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**Ecological Concerns
Interdisciplinary Perspectives**



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Contents

Editorial	3
The Contemporary Ecological Crisis: Tracing Its Emergence <i>George Karuvelil SJ</i>	5
Science and Ecology <i>Job Kozhamthadam SJ</i>	21
Ahimsa: The Ecophilic Vision of Gandhi <i>Subhash Anand</i>	45
Ecology and the Indigenous Peoples <i>John B. Mundu S.J.</i>	63
Ecological Concerns: An Indian Christian Response <i>Mohan Doss SVD</i>	85
Ecologization of Christian Faith: Living The Love Commandment in an Ecozonic Age <i>Mathew Jayanth SJ</i>	101
Ethical Challenges from Ecology <i>George Therukkattil MCBS</i>	121
Environment: For Whose Development? <i>Walter Fernandes SJ</i>	139
Book Review	158

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Editorial

There is a growing awareness among people all over the world today that we are facing an ecological crisis. As Samuel Rayan points out, “The Earth system is being polluted and destroyed through wasteful, profligate, and predatory practices by modern profit-oriented scientific-technological culture, be it industrial, agricultural, or communicational. The Earth’s standing, meaning, and history as the Home of Life are under threat of death.”

It is the awareness of this crisis that has made us choose ecological concerns as the theme of this issue of *Jnanadeepa*. We wish to develop inter-disciplinary perspectives on ecological issues.

There are two articles in this issue which deal with the factors that have led to the emergence of the ecological crisis. The first one seeks, from a philosophical point of view, to critique the overly romantic diagnoses of the ecological crisis and offer what the author considers to be a more realistic diagnosis. In his opinion the ecological crisis must be traced back to the growth of the market system and capitalist economy, which was facilitated by a mechanical philosophy of nature and the Protestant Reformation, which led to the reversal of the treasured values of a culture. The second article deals with ecology and science. It begins with a brief discussion of the ecosystem and goes on to describe the manifestations of ecological degradation. The author thinks that it is wrong to hold that science and technology are solely responsible for the ecological crisis. It is equally wrong to contend that science and technology are in no way responsible for this crisis. A more correct view would be to maintain that ecological degradation is the outcome of the dynamic interplay of socio-economic, institutional and technological factors. A third article deals with the relationship between development and the environment. The author points out that the type of development that we have adopted has led to environmental degradation and the deterioration of the condition of the poor in general and of women in particular. Hence we need to search for alternative models of development which are eco-friendly and supportive of the subalterns.

Included in this issue are two articles which discuss Indian approaches to ecology. The first article discusses the ecophilic vision of Gandhi. According to the author the foundation of ecophilia is Advaita, which can be understood as the inter-relatedness of all things. He also points out that for Gandhi the ashram was an expression of ecophilia. Ahimsa and satyagraha are the key elements of Gandhi's approach to human society and the cosmos. A second article seeks to articulate the understanding of and attitude to nature to be found among the indigenous peoples of central India. Their harmonious relation to nature is rooted in their religious beliefs, which are expressed in their myths. In order to preserve ecological balance we need to renounce our greed and our tendency to dominate and adopt the indigenous vision of the interdependence of all things and the practice of self-emptying servanthood.

There are three articles in this issue which attempt to develop a Christian perspective on ecology. The first one seeks to articulate an Indian Christian response to the ecological crisis. After a brief analysis of the causes of the ecological crisis, the author reflects on the Christian religious resources and the Indian religious experience for insights to respond to this crisis. He also points out the need for developing an eco-consciousness, an eco-spirituality and a healthy attitude to nature. The second essay attempts to motivate Christians to understand and live their faith in ways that would facilitate the healing of the planet. The main argument of the paper is that an ecological understanding of God and human beings provides the necessary motivation to link ecological concerns with faith. The theoretical framework of the argument is based on the love commandment, which points out the essential quality of being a Christian in the world. The third article discusses the ethical challenges arising out of the ecological crisis. After a brief analysis of the moral issues related to ecology, the author of the paper pleads for a holistic eco-ethic, as well as a socio-economically just ecological ethic. He also deals with the moral issues raised by the development of modern technology and the need to respect the rights of non-human nature.

It is our fond hope that the articles in this issue of *Jnanadeepa* will stimulate a lot of reflection and lead us to adopt a more eco-friendly life-style.

Kurien Kunnumpuram, SJ
Editor

The Contemporary Ecological Crisis: Tracing Its Emergence

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Abstract:

In this article the author asks the question: How has the ecological crisis come about and what can be done about it? Obviously the treatment of an ailment would depend on the diagnosis. When the diagnosis is misguided and overly romantic, so would be the proposed remedy. By “overly romantic” the author refers to those views that are out of touch with the living reality of nature as experienced by those who live in nature. Such romanticised views invariably originate from theoreticians of urban, industrial backgrounds. It is only by exposing such overly romantic notions and coming to a more realistic understanding that we can begin to search for appropriate remedial measures. This paper is an attempt to do the former task, i.e., to critique some of the overly romantic diagnoses that are sometimes held to be responsible for the ecological crisis and offer what the author considers a more realistic diagnosis. The author traces the roots of the contemporary ecological crisis to the growth of capitalism, which was facilitated by the mathematisation of nature and the protestant reformation.

Keywords:

Ecological crisis, diagnosis of the crisis, romantic analysis, nature as a machine, commodification of nature.

The ecological crisis we face is real. It has led us to “genocide (the destruction of peoples), biocide (the destruction of life), ecocide ((the destruction of eco-systems) and geocide (the destruction of the earth).”¹ How has this come about and what can be done about it? Obviously the treatment of an ailment would depend on the diagnosis. When the diagnosis is misguided and overly romantic, so would be the proposed remedy. By “overly romantic” I refer to those views that are out of touch with the living reality of nature as experienced by those who live in nature. Such romanticised views invariably originate from theoreticians of urban, industrial backgrounds. It is only by exposing such overly romantic notions and coming to a more realistic understanding that we can begin to search for appropriate remedial measures. This paper is an attempt to do the former task, i.e., to critique some of the overly romantic diagnoses that are sometimes held to be responsible for the ecological crisis and offer what I consider a more realistic diagnosis. Let us begin however, with some general considerations.

Ecology, by its very nature is a relational concept. The word comes from the Greek *oikos*, meaning “house” or “habitat”. Thus it signifies a discourse about home. It is the study of the relationships of living things to their surroundings. Surroundings, in this context, are understood as the environment of the organism. And it includes living and non-living surroundings. Environment is of supreme importance to any organism, since its very survival depends on how the organism interlocks with other organisms as well as its inorganic surroundings. This relational aspect of ecology is emphasized by Rajendra Kumar when he observes,

Although the fauna and flora of an area must be identified and enumerated, and although the physical forces at work in the area must be recognized, neither an account of the biota nor a description of the habitat constitutes an ecological investigation. Similarly, if a man rises at daybreak and makes a list of the birds he sees without any consideration of the relation of the occurrence of these species at [sic] other factors, he is not an ecologist.²

If ecology is a relational concept by its very nature, this must be the starting-point of any philosophy of ecology. It is not surprising, therefore, to find writings on ecology – whether dealing with the ecological crisis, or dealing with alternatives to the present scenario – centre on our relationship to nature. The roots of the contemporary ecological crisis are traced to one way of relating to our environment and the suggested solutions recommend another kind of relationship. It is these relations that we need to explore in tracing the roots of our ecological crisis.

1. The Diagnosis of the Romantics

The following incident narrated by Thomas Derr gives us a good picture, not only of the eco-romance of the elite, but also of two other approaches to nature.³ In 1971, Sicily's volcano Mount Etna was erupting. One day a group of tourists, among the thousands flocking to see the spectacle, were watching the lava flow destroying all in its path. Fascinated, this group of tourists cheered as the flow reached the road on its way down. But the local farmers were not amused; they were enraged that these people should take so much pleasure in the destruction of their fields. They shouted at the tourists and even attacked them. A few days later these farmers organized a special Mass where they implored the Virgin Mary and the local saints to intercede for them so that the flow of lava might be stopped. They believed that a similar miracle had taken place during the irruption of 1928. In the meanwhile the government began talking about using bombs to divert the lava flow so as to save the village.

The attitude and the approach of the tourists was obviously far from that of the farmers who were affected by it; still different was the approach of the government. For the tourists, far removed from the destructive impact of the lava, nature is a source of awe; overawed as they were, they cheered the progress of the lava. The farmers' experience of nature is totally different: it is a half-enemy, a source of good and evil, whose next move is unpredictable. Their religion is a way of coping with this unpredictability. The government's approach to nature betrays an attitude different from both of these. For the government, nature is an inert thing which may be manipulated for human ends. The first is a typical eco-romance

divorced from a living relationship to nature; the second is a realistic approach that arises from living and interacting with nature; the third, although arising from a living interaction with nature (as in the previous case), is a manipulative, technological approach that lacks the dimension of mystery and awe that is still present in the second approach.

Eco-romance is not necessarily tied to being overawed by nature as in the case of those tourists. It could come from an uninformed or a one-sided view of history. Let us examine some of these alleged villains.

1.1 Agriculture and Human Greed

Upon one diagnosis of the present ecological crisis, for example, the whole trouble started with the beginning of agriculture around 8000 B.C., which then spread across the globe!⁴ The reasoning is that agriculture is based on the tendency to store food rather than collect it. In our romantic fantasies we tend to picture the primitive people as living in perfect harmony with “Mother Nature”, which is said to be destroyed by the human greed for possessions. Thus begins the story of the “Takers” (the greedy ones who accumulate) as opposed to the “Leavers” (those who let the earth be).⁵ While no one should doubt the important role played by human greed in the ecological degradation of our planet, to blame it all on greed is to be ignorant of historical facts and empirical data. It is not just that empirically the agrarian people were attached to the earth they cultivated. There are more important considerations. First of all, pre-modern societies did not encourage greed, but condemned it, as we shall see in the next section (see, 2.2). Moreover, even if they wished to destroy the environment, they did not have the ability to do it. The pre-modern agrarian cultures, dependent as they were on the vagaries of nature, had no other choice than to endure the cycles of glut and shortage.⁶ Philip Ashby is correct in observing that “Even if one should have wished to destroy the ecological balance, pre-industrial technology simply did not have the means to produce such destruction. Until the present century not even the most perverted of intentions would have succeeded in

destroying the ozone layer, saturating our food with harmful chemicals or polluting the Alaskan coastline.”⁷

1.2 The Objectifying Intellect

Other romantics would make culture, rather than agriculture, the root of our problems. Put in such general terms, of course, it becomes a truism. The problem is in identifying the particular strand of the vast, complex and varied mosaics we call cultures from which the present crisis has risen. And there the problems begin. Some trace it to our dichotomizing intellect: we tend to think of ourselves as subjects who think of the world as an object. And Descartes emerges as the villain in this way of thinking. This is said to lead to the manipulation of nature, the object. Ecological problems arose when the attitude of respect and veneration gave way to an eagerness to conquer and possess.⁸ Thus nature, that was essentially maternal and divine, becomes a mere deposit of material resources to be exploited for human ends.

What such romantic notions of Mother Nature neglects is that if it is a mother, she has also the tendency to devour her own helpless children. While the numerous creatures of the earth are fed on the ample breasts of this mother, she also hides in her bosom the treacherous earthquakes and the tsunamis, the volcanic irruptions and the devastating floods. It is only by ignoring this treacherous side of Mother Nature and the accompanying response of awesome terror can anyone say that her “primitive” children treated her exclusively with respect and veneration. Such romantics need to be reminded: “Since primitive times man has been altering his environment dramatically, in ways that upset ecological balances. Early hunters used fire to drive out their game. Agricultural people everywhere clear fields and dam streams and wipe out stock predators and kill plants that get in the way of their chosen crops.”⁹ To assume that there was a time when humans identified themselves with nature without objectifying it with their dichotomizing intellect is to engage in sheer fantasy. Even if that assumption is granted for the sake of argument, any return to that state is not a possibility open to us. “Returning to an innocent, unselfconscious identification with the world in which we find ourselves would be to surround ourselves

with *loyal* dogs, *proud* peacocks, *horridly half-human* apes, *self-sacrificing* lambs, and human beings themselves identified by their social roles and imagined histories.”¹⁰ The fact that we tend to describe our surroundings with such adjectives gives an indication of how far removed from reality this romantic picture is.

With a simple-minded approach, it is not difficult to trace the contemporary ecological crisis to a certain alleged blind spot in Western thinking. If ecology by its very nature is a relational concept as we have maintained, it must be conceived as the study of relationships, and not of individual substances. And relations seem to be a blind spot in Western thinking. According to Vincent Bruemmer, this is inherited from its Aristotelian DNA. “Since Aristotle, our [Western] intellectual tradition has been infected by the ontological prejudice that there are only two sorts of reality: substances and attributes. This makes it very difficult to conceive of relations in an adequate way, since they fall into neither of these two categories. Consequently the tendency has been to interpret relations as though they were attributes of one of their terms.”¹¹ While this observation has some plausibility in the context of the analysis of love that Bruemmer is concerned with, how wrong would an extrapolation of this observation be if applied to an analysis of the ecological crisis becomes obvious when we consider that Aristotle’s philosophy has been with us for more than two millennia whereas the sort of ecological problems we are talking about are largely a twentieth century phenomenon.

1.3 Christianity

There are some theoreticians who trace our ecological crisis to the “Christian axiom that nature has no reason for existence save to serve man.”¹² This view was forcefully expressed by Lynn White, way back in the 1960s. Since then it is often taken as axiomatic that the current ecological crisis is the illegitimate child of the unholy union of the biblical injunction to “dominate” the earth with the Platonic dualism and its alleged contempt for all things earthly and material. Historical Christianity, this illegitimate offspring, then latched itself on to a transcendent God who lived somewhere out

there resulting in Christians looking down on the material earth and subjugating it with an attitude of contempt.

Stephen Clarke reminds these “experts” who would blame Christianity for the present ecological crisis, that the biblical theists were convinced of the sacramental importance of this material world. To take a concrete example, the dominant morality of medieval Christianity was against even mining, because they considered it a literal devastation and metaphorical rape of the earth. The commercialization of the earth that took place later was done in the face of strong resistance from the Church.¹³ Then there is the idea of Christianity rooting itself in a transcendent God so as to cultivate an attitude of plundering the “Mother Earth”. This also does not stand scrutiny in the light of Boulding’s observation about the Benedictines. With them, manual work on the land became something respectable; here was a group of intellectuals for whom working with their hands on the soil was sacred worship.¹⁴ What needs to be noted is that while renunciation and monastic practices are found in different religions and different parts of the world, manual labour on the soil as a sacred duty seems to be a unique Christian development. So much for the Christian contempt for the material world in the pursuit of a transcendent God!

What we need to learn from these simplistic explanations is that we must stop looking for caricatured villains – whether they be Plato or Christianity, or human greed or power and profit. A more nuanced understanding of the emergence of the ecological crisis must begin with the realization that complex historical and cultural happenings do not have mono-causal or linear explanations. At the same time we must not level up all the past by saying that altering nature has been done by human beings since primitive times. That remains an uninteresting truth that ignores the important fact that the emergence of the present day ecological crisis –involving the destruction of the ozone layer and large scale nuclear and chemical pollution— is unprecedented. It is not comparable to the impact of any fire used by the primitive hunters to drive out their game or the clearing of fields done in earlier forms of agriculture. There is no denying the fact that the modern world has developed a culture and a behaviour pattern that has no parallels in the past. It is a culture

that has promoted and continues to promote the death of our environment and the reckless exploitation of its non-renewable resources. Thus although fully aware that we must not blame individual thinkers (Plato, Aristotle, Descartes etc.) for wholesale cultural shifts, we must at the same time keep looking out for developments that paved the way for such shifts in thinking that brought us to where we are.

2. A Realistic Understanding

The decisive development that has brought about this shift is the growth of the market system and capitalist economy. This, in turn, was facilitated by other, earlier developments, the most important of which were perhaps the mathematization of Nature and the Protestant Reformation. The former leads to a mechanical philosophy of nature and the latter to a reversal of the treasured values of a culture. Together they lead to the commodification of the earth.

2.1 Nature as a Machine

Earlier we made the observation that the pre-modern societies, even if they tried to damage the environment, did not have the wherewithal to do it on the scale that is prevalent today. That capability is one of the bitter fruits of modern science. Crucial to the development of modern science is what has come to be known as the mathematization of Nature.

The development of modern science was a gradual process. But the turning-point was the Copernican insight. And the immediate reason for Copernicus to adopt the heliocentric view was not any practical consideration, but the mathematical discrepancies shown by the earlier geocentric view. Copernicus saw that if he were to give up our commonsense view and assume the sun as the centre of the universe instead of the earth, much of the discrepancies in the Ptolemaic conception would disappear. These mathematical considerations are taken further by Galileo. He realized that the nature we experience is too complex to be dealt with in any exactitude and to gain certain knowledge about. This prompts him to take a mathematical approach. He delineates the measurable aspects of

our experience of nature and treats them as objective and considers the rest of our experience as subjective. Bernard Lonergan describes the process thus:

For Galileo the object of science was the geometri-
zation of the world. In proposing this he had to
meet the objection that is obvious to everybody
that the real world is far more than what is treated
in geometry. To meet that objection he drew the
distinction between primary and secondary quali-
ties. Primary qualities are inherent in things them-
selves. The things themselves have length and
breadth; they move; they have weight and mass.
These are all measurable qualities in the things
themselves. But there are also secondary quali-
ties: colour, sound, odour, taste, the feeling of hot,
cold, wet, dry, rough, smooth, heavy, light. The
characteristic of all these is that they are not in
the thing but in the subject. ... They are second-
ary qualities. They result from an interaction be-
tween the real thing, which is just geometrical, and
the animal.¹⁵

Accordingly, only that aspect of nature that is quantifiable in mathematical terms can be considered to be objectively belonging to nature. It is this distinction between primary and secondary qualities that we find in the philosophy of John Locke.

The dramatic success of mathematization is there for all to see. For the first time, modern science held out to humans the promise of deliverance from the cruelties of nature –recurring natural calamities, plague and disease. The moderns dreamt of a future when they would no longer be at the mercy of nature; rather, they would gain absolute control over it and direct it to the attainment of human ends. It is a different matter that this promise of salvation has been belied time and again (the most recent case being the tsunami of December 2004) and the utopian vision of a heaven on earth has turned into a nightmare of ecological crisis. But that was the starry-eyed hope of the moderns in the wake of the new science. What went totally unnoticed in the heyday of modern science was that it was built on a mathematized view of nature.

Mathematization was a turning-point in as much as it led to a mechanical philosophy of nature. Till the modern period, the dominant sections of Western culture saw Nature as permeated with divine rationality and final causes. Of course, the nominalists of the earlier period play an important role in undermining this Aristotelian view of nature as a living organism with a built-in *telos*. But it is during the modern period that nature comes to be seen as an impersonal machine. This view of the cosmos as an intricate machine made up of an infinite number of particles ordered by mathematical laws became the foundation of the modern world-view. Richard Tarnas puts it succinctly: “By the beginning of the eighteenth century, the educated person in the West knew that God had created the universe as a complex mechanical system, composed of material particles moving in an infinite neutral space according to a few basic principles, such as inertia and gravity, that could be analyzed mathematically.”¹⁶

2.2 The Reversal of Values

Once the natural world was objectified in mathematical terms and its fruits began to be tangibly felt, the next to be given the same treatment was the cultural world of politics, economics and social organization. Of these we shall concern ourselves only with the economic aspect.

Till the modern period there was no such thing as an autonomous economic realm. Economic life was inextricably woven into the social, political and religious life. Wealth was not considered a value in itself. To amass wealth for its own sake was to commit the sin of avarice. In the words of Robert Heilbroner, “The idea that each working person not only may, but should constantly strive to better his or her material lot ... was quite foreign” to much of the recorded history of civilizations.¹⁷ Small wonder that in times of plenty, people preferred to eat and drink rather than work harder to earn more.¹⁸ The idea of work as a means of amassing wealth did not exist; indeed, amassing riches was not a treasured value of pre-modern culture. There was no concept of land as a freely saleable, rent-producing thing that it became later in the modern world. It existed either as common pastures for grazing cattle or as manors

and principalities that formed the basis of social status and prestige. Similarly, there was no such thing as labour understood as a commercial entity that could be bought and sold; there existed peasants and workers tied to the lord's manor, but not labour as a commodity. Something similar can be said of capital.¹⁹ Production was dictated by the constraints of customs and traditions characteristic of hereditary occupations rather than by labour-saving and efficient use of funds. Thus the pre-modern world could not develop a market system, because it did not have the concept of labour or capital, or land, understood as impersonal economic entities.

Various factors contributed to the change from this situation to that of the modern, economic world. One was the development of individualism and the accompanying democratic impulse. Among others, one of the factors that contributed to the development of individualism was, strange as it may seem, the new science and cosmology. These prompted a new scepticism towards all inherited beliefs and practices. A spirit of questioning all received traditions and authority was in the air. Descartes gave voice to this spirit in his philosophy. His manner of doing philosophy that began with questioning all received opinions gave ultimate authority to individual human reason as the infallible guide to truth. Till then, revealed truth and the received wisdom of tradition had maintained an objective authority outside of individual judgement, but in the Cartesian procedure, individual human judgement has the final say in all matters, including religious matters. Reason – individual reason – replaces revelation and tradition as the arbiter of truth. Descartes had inaugurated a new age whose motto became “Have the courage to use your own reason,” as Kant succinctly put it.²⁰

This growth of the modern, self-reliant individual, independent of social and religious ties, all external authorities and traditions, was furtherance of a process set in motion by Martin Luther and the Protestant Reformation. In his rebellion, he had already undermined the authority of the Pope. Monasticism and mysticism which catered to a select few was looked down upon. The salvation of all believers without the mediation of any hierarchy was the new mantra. What Descartes did was to grant to all in a general way what Luther had granted to all the believers. This democratic impulse and

individualism are very important in the development of the competitive market economy.

Many authors, beginning with Max Weber, have traced the emergence of capitalism to the Reformation and the Protestant ethic. The Protestant Christian, deprived of the Catholic recourse to sacramental justification, had to depend solely on the inscrutable will of a God who had pre-destined some to eternal salvation and others to damnation. This religious scenario, together with the absence of the unifying power of Christendom at the socio-political level, was bound to create a sense of insecurity. On the other hand, there was the heightened sense of the individual and his freedom. The insecurity led the striving Protestant Christian to look for signs of being among the elect. Since the monastic bend of Catholicism was replaced by an exclusive devotion to duty and one's profession in the world, it was success in one's worldly calling that came to be considered the sign of being among the elect. The ensuing ethic of hard work, together with the Puritan²¹ demand for renunciation of pleasure, contributes to the accumulation of capital and the eventual growth of capitalism.²² Once the accumulation of capital begins to be taken as a value, it sets in motion a process that carries forward on its own steam. In the words of Tarnas,

Whereas traditionally the pursuit of commercial success was perceived as directly threatening to the religious life, now the two were recognized as mutually beneficial. ...In time, much of the originally spiritual orientation of the Protestant discipline had become focused on more secular concerns, and on the material rewards realized by its productivity. Thus religious zeal yielded to economic vigour, which pressed forward on its own.²³

This is an extremely significant development that changes the entire value orientation of Western culture. In the new Christianity, accumulation of wealth was a religious virtue. Being economically backward was a sign that God was not with them or even if he were, he had turned his back on them! Once money and capital, and not human well-being, becomes the driving force of the economy, accumulation of wealth becomes an end in itself, replacing the Judaeo-Christian God as the sole legitimate end of human life. Work

was no longer the sacramental activity it was for the Benedictines, but the means of becoming rich.

2.3 The Commodification of Nature

When this drive for democratic, personal accumulation is conjoined with an impersonal, mechanical view of nature, the stage was set for the new economy. Common pastures became private properties and the new “owners” could engage in a no-holds-barred exploitation of its resources without any moral compunction. It was not merely an exploitation of what is there, but also its modification. The rich bio-diversity of the previous times, for example, gave way to mono-cultural cultivation and animal husbandry so as to make it economically viable in the competition of the market place. Modern science, with its mathematical approach, had supplied the technology for both exploitation as well as newer forms of manipulation. Thus we have the unholy combination of the religious zeal for secular success, heightened individualism with its democratically competitive greed cut off from social and religious constraints, a new awareness of the seemingly endless resources of this planet, and newer and newer technology that provided the tools for exploiting and manipulating nature. And the result is there with us today.

We stand at the crossroads today. We have been deprived of all naïve optimism regarding science and its promises of an earthly salvation and yet cannot make an innocent return to the bosom of the tender loving Mother Earth. We are aware of the ecological havoc we have created and yet know full well that we cannot put the technological genie back into the bottle. Although we cannot turn back the technological clock, a realistic awareness of how we have reached here might prompt us to rethink the values that brought us here, without sacrificing some of the important gains of modernity. Such an awareness must become an integral part of a new cultural awakening in place of the “I buy, therefore, I am” consciousness of the present day. Otherwise the only difference between us and the pre-moderns would be this—they were at the mercy of the vagaries of nature and we would be at the mercy of blind market forces, even more than those of nature.

Notes

1. Jose Ramos Regidor, "Some Premises for an Eco-Social Theology of Liberation." *Concilium*, no. 5 (1995): 78-93. p. 80.
2. Validin Rajendra Kumar, "Moral Dilemma in the Ecological Crisis: A Christian Response to It in the Context of India.", University of Mysore, 2002.
3. Thomas Sieger Derr, *Ecology and Human Liberation: A Theological Critique of the Use and Abuse of Our Birthright*, 1973, p.5
4. This view is found in Daniel Quinn's novel *Ishmael*. Relevant excerpts of an extensive nature are to be found in Kuruvilla Pandikattu, Tamas: *Alternative Ways of Viable Existence*. Mumbai: World-Life-Web, 2002.
5. *Ibid.*
6. Stephen R. L Clark, *How to Think About the Earth: Philosophical and Theological Models for Ecology*. New York: Mowbray, 1993, p.10
7. Philip Ashby, "The Biblical Monotheistic Approach to Nature." In *Science and Spirituality*, edited by N.K. Singh. New Delhi: Global Vision Publishing House, 2005.
8. Joseph Peruma, *The Motherly Earth: An Ecological Ethics of Human-Nature Relationship*. Malleswaram, Bangalore: Claritian Publications, 2002.
9. Derr, p. 19
10. Clark, p. 16. Italics added.
11. Vincent Bruemmer. *Model of Love: A Study in Philosophical Theology*. Cambridge: CUP, 1993, p.33-4.
12. White, 'The Roots of our Ecological Crisis', *Science*, 155 (1967), pp.1203-7, cited in Clarke, p.8
13. Clarke credits this finding to *The Death of Nature* by Caroline Merchant (Wildwood House: London, 1982)
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21. Puritanism is a religious movement that arose in the Church of England in the 16th and 17th centuries and eventually spread to the other countries, especially the new world. They opposed the alleged unscriptural, Catholic forms of religiosity and sought to substitute it with the Calvinist model of predestination. They also emphasized simple lifestyle.
22. This is an extremely simplified version of the analysis of Max Weber with his emphasis on the role of the Puritan ethic in the growth of capitalism and the analysis of W.P. Webb which complements Weber in as much as it also explains why capitalism did not grow in the Catholic countries.
23. Tarnas, 246.

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Science and Ecology

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Abstract:

Unfortunately we are witnessing today a deformed and distorted sight of mother nature, due to centuries of misuse, abuse, exploitation fuelled by crass ignorance, gross insensitivity and the deep selfishness of humans. In the past science and technology often used to be projected as the whipping boy of this tragic turn of affairs. This paper is an attempt to discuss briefly the role various factors, particularly science and technology, have played in bringing about this sad degradation, and how this can be reversed, particularly with the help of science and technology. The author argues that these ecological problems are too complex, and the agents involved too many and too diverse to be attributed to just one or a few causes. Accordingly, any solution to this mammoth challenge calls for a collaborative effort from various power centres. The author is hopeful that the dangerous trend can still be reversed, and the damages can be repaired, particularly with the application of the existing findings of science and technology, and by developing appropriate new ones. However, an all-pervasive issue like this cannot be efficiently and effectively handled by science alone. It affects everyone, and everyone has a share in finding effective remedies.

Keywords:

Ecosystem, energy cycles, ecological degradation, eco-sensitivity, science.

Introduction

Nature, in its original, un-tampered state, was perhaps the most impressive and imposing masterpiece of the Creator. Not only was it noted for its amazing immensity, awe-inspiring majesty, captivating beauty and breath-taking variety, it was also remarkable as a self-sustaining, self-maintaining, self-repairing, balanced and harmonious system. When many primitive peoples in practically all civilizations surrendered to this nature in worship, they were not giving vent to any irrational streak, but rather were recognizing their insignificance before this awesome grandeur and might. But today unfortunately we are witnessing a deformed and distorted sight of mother nature, thanks to centuries of misuse, abuse, exploitation fuelled by crass ignorance, gross insensitivity and deep selfishness of humans. In the past science and technology often used to be projected as the whipping boy of this tragic turn of affairs. This paper is an attempt to discuss briefly the role various factors, particularly science and technology, have played in bringing about this sad degradation, and how this can be reversed, particularly with the help of science and technology. I will argue that these ecological problems are too complex, and the agents involved too many and diverse to be attributed to just one or a few causes. Accordingly, any solution to this mammoth challenge calls for a collaborative effort from various power centres.

