.

The affirmations were followed by four covenants, by which Christians were called upon to work, among other things:

3. For preserving the gift of the earth's atmosphere to nurture and sustain the world's life; for building a culture that can live in harmony with creation's integrity; for combating the causes of destructive changes to the atmosphere which threaten to disrupt the earth's climate and create widespread suffering. The churches can develop new theological perspectives concerning creation and the place of humanity in it, and join the global, local and personal efforts to safeguard the integrity of creation.

The final document from Seoul, strongly influenced by the many representatives attending from the South, describes a worldview grim even in 1990 and getting worse every year:

We have entered a new period of history in which humanity has acquired the capacity to destroy itself. Developments in the areas of economics, politics and technology cannot continue on their present course. More and more people are realizing that a radically new orientation is required if catastrophe is to be avoided. Movements of resistance are taking shape in many parts of the world. Such movements are also growing in the churches (Gerle 1995: 63).

The Seventh Assembly of WCC in Canberra in 1991 urged the continuance of the work of JPIC (Niles 1992). On the other hand, Rio showed that the massive participation of NGOs in the debate is now so advanced that a church-based ecumenical movement no longer needs to play a leading role in supporting and stimulating such groups (Granberg-Michaelson 1992: 47). In 1994 the WCC reorganized its administration structure, and JPIC was incorporated into a new programme renamed Theology of Life (Chial 1996). 'What has yet to emerge', comments Chial, 'is a theology that significantly inspires change' (p. 58). This is a lot to ask: the current WCC programme has a lot of information on peace and justice, but hardly mentions the theology of creation at all.

Fortunately, other forms of international consultation on the relationships between religion and the environment have also been developing (Baker 1996). In 1986 the World Wildlife Fund and the International Consultancy on Religion, Education and Culture set up a meeting of religious leaders in Assisi, to discuss how each of their communities of faith could contribute towards stimulating environmental awareness and promote conservation within their own traditions (Berry 1993). The result was renewed interest in studies of how the various sacred writings teach respect for the earth; the initiation of

thousands of conservation projects and environmental education programmes around the world, and the creation of the Network on Conservation and Religion (Anon 1995)

In 1990, a group of 34 leading scientists (including the atheist cosmologist Carl Sagan and the Marxist palaeontologist S.J. Gould) signed an *Open Letter to the Religious Community* seeking to enlist the help of people of faith in addressing the environmental crisis. The letter points out that problems as huge as the contemporary threats to planetary health must be recognized as having 'a religious as well as a scientific dimension. Efforts to safeguard and cherish the environment need to be infused with a vision of the sacred' (Baker 1996; Rasmussen 1996: 183). In 1992 came the *World's Scientists' Warning to Humanity*, signed by 1575 distinguished scientists, including more than half of all living Nobel laureates (Ehrlich and Ehrlich 1996: 242). All these authoritative voices agree that the survival of Western civilization will be at stake in the foreseeable future, certainly in the lifetimes of our children. Like the *Open Letter to the Religious Community*, the *World's Scientists' Warning* concluded with an appeal for help from the leaders of the global communities of businesses, industries and religions.

The Joint Appeal by Religion and Science for the Environment was established in 1990, followed in 1993 by the National Religious Partnership for Environment, based in New York (www.npre.org). In 1995, a Summit on Religions and Conservation in London, again sponsored by WWF along with the Pilkington Foundation and a Japanese humanitarian foundation, brought together religious leaders representing nine of the world's major faiths to review progress since the 1985 meeting (www.onecountry.org). In February 1998 the Archbishop of Canterbury and the President of the World Bank hosted a 'Dialogue on World Faiths and Development' at Lambeth Palace. Their final statement released in November 1999 optimistically declared that:

The commitment to improving the lives of the poor found among those at the conference enables the bridging of huge cultural and theological divides. It is crucial to try to replicate this in many practical country settings, and the signs are that it is already beginning to happen (www.worldbank.org)

Berry (1993) outlines the history of environmental concern in Britain, and religious responses to it. In general Britons are well aware of problems ahead but not united by the 'sense of approaching catastrophe' that initiated the processes of JPIC. Likewise, the Conference of Churches in Aotearoa New Zealand was quick to point out that the

1990 Seoul meeting coincided with the 150th anniversary of the Treaty of Waitangi, and their booklet on JPIC strongly urged local discussion of the links between JPIC and the Treaty (Anon 1990a). But its long-term impact on local congregations was microscopic.