The Making of the Ecosystem: A Scientific Perspective

Nature as a Balanced, Harmonious System

In ancient times people were so impressed by the balance and harmony of nature that they looked upon it very much as a living organism. In the Middle Ages as well, this tradition persisted. As late as the end of the sixteenth century saw Johannes Kepler, one of the founders of modern science, in some of his writings occasionally referring to nature as a living organism. Although this obviously was an exaggeration, there is no doubt that nature can be considered a well-regulated system. By definition a system is an arrangement of matter so related as to form a whole unit. Our planet earth, with all its different parts and surroundings, constitutes one large unit or

system. In this paper we are concerned with the ecosystem. Scholars point out that “the living organisms of a habitat and their non-living environment function together as one unit called the ecological system or ecosystem.”¹ Our study will focus on the earth as an ecosystem. It has been estimated that there are some five million species of plants, animals and micro-organisms, all forming a vast interrelated network in our ecosystem of the earth. Such a system has two principal parts: the abiotic and the biotic. The abiotic component includes the atmosphere (air), hydrosphere (water) and lithosphere (soil), whereas the biotic component includes all living organisms that interact with each other and with the abiotic part. Both these parts, each influencing the other, are necessary for an ecosystem. An organism tries to maintain a stable internal environment irrespective of the nature of its external environment. Ecology is the study of the relationship of living organisms among themselves and with the environment. More specifically, it deals with the principles of survival, adaptability and reproduction common to life on our planet earth.

The ecosystem of our planet has a number of special characteristics. Perhaps the most striking one is its unity in diversity. Despite the large diversity and variety, we see a beautiful unity underlying our ecosystem. Close interconnectedness of the different parts is another distinguishing mark. It is a dynamic system teeming with activity, and hence requires a delicate balancing between the different elements and between the diverse interactions among them. Such a balanced, dynamic and coordinated system has certain checks and balances built into it, and can tolerate changes and fluctuations as long as they remain moderate and within certain bounds. As we shall see, ecological degradation sets in when these natural Lakshman Rekhas are ignored, opening the door to strong outside intrusions. Although the close-knittedness and interlinking are a blessing, they have a reverse side as well: any problem in one part will have its chain reaction in the other parts as well; any breakdown in one region can prepare the way for the eventual collapse of the whole system.

The Different Cycles in Nature

The deep level interconnectedness as well as the balancing and self-maintaining mechanism of our ecosystem can be best illustrated by a brief discussion of the different cycles operating in our system. In fact, these cyclic phenomena are primarily responsible for rendering the system self-sustaining and self-maintaining. It is thanks to these cycles that our ecosystem is able to preserve itself and support and sustain life and life activities. A cyclic phenomenon is one that repeats itself after a certain period of time. It involves many and varied complex processes and interactions, but at the end of them all, the system is restored to its starting point to begin the processes anew. These cyclic processes are absolutely essential for the survival of the ecosystem since it allows the reuse of the essential elements, and hence the system can manage with a finite amount of these essential elements. Without such a reusable system, nature would have been forced to produce almost an infinite amount of each essential item.

The Energy Cycle

The sun is almost the exclusive source of energy for the biosphere since 99.98% of the energy comes from it. But this energy has to be rendered usable by transferring it to the molecules that make up the various beings in the system. These processes are called the photochemical processes of which photosynthesis is the most important one. Photosynthesis is the process by which plants prepare their vital food with the help of light energy from the sun, carbon dioxide from the atmosphere and water and minerals from the soil, producing carbohydrates and releasing oxygen. Plants retain carbohydrates as food and give out oxygen into the atmosphere. The carbohydrates are converted into energy and are stored up in the form of chemical bonds. When animals consume plants (vegetables), they take in precisely this stored-up energy of the plants. When they breathe, they take in oxygen and give out carbon dioxide to be used by the plants.

Not all energy produced is used up for life processes. Some is stored in dead matter. Certain bacteria convert dead matter into organic sediments, releasing carbon dioxide, water and heat into

the biosphere. Again, plants take in this carbon dioxide and water to restart the cycle.

Heat Cycle

This is closely linked to the energy cycle since heat is but one form of energy. Heat is also supplied by the sun. A small part of it is absorbed by the ozone layer. Atmospheric water vapour, carbon dioxide and dust particles in the atmosphere absorb another fraction. The earth actually gets about 47% of the total heat coming from the sun. It is important that the absorption and re-radiation of heat by the earth should ultimately balance, since any imbalance will upset the dynamic equilibrium maintained by a healthy ecosystem. This balancing is regulated mainly by water vapour in the atmosphere.

Carbon Cycle

This is also closely related to the energy cycle since photosynthesis plays the key role in this process. Carbon is the most fundamental element for all organic substances. In fact, organic chemistry is fundamentally the scientific study of carbon compounds. In this cycle carbon, that is vital for all forms of life, is circulated from animals to plants and back to animals through plants. Plants take in carbon dioxide and produce carbohydrates with the help of sunlight through the process of photosynthesis, releasing oxygen at the same time; animals, on the other hand, take in carbohydrates as well as oxygen, and release carbon dioxide.

Oxygen Cycle

After nitrogen, oxygen is the most abundant gas in our atmosphere, making up about 21% of the atmospheric gases. According to some astronomers, in the initial production of oxygen the sun played the principal role since they say that the ultraviolet rays from the sun split up the water vapour surrounding the earth, releasing a large quantity of oxygen. This life-saving oxygen also undergoes a cyclic process: The breathing of animals and the combustion of dead-matter both take in oxygen and give out carbon dioxide, whereas plants take in carbon dioxide and give out oxygen.

A coordinated, balanced interplay of these two processes is necessary to keep the ecosystem healthy.

Nitrogen Cycle

With an abundance of 78%, nitrogen is the most abundant gas in the atmosphere. However, nitrogen in this form is unusable, and so has to be rendered usable by a process known as “nitrogen fixing,” i.e., incorporating it into a chemical compound. This is usually done by converting nitrogen into ammonia or amino acids which can be used by plants and animals. This fixing is carried out on land by diazotrophs, organisms having the genetic code for the synthesis of the enzyme nitrogenase which serves as a catalyst for nitrogen fixation. Nitrogen that is locked up in dead plants and animals is decomposed by bacteria producing carbon dioxide, water and ammonia. This ammonia returns to the atmosphere, where it gets dissolved in rain water and returns to the earth.

Water Cycle

The importance of water needs no explanation since all beings in our system are heavily water-dependent. Fortunately we are able to manage with a finite amount of water, thanks to the water cycle. Water from the sea and land sources evaporates and goes up to produce cloud and precipitation, which come down to the earth as rain and snow.

The Atmosphere

The atmosphere, which extends up to 50 kilometers from the earth, is really a built-in protective system, serving the earth and its inhabitants as an insulating blanket. Among its many salutary functions, it softens the scorching heat coming from the sun by absorbing a part of it. Its ozone layer absorbs the most deleterious ultraviolet radiation from the sun, thereby protecting living organisms from extinction.

There are many other components making up the ecosystem of our planet. All these show that our system was initially established as a self-sustaining and self-maintaining, balanced, harmonious life-friendly system. It would have continued to be so for ages to come.

However, unfortunately today the situation has changed drastically for the worse, and is moving towards alarming levels.

Ecological Degradation

As we have seen, a delicate, precarious balancing of the numerous components and activities is the characteristic mark of an ecosystem, and it will remain healthy and vibrant as long as the different elements are kept within moderate bounds. The system is also capable of handling variations and changes up to certain limits. Once these limits are exceeded, degradation sets in. This indeed has already happened to the ecosystem of our planet. Perhaps the most obvious part of this disturbing process is pollution. In general, pollution involves the addition of any substance or form of energy to the environment at a rate faster than it is equipped to deal with by dispersion, breakdown, recycling, or storage in some acceptable form. Depending on its source, pollution can be of different types: air pollution, ground pollution, water pollution, etc.

Air Pollution

Our environment is constituted of many gases in different proportions. Since it is a dynamic system, a certain degree of fluctuation in the proportion is natural, and the system readily handles it. Air pollution occurs when gases, fine particles of solids, or finely dispersed liquid aerosols are released into the atmosphere at rates higher than its capacity to accommodate them through dissipation or through incorporation into the biosphere. As we shall see below, this problem has given rise to a very dangerous phenomenon known as acid rain.

Ground Pollution

This refers to pollution on the land. Ordinarily land is able to deal with certain fluctuations in its composition, usually with the help of microorganisms. Ground pollution sets in when the ground is unable to dispose of the addition of materials like solid wastes that cannot be broken down fast or at all. This can come about because of the removal of top soil from the ground, which leads to destruction of the fertility of the land, on the one hand, and over-

silting or sedimentation of rivers and streams on the other. It also has serious consequences for agriculture.

Ground pollution can happen because of the excessive use of pesticides, plastics and other chemical products. These too are often resistant to the action of soil bacteria. Furthermore, pesticides are often rain-resistant, and so cannot be dissolved in water, and so can survive for long periods.

Water Pollution

Although water is a very good solvent and so can dissolve many products, many modern synthetic and chemical products are indissoluble in water. Other items are substances coming from acid rain, silt from soil erosion, runoff from septic tanks, chemical wastes from industrial plants, sewage, etc. When a water source receiving such products is unable to dispose of these items either by breaking them down or through recycling, water pollution results.

Usually water contains bacteria capable of disintegrating foreign substances added to it. But if the matter from outside exceeds the limit, algal water blooms may be formed. When these die, their remains become additional organic waste, thereby rendering the water deficient in oxygen. This can give rise to a surge in the activity of organisms that do not need oxygen. Foul and unhealthy gases like methane, hydrogen sulphide are emitted, and the water becomes a source of stench and diseases.

Greenhouse Effect and Global Warming

A part of the electromagnetic radiation coming from the earth heats up the surface of the earth, inducing infrared radiation. Left alone, this infrared radiation would pass into space and would not have any serious harmful impact on the environment. Nitrogen and oxygen are non-greenhouse gases and do not absorb infrared radiation. However, there are small amounts of greenhouse gases also in the atmosphere which do absorb this radiation. There are over 30 such gases, the principal ones being carbon dioxide, methane, nitrous oxide, black carbon aerosols, ozone, chlorofluorocarbons(CFCs), hydrofluoro-carbons(HFCs), perfluorocarbons(PFCs), sulphur hexafluoride, etc. The radiation

absorbed by them heats up the air and the earth's atmosphere, just like the hot gases inside a greenhouse heats up the air, plants and soil inside. This phenomenon is called the greenhouse effect.

Of course, a certain amount of heat is necessary to warm up the earth and make it habitable for humans and other living beings. But an excess does serious harm to the earth and its inhabitants. For instance, it can give rise to increased climate volatility, resulting in more extreme weather conditions producing severe heat waves, droughts, etc. It also causes excessive melting of snow and ice and shrinkage of ice sheets. As water gets heated up, it expands, raising the sea levels. This can also give rise to ecological and medical problems.

Acid Rain

When fossil fuels like coal are burnt, sulphur dioxide and nitrogen oxides (nitrous and nitric oxides) are produced as waste. In the atmosphere these gases combine with oxygen and water vapour to form sulphuric and nitric acids. Furthermore, carbon dioxide in the atmosphere combines with moisture to form carbonic acid. These acids floating in the atmosphere get mixed with rain, snow, moisture, etc., and come down to the earth. This phenomenon is known as acid rain.

This acid rain has several harmful effects. It increases soil acidity and changes the chemistry of the soil. It can also increase the acidity of the water in lakes, rivers, etc., thereby making water unsuitable for fish and other wild life.

Ozone Layer Fracturing

The ozone concentration in the stratosphere (17-50 kilometers above the earth) forms a rather thin layer called the ozone layer which absorbs the ultraviolet radiation from the sun and protects the earth and living beings on it. In the stratosphere there are both ordinary oxygen and its isotope ozone. Until the middle of the 20th century the ozone layer remained intact, performing its function smoothly. An equilibrium condition existed, with the concentrations of both forms of oxygen remaining relatively constant. However, certain developments since then led to the destruction of a part of

the ozone collection and consequent thinning of the layer. A number of anthropogenic gases like nitric oxide from exhausts of aeroplanes, nitrogen fertilizers, industrial chemicals like chlorofluorocarbons, etc., can destroy ozone. Among these the role of CFC, invented in the 1930s as a substitute for ammonia in refrigerators, is very serious. Although in the lower atmosphere it remains stable, in the stratosphere it breaks down because of ultraviolet radiation, and chlorine is produced. This chlorine reacts with ozone to produce chlorine monoxide and oxygen. Thus ozone is converted into ordinary oxygen, thereby reducing the ozone concentration. The damage does not stop here. The chlorine monoxide is further broken down by ultraviolet radiation into chlorine and oxygen, to begin another round of breakdown of ozone. It has been estimated that, thanks to this chain reaction, a single chlorine atom trapped in the stratosphere can destroy 100,000 ozone molecules.

The rupturing of the ozone layer has serious consequences for us humans. For instance, it increases the incidence of skin cancer; it can increase the rate of eye diseases, etc.

Some Examples of Actual Environmental Pollution

All these different forms of pollution are rampant in our environment today, some having taken alarming proportions. For instance, it was reported in 2000 that the Chinese Shenyang Smeltry discharged 74,000 tons of sulphur dioxide and 67 tons of heavy metals annually. Fortunately, in June 2000 this monster was shut down. The US, the most industrialized nation in the world is also the world leader in the production of hazardous carbon dioxide, and it is projected that China may overtake the US in 2025 if it continues in its current state. In the year 2000 a study by Jonathan Levy and John D. Spengler reported that the emissions from a power station in Massachusetts could be linked to 43,000 asthma attacks and an estimated 159 premature deaths each year. The US uses 27-32 million kilograms of atrazine each year, thereby making it the most widely used weed killer. This chemical is reported to cause sexual abnormalities in frogs. Coming to India, deforestation due to tremendous pressure on land is a serious threat to ecology. It has been reported that in Orissa the Similipal Tiger Reservation Area

has suffered heavy deforestation due to the shifting cultivation of the tribals in that area. In Madhya Pradesh, it has been reported that the discharge of industrial waste from Brajarajnagar paper mill and from two others into the Mahanadi has increased the salinity of the water, and has given rise to cracks in the Hirakud Dam.

The Living Planet Report, published on October 1, 1998, by the World Wide Fund for Nature, the New Economic Foundation and the World Conservations Monitoring Centre at Cambridge, England, gives a number of revealing facts.² According to it, since 1960 the use of fresh water has doubled, thereby noting a sharp decline in the store of freshwater. Also carbon dioxide emission has doubled during this period. It also says that consumption of wood and paper has increased by two thirds. Side by side, consumption of sea fish has more than doubled. It also points out that few forests were managed sustainably. These statistics should serve as a serious eye-opener for anyone concerned about our ecosystem.

Causes of Ecological Degradation

What is the cause of ecological degradation? What factors have led our one time beautiful and healthy nature - praised for its beauty and grandeur, revered for its immensity and power – to degrade into a polluted and risk-ridden world? Ecology and related issues are too complex to be limited to any particular source or cause. Any simplified solution runs the risk of either missing the actual culprits or getting only a partial answer. Failure to diagnose the root cause(s) correctly is a sure path to the perpetuation of the problem.

Two extremes need to be steered clear of in this context: 1). Framing science as the whipping boy of ecological degradation, 2) Claiming that science is value-neutral and hence it has to be exonerated from all responsibility. When these two extremes are avoided and the matter is subjected to a fair and balanced reflection, one finds that a whole cluster of factors were responsible for this tragic state of our planet, and the real remedy rests in a concerted and coordinated effort of all these sectors.

The Principal Causes of Ecological Degradation

According to a recent study, “Environmental degradation is the result of the dynamic interplay of socio-economic, institutional and technological activities.”³ Obviously, technology which is closely linked to science is only one of the causes.

Social Factors

Over-population, pathetic poverty and fast urbanization are some of the primary social factors driving our environment to a crisis point. There has to be a healthy balance between population growth and the life support system. Any explosive growth in population forces people to exploit nature indiscriminately for their survival. A recent study shows that India supports 17% of the world population on just 2.4% of the world land area. Not only that, the population is growing at a high rate of 1.85%. Naturally, there is tremendous strain on the natural resources available.

Poverty is another key player in this tragedy. The linkage between poverty and abuse of nature is too well known to need any detailed discussion. In fact, poverty is both the cause and effect of ecological degradation: Poverty forces the poor to squeeze out every thing available in nature to meet the immediate need of survival, without any regard for the long-term consequences. Conversely, a depleted environment becomes unhealthy and becomes a source of sickness and more poverty.

Fast and reckless urbanization is another cause of ecological degradation. Drastic demographic changes are taking place in India and other countries in favour of urbanization. The village population is fast shrinking and the urban population swelling. This transformation has its ripple effect on ecology since this stretches the land and other resources in the urban areas to the maximum and leads to serious deterioration of living conditions. For instance, unsanitary slums are increasing both in number and volume. There has been an eightfold increase in urban population during the period 1901-1991. In India in 1971 the urban population was only 109 million; but by 2000 it has grown to over 300 million – an almost threefold increase!⁴

Economic Factors

The role of economic factors in bringing about ecological problems is obvious and well known. A significant part of the problem has come from reckless and law-flouting industrial plants and projects. Many countries, including India, have good laws to prevent and remedy pollution. But enforcing these measures is expensive, and cuts deep into the profit margins of the owners. Profit-hungry entrepreneurs hardly care about implementing these regulations.

Again, poverty forces the poor to look for immediate gain and forget about the long-term consequences. Indiscriminate felling of trees, shifting cultivation on an extensive scale, etc., are some typical instances of this problem. Furthermore, lack of adequate funds prevents agencies from enforcing some of the measures necessary for environmental health.

Perhaps a very apt illustration of the role of economics in ecological degradation is the response of the United States and United Kingdom to the Kyoto Protocol, widely considered a landmark in the efforts of the international community to reverse ecological degradation. In December 1997, representatives from 160 signatory nations of the United Nations Framework Convention on Climate Change attended a meeting at Kyoto, Japan, and reached an agreement, called the Kyoto Protocol, to reduce global emission by about 5.2% for 2012. The European Union agreed to reduce it by an average 8% below the 1990 level and Japan by 6%. Initially the US agreed to reduce it by 7%. But later on it began dragging its feet on the matter, and finally went back on it. On September 25, 2005, UK also followed the US example. In both cases it was the economic factors that led them to make the wrong decision. The US said that “caps on energy use would damage its economy.”⁵ According to a study done by Wharton Econometric Forecasting Associates, “Kyoto Treaty would cost 2.4 million jobs; our country’s Gross Domestic Product (GDP) would be reduced by 3.2%; prices would rise for food, housing, and heating.”⁶ Similar reasons were given by Mr. Tony Blair, the Prime Minister of UK. It may be noted that the United States is the world’s largest carbon dioxide emitter. This fact flies in the face of Jack M. Hollander’s principal thesis in his book, *The*

Real Environmental Crisis: Why Poverty, Not Affluence, Is the Environment's Number One Enemy, that "the rich can afford to preserve their environment, the poor have to exploit their environment ruinously to survive."⁷

Institutional Factors

In the building up and maintaining of a healthy environment individual attention and cooperation are vital, but not sufficient. Strong and sustained institutional effort and support are necessary. Most countries have ministers and departments to take care of these matters. In India, for instance, The Ministry of Environment and Forests is responsible for this job. However, often the efficiency and effectiveness of such governmental agencies are questionable. Besides, very frequently the enforcement capabilities of these agencies leave much to be desired. It has been reported that "the weakness of the existing system lies in the enforcement capabilities of environmental institutions, both at the centre and the state. There is no effective coordination amongst various Ministries/Institutions regarding integration of environmental concerns at the inception/planning stage of the project."⁸

Science and Its Role in Ecological Degradation

The interface between science and ecology, particularly its role in precipitating the ecological crisis, is highly complex involving many aspects and defying any simple, straightforward analysis. That the linkage between science and ecology is complex becomes evident from the fact that science has both a positive and negative impact on ecological harmony and health.

Reference has already been made to the extreme and one-sided view of considering science as the whipping boy of the contemporary crisis in ecology. Such a view betrays a sheer lack of perception of the gravity and complexity of the problem. Often such a view has its genesis in the mistaken identification of science with technology. Technology is closely related to science, but the two are not identical. Technology is the practical application of science; technology is science's attempt to touch and transform the world around. However,

one can be an outstanding scientist without being a technocrat or technologist. Albert Einstein, for instance, made hardly any direct contribution to technology; yet he is considered one of the greatest scientists who ever lived. Furthermore, in the case of the ecological crisis more than technology is involved. Industry and industrialists play a crucial role in determining how technology is applied and for what purpose. Often monetary profit is the prime factor in their decisions. When this happens, ecological considerations become the casualty. The illustrative instances mentioned above bear this fact out.

The Positive Impact of Science on Ecology

1. Science and Its Positive Attitude towards Nature

A positive attitude towards nature is a necessary requirement for a healthy and balanced concern for the environment or ecology. This is obvious from the fact that all eco-friendly religions are marked by a positive and reverential attitude to nature. In fact, eco-friendly religions like Hinduism, Buddhism, etc., observe many customs and traditions to express this positive attitude and reverence. For instance, the bhumipujan (the ground-breaking ceremony for constructing a new building) ceremony in the Indian tradition has as one of its principal parts a prayer asking pardon for hurting mother earth. Kissing the ground on arrival to a new place is another custom along the same line.

It is important to underline the often forgotten fact of history that the birth of modern science was based on a positive understanding and appreciation of nature or the material universe. Although most of the founders of science openly expressed this point, Nicolas Copernicus and Johannes Kepler have expressed it most vividly. For instance, Copernicus writes about an almost divine-like status of the sun in his revolution-making *De Revolutionibus*: “The sun is not inappropriately called by some people the lantern of the universe, its mind by some others, and its ruler by still others. [Hermes] the Thrice Greatest labels it a visible god, and Sophocles’s Electra, the all-seeing. Thus indeed, as though seated on a royal throne, the sun governs the family of planets revolving around it.”⁹ Kepler is even

more explicit. For him the material universe is something sacred since it is the “bright temple of God.”¹⁰ In his letter to David Fabricius, he stated: “For me nature aspires to divinity.”¹¹ Indeed for him the material universe was truly the image of God, just as the human soul is: “The world is the corporeal image of God, whereas the soul is the incorporeal, though created image of God.”¹² In his view God had ordained that the universe act and operate by the same laws as God’s: “As God the Creator played, so he also taught nature, as his image, to play; and to play the very same game he played for her first.”¹³ That the positive attitude towards the material universe was an integral part of Kepler’s life and thought was made unmistakably clear in his heated exchange with his friend Johannes Pistorius, a pious, traditional Jesuit priest who had a negative outlook towards the universe and life in it. Pistorius referred to life and activities in the present world as “inaneities of the world.” To this Kepler gave uncharacteristically a merciless and sharply-worded response. He went to the extent of saying that such an attitude was at the root of “the passionate factional fights, the views about personal beatitude, the roman claims about religious supremacy, the abuse of power, etc.”¹⁴ In some ways Isaac Newton also shared a similar positive view insofar as he believed that nature was the revelation of God, and we could go to God through the study and reflection on it. Thus most of the founders of modern science, if not all, had, in varying degrees, a very positive attitude towards the material universe. In fact, this is what motivated them to invest their valuable time and energy in the study of nature, although at that time the reward available was, in most cases, meagre and unattractive.

Since this positive attitude is at the root of both modern science and ecology, it is incorrect to look upon science as the villain of the environmental degradation today, as many often do. Science, one may say, was born to assist environmental concern, rather than resist it.

2. Recent Scientific Developments Should Promote Eco-Sensitivity

Many recent findings tell us that we are intimately inter-linked with the rest of the universe. We are all webbed together with a real bond of a common origin and common heritage. In a true sense we can join Francis of Assisi and say “Brother Sun, Sister Moon!” Science tells us that every atom in our body was in the womb of a sun-like star at some time in the past. Atoms like carbon, oxygen, phosphorus, etc., in our body could be manufactured only inside a star. Every material part of our body was inside some star some time ago. Francis of Assisi was right to call “Brother Sun.” If he had known a bit more science, he would have called “Mother Sun, rather than brother sun.”

Furthermore, evolution tells us that all living beings have a common origin from some primeval stuff. The developments in the genetic revolution reveal an even deeper bond. The Human Genome Project tells us that the DNA of all living beings is made up of the same 4 chemical base units: [Adenine(A), Guanine(G), Cytosine(C), Thymine(T)]. More interestingly, the genomes of living beings show very close similarity. For instance, the chimpanzee share 98.4% of the human genome;¹⁵ Cows 90%, Mice 75%, Yeast 30%, E. Coli bacteria 15%. Indeed, all living beings are linked together closely. All are brothers and sisters in a real way. We cannot ignore or ill-treat other living beings. We need to have genuine concern for the rest of the living world. This is exactly what eco-sensitivity is all about. If science is taken seriously, if we go by scientific findings, we should become more concerned about the world around us.

3. Science as a Restorer of Eco-Health

There is no doubt that science and technology should own up some of the responsibility for ecological degradation. But this is only just one side of the issue. There is an often forgotten side: Science can and does play an important role in repairing the damage done to nature and restoring it to good health.

Ignorance is at the root of all ecological abuses, be it among the tribal and rural population or among the urban and literate societies.

Science goes a long way in remedying this serious deficiency. Proper knowledge and timely information are the necessary prerequisites for ensuring healthy environmental conditions. Science is making substantial contribution in this area. Thanks to science, today we know the seriousness of air pollution and other types of pollution, the importance of the ozone layer and our need to preserve it intact, etc. Scientific research can expose the possible dangers of seemingly harmless products. To cite one recent example, it has been found that MXC (Methoxychlor), a common pesticide developed as a safe alternative to DDT, has serious undesirable effects. A research team at the Yale School of Medicine found that MXC suppressed the expression of HOXA 10, an oestrogen-regulated gene, by up to 70%, thereby reducing the ability of the uterus to support pregnancy. Science needs to intensify its research in this field and share the findings with the public.

Science gives the knowledge and technology acts on it. Science not only traces the source of the problem, but also points out how it can be counteracted, and technology makes this counteraction possible. It is no exaggeration to say that today science and technology are becoming the principal agents for nursing and restoring nature back to good health. For instance, with the help of science, many steps have been taken to reduce the pollution level, and the results are very encouraging. A NASA-funded study showed in December 2001 that the rate of growth of greenhouse emission slowed during the 20 years from 1980. In the reduction of CFCs also science is reported to have done laudable service. Currently technology-driven measures can reduce pollutants like methane cheaply and swiftly.

Fuel economy cars and other means of transportation are other ways in which science can contribute to the restoration of eco-health. Recently the Honda and Toyota companies have come up with remarkably fuel-efficient cars. Honda's Insight gives 61 miles per gallon, while Toyota's Prius gives 68 miles per gallon. It has been estimated that Insight produces only 3.1 tons of GGEC greenhouse gases for 15,000 annual miles, compared to 13.6 tons of Dodge Ram and 20.4 tons of Ferrari Enzo. We can expect even better results as science and technology make further advances.

Furthermore science helps in identifying cheap and naturally occurring alternatives. For instance, a recent study in India has revealed that the Vedic Indian plant Sanjivani has many salubrious effects. The findings of a team headed by Nand K. Sah of Madhav Institute of Technology, Gwalior, have shown that a bioactive compound extracted from it triggered biochemical reactants that can arrest genetic damage and produce longevity-giving anti-oxidants.

The Negative Impact of Science on Ecology

Although the negative impact of science on ecology comes mostly through technology, other factors also contribute to science's involvement in ecological degradation. As we have seen already, science began in an atmosphere of eco-friendliness. But in course of time certain developments in science, particularly during the period of classical science, poisoned this atmosphere, allowing vested interests to use science to advance their greed-driven agenda by indiscriminately exploiting nature.

1. Mechanical Philosophy of Nature

This was the official philosophy of science of classical science, according to which the universe was looked upon as a gigantic machine, governed by the laws, rules and methodology of the science of mechanics. Since mathematics was an integral part of Newton's mechanics, the rules and laws of mechanics were characterized by mathematical exactness, precision and objectivity. This universe was governed by blind and rigid laws of mechanics. Not only the material universe, but also the living world, including the human body, was reduced to lifeless machines. In the bargain nature lost its liveliness, dynamism and creativity.

2. Objectification of Nature

A natural consequence of this mechanical view was that nature was reduced to a mere object, detached from all relations to humans and human activities. Humans got alienated from nature. Science, the paradigm of human activity, too got alienated from nature. Once nature was turned into a mere unrelated object, all respect for nature began to wane and disappear. Nature became something that could

be used at will to gratify one's desires and needs, without feeling any qualms of conscience.

3. Technological Advances

It was at this time that many technological advances began to surface, allowing science to produce many new and attractive things people could use. Technology began expanding to practically all fields of human life and activity, offering new and easy means of comfort and convenience. Since these items added to the comfort and convenience of people, they became highly desirable, and the demand for them saw a sudden quantum jump. Such heavy demands put severe strains on nature's resources, leading the producers to do violence to nature. Denaturing of nature was the inevitable outcome. But since nature had already been reduced to a mere object, hardly anyone felt upset by this turn of events.

4. The Industrial Revolution

Industrial Revolution usually refers to the social and economic organization arising from the replacement of hand tools by machine and power tools, small-scale production by large-scale industrial production. It originated in England around 1760, but later spread swiftly to other nations as well. The Industrial Revolution came in at the nick of time to meet the burgeoning demand for commodities. For profit-hungry, principles-flouting industrialists this became a golden opportunity to promote their selfish agenda. Many important laws for the protection of nature and the environment were enacted, but this unscrupulous business world always found a way out. Natural resources were mercilessly exploited, with hardly any concern for the future of nature.

5. The Moral Responsibility of Science

Some scholars believe that science is value-neutral and hence cannot be held morally responsible for any harmful consequences. Their argument is based on the claim that the harmful effects, if any, are due to the misuse of science by human agents, and so those responsible for the misuse should be held accountable. It seems to me that science cannot be exonerated so easily. If science were to

be considered to be pure knowledge, perhaps this justification would be defensible. But science is far more than pure knowledge, it is an activity. It involves human activity that has impact on other humans and other beings. Also human activity involves intention or motive. Given all these, science cannot be considered amoral or morality-free.