The Anglican Fifth Mission Statement

Meanwhile, a parallel process of consultation and exhortation was going on within the Anglican Church—which is of course a member of WCC, but is also large enough to conduct its own enquiries into matters raised by WCC meetings that could be especially important to the world-wide Anglican communion. The most authoritative Anglican assemblies are the Lambeth Conferences, called every ten years by the Archbishop of Canterbury and attended by bishops representing every province in the Anglican world. The Anglican Consultative Council (ACC) was established in 1969 to provide for more frequent and broader-scale discussions between successive Lambeth Conferences. ACC is an international assembly of clergy, bishops and lay people from throughout the Anglican Communion, and it usually meets every three years. The 1988 Lambeth Conference discussed environmental concerns; and its report, plus the events in Basle and Seoul, were discussed by ACC at its eighth meeting in Wales in 1990. In the final report of that meeting, entitled *Mission in a Broken World* (Anon 1990b: 101-103), the ACC sought to

bring up to date the definition of mission which has been developing within ACC, and to relate that to the current phase of human history . . . A consistent view of mission repeated by ACC, the Lambeth Conference [and others] defines mission in a fourfold way:

The mission of the church is:

- (a) to proclaim the good news of the Kingdom;
- (b) to teach, baptise and nurture new believers;
- (c) to respond to human need by loving service;
- (d) to seek to transform the unjust structures of society

We now feel that our understanding of the ecological crisis, and indeed of the threats to the unity of all creation, mean that we have to add a fifth affirmation:

- (e) to strive to safeguard the integrity of creation and sustain and renew the life of the earth.

Just like the Seoul declarations, however, the Statement is likely to be misunderstood by the un-scientific fruitful, and lack credibility to

conservationists. For example, people who still believe that God set limits to the sea¹ and made the hills to stand eternally are not well equipped to deal with the problems arising from global warming, rising sea levels and massive soil erosion. Not all Christians are literalists of course, but neither do all Christians understand enough of the basic science they need to take the Fifth Mission Statement seriously.

What is 'The Integrity of Creation'?

The concept of the 'integrity of creation' introduced at the 1983 Vancouver Assembly of the WCC was new and not well defined, but generally agreed as having implications far beyond the earlier idea of sustainability (Gerle 1995: 47). To some, its very novelty was an advantage: one participant in a discussion of what it might mean commented, with some exaggeration, 'Thank God the ecumenical movement has finally given us a concept without content so that we can put into it what we want to!' (Niles 1989: 53). To others, the concept of the integrity of creation is too indefinite to be at all useful—the German delegates at Vancouver declared that it is untranslatable, and the Basel conference avoided the term altogether (Gosling 1992: 9). A scientist wants to know what a theologian understands by it, and further, what 'safeguarding' it means—*from whom or what does it need safeguarding, and why?*

The original meaning of integrity, as understood in the Hebrew Scriptures, was primarily a matter of relationship to God and adherence to God's laws. The integrity of nature consisted in the fact that it had never disobeyed God; nature was always and still is perfectly obedient to God, so if any part of nature was hostile to humanity after the Fall, that was because it was being used as a means of conveying divine judgment on humans (Kaiser 1996). If we have lost this sense of the integrity of creation in modern times—or act as though it did not exist, that is *our* problem, says Kaiser—a problem with our concept of creation, and underlying that, a problem with our concept of God. He agrees with Pagels (1988) that the later Christian idea that the fall of Adam necessarily involved the corruption of the whole natural world—and therefore that creation needs redemption as much as humanity—is simply wrong and is to be discarded.

¹ To the biblical writers, the sea represented chaos, which is why, in the Book of Revelation's vision of the new earth, 'the sea was no more' (Rev. 21:1). To the secular marine conservationist, this point of view is incomprehensible.

It is a surprise and a relief for a biologist to be assured by theologians that the Hebrews understood that thorns and thistles are an integral part of God's creation, and that it is only their *presence* in tilled fields that made them a curse to the Hebrew farmers, not their own characters; that only arable land was cursed, not all of wild nature; that if there was a conflict between God and Israel, nature was on God's side; and that the groaning of the earth while waiting for the sons of God to appear was less about loss of integrity than a poetic image concerning the corruption of bodies in their graves. These concepts translate much more readily to the modern mind than the fantastical Greek ideas that came to overlie them in New Testament times. Kaiser completes his reinstatement of the original and far more contemporary-sounding and satisfactory meaning of the phrase by putting humans in their place:

The integrity of nature...is not something humans can either contribute to or detract from...if we fail to respect [it], we will certainly bring ruin upon ourselves...but the order of nature—as understood in Scripture owes no more to human participation than it does to any other species (Kaiser 1996 : 290).

In other words, the biblical view is that creation needs safeguarding from *humanity*—because, of the two, only creation retains its original integrity intact. Many a conservation manager, surveying the trampled vegetation, scattered wildlife and strewn litter around a popular beauty spot after a holiday weekend, would agree with that conclusion, if not for the same reasons.