It is often said that science is not responsible for the environmental degradation; technology is responsible, and science and technology are different. It is true that technology is the application of science, and hence the two are not the same. Still, science and scientists have to bear some responsibility for the application to which their work is put. Science and scientists cannot simply wash their hands of all the harm technology brings about. It is true however that their responsibility is limited and the actions they can take are also limited. This limited responsibility they need to accept with all its consequences.

This point can be seen from another perspective too. Today science and scientific institutions are well funded and highly respected. This was not always the case. Kepler died in utter poverty; so did many other scientists, particularly before the technological revolution. One principal reason why scientific institutions and scientists are well taken care of is that technology brings in huge amounts of money. If science and scientists get a share in the good technology produces, should they not also accept a share in the harm technology causes? It is true that once a scientific idea has moved into the hands of technologists, scientists cannot take it back or stop them from doing what they want. Yet I think that they have a responsibility to protest any harmful use made of their ideas, and since scientists are highly respected in our society, their voice will be heard.

It may be noted that many scientists have carried out admirably this duty of theirs, and quite effectively too. For instance, in 1992 more than 1700 scientists, including 102 Nobel laureates, from across the globe, assembled in the US to point out the breadth and depth of the environmental degradation that is taking place around us. The joint statement they put out had a profound impact on the world community. Many other instances can be given. Such activism and

awareness campaigns must continue and become stronger and firmer in the days to come.

Conclusion

The level of ecological degradation is serious and alarming, but it is not irredeemable. The dangerous trend can still be reversed, and the damages can be repaired, particularly with the application of the existing findings of science and technology, and by developing appropriate new ones. However, an all-pervasive issue like this cannot be efficiently and effectively handled by science alone. It affects everyone, and everyone has a share in creating this predicament. There needs to be an international collaboration and effort to meet this serious challenge. Fortunately many agencies, particularly the UN, are already seized of this situation, and are doing admirable work in this field. This should continue unabated, and needs to be intensified and expanded. Science and scientists cannot take an “I know nothing” attitude in this context, but have to be deeply and creatively involved in this necessary and noble task. Certainly we do not want to go back to the pre-modern science era of considering nature as a living organism like humans and animals. But we need to keep in mind that nature has a life of its own, a life that demands respect and care from all of us. We also need to remember, as our sages of old have taught us and as contemporary science confirms, we humans and nature are so intimately linked with each other that in this case of eco-struggle all stand to win or lose. If nature loses out, we too stand to suffer from it; if nature wins we too stand to profit from it. If we take appropriate care of nature, we will find a healthier and richer home in nature.

Notes

1. M.C. Dash, *Fundamentals of Ecology* (New Delhi: Tata McGraw-Hill Publication Co., 1996), p.27.
2. See *Britannica Book of the Year 1999* (Chicago: Encyclopedia Britannica Inc., 1999), p.213.
3. “The Underlying Causes of Environmental Degradation,” <http://indiabudget.nic.in/es98-99/chap1104.pdf>
4. See *Ibid.*

5. David Adam, "Climate Change Talks Open a New Front," *The Hindu*, November 3, 2005, p.16.
6. Paul M. Weyrich, "Environmental Degradation and Evangelicals," in <http://www.cnsnews.com/ViewCommentary.asp?Page=%5CCommentary%5Carchive%5C2005511%5CCOM20051118c.html>
7. <http://www.culturewars.org.uk/2003-02/hollander.htm>
8. *Ibid.*
9. N. Copernicus, *On the Revolutions*, tr. Edward Rosen, ed. Jerzy Dobrzycki (Baltimore: Johns Hopkins University Press, 1978), p.22.
10. Carola Baumhardt (ed.), *Johannes Kepler: Life and Letters* (New York: Philosophical Library, 1951), p.32.
11. Kepler's letter to Fabricius, dated July 4, 1603, in *Gesammelte Werke*, ed. W. von Dyck, Max Casper, F. Hammer, M. List and Volker Bialis (Munich, 1937-), Vol. XIV, nr. 262, ll.495-496.
12. *Ibid.*, Vol. XIII, nr. 117: ll.295-296.
13. *Ibid.*, Vol. IV, p.246: ll. 23-24.
14. Job Kozhamthadam, *The Discovery of Kepler's Laws: The Interaction of Science, Philosophy and Religion* (Notre Dame: University of Notre Dame Press, 1994), p.38.
15. This figure seems to have been modified recently; some studies put the difference as much as 4%.

Ahimsa: The Ecophilic Vision of Gandhi

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Abstract:

The author studies the profound notion of Ahimsa as the ecophilic vision of Gandhi and points to its role in dealing with the ecological crisis of today. He visualizes a new world of healthy individuals in a healthy community on a healthy planet, sharing with one another the bounty of the one Father and Mother of all. This is part of Gandhi's quest, his concern for *loka-sangraha*, his *seva* to *hari-jana*, his worship of Hari (God), his search for Truth, his faith in *advaita*. The Gandhian ashram embodies this search and anticipates in some way the goal of that search. Only when ecophilia is part of a greater search will it be truly effective. Only when our concern for ecology shapes our life-style will it be credible and transformative.

Keywords:

Ecophilia, M. K. Gandhi, Advaita, inter-relatedness, personal commitment, ashram, satyagraha, Mother Nature.

Gandhi introduces his autobiography with these words: “I simply want to tell the story of my numerous experiments with truth, and my life consists of nothing but those experiments” (39\2-3).¹ For him “truth is the sovereign principle, which includes numerous other principles” (39\4). Thus his search for truth is an integral search: it embraces all aspects of his life. For this reason Gandhi’s search includes “experiments with non-violence, celibacy and other principles [wrongly] believed [by others] to be distinct from truth” (39\4). He concludes his autobiography with the words: “I can say with assurance, as a result of all my experiments, that a perfect vision of Truth can only follow a complete realization of Ahimsa” (39\401).²

A. Advaita as the Foundation of Ecophilia

Ahimsa is not just non-violence, but love (42\481), nay an “identification with everything that lives” (39\401). Life taught Gandhi that “the nearest approach to Truth was through love” (48\404), and love is “the only inevitable means” (42\405). His life was a series of experiments not only with Truth but also with ahimsa (39\350). Elsewhere Gandhi claims: “I am making an experiment in Ahimsa on a scale perhaps unknown in history” (53\333). Gandhi was very much inspired by the *Bhagavad-Gīta*, which he describes as his “perennial guide to conduct” (27\315), “an infallible guide of conduct” (39\211), “the book *par excellence* for the knowledge of Truth” (39\600). This text reports Krishna urging Arjuna to work for *loka-saṅgraha* (3.20, 25), holding creation together. Commenting on 3.35, Gandhi says: “A wise man should be as industrious and work as hard as others; only, he should work for the good of the world, disinterestedly and without attachment” (32\172).³ Gandhi’s search for Truth is also his struggle for *loka-saṅgraha*, an *eco-philía*,⁴ a love for the integrity of creation.

Advaita as Inter-relatedness of all Reality

We can understand Gandhi’s insistence on ahimsa only if we appreciate his basic presupposition: the inter-relatedness of all reality. Though not an Advaitin in the traditionally understood sense, Gandhi

believes in some kind of *advaita*, “in the essential unity of man and for that matter of all that lives” (25\390). Beyond life, Gandhi affirms the oneness of all creation:

Science, both physical and metaphysical, tells us that we are all identical both physically and spiritually... our bodies are made up of the same five elements, there being no difference on account of origin, race or sex... [and] an inward view will reveal only one soul pervading us all (42\77).

Gandhi’s view finds its corroboration in contemporary writings. Let me quote just one:

There is a deep web of relationships within our human lives, a web that bonds us both to all those people who have impacted our lives in a variety of ways and to the whole of creation. The atoms that make up our selves have existed for more than fifteen billion years. My atoms were, perhaps at one point, stars before they later became part of the planet Earth. My atoms were perhaps part of the mountains and the seas, or a bird or a tree, and later may have been part of a rose or another human. In a way I am everything.⁵

Humans experience the inter-relatedness of reality within themselves: “The human body is the universe in miniature. That which cannot be found in the body is not to be found in the universe. Hence the philosopher’s formula, that the universe within reflects the universe without” (77\2).⁶

This inter-relatedness of all is dynamic in character: “a human is made of earth. His body springs from the earth and derives its sustenance from the various forms which earth takes” (28\206). Thus a polluted earth will be a source of pollution to humanity. The converse is also true: “Purification being highly infectious, purification of oneself necessarily leads to the purification of one’s surroundings” (39\402). Elsewhere Gandhi says: “I do not believe... that an individual may gain spiritually and those who surround him suffer... I believe that if one man gains spiritually, the whole world gains with him and, if one man falls, the whole world falls to that extent” (25\390). The whole of creation is held together by “the

universal and all-pervading Spirit of Truth” (39\401). Thus, there is a certain oneness, a certain non-duality in all reality, because all reality comes from, is sustained by, and finds its fulfilment in the Real, in Truth. Gandhi even says that “the sum total of all that lives is God” (26\571). The whole of creation mediates the presence of “the one and the same Creator” (39\221). Hence violence to any creature, however small it may appear to be, is equivalent to closing oneself to Truth that is God.

Inter-relatedness as Personal Communion

We humans are persons. We experience inter-relatedness not merely in terms of causality, but also - and much more powerfully - in terms of interpersonal relations: others have significance not merely in terms of my need, but by virtue of what they are. This approach is also an essential feature of ecophilia. Our concern for ecology cannot be merely in terms of *our* survival, for then we would continue to function within the framework that has resulted in the present ecological crisis: nature merely as subservient to human needs. We need a new attitude towards environment, an attitude of love: ecophilia. This is possible if in some way the inter-relatedness of all reality is ultimately personal, grounded in the supremely personal creative power.

The reader will naturally ask: “Does Gandhi accept God as personal?” In his writings we come across such clear statements as “God is not a person. He is the Law and also the Law-giver... It means that man would reap as he sows” (79\228; 84\306). Gandhi spells out the religious meaning of this understanding of God: “When we pray to the Law, we simply yearn after knowing the Law and obeying it we become what we yearn after” (50\240). God seems to be like the sun: if you open your window you get the sunshine; if not you remain in the dark. The sun can do nothing about it!

Gandhi does not claim to be a consistent thinker (39\3-4). Hence it should not surprise us that sometimes when he speaks of God, we find that he uses certain expressions that are more intelligible in a personalistic understanding of God: God is love (37\349; 48\405), God has compassion (29\142), God hears the prayer of those who trust in Him (40\120), God can be found only through love, not any

love, but the type of love we find in the lives of great devotees like Mirabai (90\41). Hence a more correct statement of Gandhi's position can be given in his own words: "If God is not a personal being for me like my earthly father, He is infinitely more" (57\165).

The created reality is not just something, but the sacrament of somebody, of the personal Divine that grounds its existence. To that extent it is sacred. The practice of ahimsa is built upon this presupposition. A person is an end-in-onself. One's worth is not in terms of usefulness to others, but flows from one's own inner being. Hence love – the accepting of and the being accepted by the other as the other – is the most appropriate expression of a personal being. Therefore in as much as we are persons, we become fully ourselves only through love. To put it differently, if human beings become authentic through love, it is because they alone are "made in the image of God" (31\101), of that God who is Love. Love enables me to find the other meaningful precisely as the other. Love, thus, calls me to transcend myself. This is not possible without ongoing purification, for only by it we can create space for the other as the other. Hence, "without self-purification the observance of the law of Ahimsa must remain an empty dream" (39\401).

Personal Communion as Commitment

Gandhi believes that "this life is given to us for repaying our debts" (53\417). According to the *Śatapatha-brāhmaṇa* (1.7.2.1-5), all of us are born in this world with four debts (*catur-ṛṇa*). We are indebted to our parents for our birth, to nature for all the wonderful things we receive from her, to the sages from whose wisdom we learn, and to our society for providing us all that comes to us in the form of culture: language, art, etc. This text brings out the central truth of our existence: we owe an immense debt not only to humans but also to nature around us.

What little we know tells us beyond the shadow of doubt that if the sun-god rested even for a day from his ever ceaseless *tapascharya* [penance], we would perish... Thus we are most intimately connected with every living creature in the world and with everything that exists; we ought to try and know something about our benefactors, the shin-

ing divinities gliding in the sky (49\297).

The *Śatapatha-brāhmaṇa* tells us that we can repay our debt to nature by offering a sacrifice (*yajña*), as this was considered to be the most effective way of maintaining the order of nature (*ṛta*) that is so important for human well-being.⁷ Needless to say, the *yajña* spoken of here is the Vedic sacrifice.

Modern science has confirmed the ancient insight: human wellbeing and integrity of creation are inter-related. Gandhi is aware of this:

Doctors say that 99 per cent of all the diseases are caused by insanitation, by eating things not fit to eat and by lack of proper nutrition... Today pure water, pure earth, and pure air are not available. We live sheltered from the sun (85\213).

If we wish to be healthy we need to respect the basic laws of life:

Disease springs from a wilful or ignorant breach of the laws of nature. It follows, therefore, that timely return to those laws should mean restoration. A person who has tried nature beyond endurance, must either suffer the punishment inflicted by nature or, in order to avoid it, seek the assistance of the physician (85\264).

Gandhi sees a relation also between human misdeeds and natural calamities. Speaking of the earthquake in Quetta in 1925, Gandhi said: "A man of prayer regards what are known as physical calamities as divine chastisement" (61\161). This is how Gandhi responded to the floods in Gujarat in July 1927:

We would do well to regard it as a punishment for our sins. There is not only no great difference between moral sins and economic sins, but on the contrary the two kinds of sins are closely related. Among the three classes of sins, telling lies, dirtying the river-water and raising an opium or tobacco crop in the fields in place of wheat there is only a difference of degrees, none of kind (34\267).

Here I presume that the latter two are examples of economic sins: economic planning that is more concerned with monetary gain and even disregards the overall welfare of humans. Our experience

teaches us that ecological violence is sinful and suicidal. “Every evil-doer, unless he mends his ways, is bound to destroy himself” (90\228).

Ecophilia consists not merely in a negative attitude: avoiding all that can destroy the integrity of creation; it also calls for action that will positively nurture the symbiotic character of our environment. Gandhi knows that the *BhG* had already given a new meaning to ‘*yajña*’:

‘*Yajña*’ means an act directed to the welfare of others, done without desiring any return for it... ‘Others’ embraces not only humanity, but all life... From this definition of *yajña* it follows that a primary sacrifice must be an act which conduces the most to the welfare of the greatest number in the widest area, and which can be performed by the largest number of men and women with the least trouble (44\241).

The *BhG* reminds us of the *Puruṣa-sūkta* (3.10), that presents a primordial *yajña* as the origin of creation.⁸ Commenting on this, Gandhi say: “*Yajña* having come to us with our birth, we are debtors all our lives and thus for ever bound to the serve the universe” (44\242).

Certain beliefs of our ancestors about the efficacy of *yajña* may not stand the test of modern science, but we need to go beyond a particular belief and respond to the concerns enshrined in those beliefs.

We need not go into the question whether *yajñas* purify air, for it is irrelevant to ask, in connection with a religious ritual, whether it results in such a trivial benefit as the purification of air. Modern physical science can give us better help in that regard... The principles are the same at all times and in all places. But the practices based on them vary from age to age and country to country (30\193).

We can maintain the integrity of creation only through a spirit of self-sacrifice, for then whatever we plan and do will be in the larger interests of humanity. “Selfless work there [in the *BhG*] is described

characteristically by one beautiful word called *yajña*” (34\458). We need to find out what is the best course of action today, and act accordingly.

Yajna is a beautiful and highly suggestive word. Its meaning, therefore, can change and expand with the growth of our knowledge and experience or with changing times. The word can be interpreted to mean worship, sacrifice or service of others. Understood in this sense, *yajna* always deserves to be revived (30\192).

Commitment as Service

Gandhi loved to use symbols to express himself. He expresses his concern for ecology by promoting *go-sevā*, the service of cows. “In *gosevā* of my conception, I include all living creatures” (55\407). For him cow-protection “is infinitely more than mere protection of the cow. The cow is merely a type for all that lives... Man becomes then not the lord and master of all creation but he is its servant” (26\545). Thus if cow-protection is symbolic of a wider concern it “can only be secured by cultivating universal friendliness, i.e., Ahimsa” (25\520). Hence Gandhi’s attitude towards the cow is indicative of his attitude towards the whole of mute creation. In his opinion “cow-slaughter and man-slaughter are... the two sides of the same coin” (25-519). What Gandhi seems to be suggesting is that a person who is violent with nature will not hesitate to be violent with other human beings. It is a question of attitude. Gandhi sees himself not as the owner but as the trustee of creation. The task of a trustee is not merely negative % protecting the property entrusted to him or her % but also positive. Hence cow-protection “included cattle-breeding, improvement of stock, humane treatment to bullocks, formation of model dairies, etc” (39\338-39).

Once an interviewer said to him:

If I have properly understood you, then the distinctive feature of your idea of cow-protection is complete adherence to truth and non-violence, absence of communal ill will, utmost forbearance and love, and attention to the economic aspect... Isn’t this your particular point of view regarding *goseva*?

Gandhi's reply was terse but forceful: "Perfectly true" (55\408). It does not surprise me that Gandhi sees communal harmony as one aspect of *gosevā*. In 1929 Gandhi reversed the equation 'God is Truth' and maintained that 'Truth is God'. He hoped that in his search for God not only all believers but even the atheists could be his partners because they too are open to truth (48\404-05). Only when all humans, whatever be their religion, work together can we preserve and promote the integrity of creation – this being one expression of our search for truth.

Gandhi often spoke of *harijana-sevā*. "Harijan service will always be after my heart and will be the breath of life for me, more precious than the daily bread" (55\366). Gandhi sees the Harijan as a symbol of all the oppressed: "if you are a Harijan, you are done for. You may not expect justice" (58\85). He reminds us that "God is the helpless," and then asks "who could be better fitted to be called Harijans in this sense than the millions whom the insolence of men has made the outcasts of society" (63\231)? There is an intimate relation between social justice and ecophilia. This is also suggested by the word *hari-jana*: a creature of God.⁹ If we can be disrespectful towards some humans, seeing their significance only in terms of the service they can render to others, then we will tend to be disrespectful towards the rest of creation too. Social justice is an expression of ahimsa. Persons who are guilty of ecological violence do not think of others and their needs. They use their money-power to rape the earth, using her for their sinful gain.

B. The Ashram as the Expression of Ecophilia

Just as *go-seva* and *harijana-sevā* are symbols Gandhi used to effectively communicate his vision, so too is the ashram, "a community of men of religion" (AO\3). It was an important element of Gandhi's approach, once again expressing his thought through life. When in 1915, he founded an ashram close to Ahmedabad, there was some discussion as to what name it should have: Tapovan? Sevashram? Gandhi explains the eventual decision: "Our creed was devotion to truth, and our business was the search for and insistence on truth... So my companions and I selected the name 'Satyagraha

Ashram', as conveying both our goal and our method" (39\314). The ashram is a concrete expression of Satyagraha.

Ashram: A Call to Being-at-Home

The word ecology is derived from a Greek word denoting a house or a home (*oikos*). Hence, in its broadest sense, ecology is the art of being-at-home. We % at least most of us % try not only to keep our home neat and tidy, but also wish to make it beautiful and homely. Because "man is both an individual and social being" (34\418), he can never be at home all alone. The ecological task calls for collaboration of different thinkers, be they of the same faith community or of other religious traditions or even 'unbelievers'. But if we accept ecophilia as an essential component of satyagraha, as a way of life, then it calls for the being-at-home not only of individuals with themselves, but also of people among themselves, a community in which there is a struggle to relate life and thought, praxis and theory. This is suggested by the very nature of ahimsa. Real love brings people together, without any form of discrimination. The community is the embodiment of this love, a sacrament that not only expresses the power of love but also leads to a greater experience of its depth.

Telling us the reason for the foundation of the Satyagraha Ashram, Gandhi says: "My life is devoted to the quest of truth. I would live and, if need be, die in prosecuting it, and of course I would take with me as many fellow-pilgrims as I could get" (AO\7). Yes, the ashram is both the method and the goal of satyagraha, once again illustrating another principle of Gandhi "that ultimately the means and the end are convertible" (48\405). If the search for Truth includes concern for the integrity of creation, then the ashram is both the method and the goal of ecophilia: the integrity of creation will be guaranteed only when we all work together to make the earth our one home, our *sva-deśa*, and we all one family.

We have seen that in explaining the relation between satya and ahimsa, Gandhi falls back on the concept of *advaita* (non-dualism). In a very real sense, the Gandhian ashram is an experience of *advaita*: people who are different in many ways come together in love, so that they experience one mind and one heart. They are many and yet

one. This existential *advaita* is grounded precisely on the fundamental metaphysical insight of Gandhi: God, the supreme Satya, “alone is and nothing else exists [independently of Him]” (48\405). The ashram is also moving towards a fuller realization of *advaita*, towards an in-depth experience of being-at-home with themselves, with other humans, with the rest of creation, and with God, the one Womb of us all. Only then will ecophilia attain its depth.

Being-at-Home with Our Self

Almost all the evils that plague our society and our environment have their source in our hearts. We have distorted ideas of self-actualization and development, of happiness and prosperity. The problem becomes more acute when our discerning capacity is darkened by the cloud of greed and passion. “Excessive greed for anything is the root of all evil” (51\260). A lasting concern for ecology can only be guaranteed by truth, truth accepted by our minds and hearts. Gandhi tells us that during the evening prayer “the last 19 verses of the second chapter of the Gita” are read. He continues: “These verses describe the *sthitaprajna* (the man of stable understanding), which a Satyagrahi too must acquire, and [they] are recited in order that he may constantly bear them in mind (51\33). The *sthitaprajña* finds joy within himself. He has control over his senses. He is free from attachment and greed. Non-stealing (*a-steeya*) % having “more than the minimum that is really necessary” (51\58), and non-possession (*a-parigraha*) are two of the vows that Gandhi expects the ashramites to practice.

To arrive at this state of mind, the individual has to search his heart and purify himself. Hence “if insistence on truth constitutes the root of the Ashram, prayer is the principal feeder of that root” (51\22). Prayer aims at

self-purification. When we speak out aloud at prayer time, our speech is addressed not to God but to ourselves, and is intended to shake off our torpor... To propitiate this Truth [God] is *prarthana* [prayer] which in effect means an earnest desire to be filled with the spirit of Truth (51\36-37).

Without this spirit of inner search we will not be attentive to divine inspiration.

Mankind is notoriously too dense to read the signs that God sends from time to time [through natural calamities]. We require drums to be beaten into our ears, before we could wake from our trance and hear the warning, and see that to lose oneself in all is the only way to find oneself (34\398).

There is a good deal of congregational prayer in the ashram, but this is not enough.

One who never prays by himself may attend congregational prayers but will not derive much advantage from them. They are absolutely necessary for a congregation, but as the congregation is made up of individuals, they are fruitless without individual prayers. Every member of the Ashram is therefore reminded now and then that he should of his own accord give himself up to self-introspection at all times of the day (34\38-39).

In his own life, Gandhi gave a great place to silence. He wishes his coworkers to do the same, but he knows he is making a difficult demand. He himself tells us: "Not everyone, however, can observe complete silence... That is why we live in communities and, adding up small measures of silence, rest content with a little happiness" (21\269). The ashram offers the inmates the possibility of silence. It is, thus, a call to individuals to be at home with themselves. Only then will the members arrive at the Truth, with their minds and hearts.

Being-at-Home with Our Brothers and Sisters

The ecological task is too big to be handled by any single community, religion or nation. It calls for the collaboration of all people of good will. The ashram brought together Hindus, Muslims, Christians, Parsis, and others (AO\5). The land for the Tolstoy Farm in South Africa the forerunner of the Gandhian ashram was bought and made available by Gandhi's 'German friend Kallenbach' (AO\5). When we work together we also wish to share life, and when we share life we also wish to work and serve together. Gandhi got the inspiration to move towards life in a commune after reading John

Ruskin's *Unto the Last*. "I determined to take *Indian Opinion* [a paper he was publishing] into a forest," he tells us, "where I should live with the workers as members of my family" (AO\1).

To see the ashram merely as the living together of co-workers would not be a fair assessment of what Gandhi had in mind. The ashram is meant to be a miniature of what the whole world should be if we all want to be concerned with the integrity of creation. The ashram offers us an ecophilic life-style. Gandhi explains:

At the Ashram we hold that Swadeshi is a universal law. A man's first duty is to his neighbour... As a matter of fact there is in Swadeshi no room for distinction between one's own and other people. To serve one's neighbour is to serve the world. Indeed it is the only way to serve the world (AO\67).

To think globally and to act locally that is what Gandhi seems to be suggesting. The ashram presents us the real possibility of a life-style that is non-violent, non-exploitative, non-self-centred and yet deeply joyful and fulfilling. It demonstrates forcefully the truth of ecophilia: the more humans respect the integrity of creation the more will they be happy and healthy.

Being-at-Home with God Our Father

The members of the ashram "did not merely imagine but had a loving faith that the Ashram was God's" (AO\11). Gandhi finds this way of thinking in the *BhG*: God is deeply concerned with the well-being of His creation. He is always engaged in protecting it. If need be, He even descends on the earth to uphold goodness (3.24; 4.7-8). The concern for ecology is also a sharing in God's concern for His creation. "We desire to recognise and realize Him, to become one with Him, and to seek to gratify that desire through prayer" (AO\36). The more we come close to God, the more we come close to His creation. Then we realize that "service of His creation is the service of God" (63\233). Nay, the person of deep prayer sees God in all creation, and all creation in God (*BhG* 6.30-31; 9.4). Thus the service of creation becomes a contemplative experience. Then ecophilia becomes theophilia.¹⁰

We noted above that the *sthitaprajña* is free from all forms of selfishness. For this he needs to go through rigorous discipline. But this is not enough. The *BhG* insists that he needs to ‘see’ God (2.59). Consumer greed is one of the most powerful causes of ecological depletion and destruction. The people who produce and flood our markets with consumer goods will not hesitate to use violence to crush those who oppose them. The “Satyagrahi relies upon God for protection against the tyranny of brute force” (83\258).

There is another reason why our concern for ecology should be rooted in deep prayer. As noted above, this is a task that calls for the collaboration of all people of good faith. The ashram brings together like-minded people, but people who are still pilgrims with all their weaknesses and shortcomings. Hence there is a need to deepen the bond of unity. Gandhi insists that congregational prayer is “a means for establishing the essential unity” (83\152). We are one because we all come from God and only God’s grace can enable us to live in loving communion and service.

Being-at-Home with Nature Our Mother

Gandhi was determined that his first experiment in ashram living should be in the forest (AO\3). There could be a practical reason explaining this choice: the land on which he and his companions could work was more easily available away from the city. I am inclined to think that there was also a subconscious factor in this choice: the ancient practice of *vānaprastha*. In the first two *āśramas*, % *brahmacarya* and *gārhasthya* % we are more concerned with the first three goals of human life (*puruṣārthas*): economic well-being (*artha*), aesthetic and emotional fulfilment (*kāna*), and moral development (*dharma*).¹¹ Life in a forest, which makes communion with nature easier, is seen as more helpful in realising our transcendental orientation, the fourth and final goal (*mokṣa*), and this was also Gandhi’s deepest longing (39\3).

The ashram enabled Gandhi to experience the silence he wanted since, as he tells us: “it has given me peace I cannot describe, and it enables me to commune with Nature” (67\306). Communion with nature is important for our full growth.

Both children and grown-ups love dramas and the spectacular scenes they present. But no drama composed or acted by human beings can ever equal the great spectacle which Nature has arranged for us on the stage of the sky [the movement of the stars]... The more we meditate on this miracle of God, the more we grow spritually (49\297-98).

For this reason it is not enough to read printed books. We need to “read the book of nature, learn the language of trees, listen to the music of spheres in the sky, watch the drama enacted in it every night” (51\259). For the same reason, even before they learn the alphabet, we should tell children about “nature’s beauty, the sky, the trees and plants” (51\6). The forest is a source of wisdom:

When a man enters the forest he is bound to make friends with trees, leaves, birds and animals... and, by the time he emerges from the forest, would have gathered such knowledge which would be helpful to himself and which would enable him to guide his neighbours. We need to create a forest in our heart (65\309-10).

The tribals, whose life is so intimately bound with the forest, are the most ecophilic people I have come across. They also have a very strong community ethos. The more we love nature and experience its beauty, the more will we want to maintain its integrity, and we will want to do this together.

Gandhi’s going to live in a forest may have another significance in the context of ecophilia. Explaining the meaning of *vānaprastha*, Gandhi says: “From fifty to seventy five wife and husband should live apart and wholly devote themselves to the service of the people. They must leave their families and try to look upon the world as a big family” (AO\81). This is exactly what Gandhi wishes to do. On hearing that one of his friends had given up his job to be free to serve others, Gandhi says: “I suppose our forefathers must have had a similar motive in entering *vānaprastha*” (66\69). The ashram embodies Gandhi’s desire to serve the whole of humanity, the whole of creation. Only when we make the service of others one of our major concerns will we do our best to keep the earth healthy for

generations to come. Only then will we be more responsible in using the resources of nature.

All the healthy inmates of the ashram were expected “to work in order to live” (AO\60). This activity too has an ecophilic dimension: “If men did not do body labour, that is, did not cultivate land and grow crops, the rains would stop. My own belief is that natural phenomena are connected with moral behaviour” (49\150). Many parts of India have experienced severe drought, sometimes even through successive years. Deforestation is considered to be one of the factors leading to the failure of the monsoon. Gandhi concurs with this opinion. “The rainfall is low wherever there is no vegetation... If trees are planted in Kutch regularly and diligently, the rainfall there can be increased and the land made more fertile” (28\469). Hence in some parts of our country “tree plantation would be... a religious necessity” (28\457).

Healthy individuals in a healthy community on a healthy earth, sharing with one another the bounty of the one Father and Mother of all % this is part of Gandhi’s quest, his concern for *loka-saṅgraha*, his *sevā* to *hari-jana*, his worship of Hari (God), his search for Truth, his faith in *advaita*. The Gandhian ashram embodies this search and anticipates in some way the goal of that search. Only when ecophilia is part of a greater search will it be truly effective. Only when our concern for ecology shapes our life-style will it be credible and transformative.

Notes

1. I am basing my study almost exclusively on *The Collected Works of Mahatma Gandhi*, 90 vols., New Delhi: Publication Division, Ministry of Information and Broadcasting, Government of India, 1958-84. The references will be given in the text itself: volume number, followed by a slash, followed by the page number. I shall also quote from Mohandas K. GANDHI, *Ashram Observances in Action*, ET V. G. Desai, Ahmedabad: Navjivan Pb. House, (1955) rep. 1959. For this too the references will be given in the text itself: AO, followed by a slash, followed by the page number.
2. Certain non-English words *ahiṃsā*, *āśrama*, *dharma*, *satya*, *satyāgraha* are so much part of Gandhian discourse that they are now part of English and hence, they will neither be italicized, nor will they carry

any diacritical marks. I shall follow this norm also when I am quoting Gandhi's writings. Other non-English words, when part of a quote, will retain the spelling given in the original

3. Gandhi translates *loka-saṅgraha* in 3.20 as "the guidance of mankind" (32\168).
4. The word ecology is derived from the Greek *oikos* (house). See J. A. SIMPSON & E. S. C. WEINER, *The Oxford English Dictionary*, 2nd ed., 20 vols., Oxford: Oxford University Press, 1989, rep. 1998, vol. 5, p. 58a. The words *philos* and *philia* mean lover and love. Hence the neologism *ecophilia* suggests a love for one's house, a concern for ecology.
5. Cletus WESSELS, *Jesus in the New Universe Story*, Maryknoll (NY): Orbis Books, 2003, p. 124.
6. In ft. nt. 2, the editor supplies the Sanskrit text: *yathā piṇḍe tathā brahmāṇḍe*.
7. For a detailed discussion of this idea see Subhash ANAND, *Hindu Inspiration for Christian Reflection: Towards a Hindu-Christian Theology*, Anand (Gujarat): Gujarat Sahitya Prakash, 2004, pp. 2-21.
8. For the detailed discussion of this hymn see "Puruṣa-Yaj-a: Self-giving as the Mystery of Being", *Ibid.* pp. 1-64.
9. The noun *jana* is derived from the verb *jan*, "to be born or produced." See Vaman .S. APTE, *The Practical Sanskrit-English Dictionary*, Delhi: Motilal Banarsidass, rev. ed., 1912, rep. 1998, p. 445c.
10. For a detailed presentation of this idea in the *BhG*, see Subhash ANAND, "Contemplation and Secular Involvement", *Vidyajyoti Journal of Theological Reflection*, 47 (1983), pp. 240-49.

Ecology and the Indigenous Peoples

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Abstract:

After articulating the indigenous peoples' understanding of and approaches to ecological issues facing them, the author wishes to enlarge approaches to ecology which are prevalent among the non-indigenous peoples. Then, he seeks to unmask the presumptions of the understanding of the nature-human relationship in contemporary ecological studies. The article is limited in its scope to the indigenous people of central India in general and Mundas in particular. Nevertheless, it is hoped that the insights from the traditions of the indigenous peoples of central India would break open the 'conceptual prison' into which most of our theological thinking concerning the ecological crisis has been imprisoned. Finally, the author poses the question: Will the earth survive if the current way of human involvement continues? The answer, according to the author, is an emphatic "no".

Keywords:

Ecology, Mundas, Santals, indigenous people, indigenous ecology, Jharkhand, Asur myth, ontology, landscape architects, Santal Parganas.

It has become a platitude on the lips of the academicians (sociologists, anthropologists, economists, philosophers, theologians), social reformers, politicians and governments of various nations to say that the indigenous peoples are ‘nature lovers’, and that they have a symbiotic¹ relationship with nature (that is, animals, birds, insects and reptiles, plant, land with its green covered high hills and forests, green meadows, rivers and tanks). They come to this conclusion by observing that the indigenous peoples mostly live in the hill ranges away from the cities. They are agriculturists and far from either the capitalist or the Marxist ideal of economics and society. Furthermore, they hold that indigenous peoples are land-based people and that the things they use in day-to-day life are made of the raw materials which abound around their habitat. Each house has various animals – goats, sheep cows, chickens, ducks etc. All these things are true but this way of portraying their love for or symbiotic relationship with nature does not seem to resonate with their understanding of their love or symbiotic relationship. It is so because they understand themselves as part of nature rather than nature as an ‘object’ out there for them to grasp and use as a commodity.

In this article I intend, first, to articulate the indigenous peoples’ understanding of and approaches to ecological issues² facing them, with a view to enlarging the understanding and approaches to ecology which are prevalent among the non-indigenous peoples. Second, to unmask the presumptions of the understanding of the nature-human relationship in contemporary ecological studies. The article will be limited because I will deal with the indigenous people of central India in general and Mundas in particular. Nevertheless, it is hoped that the insights from the traditions of the indigenous peoples of central India would break open the ‘conceptual prison’ into which most of our theological thinking concerning the ecological crisis has been imprisoned.³

Before I enter into a reflection on the points mentioned above, I would like to clarify the word “ecology”. The lexical meaning of ecology is that it is a branch of biology concerned with the relationships of organisms to one another and to their physical surroundings. The definition points to the existence of a relationship

among the living organisms and the space in which they live or are placed. The eco-problems, in simple terms, rupture of life-giving interrelationships, and change of environment in which life becomes difficult, have shown that it is a section of rich and powerful human groups which are not only adversely affecting the relationships of the living organisms among themselves and with their habitat, but the same human groups also are destroying the weaker sections of the human group along with the environment, assisted by science and technology to serve the former's capitalist ideology and greed.. The ecological crisis⁴ is the outcome of the unethical claim of a rich and powerful human group's supremacy over other weak human beings, nature and creation as a whole in view of satisfying their greed. .

In this context it is pertinent to be aware of the people and groups who "see it as quite all right to be involved in environmental campaigns for tree-planting and reforestation, clean water and air and organically produced vegetables and fruits. But one must not say anything about logging bans, boycotts of pesticides and industrial fertilizers, mono-culture crops, transnational agri-business, open pit mining or chemical and radioactive pollution."⁵ Such people would like to set environmental and ecological issues apart from the political, economic, social, religious and cultural dimensions of society. They would not consider the problem of the displacement of indigenous peoples from their land and habitat as an ecological issue in the name of development and 'national interest.'⁶ However, everybody is concerned about air, water, and soil. Everyone shows that he/she is pro-environment, but in his/her own interest. In such a situation of conflicting attitudes towards ecology and development dynamics we must place the issue of the 'survival of the peoples', 'the daily bread' at the core. Therefore, in the light of the past experiences and the recent experiences of the earthquake in the North and tsunami in the South of our country we need to go back to our religio-cultural traditions and re-interpret them in order to discover a new mode of our be-ing among living beings as well as in the whole creation.

A visit to Netrahat on the 22nd and 23rd of March 2004 brought home to me new dimensions of ecological crisis and responses, from

merely saving forests, protecting air, water and land from pollution, maintaining biodiversity, taking measures to stop depletion of natural resources etc. to the core of the issue, namely, genocide (that is, destroying the so-called less developed peoples by the rich and powerful groups of people represented by the Government, politicians, industrialists, economists who are champions of a capitalist ideology of development) by displacing indigenous peoples from their centuries old land and habitat in the Netrahat hills. The Netrahat Field Firing Range Project is an ambitious plan of the Indian Government to acquire 2.5 lakh *hector* land for defence purposes. Within this area of forest there are 245 villages with a population of 2.35 lakh persons, most of whom belong to the Indigenous Peoples. In fact since 1956 the people had been suffering from military exercises which had been taking place on a twice yearly basis. By 1992 the Government proposed to acquire the whole area permanently. The people non-violently began opposing the military exercises. The people began asking questions: "It seems that the tribes have the sole responsibility of developing the country. Why are all the dams, factories and firing ranges built only in tribal area? I also want to ask them: Is this the only way you have to develop the country?"⁷ The hills resounded with the cry of the people "*jaan denge, jamin nahi denge*" (we will lay down our lives but we will not give our lands). Since then every year on the 22-23 March people from every affected village come to consolidate their struggle against the possible displacement at Tutuwapani. On the night of 22nd March 2004 people remained on the roadside under the trees telling their stories of struggle through songs and dances, and street plays throughout the night. On the 23rd morning the people were asked to move a bit away from the meeting place in the direction of their respective village and assemble again in the meeting place in the form of a procession. While procession was in progress and each group was moving towards the place of meeting it began raining. People did not have umbrellas to cover them but they remained in their lines and kept on marching and shouting '*jan denge, jamin nahi denge*'. This cry was that of human survival as a people along with their habitat and other beings.⁸

Therefore, I believe that any discourse of ecology cannot be limited to only protecting and saving from extinction some non-

human living beings and inorganic beings, but must focus on saving the less fortunate indigenous peoples, which necessarily includes the non-human living beings and inorganic beings, from the socio-political-economic, religio-cultural pursuits of the rich and powerful groups of the country. Why are the indigenous peoples determined to lay down their lives for a piece of land? Why can people not give their lands for a price (which is being offered) and go elsewhere? The people and the area are backward and undeveloped, therefore should it not be developed by the Government through setting up the firing range in addition to enhancing nation's military power? Why are some groups opposing the industrialization of the state? The new breed of greedy 'colonizers' asks these questions. In the present case the colonizers are not from outside but from inside the country. The history of the colonizers had been to destroy the people as people, the land and whatever was found in the particular area so that they could satisfy their greed.

Indigenous understanding of ecology: Rooted in their religious foundation

When we look around the topography of the indigenous peoples of Jharkhand we notice a marked difference from the villages of non-indigenous peoples. They live amidst hills, valleys and plains, with bushes and shrubs all around. The village proper is like a forest where we find various kinds of full grown fruit trees – jackfruit, tamarind, drumstick, mangoes, blackberries etc. The village would never be on a plain ground. Close to the village or within the boundary of the village one would see a cluster of old sal trees which is called the sacred grove (*sarna*). The fields all around the houses will have standing crops. The houses are not separated by wide metal roads or pavements in front of the house. The house itself will have sections for humans (living and dead⁹), animals and fowls living in close proximity. The physical set-up of the dwellings illustrates the interrelationships and mutual communion of humans, animals, land and invisible supernatural beings and God. Rootedness in the land is central to interrelationship and survival. An outside observer will miss the harmonious living, rhyme and rhythm, dance and music of life in the village set-up. This feeling of harmony is rooted in their

vision of life which is fundamentally a religious vision. Therefore, indigenous peoples' understanding of ecology must be sought in their religious beliefs.

In all the myths of origins of the major indigenous peoples (Munda, Ho, Santal, Oraon and Kharia) we see how before land and other beings appear on the land, water is found everywhere. According to the Munda myth the Old One (the Supreme Being) asked the tortoise, crab, earthworms to bring up earth from the womb of water.¹⁰ It is also true of the other cognate indigenous groups of Ho, Kharia, Santal and Oraon. Once the land is made, the Old One made animals who live on the land, trees and, finally, human beings. The Old One took the help of other creatures to make the land. This is how in fact cultivable land is made in the villages. He is not portrayed as all powerful, but as someone who is the source of everything that was taking place. We notice how in the primordial times itself other-orientedness, interrelationship and cooperation characterize the mode of engagement, and not the competitive and individualistic operations which we encounter today in our world.

Once the creation of all beings was completed, the Hos and Mundas have kept up some myths which shed light on the relationship among the beings in the creation. The Fleeing of the Rice Mother,¹¹ The Legend of Mother Cotton and the Ashes, the Creation of Tobacco¹² illustrate the relationship among the beings in the universe. The Ho version of the Fleeing of the Rice Mother is illustrative of human-divine-nature. Rice is called mother for it feeds human beings, other animals and birds. It is symbolic of all grains. In the beginning paddy grew and yielded grain without husk. Having harvested and threshed it, people used to cook it. They ate while it was standing in the fields too. The Rice- Mother tolerated all that, but one day a non-Ho while defecating in the paddy field plucked the grains and began to eat it. The Rice Mother could no longer bear this indignity. She wondered: how human beings ate her while defecating and urinating! How they ate her either uncooked or cooked! So she decided to run away from the human beings. When human beings saw her running away, they prayed to Singbonga. Singbonga then said to the Rice Mother: "Do not flee. Human beings will no longer desecrate you, I will clothe you." Then Singbonga covered the rice

with husk. Afterwards the Rice-Mother remained among human beings. Ever since every year before the sowing of paddy during the *Her mut* feast the Rice-Mother is called back by offering a sacrifice of a white cock to Singbonga. The myth has the following symbolic meanings: first, it is human beings who break the ontological interdependent relationship ('desecrate') between nature and human beings out of greed. Second, Nature breaks its life-giving relationship by 'running away' from human beings. Third, human beings on their own cannot call back the Rice-Mother, therefore during the feast of *Her Mut* the headman of the house prays to Singbonga that he send her back to his house in case she had left the house because of his ill-treatment of her. Fourth, the myth refers to an abiding relationship between the human-divine and nature. The survival of humankind and nature depends on each other and both in turn are rooted in the divinely ordained mode of inter-relationship and communion with mutual respect.

Can human beings survive without animals? The myth of tobacco brings home the truth that human beings cannot exploit animals the way they want to. According to the Munda myth the first man yoked his oxen in the morning and never rested till midday. The animals always got exhausted. Therefore they appealed to Singbonga saying that they were happy to serve human beings, but they were never allowed to rest a bit from early morning to noon. Singbonga saw the plight of the animals so he told them that he would cause a craving for tobacco in human beings. They would stop ploughing while they prepared tobacco to eat. Thus the animals would get rest. Now historically speaking tobacco might have come among them very late, but the main concern is that human beings must not exploit animals (nature) to the point of their death (degradation). Animals would not be able to help human beings to survive if they did not take care of them in turn.. This argument may be extended to the unscrupulous, greedy extraction of natural resources, such as land, minerals, water, forest by humankind. The impact is not hidden to anyone except to the greedy rich and powerful class, which does not want to see its cosmic ill effect. It lives in an illusion that it can save itself while it continues to destroy other weaker human beings, non-human beings and nature as whole in the name of development or maximum profit (for itself).¹³ The Ho-Munda myth points an

accusing finger towards humankind for its own destruction and the destruction of creation.

The myth of the Rain of Fire which is found in all the five major indigenous traditions- Ho, Munda, Oraon, Kharia and Santal – also powerfully illustrate that it is human beings who violated the divinely ordained way of life among themselves and in respect of nature. This made the Supreme Being angry. So in order to purge creation he rains fire to destroy it. The cause of human evil is not clearly spelled out in the myth. But the divine displeasure and anger is highlighted. All the versions of the myth agree that the Supreme Being saved a pair of brother and sister in a crab hole and from them humankind multiplied. The myths are silent about nature, but the listener of the myth understands that it is the myth of the destruction of human wickedness and saving of humankind from utter annihilation because a creation without humankind is inconceivable. Even the Supreme Being needs human beings, not in the ontological sense but in the existential order of life. He gets food through sacrifices which he does not eat but distributes it to his servants. This is clearly brought out in the Oraon version of the myth.¹⁴ Dharmes (the Supreme Being) had decided to destroy human beings because they had filled the earth with their excreta. They had become numerous. Upon this his wife told him that it was foolish to do that. It was human beings who were offering them rice and eggs. Because of human beings everything on the earth has life. But Dharmes did not listen to his wife and he rained fire. As a result everything got burnt. After the rain of fire Dharmes went hunting. Everything was reduced to ashes. He remained hungry. His wife had prepared rice with a little millet flour. She gave him water to wash his hands. Dharmes sat down to eat. Being very hungry he put his hands in the food immediately. It was very hot so he got his hands skinned off. Then his wife asked him how could he get rice and eggs (through sacrifices) because he had destroyed all human beings in his anger. The myth refers to the fact of how the interdependence of the human, the divine and nature is at the root of life in creation. Destruction of one or the other dimension of creation results in self-destruction. Dharmes getting angry to the extent of destroying humankind shows the extent and gravity of human wickedness.

The most definitive insight into human wickedness is exemplified in the Asur myth which is alive among three major indigenous traditions of the Hos, the Mundas, and the Oraons.¹⁵ The myth begins with the situation of cosmic lack of “food and drink” due to the heat emanating from the furnaces of the Asurs (a section of human-kind which is rich and powerful) The heat is so intense that even Singbonga felt the scorching heat (recall global warming). The lack of food in creation is the direct result of the Asurs’ mode of economic operation in order to satisfy their excessive greed for more iron (profit). Then Singbonga sends different pairs of birds to carry his message that the Asurs must adhere to his wisdom and law of economic activities. His message was simple and direct taking into consideration the good of every creature in the creation: “ If you blow the bellows by night, then do not blow them by day; and if you blow them by day, do not blow them by night. The tank with its floating lotuses, the bund with its marsh flowers are drying up...” This mode of activity was established and regulated by his creation of day and night.¹⁶ The Asurs violated the divine wisdom of working either by day or night for it ensured rest for human beings as well as other beings. Now, making other creatures of the earth suffer was not the end of their oppression, they placed themselves above Singbonga (pride) by saying to the divine messengers: “We ourselves are Singbonga; we ourselves are the great deity. We obey no orders. We had our dawn and sunset before Singbonga, the Sun-God had his (i.e., we existed before him). Nobody is greater than we are.. We will blow the bellows by night and will blow them by day. We hold together like plantain in a bunch, like mangoes spitted on petioles of a twig. We obey no orders”¹⁷ The reply of the Asurs reflects the attitude of a proud rich person (a group/groups of humankind). They become masters over every being and creation. They make their own laws to suit their greedy drive of amassing maximum profit. In the indigenous terminology Asurs symbolize the proud and greedy people. The experience of being exploited by creation and all beings and Singbonga’s timely communicated message through birds is an indictment on what is happening on the earth in the name of economic prosperity, scientific and technological development endangering the whole of creation with all the living and non-living beings. Whatever we see in Jharkhand in the name of development

and national interest is the continuation of the life of greed and pride of the rich ruling class which is predominantly non-indigenous. The policies of development through industrialization, open cast mining operations, forest law, urbanization, mega dam projects are symbols of the furnace in which the poor indigenous peoples, earth and the whole creation are 'sacrificed' so that a top rich class and the ruling class may never lack the material comforts of life.

Moreover, the myth highlights forcefully that Singbongae/Dharmes (the Supreme Being) is not a god who allows the Asurs (proud and greedy people) to continue in their designs defying his design and destroying fellow creatures. Singbonga, first, makes an attempt to tell them directly through his messengers to abide by the ontological laws of interdependence, fellowship, and equality, but they refuse and even make them 'outcastes' (uproot them from their identity by disfiguring them). Second, he transformed himself into a despicable servant boy wanting to be hired by them, but they disown him. However, the poor, old and childless couple hired him. He wanted to show them the way of self-emptying servanthood. Third, he tried to make them recognize him through games, yet they do not recognize him. Finally, he showed them the way of sacrifice. The Asurs ran short of iron. They came to the servant boy and asked him to divine the cause of it. He showed that they have to sacrifice to Singbonga in order to get iron coagulated. Twice they went through the experience of the good a sacrifice to Singbonga does. Even then, because of their greed and pride they did not recognize Singbonga and showed more interest in amassing gold and silver. When the Asurs came to the servant boy for the third time he suggested that a human being be sacrificed. They went to the country of Mundas to get a human child, but the Mundas chased them away. They came back to the servant boy and told him that no one would sell them their children to be sacrificed. At last the servant boy asked them to sacrifice him and told them how to do it. After the sacrifice the servant boy came out transformed and with plenty of gold and silver. On seeing the boy adorned with gold and silver, the Asurs enquired whether there was more gold and silver inside the furnace. He told them that there was plenty. If they wanted to go inside then all males must go inside. They went inside. The boy asked their women to plaster the furnace and lit the fire. When the furnace was opened the women saw only the charred bones of their husbands. The women saw the trick the boy played on them, but he told them that he had

sent messengers to remind them of his command to regularize their economic operations. They did not obey. They would survive (get their food) only if they obey his commands by revealing themselves to the diviner. The myth ends with the women being thrown down by the ascending Singbonga to different places. They possessed the places they fell into. They got back their 'spirit' existence in the wild country. But some of them were identified with the benevolent 'spirits' of the village. One thing is clear that they have to protect humans, the cattle and the crops.

The Asur Myth: Watershed of Life in the Creation

The myth brings to light deep insights into the life in creation. It is time to articulate them as the indigenous people believe. First of all, the myth affirms the abiding communion, interdependence, fellowship and self-emptying mode of servanthood of all beings. In serving one another each one lives and helps others to live and makes the whole creation a life-promoting and enhancing one. No one being can exercise its mastery over others to its advantage alone. In the concrete, human beings cannot do with the natural resources as they want in order to satisfy a few people's greed; nor can they oppress fellow human beings.

Second, it is the greed and pride of a few rich and powerful people, that cause cosmic destruction in terms of ecological crisis (degradation of land, water and air - the whole creation), the annihilation or oppression of human beings, species extinction and biotic alterations of animals and plants, and wastage of natural resources and their toxification. Every human act of greed and pride is an abomination. It is an offence against divine wisdom which sustains and gives purpose to the interdependent harmonious living and be-ing in the universe. It is an act of self-destruction like that of the Asurs. No amount of arguments for the homocentric vision of life in the universe will be able to save humankind as long as the greed and pride of a few is not overcome by the religious vision of life as espoused by the indigenous peoples' Asur myth.

Third, the myth reveals that the creation is not like a unicellular being. It is a communion of beings. They are necessarily interrelated and interdependent. The interrelationship is not based on autonomy

or heteronomy but an ontonomy.¹⁸ The basis of ontonomic relationship is “the assumption that the universe is a whole, that there is an internal and constitutive relationship between all and every part of reality, that nothing is disconnected and the development of one being is not to be at the expense of another- not because it should or ought not, but for the same reason adduced in the case of cancer, namely that it neither promotes the life of the whole organism nor is it of any utility for the affected organ.”¹⁹ The myth does not deal with material creation alone. It deals with the human and divine reality. Therefore, when we talk of ecology from the indigenous perspective we cannot limit ourselves only to the material earth, but the network of the human, divine and cosmic worlds.²⁰ The indigenous people live by this belief and it is expressed in the rites of passage, feasts and festivals, social organization and in the day-to-day life too. The loss of this religious foundation caused the Asurs to behave the way they behaved which eventually led to their own destruction. Any ecological concern cannot bypass the religious foundation for ignorance of this will result in a part of humankind playing god.

Fourth, the myth advocates a self-emptying servanthood in the individual and collective inter-human and inter-being relationship. It is a prophetic denunciation of the contemporary mode of seeking human supremacy over creation, disregarding the divine wisdom through the capitalist ideal and mode of economic prosperity and amassing of material conveniences by a few rich and powerful. It is also an indictment on the use of science and technology to further the greedy and arrogant attitude of the unholy alliance of the rich and powerful class in the society. The present Jharkhand Government and non-indigenous industrialists and population have accelerated their efforts of pursuing the path of development through industrialization and urbanization (which need a lot of land, building of big dams for water and electricity and all of these imply displacement of the indigenous peoples from their homes and hearths). Do these not reflect the policy of the Asurs? Tribals would be completely wiped out of human history because they would not be able to compete with the rich and powerful class who determine what is best for them. The people would be reduced to a labour reserve without any name or identity of their own. The myth calls

for seeking an alternative path in the lines of divine wisdom as discovered in the Asur myth.

Fifth, the myth gives a call to the indigenous people to wake up and see the illusory vision of life projected by the rich and ruling class of the state and country. They are presenting an alien vision of life which will destroy the indigenous seed of life just as it seeks to destroy the indigenous animals and plants through its bio-engineering technology. No bio-engineered species will be able to survive in the natural ecosystem which has not shared in the millennia of co-adaptation of native species with the environment. Once the rural indigenous population opts for the bio-engineered paddy, it will not be able to preserve the seed for the following year. It will have to depend on the scientific community which is controlled by the rich and the powerful. It will be subservient to the rich and the powerful for everything. The individual faces of the rich and powerful people or groups might change but the societal structure of the rich and the poor will remain. The gulf between the rich and poor will be widened day by day. Hence the indigenous peoples will have to stand united and not only present their alternative but also oppose their plan.

Indigenous Peoples: Landscape Architects

The belief system of the indigenous peoples of Jharkhand has highlighted for us that ecology has a religious foundation. What we see in the world is that a section of human beings due to their greed have become the destroyers of ecology. Now the Indigenous peoples' belief is lived out daily. The clan system of the indigenous peoples is related to trees, birds, reptiles or material objects. It not only serves the social purpose of human alliances (in terms of regulating marriage)²¹, but it expresses the ontological foundation of brotherhood and sisterhood extended to all beings in the creation. For example, Horo (tortoise) among the Mundas: People belonging to this clan do not destroy a tortoise for they become their brothers and sisters. It is believed that in the primordial times, the tortoise was instrumental in saving the group. Unfortunately under the influence of modernity the sacredness of the clan and its deeper meaning is being lost. Under the influence of non-indigenous people

who have dislodged them from their land there began a movement of striking off the clan name. This is a sinister design of the anti-indigenous people so that the indigenous people will forget their specific name and identity.

The principles of inheritance and succession²² of the indigenous people presents before us a unique structure of relationship with ecology. It is not I who own the land but we belong to the land. We inherit it from the ancestors and so possess it collectively. Accordingly, three principles determine the human-land relationship: one, the land and all the property belongs to all in common; second, the land is inalienable; and third, only the sons get an equal share of the ancestral land and property for their use. These principles are the backbone of the indigenous peoples' identity. The Chotanagpur Tenancy Act and Santal Parganas Tenancy Act are the twentieth century bulwarks which have saved the indigenous peoples from the onslaught of the non-indigenous peoples who had already pushed them to the deeper forests. The non-indigenous people find these principles and their application in real life intriguing and against the dynamics of development. With the invasion of non-indigenous peoples in Jharkhand region, ecology has changed drastically which had not altered despite centuries of occupation by the original settlers. For the non-indigenous people the land and its natural resources are means to gain wealth; for the indigenous peoples they are wealth. So how can one destroy wealth?

The character of the indigenous architects is founded on two ethical values: non-addiction to material things (anti-greed life) and non-addiction to self-sufficiency (anti-pride life). These two values give direction to their interrelationships at all levels. All values that make human beings divine, namely, cooperation, consensus, mutuality, equality, solidarity with the weak, sense of belonging to the group (family, clan, village and tribe), joy and celebration, are guided by the strong adherence to anti-greed and anti-pride life. Both these values strike at the root of the spirit of individualistic and competitive pursuits, and nurture the spirit of communion of communities.

Whatever is said above is symbolically represented in the dance during the feasts and festivals. Their dance is circular and all the

dancers are interlinked with one another. The drummers remain in the middle of the circle. As such, the line of the dancers is never closed so that anyone is welcome to join the dance. The feasts follow the seasonal cycle of the main crop. One must keep in mind that feasts are sacred events because without sacrifice the dance does not commence. Each sacrifice is a symbolic ritual communion of the human, the divine and nature for harmonious existence. In this way dance is the celebration of the harmonious fellowship which was ritually enacted and experienced. On another level of celebration comes the place of songs in their life. Their songs manifest their closeness to the life of plants and animals. An indigenous person is so connected with all that is around him/her visible or invisible, that he/she bursts out in song spontaneously whether he/she is alone or in a group, in the forest or on the river banks, while working in the fields or resting in the shade or while returning from a hard day's work.

Exorcism of Asurs: Identification of the Assumptions

The foregoing considerations have helped us to identify the Asurs (demons) who are in fact late comers on this earth, that have brought about an ecological crisis in the whole of creation. For centuries the indigenous peoples lived on this earth, but ecological degradation was unheard of. The cause of all the ills that have been imposed on the earth is just one species: human beings. Even within the species of human beings it is the rich and powerful class of people, groups and nations in the name of development who are turning the earth into a furnace which will not be able to sustain the species.

It is the greed and pride (human arrogance of superiority among the organisms in creation, even the denial of the divine) of a few rich and powerful groups and nations which are the root of all illness of the earth. They are using science and technology to abuse the earth. The capitalist mode of engagement with one another and with the earth has already caused the extinction of thousands of non-human species. It is a forerunner of what will happen to humans. The extinction of the human species would not be so obvious as it is in the case of non-human species. But the process of extinction would be the same. First, the weaker groups of people (like indigenous

peoples) who live in the rural areas would be the target. Their identity and constitutive elements (such as language, religious vision, social-cultural structure) would be made to appear inferior and the so-called superior one would be imposed on them by the rich and the powerful groups. They would be dispossessed of their land, the basis of their identity, under the pretext of development and national interest. The post-independence Jharkhand is a fitting case of this process. The present Bhartiya Janata Party Government of the state (which is in alliance with the Hindu fundamentalist family consisting of Vishwa Hindu Parishad, Rastriya Swayamsevak Sangh, Bajrang Dal etc.) is promoting the industrialization of the state and imposition of Hindu religion on the indigenous people. For industrialization the state government has signed 40 Memoranda of Understanding with big industrialists who would set up their industries in the hilly areas and villages where mostly indigenous peoples live. Where will these indigenous people go once they are evicted from their lands? They would have no choice but to live in the margins of the city. They would be reduced to a faceless people living in the peripheries of the cities. The Hindu fundamentalist groups are driving a wedge between the indigenous people who have embraced different religions especially Christianity. They are championing the anti-conversion bill which the current chief minister proposed in the rally of the Bhartiya Janata Party on the 10th of December, 2005.²³ These groups are brainwashing and terrorizing the vulnerable rural indigenous peoples saying that they are Hindus. The history of the indigenous peoples of Jharkhand is the sad story of exploitation by the Hindus who were introduced by the Hinduized raja of Chotanagpur.²⁴ These people little by little dispossessed the people of their land and became rich and powerful. Unfortunately historians have focused only on British colonialism but have overlooked the colonialism of the Hinduized group. These later joined hands with the British and subjugated the indigenous people. Today we witness a similar unholy alliance of the non-indigenous population and the government who are key players in destroying the indigenous people and their territory in the name of development.