Within WCC, the idea of the integrity of creation has proved useful, for two reasons summarized by (Niles 1989: 58). 'First, *it has given a new prominence to the doctrine of creation*', understood as the rather difficult theistic idea of a continuous and continuing divine upholding of all life, rather than simply as the deistic idea of 'the initial divine act which set nature and history on their course'. Second, since the biblical idea of the integrity of creation refers to much more than ecological issues, it offers a context for our struggles for peace and justice. Hence, the new term 'integrity of creation' is widely understood to mean that there is a 'moral order given in creation that we disregard or violate at our own peril [a concept developed in more detail elsewhere (Murphy and Ellis 1996)]...*moral value or worth [is] something the Creator has bestowed on the whole of creation and not just on the human part of it*' (Niles 1989: 59). The natural inclusiveness of the concept that creation has its own integrity provides a theological means of holding together the issues of justice, peace and environmental management.

At Annecy, in France, a meeting on theocentric ethics in September

1988 agreed, after extensive discussion, on a working definition

The value of all creatures in and of themselves, for one another, and for God, and their interconnectedness in a diverse whole that has unique value for God, together constitute the integrity of creation (Birch, Eakin and McDaniel 1990: 277)

The emphasis of this definition appears to be upon creatures as individuals, which is understandable from a theological point of view, but it is likely to run into difficulties when conflicts arise between the good of the individual as envisaged by theologians, and the good of the ecosystem as envisaged by scientists. For example, what happens if deer, seen as 'creatures of value in and of themselves', become so abundant that they cause damage to their habitat, which presumably is included within the idea of 'a diverse whole that has unique value for God'? In such a situation – which is common in parts of Scotland, New Zealand and the USA, the two sets of values are incompatible. Which of them is to be sacrificed for the other?

For Aldo Leopold – widely regarded as the father of wildlife conservation in USA, the answer is clear. He was a hunter and woodsman of great skill, and in *A Sand County Almanac* (Leopold 1987), he advocated the view that, when necessary, the individual must be sacrificed for the ecosystem.

All ethics so far evolved rest upon a single premise – that the individual is a member of a community of interdependent parts. The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively – the land (pp. 203-204)

A land ethic of course cannot prevent the alteration, management, and use of these resources, but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state. In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such (p. 204)

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise (p. 224-25)

What Christians need is a concept of the integrity of creation that transcends the static and simplistic theological idea of 'wholeness', or even 'telos', one that does justice both to (a) the restless dynamism of the real natural world recognized by science and (b) the real conflicts of interests between individual and community at all levels of nature. There is little recognition of that need so far. For example, in early

1988 a large meeting of the WCC on the theme of JPIC was held at Granvollen, Norway. Granberg-Michaelson (1994: 99) commented on the extent of the agreement among participants on the central ideas, including that 'Every creature and the whole creation in chorus bear witness to the glorious unity and harmony with which creation is endowed'. Such a perspective would sabotage any prospect of cooperation with evolutionary biologists on environmental issues. Likewise, Richard Randolph, of the Centre for Theology and the Natural Sciences, expounded to the 1998 Templeton Conference in Berkeley the ethical idea of encouraging the 'flourishing' of natural systems as a theological aim. California is as much altered by the flourishing of introduced species as is New Zealand, which he freely granted, but he had no precise answers to the question of how we should distinguish between flourishing pests, to be controlled, and flourishing native ecosystems, to be protected.

It is important and encouraging to note that Leopold's secular definition of the integrity of 'the biotic community', Ancey's theological idea of the value of 'a diverse whole that has unique value for God', and JPIC's term 'the integrity of creation' all avoid the anthropocentric term 'environment'—always taken to mean the environment of humans. The creation that we are concerned to care for, or at least to avoid damaging, has its own life and values, and is far more extensive than the human environment—it existed long before we evolved, and in vast areas of ocean, mountain ranges, deserts and tundra it still survives independently of us. Recognition of this is a real contribution to contemporary culture (Gerle 1995: 117). Nevertheless, secular literature (i.e. most literature) is primarily concerned with the human environment, and, as it provides an important resource for this study and its focus cannot be changed merely by inserting a different terminology, I have continued to use the term as generally understood.

Gosling points out that 'integrity' is a *relational* word, with both vertical and horizontal dimensions. Theologically:

integrity of creation implies both the vertical dependence of creation on its Creator and the worth and dignity of creation in its own right (i.e. its intrinsic value) ..[horizontally], every creature is bound to every other creature in a community and communion of being. Human beings especially must recognise that we are not separate from and above the rest of creation, but part of its totality, sharing with other living beings their limitations and destiny (1992: 10).

Such a concept is already there in Leopold's definition, but is relatively new to mainstream Christianity, and if accepted would entail a huge revision of many ancient theological convictions concerning the

dignity of humanity. Even in the secular world, it would meet a great deal of resistance (King 1996).