Conclusion

By way of conclusion, I do not offer any action plan which a reader might expect from me. I merely pose a question: will the earth survive if the current way of human involvement continues? The answer is an emphatic “no”. The greedy and proud human supremacy needs to give way to the indigenous vision of interdependence of all things and self-emptying servanthood. The economic pursuit of making a few rich richer and more powerful must be replaced by the dynamics of equal sharing of “food” among human and non-human beings. The greedy methods of destroying the earth and even the power of the earth to renew itself must be changed by adopting the indigenous sense of brotherhood and sisterhood with the living earth. The indigenous peoples’ understanding of ecology challenges the rich and ruling class who give lip service to the preservation of ecology by perpetuating its consumerist (greedy) way of life.

I would like to conclude my considerations by referring again to the Asur myth. The myth has the key to save both ecology and humans. Human beings are the root cause of the ecological crisis. Hence, they alone can save themselves and establish ecological balance.

Notes

1. *The Compact Oxford Dictionary*, Thesaurus, and Wordpower Guide defines ‘symbiosis’ as follows: “a situation in which two different organisms live with and are dependent on each other, to the advantage of both”. The definition sounds a bit too superficial as understood from the point of indigenous peoples. The relationship between the two is understood at the ontological level, that is, they are interdependent for their existence. It is not a question of mere ‘advantage of both’, hence relationship is maintained and which could be optional, but it refers to a relationship inherent in their be-ing.
2. Bas Wielenga, *Towards an Eco-Just Society*, Bangalore: Centre for social Action, 1999, pp. 47-72. The author has succinctly narrated how different groups, guided by their particular interests, have responded to ecological issues.
3. David G. Hallman (ed.), *Ecotheology: Voices from South and North*, Geneva: WCC, 1994, p. 6. The author has described the conceptual

prison as a fact that in most of theological thinking human supremacy among the species is maintained, whether it espouses steward theology or talks of more responsibility than dominion in relation to various species. Furthermore, such thinking underplays so-called non-living beings (such as land, water, trees etc.) from its purview. In 1978 a book *The Earth is the Lord's: Essays on Stewardship* edited by Mary Evelyn Jegen, New York: Paulist Press is a fine example of theological thinking proposing stewardship of the earth.

4. Various aspects of ecological crisis are systematically presented by Bas Wielenga in his book *Towards an Eco Just Society*, Bangalore: Centre for Social Action, 1999, pp. 12-46. Also Calvin B. DeWitt, "The Religious Foundations of Ecology" in *The Mother Earth Handbook* edited by Judith S. Scherff, New York: Continuum publishing Company, 1991, p. 253-254 wherein the author has summarized seven degradations of creation enveloping the whole universe.
5. Jose Pepz M. Cunanan, "The Prophet of Environment and Development" in David G. Hallman (ed.), *Ecotheology: Voices from South and North*, Geneva: WCC, 1994, p. 26.
6. The magnitude of displacement of the indigenous peoples all over the country and Jharkhand in particular since independence is quite alarming. The displacement of indigenous peoples in particular through mega dam projects and industries such as, Sardar Sarovar on the Narmada river, Tehri Bandh Pariyojna. Steel industries in Bokaro, Rourkela, to mention a few, present a gory picture of destruction of people and ecology. See the work *Development-induced Displacement and Rehabilitation in Jharkhand 1951-1995* by Alexius Ekka and Mohammad Asif, New Delhi: Indian social Institute, p. 67 which presents the issue of displacement of the indigenous peoples in Jharkhand
7. All India Coordinating Forum of the Adivasis/Indigenous Peoples, *Voices of the Adivasis/Indigenous Peoples of India*, New Delhi: AICFAIP, 2001, p. 44.
8. A brief history of Netrahat Field Firing Range is found in *Visthapan Ka Atank* edited by Pius Tirkey and others, Gumala: Kendriya Jan-Sangarsh Samiti, 2005.
9. An interior portion of the main house is marked out as an abode of the deceased members (ancestors) of the family.
10. Munda myth in John Hoffmann, *Encyclopedia Mundarica*, Patna: Government Printing, 1930-1979, pp. 3981-3982; Santal myth in P.O. Bodding, *Traditions and Institutions of the Santals*, New Delhi: Gyan

- Publishing House, 2001, pp. 2-5, reprint. Kharia myth in S.C. Roy, *The Kharias*, vol. 2, Ranchi: Man in India Office, 1937, pp. 414-418.
11. The story of the fleeing of Rice Mother is the basis of Her mut feast in which before sowing paddy Singbonga is invoked to send back the rice mother. The story may be found in Dhanur Singh Purty, *Ho Disum Ho Honko*, Book 7, Chaibasa: Xavier HO Publications, 1982, p. 10.
 12. These myths are from the Munda tradition; the texts may be found in Hoffman, *Encyclopedia Mundarica*, pp. 4466 and 4197-4198 respectively.
 13. See the impact of irrevocable degradation of nature Alex Ekka, *Development-Induced Displacement*, pp. 119-126.
 14. See John Lakra, The Genesis of Man: The Uraon Myth” in *Sevartham* 19(1984), pp. 41-47.
 15. See the Ho version of Asur myth in Dhanur Singh Purty, *Ho Disum Ho Honko*, Book 7, Chaibasa: Xavier Ho Publications, 1982, pp. 13-21; Munda version in John Hoffmann, *Encyclopedia Mundarica*, pp. 1648-1658; Oraon version in Sarat Chandra Roy, *The Oraons of Chotanagpur: Their History, Economic Life and Social Organisation*, Ranchi: Man in India Office, 1994, pp. 251-272; also John Lakra, “Genesis of spirit: The Uraon Myth” in *Sevartham* 11(1986), pp.45-57.
 16. See for the myth Hoffmann, *Encyclopedia Mundarica*, pp. 3985-3988)
 17. *Ibid.*, p. 1649.
 18. Raimundo Panikkar, *Worship and Secular Man*, Mew York: Orbis Books, 1973, pp. 41-55. I am indebted to him for these neologisms in the above pages.
 19. *Ibid.*, 42.
 20. In the Indian school of Anthropology human, divine and cosmic network is expressed as ‘nature-man-spirit complex’. See the edited work of R.S. Mann, *Nature –Man-Spirit Complex in Tribal India*, New Delhi: Concept Publishing Company, 1981 which is a fine anthology of the explication of a wholistic indigenous vision of reality.
 21. The marriage laws are based on the clan exogamy and tribe endogamy. Clan exogamy is a sacred law for all those belonging to the same clan are brothers and sisters. Incest is the greatest evil act a person can commit..
 22. Munda principles of succession and inheritance are recorded in “Principle of Succession and Inheritance among the Mundas” in the *Journal of The Bihar and Orissa Research Society* 1(part 1/Sept 1915), pp. 5-

19. Similar Ho principles of succession and inheritance may be found in the "Appendix: Inheritance and Partition of Property among the Aboriginal Races" of *Census of India 1911*, vol. 5, Bengal, Bihar and Orissa and Sikkim, report by L.S.S. O'Malley, Calcutta: Bengal Secretariate Book Depot, pp. 1-v.
23. See *Sunday Hindustan Times*, December 11, 2005, p. 1.
24. Fidelis de Sa, *Crisis in Chotanagpur*, Bangalore: Redemptorist Publication, 1975, p.35..

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Ecological Concerns: An Indian Christian Response

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Abstract:

The objective of this paper is to reflect on an Indian Christian response to the ecological crisis that threatens to obliterate life from the face of the earth. This paper, in the first part, briefly sketches the ecological crisis and the causes of this ecological crisis, and in the second part it reflects on the Christian religious resources and on the Indian religious experience for insights to respond to the ecological crisis. The final part of this paper offers three ecological imperatives to value and preserve creation that is threatened by human greed. The ecological imperatives – eco-consciousness, eco-spirituality and the call to be stewards of creation – demand that we make concerted and urgent efforts in different spheres of life. Jesus, the incarnate Word and the Risen Lord, inspires us to follow his footprints to live in harmony with the human and cosmic community, because “all things came into being through him, and without him not one thing came into being.”

Keywords:

Ecological crisis, Indian Christianity, Nature, harmony (rta), ecological consciousness, eco-spirituality.

Introduction

The Earth is the womb of all life. Mother earth enables life to grow, provides nourishment, and sustains life. Human life is inconceivable without mother earth. Hence, humans can no longer perceive themselves as predators of nature, and planet earth can no longer be treated as an object to be dominated and exploited for humans' comfort. It is an undeniable fact today that the destiny of humanity is closely knit together with the very existence of mother earth. Indeed, humans are created to be stewards and protectors of nature and are called to cherish the inter-relatedness of everything in nature and to read with greater sensitivity the signs of the earth and take care of God's creation with greater responsibility ("to till it and keep it" Gen 2:15).

'Ecology' the familiar word of today came into currency in Germany in 1866 to denote the then emerging discipline, "science of habitat", or science of the natural environment of home. The phrase 'natural environment of home' includes everything in nature that affects "people's lives, the life of animals, plants, air and water and anything that is associated with created beings".¹ The Christian vocation is not otherworldly but closely related to this *habitat*, to this world, because as St. John says, this is the world that "God so loved that he gave his only Son" (Jn 3:16). The Christian vocation consists, contrary to the popular conception, not of perceiving the world merely as a temporary stop on the journey to heaven, but as a 'living space' (Gen 1:1-25) to live one's commitment, to protect the integrity of creation and to change the situations that threaten life, the gift of God (Gen 2:7). Therefore, ecology and ecological concerns are significant dimensions of Christian vocation and commitment.

The objective of this paper is to reflect on the Indian Christian response to the ecological crisis that threatens to obliterate life from the face of the earth today. This paper, in the first part, briefly sketches the ecological crisis and the causes of this ecological crisis, and in the second part it reflects on the Christian religious resources and the Indian religious experience for insights to respond to the ecological crisis. The final part of this paper offers three ecological imperatives to value and preserve creation, that is threatened by human greed.

1.1 The Ecological Crisis

The ecological crisis is a complex and multifaceted one that threatens life in the world. The collapse of ecological equilibrium comes not merely from one direction but is spearheaded by multi-dimensional ways and methods. The ecological crisis was initially perceived as an aggregation of local phenomena that attracted global attention. For instance, the oil spill off the shore of Santa Barbara, Mercury pollution in Miamata Bay, acid precipitation somewhere in the European continent, the gas tragedy in Bhopal or the disaster in Chernobyl etc. But today the ecological crisis has direct deleterious effects on a global level. It has to do not merely with the individual shrubs, grubs or oil spill or gas leakage in a far off place. The ecological issues have taken on a global dimension and refer to the disappearance of species, the degradation of ecosystems, air and water pollution and soil erosion.²

According to UNO, nearly 35,000 children die daily due to diseases caused by contaminated water and food. It is estimated that every tick of a second adds one football field to the deforested area in the tropical rain forests and every year an area of the size of Austria. Flora and fauna are extinguished at the rate of almost seventeen species every day. The great swings in weather conditions, flooding and other natural calamities are also consequences of the dramatic warming effect upon the world, caused by the gases emitted by the industrial cities of the world.³

While speaking on the challenges to society in our times, Pope John Paul II rightly stated that human beings have “without hesitation devastated wooded plains and valleys, polluted waters, disfigured the earth’s habitat, made the air unbreathable, disturbed the hydro-geological and atmospheric systems, turned luxuriant areas into deserts, and undertaken forms of unrestricted industrialization, degrading that ‘flowerbed’ – to use an image from Dante Alighieri – which is the earth our dwelling place”.⁴

Modern India, dubbed by the mechanistic understanding of the world, motivated by the myth of endless growth and ever-increasing profit and accompanied by a ruthless model of development, could not reduce the velocity of exploitation of the natural resources that

progressively grew beyond proportion in all dimensions of life. Consequently, the ecological crisis in India is seriously felt in the air that is polluted by the chemical ingredients of industrial chimneys and the smokestacks of automobiles on the road. Raindrops that bring about new life from the earth have turned into acid-drops due to the presence of carbon dioxide and chemical ingredients in the atmosphere which cause the destruction of vegetation. The emergence of concrete jungles and sky-scrapers in the cities and towns with unimaginable speed and rhythm and the gigantic machines employed for their construction leave not only the whole atmosphere polluted but also produce a never-ending noise pollution. The results of all these pollutions are severe illness, serious diseases and untimely deaths of fellow human beings. The dumping of waste materials of our unplanned urbanization and industrialization pollutes water in the rivers and streams and fills it with poisonous chemical particles. This in turn affects not only the health of the people but also the marine life and vegetation. Any study of the deforestation in India and the use of pesticides in the agricultural sector provides evidence of the ecological ruin caused in the name of industrial development, urbanization and green revolution.⁵

The Statement of the Indian Theological Association in 1999 described the Indian situation of the ecological crisis in the following way:

In India the ecological crisis is aggravated by factors such as erratic economic development and liberalization, a market economy, bureaucratic corruption, lack of enlightened political leadership, and the debt-trap. The population problem, casteism, massive illiteracy and poverty in the rural sectors, and appalling state of the slums in the cities add to the problem of environmental pollution. In this critical situation everybody's life and every form of life stand on the brink of disaster and even extinction.⁶

1.2 The Causes of the Ecological Crisis

The ecological crisis faced by the global community in our times is caused not merely by certain socio-economic and political

structures that operate in our societies but also by the presence of powerful motives and attitudes that orient and regulate the lives of individuals and communities.⁷ Some of these could be described as follows:

1.2.1 Understanding nature from the Newtonian Perspective

Human beings are seen as the centre of the universe and nature is perceived as something to be quantified and conquered and not as something to be respected. The mechanical world-view, a consequence of the Newtonian perception of the world, encouraged the use of technology and science to ruthlessly exploit the natural resources and glorified an industrial ethic of maximum profit, exploitation of raw materials, cut-throat competition and treatment of human beings merely as a work-force. Thus the mechanical understanding of the world distanced humans from their habitat and destroyed the inherent harmony that exists between all living beings and human society.

1.2.2 Glamour of Consumerism

The secret of the success of today's market economy is its ability to carry on the insight of the industrial revolution, namely conversion of wants into needs. The fast track market economy has even succeeded in creating new needs, new status symbols and convincingly preaches the failure of the diminishing marginal returns theory in the realm of immediate satisfaction of needs. It is in this context what John Paul II said becomes very relevant: "Modern society will find no solution to the ecological problem unless it takes a serious look at its lifestyle".⁸

1.2.3 Selfishness

Selfishness is the root cause of the ecological crisis that the global community faces today. It is primarily selfishness of a company, community or a nation that gears its activities towards greater profit and power without any concern for the lives of others. As long as one's action does not affect oneself, anything seems to be acceptable, even if it has dire consequences in a far off place or in another society

or for future generations. In fact, it is selfishness that makes people blind to the needs of others in the present or in the future and goes about exploiting all resources both renewable and non-renewable.

It is all but impossible to overcome the present ecological crisis created by the exploitative, destructive and ruthless use of technology unless structural changes in the society go hand in hand with attitudinal changes in all walks of life. For it is becoming more explicit today that the roots of the ecological disaster “lie in the attitudes, values, perceptions, and basic worldview that we humans of the industrial-technological global society have come to hold”.⁹

2.0 Indian Christian Perspective

2.1 Old Testament Perspective

The story of creation in the book of *Genesis* states that Yahweh first and foremost created space for living beings (Gen 1:1-26). It is a powerful proclamation that “every life needs its corresponding living space. Vital power and energy are not enough by themselves”.¹⁰ The living space, as described in Genesis, is given to human beings not merely to be taken care of, but as a space for their dwelling and growth. Therefore, “anyone who destroys the living spaces of other living things, destroys these things themselves, by destroying their chances for living”.¹¹ The creation story in Genesis also states that human beings are created in the image and likeness of God, in other words, as the very representatives of God. It is more appropriate today to interpret the ‘dominion’ (*rdh*) that is implied in the creation account of Genesis as the responsibility of a good shepherd to take care of creation.¹²

The Psalms present among other things a perspective that God’s creation reveals the greatness of the Creator and invites human beings to praise God for the wonder of creation.¹³ Yahweh’s promise of a new heaven and a new earth in Isaiah (Is 65:17-25), Yahweh’s assertion of His sovereignty over the creation in Jeremiah (Jer 2:2), the assurance of new life through His word and spirit in Ezekiel (Ezk 37:14), the purpose of all of creation in Daniel (Dn 3:57-90) and Yahweh’s promise of abundance of blessings (Joel 2: 19a, 21-24; and of pouring out His Spirit on creation in Joel (Joel 2:28-29)

emphasize God's all-comprehensive salvific concern that includes everything in creation and affirms that His blessings are very much for this world and for our existence here and now.

2.2 New Testament Perspective

Jesus, as we find him in the pages of the Gospels, is a child, friend and lover of nature. Nature was an open book that inspired and taught him.¹⁴ The following lines concisely picture the intimate relatedness of Jesus' life with nature:

The star proclaimed his advent. Jordan revealed to him his identity. The desert with its mysteries strengthened him for his mission. His wisdom and teaching were very much rooted in nature. In the free birds he saw Divine Providence and in the wayside flowers Divine aesthetics. The seeds, the trees and plants growing in the field were for him the symbols of the reign of God. Water was for him the symbol of the Spirit, the gift to God's people. Nature was with him in his suffering and mourned his death.¹⁵

Jesus' miracles, when read with an ecological sensitivity, challenge us to be committed to the integrity of creation and to our responsibility to our fellow human beings. The nature miracles offer a clarion call to trust in divine providence amidst natural calamities. The feeding miracles confront us with the urgency of sharing the fruits of the earth with the last, least and lost of the society today. The exorcism miracles remind us that the restoration of cosmic harmony is a significant dimension of the salvific plan of God. Jesus' healing miracles proclaim powerfully that the mission of Jesus to bring the fullness of life to suffering humanity is an expression of God's concern for life in abundance among His creation. The resuscitation miracles teach us that the final words in God's reign are not death and passivity but rather renewal, new creation and new life.¹⁶ Jesus' kerygmatic proclamation in the synagogue at Nazareth speaks of his passionate concern for integral liberation that embraces social and ecological justice (Lk 4:18-19). Jesus made use of the symbolism of food to explain the significance of his life and as an expression of his continued presence with humanity.

Some of the basic dimensions of the Christian understanding of nature are highlighted in the Pauline writings. The significance of Christ for creation is shown by stating that everything was “created in him and for him” (Col 1:14) and that the destiny of creation consists in reaching its God-directed and oriented unity in Christ (“God will be all in all” Eph 1:10; 1 Cor 15:28).¹⁷ The Pauline tradition also speaks of a dynamic movement within all of creation as well as of the interrelatedness of humans with all of creation (Rom 8:19-23).¹⁸

2.3 Theological Perspectives on Nature

One can observe two motifs in the Western theological approach to nature. One motif is called the ‘spiritual motif’ and the other the ‘ecological motif’. The trends of spiritual motif are present in the writings of Origen, Thomas Aquinas, Bonaventure and Karl Barth while the ecological motif is perceived in the approaches of Irenaeus, Augustine and Francis of Assisi, the patron saint of ecology. The spiritual motif underlies an attitude that “the end of human existence is thought to lie either in a transcendence of nature or, in modern times, a humanization of nature,” while the ecological motif perceives the end “to lie in community with nature, appreciative of nature’s blessings and cognizant that nature has value apart from its usefulness to humans.”¹⁹

The Second Vatican Council has given a clarion call to the faithful to be open “to learn the deepest meaning and the value of all creation”²⁰ and stated that the responsibilities of pastors include their duty to remind the people of “the principles concerning the purpose of creation and the use of temporal things”.²¹ Pope John Paul II continued the spirit and orientation of the Second Vatican Council in many of his writings like “Peace with God the Creator, Peace with all Creation” in 1990 and “*Centesimus Annus*” in 1991. The World Council of Churches came out with an impressive document in 1994 “Sign of Peril, Test of Faith: Accelerated Climate Change”. Bishops’ Conferences in various parts of the world and the churches of different denominations have made efforts to bring greater awareness and sensitivity to urgent ecological concerns.²²

2.4 Indian Religious Experience

The cultures and life-style of the indigenous people in India bear testimony to a continuous life process that binds together human beings and nature, animals and gods. Their perception of nature, their relatedness to nature and to one another, their religio-social and cultural expressions reveal a symbiotic relationship with nature and a holistic vision of life. The Indian religious experiences of nature synthesized in different faith traditions powerfully bring out the interrelatedness of humans with the whole of creation. Vedic wisdom perceived “the earth as the mother and the streams of water as the life-giving veins, the sky as the father and the air as the life-giving *prana*, sun as the source of life energy and fire as the supreme purifier (*Att. Veda* 12.1-63; *Rig Veda* 10.198.1, 4.40.5, 3.62.10)” and the life-enhancing and protecting energies in nature as “gods (*deva*), through which the Light of the One shines”.²³ The Upanishads remind us of the one *Atman* in which all beings find their interrelatedness (*Tait. Up.* 3.1; *Isa. Up.* 1.1), while the *Bhagavad G’ita* speaks of the nobility of a deep commitment towards the welfare of all beings (12,4; 3, 9-13). Benevolence and respect for all beings is the quintessence and the ethical-force of the traditions of Buddhism and Jainism.²⁴ Thus various Indian religious traditions perceive the earth as a life-giving mother and protecting father, manifest the Indian religious psyche as one that “has an innate perception of the universal symbiosis: all beings are bound together in the one evolutionary process of life” and reveal the identity of a human being as a person “with a spiritual consciousness of the universal harmony (*rta*) and a sense of responsibility towards the well-being of all (*dharma*).”²⁵

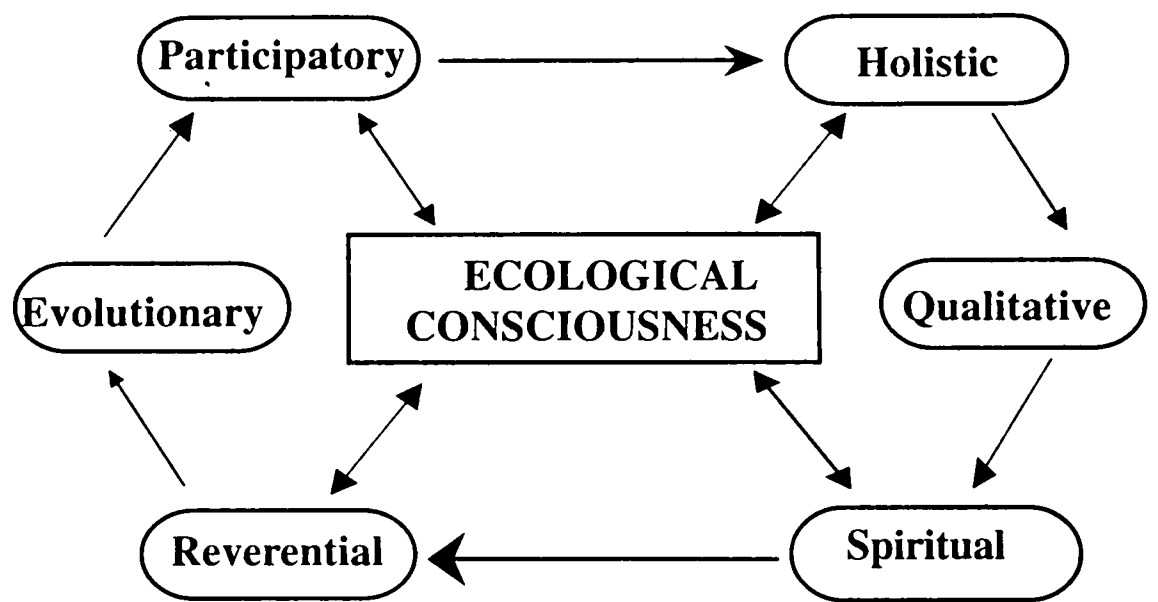
3.0 Ecological Imperatives

In the light of the reflections on the ecological crisis, its causes and on the Indian Christian religious resources, the following three ecological imperatives seem to be very relevant today.

3.1 Eco-consciousness

In the world of today the technosphere controls the biosphere and the psychosphere. Consequently, the values and directives of

the technosphere dictate terms and exploit other spheres. The emergence of ecological consciousness among humans is a necessity to safeguard the universe of the human community. Ecological consciousness challenges the rationality of the mechanical perception of the world and emphasizes economic equity and the significance of large complexes with their supportive components, namely, human persons and ecological habits. Henryk Skolimowski mentions six characteristics that enable us to describe the nature and scope of ecological consciousness. These six characteristics, according to Skolimowski, support each other; are supported by each other and serve to define each other. The interrelatedness of these characteristics in the emergence of ecological consciousness is presented through the following diagram²⁶:



Ecological consciousness, as the diagram shows, seeks a synthesis that orientates us to the spiritual and seeks social amelioration and justice for all. In its efforts to bring about a synthesis it reaffirms the wholeness and unity of creation and also the role of humans without threatening anything and also without celebrating the aggressive and exploitative tendency of human beings. Various ecological movements like the ‘Chipko movement’, the ‘appiko movement’, the fishermen’s movement, movements against the Teri Dam and Narmada Valley, ‘Mitti Bachao Abhiyan’ and other similar

movements and organizations are expressions of injustice committed against people motivated by ecological consciousness.²⁷ These movements are, indeed, protests registered by the victims of the great atrocities committed against human habitats. They try to replace hierarchical exploitation and domination of all kinds with fully participative forms of a “humanity-in-nature”, where freedom and individuality are not considered as opposites of nature and social coherence.²⁸ The ecological consciousness that emerges in and through these movements takes seriously human persons with their legitimate, complementary and participative relationship with the environment. It emphasizes the necessity of being in communion with nature. “It changes one’s attitude from plundering, robbing, exploiting to a preserving, cherishing and protecting attitude for after all one does not rob from his/her own home (*OIKOS*).”²⁹

Ecological consciousness acknowledges the truth of Christian revelation, present also in other religious traditions, that the whole of creation is but an expression of God’s love, and seeks to emphasize the harmony and communion in God’s creation. Therefore, the humans’ attitude to nature can be neither one of subjugation nor of dominion and aggressive exploitation but rather one of harmony. Ecological consciousness moulds us to hear the silent cry of Nature at the pain of the dismantling and disintegration of the components of nature by human greed and selfishness and enables us to be sensitive to the harmony that exists in the universe of a human community.

3.2 Eco-spirituality

Eco-spirituality is a contemplative attitude that makes one open and docile to God’s presence in every human being, in every event and in everything. God, the creator, sustainer and Lord of all creation, is present in all things, events and persons. Eco-spirituality enables one to experience God more and more in everything, because everything comes into being out of His abundance of love, belongs to Him (Wis 12:21) and depends on Him (Ps 104:27). Humans, who are created in the image of God, are called to love and take care of everything and realize that they and the world are interdependent and interrelated. The spiritual awareness that emerges from an intense

awareness of this interrelatedness will have the power to make people respect and transform the world. Eco-spirituality will “oblige people to move against the current of irreverence in contemporary society. Just as reverence is born in moments of quiet wonder allowing us to ponder the beautiful and to experience the presence of God there, so irreverence is a consequence of hasty skimming the surface of life and failing to find any richness of depth in it”.³⁰

Eco-spirituality, that emerges from the awareness of the immanent presence of God, takes us to the deeper and cosmic dimensions of the Christian sacraments. For instance, the symbolism of water in the celebration of the sacrament of baptism also reminds the Christian community of its responsibility to ensure that water is not polluted. Consequently, the sacrament of baptism, a sacrament of initiation into the Christian community, will also be an initiation into the wider cosmic community. In this way, responsibility to keep water clean in one’s locality, responsible use of water and water-saving projects would actually form part of our Christian commitment.³¹ The symbols used in the celebration of the sacraments like water, light, oil, bread, wine, incense, wax, human touch and voice are not only means to open us to the presence of God during the sacramental action but also means of promoting heightened ecological awareness. The symbols used in the celebration of the Christian sacraments “take into account both the transcendence and the immanence of God, while being particularly drawn to the presence of God within each living creature and within all material reality”.³²

The Word that was in the beginning with God (Jn 1:1) manifests in and through the incarnation the capacity of nature, human nature, to reveal the divine and thereby strengthens the bond between God, humans and the world. This bond has been, contrary to the popular understanding, further strengthened through the Risen Christ, who renews all creation through the power of His Spirit and continues to be the centre of human and cosmic history (Col 3:11).

3.3. Called to be Stewards of Creation

New insights and new interpretations that emerge in the present times in different religious traditions and sources emphasize greatly the significance of the interdependence of all creatures in the world

and perceive the world as a single cosmic community and the world as a gift from God and a possession of God. Although human beings are placed at the apex of creation, they are integral to creation and have the responsibility to take care of creation. This underlines a shift from a human-centred perspective to an earth-centred perspective that will respect the earth and her resources, perceive human beings as self-conscious component members or parts of the cosmos, and human destiny as irrevocably integrated with the world. In fact, “humans are neither the centre of the world, nor its master. Rather all are called to be servants and co-creators with God of the world, and always deeply appreciating the beauty and integrity of created things”.³³ In short, humans are created to be stewards and caretakers of God’s creation and to share in the creative and sustaining power of God, the Creator and to live as the ‘image’ of God. Caring for mother earth is not an option, a choice one may be called to make, but it is the call and urgent responsibility of human beings. Hence, the very vocation of human beings as stewards and nurturers calls for a conscious living with greater sensitivity and responsibility to nature.

Human beings’ concrete living of this vocation to be stewards of God’s creation is to a large extent determined by the relationship among human beings themselves. Pope John Paul II rightly emphasized this dimension of ecological concern in saying that what is at stake today “is not only *physical* ecology that is concerned to safeguard the habitat of the various living beings, but also a *human* ecology which makes the existence of creatures more dignified, by protecting the fundamental good of life in all its manifestations and by preparing for future generations an environment more in conformity with the Creator’s plan”.³⁴ Unless the relationship among human beings is guided by the values of the Gospel, our efforts to solve the grave consequences of the present ecological crisis will remain cosmetic solutions giving rise only to other forms of exploitation of nature and human beings. The children’s perception of cosmic spirituality at the Rio Earth Summit included also the following lines: “Ecology is not only trees and animals and rivers. It is also hunger and homelessness. We should help our brothers and sisters who have been abandoned in the streets”.³⁵

Conclusion

Life is a precious gift of inestimable value that God has given us. This gift of life can be nourished and lived meaningfully only through respecting the interrelatedness and interdependence of the world and humans. Values are better sustained and communicated when they are translated into decisions, deeds and projects. Values enfolded in deeds have the power to give orientation to and transform society. The ecological imperatives – eco-consciousness, eco-spirituality and call to be stewards of creation – demand that we make concerted and urgent efforts in different spheres of life.³⁶ These efforts would include encouraging people to participate in the ecological movements at local, national and global levels, empowering the younger generation to understand the significance of growing as stewards of God's creation, a serious reflection on the consumerist life-style and its consequences for our environment, docility to learn from the victims of the ecological crisis how to respect human dignity and to live as people of indomitable courage and hope, and celebrating meaningfully and effectively our eco-dependent existence through liturgical, cultural and secular symbols, rituals and events. Jesus, the incarnate Word and the Risen Lord, inspires us to follow his footprints to live in harmony with the human and cosmic community, because "all things came into being through him, and without him not one thing came into being" (Jn 1:4).

Notes

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Ecologization of Christian Faith: Living the Love Commandment in an Ecozonic Age

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Abstract:

The main argument of the article is that an ecological understanding of God and human beings provides the necessary motivation to link ecological concerns with faith. Accordingly, this essay will begin with an environmentally based reading of the love commandment, with a view to establishing that the concern for the environment is integral to the love commandment. In the second section on creation and ecology, the author applies the broader understanding of the love commandment to the environmental issues and indicates how environmental concerns become an essential part of living the Christian faith in a world facing ecological degradation. Here, basing himself on the teaching of the Church on ecology, the author discusses the relationship between God and creation and between human beings and creation to show that relationships are mediated through the environment and, therefore, the health of the environment is a necessary condition for the maintenance of an authentic relational life. The final section will focus on some of the environmental ethical principles enunciated by the church that point to the ways in which Christians ought to live the love commandment in an ecozonic age.

Keywords:

Love Commandment, human person, creation and ecology, relationship, ecological ethics.

Introduction

The keen awareness that the universe is an interdependent and interconnected system constituting a web of relationships as well as the consciousness that human beings possess the capacity to control and radically alter the basic chemistry and biology of the planet earth signify the emergence of what Thomas Berry calls, the 'Ecozonic Age'.¹ Thanks to the efforts of the United Nations Environment Program, the environmental activists, scientists, the various governmental and non-governmental environmental organizations, ecotheologians and ecosophers, and, the different churches and religions, humanity has become aware, as never before in history, of the positive and negative impact of human engagement with the environment. It is now within the power of human beings either to destroy the earth or to follow the path of healing the planet.

Though this general knowledge and awareness does not necessitate a detailed analysis of the ecological crisis facing us, it is expedient to delineate its salient features, especially the major problems, the primary causes and the main consequences. The scientific studies in various fields related to the environment have succeeded in accurately assessing and convincingly showing us the problems of ozone depletion, the greenhouse effect, the global warming, and the rapid degeneration of the earth's atmosphere and biosphere through the poisoning of air, water and soil. These problems result from the indiscriminate exploitation of the non-renewable natural resources, destruction of the tropical rainforests, mining activities, uncontrolled use of chemicals, pesticides and herbicides, and local and regional conflicts and wars. In short, the unprecedented ecological crisis is the outcome of the unsustainable pattern of development followed globally. The consequences are legion. Diseases from the consumption of contaminated food and from exposure to the harmful rays of the sun, growing poverty due to salination and desertification of productive land, topsoil erosion, drought and floods, scarcity of water, migration of the poverty stricken rural people to the urban centres that lack the infrastructure to receive them, unpredictable climate changes, massive extinction of life forms, acid rains, depletion of marine stock, and scarcity of

the non-renewable energy sources are some of the consequences facing the world.

The knowledge of the environmental problems, causes and consequences is not necessarily accompanied by appropriate action to halt any further degeneration of the environment.² There is a general apathy and unwillingness to change the attitudes and lifestyle that are demanded by the situation. The response of the international community to the ecological crisis is inadequate especially due to the greed and selfishness of the affluent and the survival needs of the poor. That is why Pope John Paul II aptly characterizes the ecological crisis primarily as a moral problem.³

The growing ecological consciousness has its repercussions on the thinking of the churches. The Catholic Church has developed an impressive body of teaching that seeks to address the ecological problems.⁴ The Church's teaching on ecology addresses environmental problems from the scriptural, theological, ethical, spiritual and social perspectives and offers guidelines, proposes action-plans in conformity with the moral and ethical norms, invites governments, multinational corporations, and industrialists to commit themselves to safeguarding the environment, and, exhorts the faithful and the people of good will to cooperate in addressing the ecological issues. The documents of the Church also contain a plea to systematic theologians, scripture scholars, scientists, moral theologians and others to undertake serious research to deepen the understanding of the various facets of environmental problems and to help arrest the degeneration of the environment.

This shows the awareness of the Church that the enormity of ecological problems is such that the restoration of the health of the environment has become the responsibility of everyone. Therefore, the church is eager to remind the believers in particular that the obligation to care for the environment arises from their faith in the creator God and is an integral dimension of their faith. Hence, Pope John Paul II, in his message for the celebration of the World Day of Peace on January 1, 1990, has forcefully stated:

Christians, in particular, realize that their responsibility within creation and their duty towards nature and the Creator are an essential part of their

faith. ... The commitment of believers to a healthy environment for everyone stems directly from their belief in God the Creator, from their recognition of the effects of original and personal sin, and from the certainty of having been redeemed by Christ. Respect for life and for the dignity of the human person extends also to the rest of creation...⁵

According to the pope, for Christians caring for creation is no more an option. It is a duty that inheres in the very faith they profess.

This essay is an attempt to motivate and assist Christians to understand and live their faith in ways that would facilitate the healing of the planet. The main argument of the paper is that an ecological understanding of God and human beings provides the necessary motivation to link ecological concerns with the faith. The theoretical framework for the argument is based on the love commandment which demarcates the essential quality of being a Christian in the world. Accordingly, this essay will begin with an environmentally based reading of the love commandment with a view to establishing that the concern for the environment is integral to the love commandment. In this connection I shall point out the need to broaden the scope of the great commandment and also make an attempt in that direction by presenting an ecologically founded understanding of human persons and God. In the second section on creation and ecology, I shall apply the broader understanding of the love commandment to the environmental issues and indicate how the environmental concerns become an essential part of living the Christian faith in a world facing ecological degeneration. Here, basing myself on the teaching of the Church on ecology, I discuss the relationship between God and creation and between human beings and creation to show that relationships are mediated through the environment and, therefore, the health of the environment is a necessary condition for the maintenance of an authentic relational life. The final section will focus on some of the environmental ethical principles enunciated by the Church that point to the ways in which Christians ought to live the love commandment in an ecozonic age. I conclude the essay by pointing out the significance of the teaching of the Church on ecology for the ecologization of the Christian faith,

that is, for living a life based on the love commandment understood in its broader sense.

An Ecological Reading of the Love Commandment

The great commandment to love God and to love one's neighbour (Mk 12:29-31) succinctly captures and conveys the core of the Christian life of faith as expressed in the central proclamation of Jesus, namely, the Kingdom of God.⁶ Since the love commandment provides the theoretical framework for linking faith and ecology, I shall briefly examine it from an ecological perspective. Does the love commandment call for the inclusion of ecological concern as an essential part of Christian living? Whether and to what extent one can integrate ecology into the faith will depend on the answer to this question. For, if faith connotes a specific way of living in the world and if the specificity of the Christian faith is expressed in the great commandment, then the love commandment ought to contain a nonnegotiable demand to care for the environment as part of the life of faith. This calls for an examination whether the love commandment stipulates such an obligation to the environment as part of the Christian faith.

Though the love commandment is often perceived to be containing two distinct commandments, the scripture scholars hold the opinion that it does not imply two separate commandments: one to love God *and* the other to love one's neighbour. Rather it refers to loving God *by* loving one's neighbour.⁷ That is to say, the love command envisages an inextricable connection between the two dimensions of this single commandment. One cannot love God without loving one's neighbour. From this perspective, the living of the Christian faith entails a radical trust in and an uncompromising acceptance of a way of life characterized by the love of neighbour as an expression of one's love of God (1 Jn 4: 7ff, esp. vv 20-21).

However, the great commandment has not always been understood this way. It suffered a gradual reduction in its status due to a narrow spiritualistic interpretation of the love of God and the love of one's neighbour. The Christian tradition has always and rightly emphasized the importance of the corporal works of mercy as an essential dimension of loving others. Obviously works of

charity are necessary from the point of view of attending to and relieving the urgent and immediate needs of the people, especially the poor and the needy. But the same tradition does not offer an excuse for limiting the scope of the love commandment to an exclusive focus on a disembodied love of God and an equally disembodied love of neighbour, nor does it give a license to neglect the concerns affecting the larger spheres of human existence. Restricting the scope of the love commandment to merely corporal works of mercy does violence to the long term interests of the neighbour and, by extension, to the full and authentic living of the Christian faith as it circumvents the larger dimensions of the great commandment. Unfortunately this has happened to the interpretation of the great commandment.

An Ecological Understanding of Human Persons

To regain the view of the deeper dimensions of the love commandment it is necessary to develop a holistic or ecological understanding of human persons as well as of God. For, at the root of the narrow interpretation of the great commandment is a partial and abstract understanding of human persons. The interpretation presupposes an anthropology based on a body-soul dualism that accords primacy to the soul as a spiritual entity and neglects the material dimension. This anthropology is inadequate as it leads to a dualistic construal of human beings and, thereby, to the reduction of human beings to an abstraction. And when it happens, it fails to offer any room for including human concern for the environment as an essential tenet of the Christian life.

This calls for broadening the scope of the love commandment. It requires an adequate anthropology based on an integral vision of human person as a body-soul unity.⁸ A holistic understanding of human persons conceives them as embodied beings who exist as part of nature. That is to say, it visualizes human beings essentially as ecological beings. Their existence is embedded in nature and their destiny is intimately intertwined with the destiny of the universe.

An integral understanding of human beings construes the 'neighbour' in the love commandment not as an abstract entity but

rather as an embodied, ecological being. Hence, loving one's neighbour involves, at the same time, loving nature which is the precondition for and the substratum of the neighbour's existence. More than an anthropological necessity and an environmental convenience, the widening of the scope of the love commandment is both a Christian anthropological imperative and is founded on and required by the Christian understanding of God as Creator.

An Ecological Understanding of God

To accord a wider interpretation to the love commandment it is also necessary to broaden the Christian concept of God. The Christian understanding of God is based on the concrete historical self-communication of God in creation and redemption. That is to say, Christians do not profess faith in an abstract, disembodied God. Instead the expression of faith in the creed affirms faith in God who is the Creator of heaven and earth. The entire created order owes its existence to God who enfleshes God's self in creation, and, in an eminent way, in Jesus the incarnate Word of God. The Christian God is one who is present in the world and who has become a part of its history through the life-giving presence of the Spirit.⁹ In Christianity, the distant, disembodied, transcendent and dispassionate God of Platonism gives way to an involved, incarnate, immanent, and passionate God approximating the *advaitic* vision of reality. For the Christians, however, the created world is distinct from the Creator God. At the same time, the mystery of the Incarnation has drawn the universe into the Trinitarian mystery. Thus, loving God as demanded in the love commandment implies loving God's creation that has been graciously drawn into the mystery of the Trinity.

Seen from this vantage point, the wider perspective on the love commandment drawn from an ecological understanding of the human persons as well as an ecological understanding of God signifies the environmental mediation of all human relationships and, thereby, lays the foundation for living the Christian faith in a credible way in an ecozonic age. It powerfully conveys the fact that existence is relational and it situates Christian existence in the context of relationality. The relational dimension of our existence encompasses the divine-human relationship, the human-human relationship and,

the human-environment relationship. This multi-relationality is mediated through the environment. This is because human beings are essentially embodied and ecological beings and, therefore, the environmental mediation of all relationships is a constitutive dimension of being human.

Creation and Ecology

Our effort so far has been to widen the scope of the love commandment through an ecological understanding of human persons and an ecological theology of God. This has important existential implications for a life of faith that seeks to integrate ecological concerns into its ambit. Presently, I shall try to concretely connect and apply the broader vision of the love commandment to the contemporary environmental issues. In doing this I shall closely follow the Church's teaching on ecology. The Catholic Church's teaching on ecology has its theological foundation in the faith vision of God, creation and human beings as enshrined in the scriptures, especially in the creation narratives.

However, it is important to remind ourselves that the predilection for the fall-redemption motif in the Bible has been instrumental in relegating the creation motif to the background of Christian consciousness, both literally and figuratively. According to Anne Clifford, "Because of the virtually exclusive emphasis on human redemption, the meaning of the nonhuman creation was ignored. This neglect of creation overlooks the fact that God's work of creation provides the cosmic purpose behind God's redemptive activity".¹⁰ As a consequence, theology itself became lopsided in its emphasis on an anthropocentric approach to reality. It is necessary, therefore, to retrieve and bring creation to the foreground of Christian theological discourse in order to bridge the gulf that separates creation and redemption as well as to see its implications for living one's faith based on a broader understanding of the love commandment in an ecologically devastated world. Understandably, the teaching of the Church on the ecological issues begins by pointing out the significance of creation for addressing the environmental questions from a Christian perspective.¹¹

The Church tries to link faith with the ecological concern through a specific reading of the creation account in the early chapters of the book of Genesis (Gen 1-3). In the process, the Church highlights some of the theological and anthropological truths expressed in the creation account that are important for Christian living. These truths concern the intimate relationship between God and creation including human beings, on the one hand, and the relationship between humans and creation including human beings, on the other. We shall briefly look at, first, the God-creation relationship and, then, the human-world relationship as elucidated in the Church's teaching on ecology. This will help lay the foundation for an environmental ethic that would be, in reality, the living of the love commandment in its wider sense.

God-Creation Relationship

The Christian life of faith is largely influenced and shaped by the understanding of God. For instance, the Trinitarian vision of God as a communion of love has great a impact on the way Christians perceive themselves, their relation to others, and the manner in which they organize themselves into a community called the Church. Even though human weaknesses always stand as a stumbling block to living up to the demands entailed in the vision of God, they have never posed any serious problems for affirming the ideals and challenges that derive from the Christian understanding of God as a communion of love.

In the same way, if Christians conceive God as one who sidelines creation in favour of the humans and their salvation/ redemption, then the possibility is that they would also neglect creation. Conversely, if our God were understood to be one who has not abandoned creation but is constantly present to it and who holds it together in existence, then this vision would influence our attitude toward creation. It is, therefore, an imperative to construct an ecologized understanding of God to bring in ecology as an essential dimension of the Christian faith.

Being keenly aware of this fact, the Catholic Church incorporates an ecological understanding of God into its teaching on ecology. It is achieved by emphasizing the various facets of the relationship

between God and creation. In the light of the Scriptures, the Church presents God, firstly, as the source of all that exists and, therefore, creation as dependent on God for its being and existence.¹² While maintaining a distinction between God and creation, the Church also stresses the dependent nature of creation and, thereby, avoids the dualism that separates creation from God.

Secondly, the Church's teaching on ecology emphasizes the goodness of creation.¹³ It takes its clue from the recurring refrain, "and God saw that it was good" as found in the first creation account (Gen 1:1-2:4a), for impressing upon our consciousness the delight that God takes in the creative activity as well as God's evaluation of creation as intrinsically good. Thirdly, this evaluation by God provides the Church with the necessary ground for its teaching on the integrity of creation.¹⁴ For, the source of the goodness is God and it is God who declares creation as good. The continuance of the goodness of creation depends on its integrity and, therefore, God desires the integrity of creation for its own sake.

The three principles elucidated as central to the relationship between God and creation, namely, God creates and sustains creation, God evaluates and declares creation as intrinsically good, and, God desires the integrity of creation, furnish a vision of an ecologized view of God – a God who is involved in creation the knowledge and worship of whom are intimately linked with and inseparable from creation. God's involvement with and continuous presence in creation provides the Church the necessary foundation for a sacramental view of creation¹⁵ that visualizes the respect and deference towards creation as an integral dimension of reverencing God.

Human-World Relationship

The relationship that God has with creation provides building blocks and an orientation for an ecologized anthropology. According to the creation account, human beings derive their existence from the Creator God. Created in the image and likeness of God, human beings stand not only in a dialogical relationship with God, but also participate in God's relationship with the creation. They are given a share in God's dominion over the world.¹⁶ The narrative, while

denying divinity to humans as well as absolute dominion over creation, describes human beings as the responsible caretakers of creation. They exercise this responsibility as dependent creatures and show it by continuing the creative and sustaining activity of God, by participating in God's delight in creation while perceiving its goodness and by maintaining the integrity of creation.

At this juncture it is necessary to explicate the ecological consequences of the disruption in the relationship between God and humans as described in the Yahwist creation account (Gen 2:4b-3:24) in order to place the environmental ethics in context. In its teaching on ecology, the church accentuates the impact of the human alienation from God upon creation. In consonance with the theology of God and the theology of the human persons, the Church interprets the story of the Fall from an ecological point of view.¹⁷ It emphasizes that the breaking of the divine-human relationship, results in a similar rupture in the human-world relationship as the earth turns inimical to human beings and as the human-human relationship falls into disarray. That is to say, human sinfulness affects the well-being of both the creation as well as the human persons. From this perspective, the Church perceives the contemporary ecological crisis as manifestations of the alienation of the human persons from their Creator God.

In the context of the alienated condition of humans and creation, the Church places the redemptive work of Jesus that encompasses not only humans but also the whole cosmos.¹⁸ This cosmic view of salvation is in perfect harmony with the ecologized understanding of God as well as with the ecologized notion of the human person. God who in the beginning of creation saw everything as good, also sees the final fulfilment of the whole creation as good. This is a move from a truncated eschatology that construes salvation in terms of the salvation of the souls. This departure has important consequences for living the Christian faith. An eschatological vision exclusively focused on the other-world will invariably lead to the neglect of this world. Whereas a cosmic vision of the final fulfilment of the entire cosmos as the redemptive finality of the Christ event as depicted in St. Paul's Letter to the Colossians (Col 1:15 ff), challenges Christians to seek their salvation in the world and with

the world. Measured with this yardstick, the neglect of creation would be tantamount to a refusal of the salvation offered by God in the person of Jesus Christ.

In this way the Church's teaching on ecology seeks to overcome the pernicious divide between creation and redemption. Its theology of God and theology of the human person together with its cosmic vision of final redemption propose a view of creation that links the creative activity of God in the beginning with the new re-creative activity of God in Jesus Christ for the final and definitive restoration of the whole creation in God. This unified vision of creation and redemption raises new challenges for living the Christian faith in the contemporary world.

Thus, a theology of God that emphasizes the loving relationship that God has with creation, proposes an ecologically embedded theological anthropology, according to which human beings are seen not only as standing in a special dialogical relationship with God but also, as an integral part of creation, actualizing this relationship by participating in the ongoing creative process to advance the well-being of creation. The authenticity of the God-humans relationship determines the nature of the humans-world relationship. In this way, the Church's teaching on ecology illumines and affirms the ecological mediation of all relationships. Here the correspondence between an ecologized Christian theology of God and a similar theology of the human person becomes obvious and its implications for living the Christian life challenging. The implications are enunciated in the environmental ethic of the Catholic Church.

Human-Human Relationship: Ecological Ethics

The scriptural perspective on the environment developed through an ecological interpretation of creation in conjunction with redemption provides the theological basis for an ecological ethics that links faith and ecological concerns. Though the ethical issues discussed show differences in emphasis depending on the concerns emerging from the specific location of the local churches, they cumulatively propose concrete ways of practicing the love commandment in a world facing ecological crisis.

It has been pointed out that the human-divine and the human-human relationships are mediated through creation. We have already elaborated and discussed the manner in which the human-divine relationship is mediated through creation. Presently we shall focus on how creation mediates the human-human relationship. The environmental ethics offered in the church's teaching on ecology accepts the environmental mediation and seeks to regulate the human-world relationship (ecological ethics) in order to ensure the quality of human-human relationship (social ethics). In this way, as we shall see, the church accords primary importance to social ecology¹⁹ in its environmental ethics.

The Church formulates the ecological ethics basing itself on and interpreting the general moral principles articulated in the Christian Tradition from an ecological perspective. Central to the church's ecological ethics is the principle of the dignity of the human person.²⁰ The source of human dignity is located in the fact that human beings bear the image and likeness of God. The enhancement of this God-given dignity calls for, among other things, a safe environment where people can live a healthy life free from the dangers of toxic waste, polluted air, water, and soil and the accompanying diseases. Since safety from the environmental hazards is in accordance with the dignity of the human person, the human engagement with the world ought to take into consideration the health and well-being of the people. Therefore, Pope John Paul II recommends that the right to a safe environment should be included in the charter of fundamental human rights.²¹

Closely linked to the principle of the dignity of the human person is the principle of respect for life²². It is also intrinsically linked with the respect for nature. For, the varied life forms on earth constitute an intricate web of life and, as God's creatures, they possess the right to life. All creatures in this web of life, including human beings, are dependent on the environment for survival. Any threat to the environment is a threat to life itself. This being the case, the eminent way to show one's respect for life is to safeguard the environment and to make it life-enhancing. However, the contemporary scenario of the massive extinction of species from the face of our planet due to the wanton destruction of the habitat

testify to the radical denial of the value of and respect for life. Besides, the thoughtless exploitation of the non-renewable resources entails a lack of respect for the life of future generations.

In accordance with the principles of the dignity of the human person and the respect for life, the Church perceives the link between eco-justice and social justice.²³ The environmental blight affects everyone. However, the effects of the environmental degradation fall heavily on the poor, the powerless, the landless, the labourers, the tribals and women. In this context, environmental justice is seen as the precondition for ensuring social justice, especially for the weaker sections of society. Because human beings are an integral part of the natural world (ecological beings), their relationship with society is mediated through the environment; and because they are an integral part of society (social beings), their relationship with the environment is mediated through society. This establishes a close connection between social justice and eco-justice. One calls for the other. Therefore, the Church acknowledges that its option for the poor requires the Church to opt for the earth by committing itself to the promotion of eco-justice.²⁴

Another principle that promotes a strong environmental ethics is the principle of planetary common good.²⁵ As the world becomes increasingly interdependent and interrelated, the environmental problems transcend the boundaries of nations and they become global in nature. Consequently, the protection of the environmental health cannot be left to the initiative of individual nations. The community of nations needs to assume this global responsibility. The church's teaching on ecology emphatically points out that the planetary common good calls for solidarity among nations. Solidarity is yet another environmental ethical principle that emphasizes a conscious and willing acceptance of our interdependence.²⁶ It rules out the development of a few at the expense of the underdevelopment of others. The principle of solidarity calls for putting an end to the exploitation of the poorer nations by the rich and reminds the developed industrialized nations of their special obligation for the good of the developing nations. The Church considers solidarity one of the conditions for the health of the environment.

The Christian tradition has always emphasized the principle of the universal purpose of created things.²⁷ God intends the fruits of the earth for the sustenance of all. The departure from this intention of God leads toward excessive accumulation of wealth in the form of goods and landed property in the hands of a few. This deprives a majority of the world's population of the necessary wherewithal for their living a dignified life and forces them to adopt unsustainable ways. Hence, the health of the environment calls for an equitable distribution of the fruits of the earth. The principle of the universal purpose of the created things also highlights the fact that human beings are responsible stewards of creation and the proper exercise of this responsibility requires a system that, while preventing the accumulation of land and wealth in the hands of a few rich, facilitates an equitable sharing in the bounty of the earth.²⁸

The Church's teaching on ecology advances the principle of sustainable development or authentic development and underscores certain factors crucial to the health of the environment.²⁹ Human beings are endowed with intelligence and they are to use their capabilities for making the world a better place to live in. Human beings have made advance in science and technology and the fruits of scientific discoveries and technological inventions are at the service of human life and dignity. However, there is a flip side to the developmental ventures. Uncontrolled experimentations and thoughtless use of technology play havoc on the environment. Taking note of the contemporary development in science and technology, the church insists on authentic development that takes into account the sustainability of the earth, the good of the present and future generations as well as the good of the other life forms. The Church also reminds us that authentic development ought not to be identified with consumption.³⁰ Rather, it calls for curtailing consumption and making sacrifices for the good of others. This is possible only if there is a change of life-style and attitudes.³¹

One of the major threats to the well-being of peoples and the environment is war.³² The Iraq war has adequately impressed upon the human consciousness that humanity has to pay a heavy price for war in terms of the loss of life and the destruction of property as well as in terms of the destruction of the environment. Humanity is

also learning that war can no longer be a solution to the problems facing the world. The church is aware that in the contemporary times no war can be a just war and, therefore, it advocates the avoidance of regional conflicts and wars as integral to the effort to maintain the health of the planet.

These principles of environmental ethics proposed by the Catholic Church provide a general framework for enhancing the human-human relationship through the enhancement of the human-world relationship. The church does not claim that its environmental ethics is exhaustive. Rather it furnishes a set of broad principles that function as a point of reference for regulating the environmental mediation of relationships in conformity with the requirement of the emerging ecozonic age. The church is convinced that Christian living guided and inspired by these ecological principles will invariably be one that integrates ecological concerns with faith. In other words, it would be a concrete exercise of the love commandment in the contemporary world.

Conclusion

The Catholic Church's approach to the environmental issues is theologically comprehensive. It incorporates the scriptural, theological, and the ethical perspectives – the three interconnected spheres of theology – to underscore the theological implications of the environment for an authentic Christian life in the contemporary world. The teaching on ecology advances the principle of safeguarding the health of the planet and delineates the essential requirements for the exercise of faith in a world facing ecological crisis. Though it may not have been its intention, in doing this the Church also provides an integral theological method not only for an ecological theology, but also for theological reflection in general.

In this paper I have analyzed, with the help of the unified theological method, the significance of the love commandment for an ecological theology. Keeping the broader understanding of the love commandment as the general frame of reference I have sought to establish that ecological concern is an essential part of living the great commandment. In fact, in the context of the emerging ecozonic age, incorporating the ecological issues into the Christian faith is

the avenue open to the Christians to live the love commandment in an authentic and credible way.

Now we could ask: what contribution does the church's teaching on ecology make? The ecological principles proposed in Catholic teaching are not something entirely new. For, the United Nations has been, for a long time, issuing general norms and offering concrete action plans for protecting the environment globally and regionally. Most of the principles proposed by the Church are also explicitly or implicitly present in the documents of the UN, especially in Agenda 21 of the Earth Summit at Rio in 1992. Hence, the formulation of the major ecological ethical principles cannot be considered the major achievement of the Church's teaching on ecology.

In fact, the major gain should be located in the sphere of Christian living. As we have seen, the Christian life of faith is an unfolding of the love commandment. If in the past this foundational commandment has been misconstrued and sidelined to the detriment of Christian living, the teaching on ecology corrects this anomaly. It offers an opportunity to widen the scope of the love commandment so as to make the environmental concerns integral to the practice of Christian faith understood as living the great commandment. It convincingly shows that in the emerging ecozonic age, living the love commandment entails living for the earth, where humans encounter God and, in the process, encounter themselves and creation in God.

Notes

1. The term "Ecozonic Age" is borrowed from Thomas Berry. He divides the history of the universe into four phases, namely, the galactic, geological, biological and human. The human phase is further divided into five phases: the Paleolithic, the Neolithic, the age of the classical civilizations and religious cultures of the world, the rise of nation states and the emergence of science and technology and, finally, the Ecozonic Age. Cfr. Mathew Jayanth, "Ecologization of Eschatology: An Ecotheological Understanding of Human Longing and Fulfillment," *Disputatio Philosophica: International Journal on Philosophy and Religion*, No. 3 (2001): 61-62
2. *The Third Global Environment Outlook (GEO-3)* – the report released by the United Nations Environment Program on May 22, 2002 as a preparation for the UN World Summit at Johannesburg from August 26 - September 4, 2002 – clearly points out that the response of the

world community to the environmental concerns has been inadequate. Cfr. Mathew Jayanth, "Ecology, Economics and Ethics: Sustainable Development as a Framework For a Planetary Ethics", in *Religion, Society and Economics: Eastern and Western Perspectives in Dialogue*, Kuruvilla Pandikattu and Andreas Vonach, eds. (Frankfurt: Peter Lang, 2003), 40-44.