Working with Secular Initiatives

The 1992 United Nations Conference on Environment and Development (the 'Earth Summit') (UNCED) at Rio was an attempt to make real progress on the environmental debate by organizing a global consultation at the very highest level (Palmer 1995). It was a huge and chaotic event, divided between an official meeting of Heads of State, a Global Forum of over 1400 non-government organizations (NGOs), and an ecumenical meeting organized by the WCC, all on different sites and all with different agendas. Many mainstream churches prepared statements for it, including the Anglican Communion (Berry [ed.] 1993: 263-64). Its consequences have included important new resources for conservation provided by national governments that committed themselves to participating in various forms of remedial action under Agenda 21 (the development of local action plans for the twenty-first century). If there was any common theme there, it was the open rejection of the assumption, seldom questioned in UN circles before, that all the diverse societies of the world could be put on a single track, along which the 'underdeveloped' countries merely represented an early stage in a desirable and inevitable progress towards the 'developed', western way of life.

Historically the Earth Summit will come to mark the time when the world realized that development as traditionally understood had failed (Granberg-Michaelson 1992: 1)

The Southern nations insisted that the net flow of resources to the North, due to massive debt repayments and unfavourable terms of trade, would have to be reversed before there could be any hope of initiating programmes for environmental sustainability in the South, and few had any illusions that the unrestrained free market would help. Against this, the Northern countries, especially the USA, worked hard to downplay the criticism of their lifestyles. One of New Zealand's representatives there, Sir Geoffrey Palmer, describes the US performance as 'abysmal' (Palmer 1995), and it was the cause of much anger as it removed all target dates from the climate convention and refused absolutely to sign the biodiversity convention (Wilkinson 1993).

In one respect, the North prevailed: President Bush simply declared that the standard of living of US citizens was not up for negotiation (Rasmussen 1996: 133). However the South, and many Northerners

with them, did manage to link poverty reduction with environmental protection and get them put on the global agenda for everybody, even though the basic policy decisions of business and finance were out of reach altogether. At the same time, during the two weeks of the meeting the global population increased by >3,000,000 (to 5,467,000,000) and the total area of productive arable land decreased by 100,000 ha (Wilkinson 1993). Effective cooperation to deal with these problems was sabotaged by international tensions—which were even worse at Earth Summit II in 1997.

The UNCED meeting achieved much less than it might have done: but it did produce Agenda 21, the Rio Declaration and two significant, legally binding conventions on biodiversity and climate change. A third document, intended to become a binding convention on forests, was reduced to a Declaration because the conference could not reach agreement on the wording (Palmer 1995). Many local authorities have developed Agenda 21 programmes, while New Zealand is a national signatory to both conventions, as well as to the separate 1987 Montreal Protocol (Hay 1996).

All of this talking and meeting is a step in the right direction, although (as was obvious at Rio) it is unclear to what extent the exhortations of those concerned about *global* survival could influence the *national* policies of those concerned to maintain or improve their own standard of living.

Why Earnest Exhortations are Never Enough

In 1994 Max Oelschlaeger published a passionate book, *Caring for Creation*, appealing for support for his view that 'There are no solutions for the systemic causes of ecocrisis, at least in democratic societies, apart from religious narrative' (1994: 5). He describes the book as a confession, an account of a conversion experience. Influenced by Lynn White, he was once strongly prejudiced against religion, but he eventually came to the opposite conclusion. He recognizes that all politicians and secular experts are part of the economic system that treats the public good as a by-product, if that. Organized religion is part of the same system too, to some extent, but in its best moments it is more concerned with the welfare of the group and the collective good than is any other institution. So, he concludes, the church is our last, best chance.

Oelschlaeger builds a strong case for his view that:

The metaphor of caring for creation is literally an instrument for social transformation: it is an instrument of moral and intellectual growth.

not a theological rule but an imaginative paradigm that might prove useful for a culture undergoing ecocrisis (p. 227).

Oelschlaeger acknowledges that religious metaphors are ordinarily associated with privileged metaphysical claims rather than environmental ethics. Unfortunately, he does not explain how to use a metaphor to persuade people to co-operate to achieve public benefits. He mentions the Tragedy of the Commons briefly but does not explore its consequences or how to escape it (Elliott 1997). He does not discuss the forces of co-evolution at all, except in the broad statement that 'the controlling memes of industrial culture must be reshaped' (1994: 230). His analysis is unusual in the Christian literature for getting close to recognizing the key dimensions of the problem, but to an experienced conservationist the idea of dealing with the sharp-edged conflicts involved in practical environmental management in terms of 'a metaphor' or 'an imaginative paradigm' is totally impractical.

As a Christian, I agree that Oelschlaeger is on the right track, a parallel (American) one to the Anglican initiative represented by the Fifth Mission Statement. On the other hand, as a scientist I am also concerned that the Church should be careful how it takes up its role in the debate, considering that it is a latecomer to this particular field. The development of research concerning the environmental crisis is much more advanced in the secular world than in theology. During the long period when, as Moltmann put it, theological and secular thinkers achieved a peaceful co-existence based on 'mutual irrelevance' (Moltmann 1985), all the foundations of the present secular disciplines of conservation biology and environmental ethics were laid without any input from theology (see, for example, Caughley and Gunn 1996; Passmore 1980). The existing system of national parks and reserves that protects many of the most significant landscapes and natural habitats around the world—which could not be established *de novo* in contemporary conditions—owes nothing to theology. If 'the ecological crisis is a *kairo* moment' for the church, as McDonagh (1994: 145) maintains—a moment of decisive challenge during which matters of great good or evil will be decided—then it is as well that others woke up to it sooner than the Church has done.

Oeschlaeger is only one of hundreds of scientists, global organizations, green activists and authors who have thought about, and written about, the environmental crisis for at least the last 40 years. Despite their strong convictions, the cold hard fact remains that, at the level of political and personal decision-making, very little has changed. Some business people are working to encourage more social and environmental responsibility in the business world, stimulated by

influential publications such as *The Ecology of Commerce* (Hawken 1993), but their impact on business practice in general so far is limited compared with the extent of changes that are necessary, and time to make those changes is galloping on. Among the majority of people, congregations and corporations there has been no very obvious response, and the global crisis continues on its way. We urgently need to know, why have these perfectly serious efforts by official and otherwise respected organizations apparently had so little effect?

The Triple Worlds Analogy

As usual with such a large question, there are many answers. But my suggestion is that activists and moral agencies of all sorts tend to underestimate the importance of recognizing the cultural and historical environment in which they operate. As Primavesi (1991) puts it, the churches in general perceive their teachings as pure deposits of truth handed down through generations of social, political and cultural vacuum. To any student of the human animal, this is nonsense.

Managing the environmental crisis is partly a moral problem, partly a political and economic one, and partly a scientific one. There are, then, three overlapping spheres of primary knowledge that are relevant to it (see Fig. 1):

1. *the realm of religion and philosophy*, not only the specifically Christian intellectual understanding of creation that underlies all western science (Lindberg 1992), but also the more general experience of the numinous in nature, and the teachings of traditional religions on community responsibilities and moral values;
2. *the realm of the legal economic and political realities* that govern human use and management of natural resources, most particularly the current free-market model; and
3. *the realm of science*, specifically the current secular biological understanding of the evolved nature, social behaviour and cultural values of humans.

Each one of these three fields of knowledge overlaps with the other two, and the fields of overlap define three sets of interactions:

4. the meeting of biology and sociology with religion is the arena for discussing how the processes of natural selection influence human philosophical systems, as illustrated by the evolution of morality and the history of the Christian church;
5. the meeting of biology and sociology with politics and economics is the arena for discussing why human nature makes

sharing of common-pool environmental resources so difficult; and

6. the meeting of politics and economics with religion is the arena for discussing environmental ethics, and particularly why different human groups have developed such different cultural attitudes to environmental management.

Environmental activism occupies the seventh, central field of the diagram, the area that all three primary spheres have in common. No appeals for action that ignore these other considerations are likely to be either intellectually respectable or effective in practice.

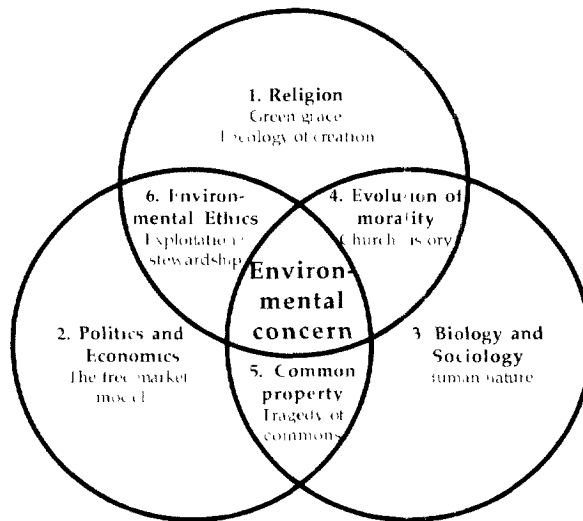


Figure 1 *Definitions and interactions of the three spheres of primary knowledge relevant to management of the environmental crisis.*

The secular idea of environmental management, usually considered an academic discipline with a variety of sub-disciplines, is merely a sub-set of the wider, religious idea of caring for creation. However, even the more limited aim of environmental management is difficult enough, for two main reasons. First, the natural world is far more complicated and unpredictable than our theoretical models can handle, which means that errors in management decisions are far more common than we like to admit (Budiansky 1995; Caughley and Gunn 1996). Second, the human environment as a common resource for all humanity, and management of it is not the business of one or a few individuals but a matter for collective action by many people whose interests usually do not coincide.