3. John Paul II, *The Ecological Crisis: A Common Responsibility*, no.6.
4. A collection of the documents containing the official teachings of the Catholic church is available in Drew Christiansen, S.J. and Walter Grazer, ed., "And God Saw That It Was Good": *Catholic Theology and the Environment* (Washington: United States Catholic Conference, 1996). The Documents include: "The Ecological Crisis: A Common Responsibility" by Pope John Paul II, "Renewing the Earth" by United States Catholic Conference, "Christians and their Duty Towards Nature" by Australian Bishops' Committee for Justice, Peace and Development, "Pastoral Letter on the Relationship of Human Beings to Nature", by the Dominican Episcopal Conference, "The Cry of the Land" by the Guatemalan Bishops' Conference, "Ecology: The Bishops of Lombardy Address the Community" by the Catholic Bishops of Northern Italy, and, "What is Happening to Our Beautiful Land?" by the Catholic Bishops of the Philippines. In the subsequent references to these documents only the title and the article number or the page number will be given.
5. John Paul II, *Ecological Crisis: A Common Responsibility*, Nos.15-16.
6. For a detailed discussion on the connection between the Kingdom of God and the love of one's neighbour, see George Soares-Prabhu, "The Kingdom of God: Jesus' Vision of a New Society" in *Collected Writings of George Soares-Prabhu, S.J.* Vol 4:Theology of Liberation: An Indian Biblical Perspective, Francis D'Sa, ed. (Pune: Jnana-Deepa Vidyapeeth, 2001), 223-251.
7. Soares-Prabhu points out that reference to the love of God is rare in the New Testament. The reason is that, according to Jesus, it is precisely by loving one's neighbour that one loves God. Cfr. George Soares-Prabhu, "The Love Commandment" in *Collected Writings of George Soares-Prabhu, S.J.* Vol 3:Biblical Spirituality of Liberative Action, Scaria Kuthirakkattel, ed.(Pune: Jnana-Deepa Vidyapeeth, 2001), 65-71. See also "Renewing the Earth", p.238-239
8. The Second Vatican Council in its Pastoral Constitution of the Church in the Modern World emphasizes the need to take human beings in their totality as a body-soul unity. Cfr. *Gaudium et Spes*, no. 14.
9. For a discussion on the link between the Spirit and environment, see Mathew Jayanth, "Ecologization of Theology for and Ecclesial Eco-

Praxis,” in *Dreams and Visions: New Horizons for an Indian Church*, Rosario Rocha and Kuruvilla Pandikattu, ed. (Pune: Jnana-Deepa Vidyapeeth, 2002), 219-220. Anne M. Clifford, “Foundations for a Catholic Ecological Theology of God”, in “And God Saw That It Was Good”: Catholic Theology and the Environment, Drew Christiansen, S.J. and Walter Grazer, ed., (Washington: United States Catholic Conference, 1996), 22.

11. The documents of the church on ecology mentioned in “And God Saw That It Was Good” refer to the two creation accounts in the Book of Genesis chapters 1-3.
12. The creation’s dependence on God is emphasized in the following documents: “Christians and their Duty Towards Nature”, p.251; “Pastoral Letter on the Relationship of Human Beings to Nature”, No.30
13. The documents that stress the goodness of creation are: “The Ecological Crisis” No.3; “Renewing the Earth”, p.228; “Christians and their Duty Towards Nature”, p.251.
14. The integrity of creation is emphasized in “The Ecological Crisis” No. 7-8, 16.
15. The church maintains a sacramental view of creation. Cfr. “Renewing the Earth”, p.231.
16. The human responsibility for the creation is affirmed in the following documents: “The Ecological Crisis” No.3; “Renewing the Earth”, p.228-229, “Christians and their Duty Towards Nature”, p.251-53, “Ecology: The Bishops of Lombardy Address the Community”, p. 302.
17. For the Fall and its consequences on the earth, see, “The Ecological Crisis” No.3; “Renewing the Earth”, p.229; “Christians and their Duty Towards Nature”, p.253.
18. The documents that present a cosmic view of redemption and new creation are: “The Ecological Crisis” No.4; “The Cry of the Land”, No. 2.1.6. For a discussion on the ecological significance of the cosmic view of redemption, Cfr. Mathew Jayanth, “Ecologization of Eschatology: An Ecotheological Understanding of Human Longing and Fulfillment, *Disputatio Philosophica: International Journal on Philosophy and Religion*, No. 3 (2001): 61-62.
19. The document “Renewing the Earth” specifically mentions the term ‘social ecology’ on page 224. For a concise discussion on social ecology, Cfr. Mathew Jayanth, “Ecologization of Eschatology: An Eco-theological Understanding of Human Longing and Fulfillment, *Disputatio Philosophica: International Journal on Philosophy and Religion*, No. 3 (2001): 223-224.

20. The following documents address the question of the dignity of the human person. "The Ecological Crisis" No.7; "Renewing the Earth", p.224-225.
21. Pope John Paul II writes, "The right to safe environment is ever more insistently presented today as a right that must be included in an updated Charter of Human Rights". See, "The Ecological Crisis" No.9.
22. The principle of respect for life is dealt with in the following documents. "The Ecological Crisis" No.7; "Renewing the Earth", p.232, "Ecology: The Bishops of Lombardy Address the Community", p. 303-304; "What is Happening to Our Beautiful Land?", p.310
23. The question of justice and eco-justice is addressed in "Renewing the Earth" p.225;
24. The connection between the option for the poor and the option for the earth is emphasized in the following documents. "The Ecological Crisis" No. 11; "Renewing the Earth", p.234.
25. The notion of the Planetary Common Good is found in "The Ecological Crisis" No. 9; "Renewing the Earth", p.232, "Pastoral Letter on the Relationship of Human Beings to Nature", No. 41.
26. The following documents deal with the principle of solidarity "The Ecological Crisis" No. 10; "Renewing the Earth", p. 233, "The Cry of the Land", No. 3.2.2.
27. The universal purpose of created things is a general Christian moral principle for the regulation of the use of created things. It is discussed in the following documents: "The Ecological Crisis" No. 8; "Renewing the Earth", p.233, "Christians and their Duty Towards Nature", p. 250; "Pastoral Letter on the Relationship of Human Beings to Nature", No. 32, 35 a, c, "The Cry of the Land", No. 2.2.1.
28. The need for ensuring the equitable distribution of goods is stressed in "Renewing the Earth", p. 239, "The Cry of the Land", No. 2.2.2.
29. The Church's view on development can be found in "Renewing the Earth", p.234, "The Cry of the Land", No. 3.2.3.
30. The following documents addressed the question of consumption "The Ecological Crisis" No.13; "Renewing the Earth", p.235, "Ecology: The Bishops of Lombardy Address the Community", p. 303.
31. The documents that call for a change of attitudes are the following. "The Ecological Crisis" No.13; "Renewing the Earth", p.239-240.
32. Pope John Paul II points out the cost of war in terms of environmental harm in "The Ecological Crisis" No.12.

Ethical Challenges from Ecology

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Abstract:

Faced with the alarming environmental crisis, we need an ethics of universal compassion, one that seeks harmony, respect and concern for all creatures, not merely one promotes the advantage of the human race but one that aims at the good which conserves and promotes all creatures, the supreme good being earthly and cosmic integrity. We are mutual custodians. We are mothers, not masters, of creation. We need an ethics of partnership. No more stewardship, but servants of and partners with Nature who care for creation, who commit themselves to join in solidarity with indigenous communities struggling for their cultures, their right to land and sea, with peasants and farmers seeking land reforms. It is in doing so that we reflect God's creative and sustaining and compassionate love. It is an ethics of communion, not domination, that propels *cosmogenesis*. Such an ethics links together the issues of justice, peace and ecology. An act of covenanting for preserving the gift of the earth's atmosphere and for nurturing and sustaining the world's life; for combating the causes of the destructive changes to the atmosphere which threaten to disrupt the earth's climate and create widespread suffering and for building a culture that can live in harmony with the integrity of creation.

Keywords:

Ethics, ecology, universal compassion, nature, rights, eco-sensitivity, global world order.

A French diplomat, undergoing a routine medical check after serving three years in Kolkata, was asked how many packs of cigarettes he smoked a day. When he protested that he had never smoked in his life, his doctor couldn't believe him: three years of breathing Kolkata's air had given him lungs resembling a habitual smoker's. The state of environment health of India is deplorable. The dismal picture, coupled with corrupt enforcement of environmental regulations, reflects the sad state of the Indian ecology in the first years of the 21st century. Ecology is the problem of problems, and indeed the question of questions that makes relative all other questions.

Ecological crisis

India today is home to many of the world's most polluted cities. Factories belch forth noxious black clouds; effluents pour untreated into rivers; sewage systems reek and overflow. Despite the tree-huggers of the *Chipko Andolan*, deforestation and over-cultivation take their own environmental toll of rural India. As a result of unchecked pollution, respiratory illnesses, cardiovascular diseases and lung ailments are rife in India. The total health costs for the country resulting from illnesses caused by pollution are estimated at some 4.5 per cent of India's gross domestic product. In other words, about half of our country's annual economic growth is being wiped out by pollution, and development is taking place largely at the expense of the environment.

Not only in India is the situation so. The ecological issue takes the same form in many Third World countries. Land is being eroded very rapidly due to over-grazing or the stripping away of the tropical forests. The desert is advancing in many semi-arid places. The cutting down of the trees means that firewood is hard to come by – and the search for fuel leads to further stripping of the land and further erosion and desertification. The resultant change in the climate forces peasants – mainly women – to walk miles carrying the water they need in their homes. The poverty of the people and of the land causes peasants to put ever greater demands on the Earth – this in turn leads before long to greater poverty.

Quite recently these problems have been greatly increased by the fact that the more industrialized countries have been trying to lessen their own ecological problems by exporting some of them to the Third World. Toxic industrial waste, and even radioactive materials, have been dumped in poorer countries by unscrupulous Multi-National Companies. Governments in these countries may not have the technological expertise available to them to monitor the waste material, or officials maybe bribed to allow dangerous dumping to take place.

Even more risky is the development of nuclear energy in some Third world countries. First world scientists and governments often express alarm about this proliferation. There may well be an element of colonialism or even racism in such alarm. But the fact is that the use of nuclear power is inherently dangerous and the more widely it is used the greater the danger. And in some of the newly developing countries the controls on the way it is used may be even less stringent than in Western countries. In many places people have to live with the constant threat of an industrial or transport accident which could poison whole towns or tracts of the countryside or large stretches of rivers or beaches. If such an accident should involve nuclear material the danger is almost unlimited.

Further, some of the ecological abuses of the Third world are affecting the world as a whole. The most obvious example is the wholesale cutting down of the tropical rain-forests. The Amazonian rainforest is being destroyed at double the rate of all previous estimates. Satellite images show that an average of 15,500 sq km of forest is being cut down by selective logging each year. This is besides a similar amount clear-cut annually for cattle grazing or farming. Selective logging negatively impacts many plants and animals and increases erosion and fires. Additionally, up to 25 per cent more carbon dioxide is released to the atmosphere each year from the decomposition that loggers leave behind. About 400 million tones of carbon enter the atmosphere every year because of traditional deforestation in the Amazon and an additional 100 million tones of carbon occurs through selective logging. When a tree trunk is removed, the crown, wood debris and vines are left behind to

decompose, releasing carbon dioxide gas into the atmosphere. A thinned canopy also makes the forest more dry and prone to fire.

Many reputable scientists believe that the loss of oxygen produced by these forests, and the smoke from their burning, are bringing about a 'greenhouse effect' which will raise the average temperature all over the world. This, they say, will in turn lead to the melting of huge amounts of ice at the North and South poles. The resultant rise in the water level of the oceans may cause much of Bangladesh and other heavily-populated low-lying areas to be totally engulfed by the sea.

World peace is threatened not only by the arms race, regional conflicts and continued injustices among peoples and nations, but also by lack of due respect for nature, by the plundering of natural resources. There is a relationship between ecological problems and structural poverty. Unjust land distribution means that farms are so small that the soil becomes exhausted. In search of new land, the farmers cut down forests in an uncontrolled way. This destruction of the natural heritage is also caused by the need of heavily indebted countries to increase their exports in order to pay off their debts. Ecology and nuclear threat were major concerns of the West. On the other hand, unjust international economic relationships and structures and forced underdevelopment are more pressing issues of the Third World. Problems relating to injustice, lack of peace, and the degradation of the environment are all linked together and interrelated. Issues of Justice, peace and ecology are related. The root cause of the different threats to life is an unjust world economic order. This in turn is linked to the misuse of science and technology to gain power over nature and over others. Ultimately the ecological crisis is a set of attitudes, goals and values – an ethical crisis. It is an integral and crucial part of the justice agenda. A good deal of modern so-called development is really a matter of the plundering by a relatively small number of people of resources which had been available for the benefit of all - and of future generations. It is an unbalanced, unjust, and ecologically exploitative development that favours a minority at the expense of many others.

Response of Christian Ethics to Ecological Crisis

In the Christian perspective, Creation is God's gift and humans along with other components of the earth community live out their lives as a gift or loan from God. Creation is something sacred and our attitude towards it should be one of reverence and responsibility. Contrary to an earlier Christian instrumental attitude, which explored and exploited creation, the Christian ethics today sees that the usual Scriptural basis to prove the syllogism: 'Imago Dei': *therefore* human dignity does not follow. This syllogism in Gen. 1:26-31 is a narration of the rescue operation on the pattern of Exodus. God's likeness in humans here is attributed to their collective co-responsibility in God's liberative responsibility to the whole of Creation. Hence 'imago Dei' is not so much our dignity as our responsibility⁰ and 'rule over' means here 'to take charge'.¹ "It is not in terms of rights that the book of Genesis describes the first violation of inter-human justice, but as spurning to be one's brother's (and sister's) keeper (Gen.4:9)."² Besides, if rights are derived from human dignity, argues Aloysius Pieris, how could infra-human creatures have any rights? It is the covenant model that we are co-responsible for the whole of creation that meets this challenge.³ Therefore, we have to take up the challenge of healing our planet. A more caring and reverential attitude towards creation is necessary.

The new Christian ethics today approaches the earth as our home, and as a sanctuary which needs to be treated with responsibility, care and reverence. The earth discloses the lineaments of divine revelation. "Human and other forms of life are dependent upon forces we do not create and cannot fully control, forces that bring us into being and sustain us and life around us, but forces that also limit and destroy us and determine the destiny of the cosmos. This dependence – a matter of fact, no matter how it is interpreted – evokes a sense of the sublime, or for some of us a sense of the divine".⁴ Creation exists for God and we should relate to all things in a manner appropriate to their relation to God.⁵ This new understanding of God-experience is crucial for an altered ecological consciousness. "There is an urgent need to connect or reconnect all things by means of a powerful Center.... This Center makes us suffer when it breaks apart, which we perceive as an unjust attack against the earth, its ecosystem, its

flora and fauna, and particularly against its poor and oppressed, both men and women”.⁶

Besides, the new Christian ethics emphasizes our faith in the Universe sharing and participating in the resurrection of all flesh. There is a future for the stars, for the mountains, for plants, for animals and for people. Christian faith is adamant about this. This assurance of a general resurrection enabled the early Christians to speak of the cosmic Christ and of the Spirit’s dwelling in the energy of the universe and of life. The omnipresence of Christ and the Spirit is a favorite theme of St Francis of Assisi, who saw all created things and beings, from the sun and the moon to birds and snails, as sacraments of God and as brothers and sisters. Teilhard de Chardin updated this experience in the context of modern cosmology and tried to identify the emergence of consciousness as the unequivocal sign of God’s presence in the movement of matter toward ever greater complexity.

The ecological crisis has led us to think about a new spirituality that is oriented to the earth, especially to the segments of living and non-living that are oppressed. It calls for “a spirituality that demands a prophetic commitment, born not of simple indignation, but of a mystic experience of unity with the divine and with all things. Such a commitment will be indispensable in inaugurating or at least reinforcing a new civilizing paradigm that is more spiritual, compassionate, tender, and fraternal. This spirituality will help to guarantee a promising future for planet Earth and for all tribes that inhabit it”.⁷ Eco-protection measures the depth of our spirituality. Ethics degenerates into codified precepts and mechanical behaviour if it does not express a form of spirituality of integrity or mysticism. The Spirit sleeps in stone, dreams in flowers, awakens in animals, knows he is awake in men and feels awake in women. Such a vision can sustain an ecological mysticism.

A New Global World order and New Global Ethic

Humans have survived the fury of two world wars, but they will not survive the fury of the war they are waging against nature. The approaching eco-disaster is visible even to those whose vision is imperfect. Therefore, before it is too late, we must return to sanity.

The other name of this sanity is the conduct of life in consonance with the laws of ecology. But it would not be enough to have only ethical values to ensure a harmonious relationship between humans and nature at the community level. The new ethical order has to find another form of centrality. This should be eco-centric and should seek the equilibrium of the earthly community. For the sake of equilibrium human beings must impose limits on their own desires. Only an ecological ethics established on the basis of respect for otherness, on the acceptance of diversity, on solidarity and on the valuation of uniqueness, will help people to dethrone the dominant utilitarian paradigm that is so serious a threat to life and peace among all creatures in nature. We have to have a code of conduct for this purpose at the global level and also a global code of environmental ethics to guide the behaviour of the global society.

The world has become a global village. Ecological issues concern today the whole world. So what we need most of all is a new global order and a new global ethic on whose fundamentals we can all agree. Ecological questions have to do with reaching a new level of globalization, of world awareness and consciousness, where there is universal understanding of the importance of the earth as a whole, the welfare of nature and of humankind, the interdependency of all and of the apocalyptic catastrophe menacing all creatures. Ecology presents a global interest, a question of life and death for humankind and the planetary system. The word 'globalization' so often used has primarily negative associations, since the process of globalization is all too often only criticized for its excessive and harmful effects, whether those of global market capitalism, industrialist militarism or excessive consumerism. Yet it is perhaps too often forgotten, especially among critical ethicists, that the consciousness of the *global*, of one planet as one world, also has important positive features in terms of a greater sense of belonging together, and has produced the remarkable growth of a new sense of global responsibility which tries to address global problems through concerted efforts, through a growing consensus and the search for a shared ethic grounded in the same intentions and spirit. "No human life together without a world ethic for the nations; no peace among the nations without peace among religions, no peace among religions without dialogue among religions".⁸

We have realized that changing our world means that we have to develop our commitment and will to change our ways. Only then can we create a new global order animated by a different and new ethics. On the one hand people need to develop a greater spirit of caring for the earth and on the other hand this new ethics cannot develop in full without a change in the awareness of our connection with and dependence on the earth and its products. What is required is an ecological ethics to effect a transformation of values that in turn leads to action to heal the planet. A planetary, ecological vision together with a commitment to a culture of non-violence and peace also undergirds the principles of *The Earth Charter* approved by UNESCO.

A Socio-economically Just Ecological Ethics

Poverty is our main environmental problem. The problem of poverty is one of the principal problems of environment. It is impossible to develop an adequate respect for Nature without taking into account the way in which she adversely affects important creatures, such as marginalized and impoverished human beings. This situation of social injustice includes an element of ecological injustice, and vice versa. The discussion therefore should focus its attention on economically just concerns and address the justice issue.

. It is a well-known fact that the resources of the world are distributed unevenly. The industrialized nations in the Northern hemisphere consume a disproportionate high share of resources and contribute by their lifestyle to the destruction of the ecological equilibrium in the South. Many low lying areas of Bangladesh are being subsumed under water not by the fault of people in Bangladesh, but by the impact of the economic activities of the people in the Northern hemisphere, in particular the burning of fossil fuels for space heating, transportation industry and electricity production, which cause global warming and the resultant rising of the sea level. The industrialized nations, almost all located in the Northern hemisphere, are responsible for 80 percent of the pollution of the earth (the United States alone 23 percent). And the solutions suggested in the societies here are shortsighted, i.e., conservationism and environmentalism, without critically scrutinizing the actual

model of society and the paradigms of development and consumption that are the main causes of the worldwide ecological crisis, especially the bad health and premature death of the poor. It is a product of the Northern hemisphere. The people in this region have despoiled nature in their countries and have robbed the colonized people of the entire world, and after all that are now claiming a safe ambience and ecological reserve for themselves. While the main nations in the Northern hemisphere are responsible for the global ecological crisis, they are also the countries that are unwilling to take the main responsibility for correcting the destructive process. Instead, they seek to impose the burden of helping nature to recover on countries in the Southern hemisphere.

Population growth is often labelled 'environmental problem' but it has been shown that it is not so much the number of people, but what they consume, what part of the 'ecoscope' they use, that is crucial. Significant is the issue of the Northern hemisphere's over-consumption. Thus a more important factor to consider when population pressure and environment are linked is the overexploitation of resources to satisfy the greed of the people of the Northern hemisphere. Depletion of natural resources and increasing environmental toxicity are the by-products of the Northern hemisphere, i.e., the lifestyle of affluent societies toward land and control over resources so that more and more people have to cope with less and less fertile land and other resources. Thus both poverty and excessive wealth are detrimental to the environment.

So, when we analyze deeper, we find that the ecological crisis is mainly due to the spirit of competition and rivalry that is characteristic of the capitalist market economy. Capitalism has removed all the moral barriers that used to keep the growth of production and consumption within ecologically acceptable limits. Under capitalist conditions the selfless *homo collectivicus* of the organic community is permanently ousted by *homo economicus* whose sole motivation is self-interest. Accordingly, the image of a fertile and abundant nature gives way to that of a poor and 'stingy' Nature characterized by the new notion of 'scarcity'. While scarcity is generally perceived as a natural fact it is actually socially and economically induced. Apparent scarcity is merely the result of the artificially generated

need for an ever swelling stream of consumer goods of increasingly doubtful usefulness.⁹

There is thus a connection between the emergence of the concept of scarcity and the emergence of a particular brand of equality. Organic societies are characterized by an 'equality of unequals'. They are composed of a great variety of individuals and groups that fit together like the pieces of a mosaic, in a 'unity-in diversity'. To indicate that this unity is not uniform or homogeneous but rather multiform and heterogeneous, we speak of 'wholeness' instead of 'oneness'.

In modern societies, the 'equality of unequals' is replaced by an 'inequality of equals'. Here people are each others' equals in name only whereas in fact they differ greatly in terms of income and status. Modern societies apply a uniform standard by which people can be compared and, consequently, ranked. Thus modern equality produced hierarchical relationships that would be unthinkable in organic societies. It turns cooperative creatures who respect each other's limits into rivals mercilessly fighting each other in the battle over scarce resources.¹⁰ To stop this dead-end struggle, we must learn once again to experience 'otherness', 'not hierarchically on a 'scale of one to ten' with a continual emphasis on 'inferior' and 'superior', but ecologically, as variety that enhances the unity of phenomena, enriches wholeness and more closely resembles a food-web than a pyramid'¹¹

Holistic Eco-Ethics

Humanity and environment are not two discrete phenomena. They constitute an integrated life-cycle system and hence have implications for each other. Eco-ethics is the means to strengthen the bonds between the two. A new eco-ethics demands that everyone goes beyond his/her personal, regional, and national interest to consider the earth as his/her home and take care of it. Hence, each nation following its private agenda is surely not the way to save the planet. Instead each nation has to cooperate in the global agenda for justice, peace and harmony. We have to develop an interdisciplinary understanding of things, a holistic approach to focus on wholes that are more than the sum of the parts. The pioneer of this holistic

approach is Alfred North Whitehead. According to him materialist mechanism was based on a one-eyed rationality and was therefore handicapped by a superficial perception of nature. As an alternative to materialistic mechanism, Whitehead advanced his own doctrine of 'organic mechanism'. Organisms are characterized by the intimate relationship between parts and the whole. Subordinate organs are fully subservient to the organism which must maintain its stability within a continuously changing environment.

Holistic ecology as practice and theory comprises and relates all existents one to another and with the environment in the perspective of the infinitely small elementary particles. "We began to think of the universe as a collection of objects rather than as a communion of subjects so that we no longer hear the voice of the rivers, the mountains, and the sea. The trees and meadows are no longer intimate modes of spirit presence. This sense of the sacred dimension of the universe has to be recovered." ¹² Our development model has to be replaced with a more broad holistic vision that takes the ecological aspect into account and a new holistic ethic that sees the universe as a communion, a cosmic consciousness, with our existential milieu as a Thou to commune with, rather than as 'it' to bring under our dominion, and a new value system, which goes beyond anthropocentrism.

This brings in the question of the model of development. What kind of development model is to be envisaged? We are wedded to the idea of a development not in the holistic sense but in the narrow, materialistic sense. Naturally our approach to development is through exploitation, degrading people and the environment. This attempt to drive the devil of technology out of nature with the help of the Beelzebub of human intervention reflects the profoundly ambivalent character of nature development. This ambivalence is already evident in the very expression 'nature development'. Nature development can be seen and described as an implicit form of cultural politics, which manages to engage certain social groups while at the same time threatening to sideline other groups to the point where their interests and needs can no longer be voiced in politics.

We need an ethics of sustainable development – sustainability education – a culture of tolerance, non-violence and peace. We need

an ethical and spiritual education for sustainable living. The concept of sustainability is suggested as the goal. But sustainability should not be reduced to merely a strategy of development but it should incorporate a vision of alternate consciousness and lifestyle. An alternate lifestyle based on a prudent use of natural resources and a redirection of our social and economic structures is urgently required. It presupposes a renewed relationship between humans and nature. A participatory society that assumes responsibility for one another and for the earth alone is sustainable.

Again, the ecological crisis raises some fundamental questions to our value-system and lifestyle especially to the modernist totalizing ideology of development. Our thinking and ethic is totally anthropocentric. The world of non-humans rarely comes to our consciousness. Liberation is understood as a process by which humans and humans alone are rescued from the material world. If we are to prevent the environmental crisis from ending in catastrophe, environmental ethicists agree, we must convert to non-anthropocentrism and judge life-forms on their intrinsic value instead of their instrumental value. We have to overcome our dominant way of thinking, which is too analytic and not synthetic enough. We have to decide to what extent this or that science has to be developed which leads to the degradation of the environment, or this or that model of development is an instrument by which nature is plundered. We have to face the problem beginning from the fate of the most threatened persons and creatures. We have to think of such appropriate technological devices as filtration of noxious gases, noise reduction and decontamination of rivers and lakes. Such projects have to be studied and advanced, so that technology that has devastated nature can also contribute to its healing. It is not enough to attack the consequences and ignore the cause. That is tantamount to grinding down the wolf's teeth without changing his wolfish nature. We lack a fundamental vision of a model of society that would promote a sustainable kind of ecological development.

Eco-politics

Politics has to do with power and control of the common good. Unfortunately we live in a society where there are two classes: those

who have power and those who do not have. Whatever class we belong to at one moment our want discovers a limit in solidarity with others, which persuades it to renounce things for the sake of others' right to live and enjoy nature. How do we satisfy our wants? Do we do so in solidarity, respecting natural cycles? Those who have power do not set limits and want others to satisfy their wants. They hold power and control politics in order to satisfy their wants and desires. The price paid for this is the aggressive use of the ecosystem - atmospheric pollution, destruction of nature and so forth. Thus there is today a form of socio-economic and political violence directed against peoples, nations, and classes; the consequences are ruined relationships, hunger, disease, and death and ecological crime against the most complex beings in nature. It is important to emphasize that the progress of eco-politics which is based on a new model of society has to aim at the social fabric, integrating all divisions on the horizon of a vast cosmic community. There is need therefore to have an eco-politics that safeguards all appropriate aspects of social ecology rather than mere sporadic interventions which essentially benefit only the powerful.

Eco-technology

In the modern society, whether socialist or liberal bourgeois, economics is the science of limitless growth or, in more technological terms, of the unlimited expansion of productive forces. The axis on which a modern society turns is its economy, seen as the whole set of powers and tools for creating wealth: this means nature and other humans beings are exploited. The model of unlimited growth is possessed by a demon: it is constructed on the basis of the exploitation of the working classes, on the underdevelopment of the dependent nations, and on the rape of nature. "Idolatry of technology, of consumer goods, of human control and corporate power is at the heart of the collective and individual sins which constitute the environmental crisis"¹³

Scientists are discovering that the technology developed by other scientists poses serious threats to the health of the people and to the life of the earth itself. The scientific achievements that released humankind from the claws of poverty, hunger and disease have now

become the most lethal weapons threatening very human survival. We are thus faced today with the ethical dilemma: the more we depend on technology, the more we are thrown into the environmental crisis – the more we produce, the more factories we build, the more we are subject to new dangers of ecological catastrophe. Therefore, more science and more technology are not going to get us out of this dilemma. Not even super computers are capable of detecting and foreseeing and foretelling the changes in the climate. Hence there is need for an eco-technology.

Larry Rasmussen in his admirable volume: *Earth community, Earth Ethics*, draws our attention to three revolutions that have drastically changed the Human-Nature relationship. They are agricultural, (especially the intensive form of cultivation for large scale production) industrial and informational. The crucial factor in these revolutions is the technology used. The nature of technology has an impact on the character of the work humans do. The pressure on environment also varies according to the kind of technology that is used. Perhaps the industrial revolution has brought about a situation where the earth's resources are exploited and manipulated to such an extent that the life of the earth itself is in great peril. "To earth, industrialization looks more and more like a succession of more complex and environmentally disruptive and damaging ways to meet the needs and wants of one particular, inordinately aggressive species"¹⁴ The industrial culture is based on a particular mind-set or an assumption that aggressive domination over nature is the absolute right of the human species and the earth has limitless resources for human use. Science and technology are tools for further exploitation. We need not repeat the discussion on the ecological damage, in most cases irreparable, of the industrial revolution. The industrial paradigm for development has led to environmental degradation, resource depletion, loss of meaningful work role, inequitable distribution and ineffective control of technology.