For both reasons, management of the environment, like that of any common property, is not a simple task. Organizing fair and just collective action among a population of independent egoists is a problem that has exercised secular philosophers, legislators and lawyers for centuries. Their disciplines have histories of their own, reflecting their independent development particularly within the liberal intellectual atmosphere of western civilisation over the last two centuries. But since the UNCED conference at Rio it has become clear that Northern style economic growth and progress are not normal and cannot be continued indefinitely. The environmental crisis is not merely a problem of applied ecology; it has wider and deeper dimensions, which are a lot more frightening and so are explored less often:

A century ago Thoreau could truly say, 'There are a thousand hacking at the branches of evil to one who is striking at the root' This is not as true now as it was in Thoreau's day, but whether we are more successful in eradicating evil is questionable. We have trouble recognising a major root when we see it (Hardin and Baden 1977: 5).

Perhaps the eye of the spirit, after centuries of experience of understanding the inner imperatives and weaknesses of the human animal, has a better chance to spot the roots of evil than the necessarily exterior eye of science. For example, a common response to any convincing explanation of the environmental crisis is: 'Now what do we do?'

There are two levels of answer: (1) we have to change the economic and political environments in which we live, and (2) we have to learn to change our own individual lifestyles. The Anglican Church is already active in the multidisciplinary and much-needed critique of the current economic and political paradigms, and lists of 'What you can do as an individual' are widely available from green organizations and academics (Wyman *et al.* 1991), but nearly all such efforts fail to take into account the problem that knowledge does not lead to virtue in a society in which ignoring virtue is a profitable strategy. Exhortation, however authoritative and well intended, cannot make a difference if it ignores what game theory can say about how people make personal decisions, especially those involving resources.

Game Theory and Environmental Decision-Making

Throughout their formative years, our ancestors lived in small, homogeneous groups in which every individual was familiar to every other one, and all had a stake in the survival of the group. Where all members of a group have interests in common, cooperation is beneficial to all, and constantly reinforced by evolved social attitudes forged and maintained by deep-rooted habits of reciprocal altruism

available only to other members of the same group. Competing groups were independent of each other, and generally hostile (Campbell 1975). But modern human society has become very diverse and complex, so the ancient rules generate tensions both within and between the main groups (e.g. nation states and political or trading blocs).

Environmentalism is a form of the Prisoner's Dilemma game (see Fig. 2) involving many players, and the problem is how to prevent egoists producing pollution, waste and exhausted resources at the expense of more considerate citizens.

The aim is to reduce the cost, health hazard and aggravation caused by litter in the centre of a modern city. The decision payoffs are calculated with reference to any one individual ('what I do') playing against the rest of the population as a group ('what you do'), i.e., the table is to be read from the left in rows, rather than from above in columns. Cooperation is defined as always using the council litter bins or taking my own litter home; defection as the opposite behaviour. The same argument can be extended to other forms of 'litter' such as graffiti and vandalism. The scores allocated to each outcome (in brackets) are arbitrary but in about the right order of desirability.

		<i>What you do</i>	
		<i>Cooperate</i>	<i>Defect</i>
<i>What I do</i>	<i>Cooperate</i>	<i>I enjoy a very clean city at the cost of some self-discipline [3]</i>	<i>I suffer the visual pollution even though I have been self-disciplined [0]</i>
	<i>Defect</i>	<i>I enjoy a mostly clean city and save myself the trouble of self-discipline [5]</i>	<i>I suffer the visual pollution, with the small consolation of not having to be self-disciplined [1]</i>

Figure 2 *Game theory analysis applied to 'the question of why not everyone living in a city will cooperate to achieve a public good'*

So, says Ridley (1996: 225), we should accept that there is no innate tendency in humans that can be used to develop and teach restraint in environmental management. Far more than the social insects, humans who are expected to cooperate together socially are also in genetic competition with each other. Because we all instinctively watch our backs, *environmental ethics has to be taught in spite of human nature, not in concert with it*. Environmental activists and authors who eloquently describe the approaching global crisis, and plead for a fundamental shift in human values, underestimate the power of the games people

play. At first sight, game theory seems to vindicate Hobbes: we don't cooperate because it doesn't pay us to do so unless everyone does, and only the most naive would ever stake their all on the assumption that everyone will.

The ancient distinction between the concept of original sin, a general predisposition, and immorality, individual acts of wrongdoing (McGrath 1994: 374) is consistent with biology. The first refers to what we *are* (any species that has survived the winnowing processes of natural selection must necessarily have equipped its members to be self-centred in some sense), the second to what we *do*—how we make those choices between self-interest and group interest. Sociable animals are not so much 'survival machines' built by selfish genes (Dawkins 1989) as 'adaptive decision-makers' (de Waal 1996: 18). The assumption that human nature is malleable by culture and circumstances, to produce altruistic or individualistic behaviour (usually equated with good or evil, respectively) according to the odds on whatever strategy might pay best in the social environment of the moment, helps to explain the origin of sin. Indeed, one helpful modern definition of sin is simply the breakdown of relationships (Barbour 1997). If original sin is equated with the conflict between natural selection for individual advantage and cultural selection for group or tribal advantage (Campbell 1975), which is inherent in human nature, then it certainly is an inescapable predisposition. We may know very well that there are good reasons why we should be honest, chaste, sober, hardworking, faithful and public-spirited in this life, if only in the hope of being happy in the next, yet somehow it is never as easy as that. St Paul hit the nail right on the head:

when I want to do the right, only the wrong is in my reach. In my inmost self I delight in the law of God, but...there is in my bodily members a different law, fighting against the law that my reason approves. miserable creature that I am, who is there to rescue me out of this body doomed to death? (Rom. 7.21-24).

Paul could hardly have written a better description of the inner conflicts generated by the meeting of our animal and cultural heritages if he had been schooled in evolutionary biology. Even more clearly, he summarizes the distinction between the two during his chastisement of the Corinthians for the dissent within their church. 'While there is jealousy and strife among you, are you not of the flesh and behaving like ordinary men?' (1 Cor. 3.3)—in other words, acting as if still living only under the influence of their unredeemed human natures. On the contrary, he urged them, 'let no one boast of men...you are

Christ's and Christ is God's —that is, they must remember that they had died to natural selection at their baptism, and had now passed through cultural selection for tribal advantage ('you are Christ's') to universal grace ('and Christ is God's').

The problem is, national and international agreements on ethical issues need cooperation between diverse groups or sub-groups with different interests, hammered out against the grain of the built-in human tendency to try to score points against members of other groups (Alexander 1987). The key problem in environmental ethics is to persuade individuals voluntarily to extend meaningful cooperation, and enough of it, to others *outside* their own familiar groups, even though that defies the ancient 'default setting' of human nature (Heinen and Low 1992). Game theory explains why: caution, lack of trust, suspicion of concealed motives, unwillingness to allow the other side any advantage, total intolerance of foreign free-riders combined with tolerance of free-riding at others' expense, have been the best way to negotiate with other groups for virtually all human history until now.

The game theory approach applies as well within nations as between them. For example, consider the matter of litter in and around any modern city. The citizens as a group would benefit if *everyone* were responsible about litter—if no-one ever dropped rubbish in the street, or threw used condoms into the bushes or burning cigarette butts out of their car windows, or dumped trailer-loads of junk at the side of the road. The local city council would save the thousands a year it now has to spend on cleaning up assorted messes in public areas, the parks and central city business area would be more pleasant to look at and walk in, the risk of disease and damage from pests would be minimised, and everyone would benefit for the expenditure of minimal personal time and self-discipline. But it does not happen. Why not?

The decisions made by any one member of a group depend substantially on the decisions made by the other members. Figure 2 sets out the options in the form of a game in which I play as an individual against the rest of the citizens as a group. Since I cannot know all of them individually and am unlikely ever to meet them all as a group, this is the equivalent of a one-off Prisoner's Dilemma game. For the purposes of the argument, it assumes I have no strong principles either way about litter, but am merely objectively calculating my options. The figure shows that, if everyone obeys the rules the city is clean, though everyone shares the cost of personal self-discipline. My personal result is better if I defect when everyone else is cooperating,

because I then enjoy a clean city without having to change my own habits. But if I cooperate and others don't, I risk having disciplined myself for nothing, in which case I might as well save myself the trouble and contribute to the mess along with everyone else. So whatever everyone else does, my best strategy is to carry on as normal. The result will be a local version of the Tragedy of the Unmanaged Commons (Hardin 1994).

The development and implementation of environmental policies within a Western democracy is largely, though not entirely, a matter of common property management. The associated problems are not new: there is a well-established branch of conventional economic theory specializing in it, and a vast literature on the culture and management of communal resources (e.g. Hardin and Baden 1977; Keohane and Ostrom 1995; McCay and Acheson 1987; Stevenson 1991). On the local and short-term scales on which we as individuals all live, common property will probably always have to be managed according to some sort of updated version of this theory, so we must learn to develop and monitor the best means of doing that.