Further, technology paved the way for the rule of Multi-National Corporations. The world's money, technology and markets are controlled and managed by gigantic global Corporations, which overrule all local interests and local culture to give way to the larger global good that free-market exchange creates. A common consumer

culture today unifies all people in a shared quest for material gratification. There is perfect global competition among workers and localities to offer their services to investors at the most advantageous terms. Corporations are free to act solely on the basis of profitability without regard to national or local consequences. Relations, both individual and corporate, are defined entirely by the market. And, there are no loyalties to place and community.

Information Technology and Cyber Culture

What kind of information do we need? It is not so much information of the kind information technology manipulates, as it is the choices that ethics poses. What understanding do we lack in order to live with the earth and with one another, on terms enhancing for life in its many guises? No doubt achievements brought about by the new technology are remarkable. The cyber culture has ushered in a new world. It is a change in the human condition, where most people do not earn their daily bread by the sweat of their brow. It is a society in which not everybody does the same work. Its culture creates borderless networks and for this reason loyalty to localities and community is not a virtue to be jealously safeguarded. A global culture that cuts across all barriers is in the making and we still do not see the full impact of it.

Information as coded, recoded, trans-coded reality carries a certain contempt for being earth-bound at all. It prefers avoiding the messy world of finite, limited, placed, dependent bodies. The earth-bound is denigrated; the abstract and precisely mathematical is elevated. The logic of unlimited growth and control of nature remains the same. Enormous power is now concentrated in humans who have access to the new technology and there is no guarantee that they will use it for the well-being of the earth. In fact, corporations are using the new technology to increase their profit by managing money and market. In split seconds investments can be withdrawn as it happened in some of the South Eastern countries a few years ago.

The Right of Non-human Nature

So far we have dealt with the ecological questions purely in term of their effects on humans. But more and more people are coming to

believe that there are wider issues at stake. Animals and plants share this Earth with us. Do we have an unlimited right to use them and abuse them solely for our own convenience? Does it make sense to speak of animals rights? Should we accept that even the Earth itself has a right to flourish? Do we have an obligation to care for the Earth and its species, even if this imposes limits on the kind of development we may promote?

Eco-crisis today reflects the human failure to look beyond the self, beyond the interests of humans. The classical discussion assumes that reason and awareness alone are the grounds on which the concept of right ought to be constructed (Aristotle and Aquinas). These grounds will naturally exclude not only animals and the plant world but also the new born babies and the mentally disabled and the aged. The intrinsic right of the biotic world should be based on other grounds than rationality.

The perspective that the earth and every form of life have intrinsic value brings in the right of non-human Nature within ecological discourse. The traditional Christian ethics was very anthropocentric, interested only in the welfare of humans. The assumption is that only creatures with consciousness and reason can be aware of their rights. The non-human world exists for humans and they have no innate right. But it is a big mistake to believe that human welfare is possible without the well-being of the rest of the planetary community.

Against this background, the new Christian eco-ethics affirms the intrinsic right of the non-human world to exist. The rights language now used for the non-human world represents a sharp change in our attitude towards it. The non-humans have the intrinsic right to exist, to be free. They do not exist for humans; the anthropocentric world always considers them as objects of our pleasure and exploitation. There is, of course, a difference between human rights and biotic rights in the sense that humans can exercise moral responsibility about the treatment of the non-human world, but not about the flora's and fauna's treatment of one another.¹⁵ While there is a significant difference between animals and humans, the feeling of pain is common to both. Animals are included in the discourse on justice on the basis of sentience, the capacity for

experiencing pain. One may extend this argument to the whole biotic community. A man can have no natural right to abuse and torment a beast, merely because a beast has not the mental powers of a man. Any creature when it reaches the threshold of experiencing and anticipating pain possesses rights. Non-humans do not exist for humans alone.

This brings a new awareness of human responsibility to nature and paves the way for the recognition of the inherent value of the non-human world. Although it was a minority view when it was propounded, it assumes greater significance today when we are seeking a new ethics to ground our commitment to the earth. This new ethical standing of the non-human world will deepen our commitment to it. A wanton destruction of life in the world and a callous disregard of the earth's resources is a violation of their inherent and God-given right. We are then questioning God's Lordship of the earth. Humans are not owners of the earth. They are not even stewards (Isiah 40:12). How can humans who are part of Nature become stewards of Nature? Everything in Nature is to be cared for. Everything in Nature has claims and rights.

Conclusion

We need an ethics of universal compassion, one that seeks harmony, respect, and concern among all creatures, not promoting the advantage of the human race alone – one that aims at the good which conserves and promotes all creatures, the supreme good being earthly and cosmic integrity. We are mutual custodians. We are mothers not masters, of creation. We need an ethics of partnership. No more stewardship, but servants (partners with Nature) who care for creation, who commit themselves to join in solidarity with indigenous communities struggling for their cultures, their right to land and sea, with peasants and farmers seeking land reforms and to have reverence for the ecological space of other living creatures. It is in doing so that we reflect God's creative and sustaining and compassionate love. It is an ethics of communion, not domination, that propels *cosmogenesis*. Such an ethics links together the issues of justice, peace and ecology. An act covenanting for preserving the gift of the earth's atmosphere and for nurturing and sustaining the

world's life; for combating the causes of the destructive changes to the atmosphere which threaten to disrupt the earth's climate and create widespread suffering and for building a culture that can live in harmony with the integrity of creation.

Notes

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Environment: For Whose Development?

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Abstract:

The tragic environmental disasters the world has been experiencing in the last few years are invitation to search for alternatives to the system that causes such results. As a help to such a reflection, we shall begin with a note on different schools of thought involved in the debate on the environment before looking at some recent events. We shall not limit ourselves to the urban events that make headlines but go beyond them to the ongoing impact on the rural poor because while the environment has today become a major issue, the way one understands it depends on the class one belongs to. Events affecting the middle class receive greater attention than those affecting the voiceless rural poor. That is why our starting-point is the environment primarily as the livelihood of the poor. Its deterioration affects them as much it destroys nature.

Keywords:

Environmentalists, development, displacement of people, forest development, the poor, tribals, victims of globalisation.

During the last two years India and the rest of the world have experienced several disasters that some call natural, though their link with the degradation of the environment is difficult to deny. Among them are the unprecedented floods in Europe and the inundation of Mumbai, Chennai and New Orleans during 2005 and the worst floods of half a decade in Assam for two successive years. One may not stretch this thesis too far by linking tsunami with climate change because one does not know its exact causes, but it is difficult to deny its link with the snow in Abu Dhabi the same day. These and other events should make one sit back and reflect on the type of development that has led to environmental degradation and to the marginalisation of the poor.

It is also an invitation to a search for alternatives to the system that results in such events. As a help to such a reflection, we shall begin with a note on different schools of thought involved in the debate on the environment before looking at some recent events. We shall not limit ourselves to the urban events that make headlines but go beyond them to the ongoing impact on the rural poor because while the environment has today become a major issue, the way one understands it depends on the class one belongs to. Events affecting the middle class receive greater attention than those affecting the voiceless rural poor. That is why our starting-point is the environment primarily as the livelihood of the poor. Its deterioration affects them as much it destroys nature.

Types of Environmentalists

How one looks at the implications of development-induced environmental degradation depends on where one stands on the issue of resource use. There are at least four stakeholders in the debate on the environment, the most important being the communities whose sustenance the natural, particularly common property, resources (CPRs) are. The tribals and other rural poor who sustain themselves on land, water and forests, the fish workers who live on the marine resources, the Dalits a majority of whom work on land owned by others, as such depend on its sustainable use and a favourable climate, and other communities like the quarry workers have nature as their sustenance. To them the environment is an ecosystem with human communities at its centre. These resources have traditionally

met their food, fodder, medicinal and other needs. Around them they have built their cultural, social and religious systems and their very identity. A symbiotic relationship has developed between them and nature. As a result, they have used the resources judiciously, treated them as renewable, preserved them as sustainable and have recognised their own right and that of nature to a life with dignity.¹

On the opposite side are many urban environmentalists to whom the environment is “beautiful trees and tigers”² and its deterioration is air and water pollution and deforestation. The communities that sustain themselves on them do not enter their thinking. Some would even like to preserve nature from them. For example, those opposing the Forest Rights Bill that is before the Parliament assume that the tribals are the real destroyers of wildlife and that one has to protect it from them. The urban environmentalists also oppose the third stake holder, the industrialist who treats land, forests and water as raw materials for his own profit and to produce consumer goods for the middle class whose lifestyle depends on them. In between is the fourth stakeholder, the official bodies like the Forest Department and the Pollution Control Board dealing with the resources. By and large these three stake holders are more concerned about water, air and forests than the communities that depend on them.³

Environment and Development

The debate around the environment and development has to be situated in the context of the contest between the stakeholders. Most planners view development only as building the infrastructure and maximising profit. Forests, land and water would then be only raw materials. But the communities that sustain themselves on them belong to the 70% of the population that lives in the informal economy while the legal, administrative and economic systems are based on the formal system. The two emanate from opposite, even contradictory, foundations. The formal is based on the concept of property, the individual and the written word. Profit is its moving force. The informal system, especially tribal, is based on the resource, word of mouth and legitimacy by the community. Sharing and equity are its foundations.⁴ To the formal sector their livelihood is a commodity and a raw material to produce goods for over-consumption by the

middle class. Profit depends on rendering them productive and for this purpose they alienate the resources from the communities that sustain themselves on them. For example, they view land only as a place of cultivation and building and ignore the agricultural labourer, the trader, the barber and others who live on it by rendering service to the village as a community.⁵

In the past religion legitimised such monopolisation. For example, much of the thinking on development was justified through the Judaeo-Christian misinterpretation of Genesis 1.26 which was viewed mainly as God's command to dominate nature. Ignored was the fact that this command included also equitable distribution and the access of all to the fruits of creation. Development is thus based on the assumption that the natural resources are raw materials meant to be exploited to ensure the investor's profit. "It is western Christianity that has taught us to see ourselves as the centre of things with the right, even the duty, to conquer, subdue and have dominion over nature. Early scientific thought reinforced this view of ourselves, by seeing the earth as the centre of the universe, with the planets, the stars and the sun all circling round it."⁶

Its result has been the destruction of nature that is the livelihood of the poor and the consequent impoverishment of the communities whom the God of history created in His own image (Gen. 1.27) and on whose side He has shown Himself (Lk. 4.18). For example, the outdated drainage system was certainly a major cause of the Mumbai floods of 2005. The unprecedented 97 cm of rain in three days caused by climate change was the second. However, the damage could have been kept within reasonable limits if the greed of the real estate speculators had not led to the reclamation of the Mahim and Bandra creeks that were rivers through which excess water from the city flowed out to the Arabian Sea. Once the builders filled them to put up high rise buildings, the excess water could not flow out of the city. That greed is seen also in the price that land fetches in Mumbai. 20 acres on which the textile mills stood once were sold in late 2005 for around Rs 700 crores, or Rs 35 crores per acre. Another 16.2 acres are expected to fetch Rs 40 to 50 crores each in January 2006. Using the pretext of the 1983 textile workers' strike, the owners had closed them down in order to sell the land as real estate.

Land, Water and Displacement

Another consequence of treating land and water as commodities alone, is the displacement of peoples' for dams, industries and other projects, in the name of national development. The post-independence Governments used the enabling laws enacted by the colonial regime to make it easy for the entrepreneurs to take control of land. These laws have their foundation in the *Permanent Settlement 1793* and continued in various legislative measures from a Calcutta law of 1824 to the *Assam Land Rules 1838* and culminated in the *Land Acquisition Act 1894* (LAQ).⁷ These laws are based on the eminent domain of the State which is called *terra nullius* (nobody's land) in Australia. The White colonisation of the Americas, Australia, New Zealand and southern Africa was based on the principle that anyone can occupy land belonging to none. The Australian judiciary has struck it down as unconstitutional since what the coloniser occupied was the livelihood of the communities inhabiting it,⁸ but it continues to be the basis of Indian land laws under its American interpretation of eminent domain. Its first facet is that all natural resources like forests, as well as land with no individual title belong to the State. Its second facet is that the State alone has the right to define a public purpose and deprive even individuals of their assets in its name.⁹ Their land can thus be acquired without their permission for the profit of the entrepreneur.

Post-independence Governments have kept these colonial laws intact and have even made them more stringent. For example, the Government of India amended the LAQ in 1984 to make it possible for the State to acquire land for private companies. Using this change the State has acquired land for Enron whose corruption is well known, the Tata Steel Plant in Gopalpur and 15,200 acres at Kalinga Nagar in Orissa and for numerous other private projects instead of getting them to buy the land they required. They thus get land at a low price while they would have to pay more if they bought it directly.

The National Water Policy 2002 is another example. Its focus is on water as a resource for irrigation and power and on building large dams. Its objectives are exploitation of the hydro-potential at a faster pace, maintaining a minimal share of hydro-power in the national system, enabling inter-state and inter-regional transfer of power and encouraging private investment in this sector. So it suggests basin-

wise investigation and planning of the hydro-potential and privatisation of water but has very little to say on drinking water. The policy ignores this aspect and treats water only as a commodity for irrigation and power to the profit of the private sector.¹⁰

This private profit-driven enterprise is given concrete shape in the projects being planned. For example, on 14th March 2002, the then Union Minister for Power outlined in the Rajya Sabha plans to build 11 hydro-electrical projects (HEP) in the Northeast because it has 58,971 MW of hydel potential or 38% of India's total (*The Assam Tribune*, 15th March 2002). On 24th May 2003, launching the 50,000 MW Hydro-Electrical Initiative for the Northeast former Prime Minister Mr. A. B Vajpayee said that the region should become India's powerhouse (*The Telegraph*, May 24, 2003). According to Mr M. Debnath, former Member-Secretary, Narmada Board, at least 48 HEP were under study in the Northeast in 2001.¹¹ There is another list of 138 possible dams in the Seven Sisters of the Northeast and 23 in Sikkim¹² to produce power for export to the rest of India and to Southeast Asia (*The North East Times*, February 11, 2002). That they are taken seriously is seen from the fact that the Chief Minister of Arunachal Pradesh praised the decision to go ahead with work on one of them even before getting Central clearance though it is against the law, because it will bring revenue to the State (*The Telegraph*, February 2, 2002). Many of these massive dams will be privately owned.

Thus, revenue, much of it to be spent on the administration, is what impels the States to permit this plunder. They ignore the fact that the Northeast is one of the 25 mega-biodiversity zones of the world and one among 18 biodiversity hot spots. Also ignored is the fact that the region which is home to various ethnic groups has witnessed armed ethnic conflicts for decades mainly because of land loss to immigrants and to development projects. Its fallout is militarisation, because of which development itself is located within a defence perspective.¹³

Many dams will be in Arunachal Pradesh whose tribes live on community owned land according to their customary law but the State does not recognise these CPRs as their livelihood. Because of this disjunction between the legal and social reality they have lost much

land to the immigrants as well as to development projects and will lose more to the dams but most of them will not even be compensated because their CPRs are considered State property according to the eminent domain. This is true also of other States. For example, by the early 1970s the tribals of Tripura had lost 60% of their land to the Bangladeshi Hindu immigrants. More of it was acquired for the Dumbur dam but out of about 9,000 families displaced by it, only around 2,500 were compensated. The rest were not even counted among the displaced because they lived on the CPRs. The unrest in Tripura is attributed mainly to their impoverishment that followed from it.¹⁴

Such massive land acquisition in the name of national development is not limited to the Northeast but is true of the whole of India, especially its tribal areas. The eminent domain ensures that what the State calls public purpose gets priority over the people but it does not oblige the State to rehabilitate those whom it deprives of their livelihood. It has resulted in massive land loss since independence. In Orissa more than a million ha were acquired 1951-1995, in Andhra Pradesh around 1.2 million ha and more during the last decade. In West Bengal 2 million ha, in Gujarat 3 million ha and in Assam 700,000 ha have been acquired 1947-2000. In most States around half of it is CPRs that are the livelihood of the rural poor. Since they are considered State property, its losers not only do not get compensation but are often not even counted among the displaced (DP) or those deprived of their livelihood without being physically relocated (PAP).

The exact number of the DPs/PAPs from 1947 till today is not known. They are more than 4 millions in West Bengal, 2 million in Orissa, 3.5 millions in AP and many more in other States. The All India total is around 60 million. Only around a third of the DPs have been resettled. In Orissa 35.27% of the DPs in 1951-1995 were resettled¹⁵ against 28.82% in Andhra Pradesh¹⁶, 33.63% in Goa¹⁷, 9.8% in Kerala¹⁸ and fewer in West Bengal, Jharkhand, Gujarat and Assam.

Forests and Development

Equally important are forests that have met more than half of the food, fodder, medicinal and other needs of the rural poor in general and of the tribals in particular. Because of this dependence, a symbiotic relationship had grown between them and the forests and they had built

an economy, culture, social and political systems around them that ensured that they were treated as renewable resources. However, to the State they are a commodity and a raw material that was given to the industrialist at highly subsidised rates. Because of the industrialist found it cheaper to destroy them than to replant them. That began the vicious circle of sequential exhaustion. The industrial agent began by cutting forests near the village and from there went to the next village, the next block and the next district. Then he began the sequential exhaustion of species. For example, after exhausting bamboos for paper, he took to soft wood species like mangoes.

Impoverished and deprived of their land, those whose livelihood it was, fell into the hands of the moneylender who accompanied the industrial agent, lost their land to him and often became bonded labourers. For sheer survival they began to destroy the forests and cut trees for sale as firewood or for timber often as bonded labourers of the contractors. That symbolises not only loss of forests but also their alienation from their culture of treating them as renewable. They go beyond losing their vested interests in its preservation to develop a culture of their destruction for survival.¹⁹ This transition from constructive to destructive dependence is basic to the loss of forests. As a result of these processes India's tree cover declined from 40% in the mid-19th century to 22% a century later and to around 13% today.²⁰

Climate change is another result of deforestation and of environmental degradation. It is not an issue of clean air but of people's lifestyle. The rich countries that account for most ozone layer destroying emissions refuse to reduce them for fear of affecting their lifestyle. The USA, that causes a fifth of all greenhouse gas emissions has rejected the Kyoto Protocol, that demands the reduction of such emissions by 15% before 2010. The other countries accepted it initially but later changed the discussion to clean mechanisms thus diverting attention from the livelihood issue. Clean mechanism is a euphemism for transferring their outdated technologies to the poor nations. They may be cleaner than that of the poor nations but will soon be outdated but the "donors" get credit points that exempt them from reducing the emissions within their own borders. They have been asking the poor countries to sacrifice some of their development in order to reduce

emissions, but through credit points for clean mechanisms, they exempt themselves from this obligation. They refuse to recognise that over-consumption in the Global North and by the middle and upper classes in the poor countries causes poverty in the South.²¹ Instead of developing its own clean technologies, India has yielded to the temptation to import “clean mechanisms” from the rich countries and has joined the biggest offender, the USA in rejecting the Kyoto Protocol.

Globalisation of Intensification

These processes are being intensified by globalisation that depends on a consumerist society. It is called a “free market” economy, but in reality it is the freedom of a few countries to impose their lifestyle on others in order to get control of their markets and natural resources. A sign of it is the growing disparities in the global income and resource use. According to estimates, in the late 1960s, 32.5% of the world’s population accounted for 87.5% of its income. In 1978 the global income was US \$8.5 trillion and the world population 4.4 billion, thus giving a per capita average of a little over US\$ 2,000. But roughly \$7 trillion of it, or 82%, was generated in the North, which contained around 25% of the population. The 75% living in the South shared the remaining \$1.5 trillion. A decade later, 784 million of the world population of 5,101 millions or 15.4%, had an income of \$13,394 billions or 78.2% of the total of \$17,135 billions. According to estimates, in the 1990s 80% of the world’s income was enjoyed by 15% of its population.²² Income is one of many signs of differential access to the resources. In the mid-1990s 17% of the world’s population living in the rich countries used 70% of the global energy, 75% of its metals, 85% of its wood and 60% of its food. That is basic to environmental degradation.²³

The recent Agreements that are intrinsic to globalisation legitimise such inequalities in the name of a “free” market. Among them are the Convention on Bio-diversity signed at the Earth Summit of Rio de Janeiro, 1992 and the World Trade Organisation that emerged from the GATT negotiations completed at Geneva in December 1993 and signed at Marakash, Morocco, on April 15, 1994. Through such Agreements those who over-consume the resources, ensure that the poor preserve the environ-ment on their behalf. These Agreements are also a part of the process of extending the culture of a consumerist society to countries

like India. It has resulted in a more intense attack on the environment. Integral to it are projects that India has initiated, including those related to forests, that will further destroy the people's livelihood. For example, studies on the World Bank Forestry Programme in Madhya Pradesh show that in reality it is meant to turn forests into plantations for industrial raw material. The tribals and other forest dwellers are denied access to these "plantation forests". Even when access is granted, they are unable to meet their food, fodder and medicinal needs because almost exclusively commercial species are planted in them.²⁴

The Poor and Women as Victims

While all feel the impact of environmental degradation most of its victims are the poor in general and women among them in particular. For example, out of the estimated 60 million persons displaced or deprived of their livelihood by development projects since independence, 40% are tribals who are a little over 8% of the country's population, at least 20% are Dalits and another 20% are other landless rural poor like the fishing communities and quarry workers.²⁵ That situation continues because there is greater attack on their livelihood after globalisation. For the focus today is on mining for private companies in Middle India and for major dams in the Northeast²⁶. Around 90% of coal and more than 50% of most other minerals are in the tribal regions and the effort is to exploit them. Which will result in massive tribal displacement.²⁷

The same is the case of other forms of environmental degradation. For example, the Mumbai floods affected all but almost all those who died because of the landslides were slum dwellers who had to occupy the worst land. The neglect of the African Americans during the New Orleans floods is well known. Urban pollution has increased because of the encouragement given to individual vehicles. In Delhi alone they deposit more than 2,000 tonnes of pollutants everyday that result in health hazards especially of children. Every class suffers but the middle class can have some recourse to health care while the poor can rarely afford the costly medicines.

Even among the poor, the impact is felt more by women, children and aged persons than by men. For example, a study of the DPs/PAPs of development projects in Orissa and AP showed a steep rise

of more than 100% in five years, in air pollution and stress related ailments and water borne diseases. The impact was more on women and children than on men, because of higher malnutrition among them after the loss of their land and forests. Even after their loss the woman is expected to continue to play her role of ensuring regular supply of food, water and medicinal herbs to the family, organic manure to the fields and fodder to the cattle. She is unable to fulfil this task after the loss of forests, the source of food and herbal medicines.

In case of the displacement of the people, their livelihood is not replaced. If some economic resources are replaced, they invariably go to men. For example, the project rarely gives a job to the DPs/PAPs. If it does, it is limited to one job per family, almost invariably to men, considered its head. Tribal and Dalit women had enjoyed a higher social status and greater economic autonomy than their counterparts in caste societies did, though they were not equal to men. This relatively high status depended on the partial control they exercised over the CPRs. After their alienation the woman is unable to work outside her home since the projects do not give her a job. If resettlement is land based, land is allotted to individuals, invariably to men except in women headed households since men are considered heads of families. Thus she loses her economic autonomy and is reduced to being a housewife alone, unable to make an economic contribution to the family economy. Slowly she loses her decision-making role since with individual *patta* becoming the norm of land ownership after resettlement, power is transferred to the man and from him to his son.²⁸

Together with land and forests, women also lose access to their traditional work without any alternative. With the alienation of this source of their sustenance they cannot grow or collect the food that the family needs and have to buy this and other basic needs. However, influenced by the outsiders who come to the project, men spend a substantial amount of their earnings on clothes, entertainment and other trivia, thus leaving a relatively small amount for the woman to run the household. Malnutrition is its consequence, particularly of girls and women because over time, women internalise the ideology of their subordination and follow the dominant caste custom of feeding elders, men and boys and girls in that order and themselves

eating last. In case of food shortage, which is common when they are deprived of their livelihood, women have to starve and girls get less food than the others do.²⁹

Besides, deprivation of their livelihood often results in additional workload for women but less food for the family. For example, with deforestation for industrial needs and development projects the distance of forests increases, and so does women's workload. In Orissa and Chattisgarh the distance of forests had increased from around one km from the village to more than five km in a span of two decades. So women had to walk the extra distance to collect less food because children and older women were unable to accompany them. The combination of higher workload and malnutrition affects their health too, but because of the extra workload, they are unable to visit the health centre since it is open only during the day when they have to work in the fields or forests. As a result, many pregnant forest dweller women are forced to work till a week before child delivery and begin to work again within a week after it.³⁰

Conclusion

The above discussion on the environment and development shows that deprivation of their livelihood and deterioration of the environment understood as natural resources has had an adverse impact on the poor in general and on women in particular. More often than not they lose their livelihood to the benefit of the better off sections of society. Deterioration of their status and environmental degradation do not have to be automatic consequences of modernisation if the communities, whose livelihood it is, continue to have some control over its process. That requires a search for alternatives to the present type of modernisation and to the natural resource and capital intensive pattern of development. In making this statement we assert that, what causes environmental degradation and deterioration of the status of the poor in general and of women in particular, is not modernisation in itself but its present model controlled by one class. One cannot fight against modernisation and development because the poor and women have as much of a right to change and modernise themselves as men have. What is required are environment friendly alternatives that are supportive of the subalterns in general and of women in particular.

The first challenge in this search is a new understanding of and approach to development itself. Today it is identified with economic growth and results in processes that marginalise the subaltern classes in general and women in particular. Some of its assumptions can be questioned, for example the need for individual vehicles at the cost of public transport. The consumerist society too needs to be questioned. One can also ask whether the present projects are the best means of meeting even genuine needs. For example, does one have to displace the poor in the hill areas in order to supply drinking water and irrigation in the coastal areas? Would developing low priced desalination technologies for its 7,000 km coastline not be alternatives to it? Is hydro-electrical power the only option in a country that has 300 days of sunshine? Why does the country import solar technology of the 1970s instead of developing low-priced alternatives? What a city needs is street lights, not necessarily electric lights. But the human and industrial waste is sent into the rivers and oceans and then money is borrowed from abroad to clean them. Instead recycling plants can ensure that costly processed water is not used for cleaning houses and toilets and for watering the garden. Recycling can provide the fertilisers for the gardens that are imported today and gas based street lights for the city.

One can give many more concrete technical alternatives. What is required is a new thinking on development. One has to go beyond economic growth and share markets to demand that the benefits reach every class. Christians need to reinforce their belief in the creation and its use as a resource to be developed for the benefit of all. That will be a method of fulfilling the mission of Him who came to make all things new.

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Book Review

Ecclesia of Women in Asia. Gathering the Voices of the Silenced. Edited by Evelyn Monteiro, S.C and Antoinette Gutzler, MM, Delhi: ISPCK, 2005. pp. xxiv-460. ISBN: 81-7214-821-6.

The book is a dialogue among the Asian women on issues in church and society that have shaped and are shaping the life and experience of women in Asia. The issues may be social like violence against women, women trafficking, wife battery, divorce, or ecclesial such as women's role in the church's life and mission, the interpretation of the bible, spirituality, ethics, and inter-religious dialogue. They affect women's life in general. However, women's experiences, views and visions are seldom included in the discussion on these issues. Their voices are either silenced or not heard. The book is an attempt to make women's silenced voices heard, first, among themselves and, subsequently, among others.

The book is a collection of papers presented at the five-day conference of Ecclesia of Women in Asia, with the theme "Gathering the Voices of the Silence," held at Bangkok, Thailand from November 24-29, 2002. The aim of the conference was to help Catholic women to effect a "break from their silenced and obscured destiny, have their voices heard, and thoughts and reflections articulated." (xix). In line with the theme, the book offers sample voices of women from 17 different Asian countries. The voices include the voices of protest at violence and exclusion, voices of prophetic anger against injustices, as well as voices of hope and aspirations.

It is organized around six themes. The five essays in Part I on Women and Violence provide a window to the women's experience of violence in the Asian countries and call for a change in the violent situation. Part II deals with Women and Bible and it contains four essays. These essays offer biblical reflections on Junia, a silenced woman in the bible, the mystery model of the church, on divorced women in Taiwan and the patriarchal discourse in the Chinese Union version of the bible. Women and Church is the theme of Part III. From the five essays

included in this Part one gets good insights into women's experience in the Asian churches as well as their vision and hope for a participatory church.

Women and Spirituality is dealt with in Part IV. It contains four essays of which two are directly and the others remotely connected with different aspects of women's spirituality. The assortment of five essays in Part V on Eco-Feminism and Theological Method deals with such topics as ministerial formation, cosmic consciousness, empowerment and construction of sexuality. Part VI on Women and Other Religions has five essays. They offer women's views on and experiences of dialogue with women of other religions. These essays show specific features of women's understanding and approach to inter-religious dialogue.

Besides the twenty-eight essays, the book also includes the keynote address in the beginning describing the origin and aims of Ecclesia of Women in Asia (EWA) and the Reports of the Conference are placed at the end.

After going through the book, I offer the following comment as a man somewhat familiar with the literature on women's theology and other related disciplines as well as a man committed and sympathetic to the struggles of women. Women have been rightly deconstructing what 'patriarchy' has constructed over the millennia. This has given the women identified men the opportunity to hear women deconstructing the patriarchal discourse. Now, we are looking forward to hear the voices of reconstruction. The book has little to offer by way of reconstruction. I make this comment being fully aware of the fact that the Asian Catholic women are just discovering their voices. Perhaps one needs to wait a little longer for hearing a characteristic discourse of reconstruction. In any case, the time has come. Certainly the book has initiated the discourse. One can expect to hear a distinct reconstructive Asian women's discourse in the near future.

Mathew Jayanth SJ

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