Controlling the litter problem by citizens' responsibility alone would require full cooperation between all sectors of society. But cooperation between groups depends on the degree to which they share common interests, whereas it is more likely that different people will have different attitudes to litter, which will affect their weighting of the options. Some are more likely to value cooperation on principle, even at personal inconvenience; others are much more likely to defect—and not only by failing to cooperate. These who feel they have no stake in the community because their interests and concerns are ignored by the other stakeholders may also use litter, graffiti and vandalism to damage public amenities that others value. The local variation in proportions of these types will produce different combinations of outcomes for the litter problem in different suburbs.

The problem of litter in public places is a simple one but similar in principle to many others faced by the Fifth Mission Statement. The cause is often seen to be ignorance—a failure of schools and parents to teach civic responsibility to children. In that case the appropriate action would be an effective public education campaign, but this analysis shows why that strategy seldom works. Those who are already responsible about litter put a high a value on cooperative behaviour in all circumstances, while others put so low a value on it that they are not likely to incur the cost of self-discipline merely in response to exhortations. Clearly, defection is the safest option for the least privileged parties in a structured society in which some members have a

lot less to gain from cooperation than others. No one will support a society, or help keep its streets clean or listen to its elected representatives, unless they feel part of it, which is why general appeals for cooperation on matters such as civic responsibility and public consideration *never* get a 100 per cent response.

On the global scale, the same logic applies. The present urgent need for groups to trust each other and work together at unprecedented levels does not alter the way we think, itself forged over thousands of years' experience of a very different world. The tensions and bickering at the UNCED Conference are proof of that (Palmer 1995). There, the differences between the participants, in wealth, ethnicity and social status, were huge, and the processes by which social inequity undermines cooperation were even clearer. The longer-term crisis cannot be addressed within the framework of conventional macro-economic theory, because it is that theory itself which is at issue. The associated problems are not officially recognized by many economists, so the literature has until recently been confined to a few prophetic and unpopular voices such as Ehrenfeld (1981) and Daly and Cobb (1990). They, in their turn, are often half-drowned in the 'brownlash' from the vested interests they criticize (Ehrlich and Ehrlich 1996).

Genuine churches are not only beacons of grace despite themselves, but also secular organizations not much better than any others at promoting naturally evolved cooperation *within* groups, which is part of social life everywhere. There is a sense in which every congregation is a social unit no different from a bridge club, and personal tensions are rife in both. On the other hand, churches should in theory be in a better position than most secular organizations to help overcome the barriers to cooperation *between* groups. Those barriers include racism, moralism, local and personal self-interest, lack of confidence in others' goodwill, and many other evils that Christianity officially abhors but actually often practices itself. Given the right circumstances, including a rediscovery appropriate to this age of their ancient prophetic function, the churches are often able to mobilize broadly humane sentiments across society in order to make a coordinated contribution to the public debate. Churches have made important critiques of public affairs in the Philippines, Brazil and the USA, always working towards peaceful revolution and playing down old antagonisms (Martin 1997: 220). A Church that truly lives up to its founder's values, despite history (Kee 1982), that deliberately rejects the old moralistic, doom-laden attitudes and concentrates on its real work of transforming people by grace, *could* make a difference.

Conclusion

It is supremely ironic that, while so many local church communities are widely seen to be, and many see themselves to be, irrelevant to and disinterested in environmental problems, it is becoming increasingly clear that religion has an important role to play in the debate. To quote only a few writers who have already made this point:

There is something like a religion embedded in our commitment to growth and modern industrial progress. For if it is true that we are committed to these values to the extent that we cannot live without them . . . they have become ultimate and absolute...in a peculiarly modern sense they have become our gods... But our profound belief in those objects has made us insensitive to the damage they are doing to that alienated world of nature on which in fact our lives primarily depend... This makes our crisis a spiritual one (Ambler 1990: 53-54).

The changes that are now needed in society are at a level that stirs religious passions. The debate will be a religious one whether that is made explicit or not. The whole understanding of reality and the orientation to it are at stake. .to ignore that, to treat the issues as if they could be settled by abstract reason, is misleading... Getting there, if it happens at all, will be a religious event, just as getting to where we are now was a religious event. Idolatry.. has brought us to the present crisis. Overcoming [it] is a religious task (Daly and Cobb 1990: 374-75)

We need the help of God's grace to overcome the xenophobia and distrust of those outside our own group that is as much part of our biological makeup as is affection and cooperation with those inside it. This sort of universalism is exactly what is needed to weld humanity into a common unit capable of making collective decisions on how to deal with the environmental crisis. Perhaps the Anglican Fifth Mission Statement, undergirded by a revitalized Christian theology of creation, might be a powerful source of it.

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