HUMANIDADES MÉDICAS

The Need for an Ethic of the Land: Living as if Nature Mattered. Deliberations on the Development of Environmental Bioethics

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Homo sapiens, in a fraction of a second (if measured in terms of an evolutionary or geological time scale), has become the major force of environmental change on Planet Earth. In the last 300 years we have created unprecedented rapid global and local ecosystem changes with an incredible impact on, and very destructive to, the health, well-being, and survival of the biosphere-that veneer of air, land, and water where the human species and most organisms are born, live, and die (1). Within only the last 50 years the human population has grown from 3 billion people at the end of the 1950s to 6 billion in 1999, and it is expected to grow another 2.8 billion by the year 2050 (2) Every year we add another 85-95 million people with almost all the increases happening in developing countries (3). Therefore, we humans who are concerned with the well-being of our Planet as a unique living ecosystem must ponder: What is the ultimate ecological outcome of this incredible growth or planetary overload for our environmental life-support systems and for the preservation of biodiversity and the survival of the biosphere? Are we moving in the 21st Century toward what scientists of the stature of Paul Ehrlich and others are calling *ecocide* (4). Do we not have a moral responsibility to protect the natural environment and the biosphere from further deterioration caused by the damaging effects of anthropotechnogenic impacts (ATIs)?

Since the 1980s the plethora of global environmental health problems has grown faster and become more complex than ever. Examples of these include: water scarcity; stratospheric ozone depletion; global warming; pollution of rivers, lakes, oceans, the atmosphere, and the landscape; species extinction's; new and reemerging infectious diseases; and the threat to biological and cultural diversity through encroachment, war, and globalization (5). These have become major concerns among both the general public and the scientific community and some have been the subject of local, national, and international agreements (6). But in spite of the increase in public awareness, in scientific interest, and in political and legal actions to address these global and local environmental problems, they do not appear to be diminishing. For example: the 3 parts per million increase in the atmospheric concentration of carbon dioxide in 1998 was the largest ever recorded in history; (7) spreading water shortages threaten now to reduce the global food supply by more than 10 percent and; (8) the ozone hole in the stratosphere has grown bigger than ever. In 1998 the hole over Antarctica was about 5 percent larger than the previous record set in 1996, and is leaving an area of the biosphere of approximately 11 million square miles unprotected from the damaging effects of ultraviolet radiation (9).

Environmental health problems are ecological, multidimensional, and profoundly intertwined with the exponential growth and the technological and cultural development of the human population. Many reasons psychological, philosophical, ethical, economical, biological, cultural, and religious may explain why our species has been gradually and globally destroying its only natural habitat the biosphere. With our recently developed ecological awareness of the great web of life the interconnectedness of the biotic and biotic components of the biosphere we are learning that on a local and global scale, environmental health problems are highly complex to address. They are related to collective and individual human behavior—to what we consume, what we eat, where we go and the way we get there, where and how we live and work, what type of governance we choose, how we vote, and how we value and feel about life, health, animals, other organisms, and the magnificent beauty of nature (10). In addition, our ecological or environmental crisis is perpetuated (or framed) by political, economic, ideological, and cultural systems (11). These systems influence economic growth, international trade, urbanization, the distribution of wealth, the existence of war and poverty, and technological and scientific

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development. It is no wonder that our environmental crises seem so insurmountable and so difficult to abate and prevent.

Given the significance of environmental problems as they relate to the survival, health, and well-being of the biosphere—humans, plants, animals, and many other species it is a moral imperative, in a Canteen sense, that we continue exploring many paths for finding creative solutions to the environmental crisis in the hopes of preventing yet unforeseeable ecological catastrophes. This moral imperative, telling us what must be done independently of our societal goals and desires, is deeply engraved in the human spirit. It is engraved, not only in pure reason, but in the deeper levels of our consciousness, as we are creatures of nature and feel connected in many ways to the biosphere from which we have arisen our Mother Earth veritably our one and only life/health-support system.

Environment as a Matter of Ethics

There is a pressing need to make environmental concerns a matter of ethical deliberation and to elucidate some moral guiding principles. Norwegian philosopher and deep ecologist Arne Naess points out that we are in need of a practical environmental ethic based on either a deeper and more fundamental philosophic or religious perspective, and on a set or norms resting on intrinsic values (12). Until now environmental considerations have been framed within the context of such anthropocentric concerns as: public health, economic development, political ideologies, laws, or the fear of extinction. That is why, as bioethicist George Keiffer points out, the present environmental crisis reflects our failure to develop a consistent, comprehensive, clear view of human/nature relationships (13). Today's environmental problems at a local or global level demand a new ethical stance toward the natural environment one that goes beyond anthropocentrism, androcentrism, biocentrism, or egocentrism. Thus, in order to find true and effective solutions to our environmental problems, we need to change or redefine our conception of nature and who we are in relation to it. Not only are we in need of understanding the complex factors and characteristics of our environmental problems but also the ethical issues they raise.

As Van Rensselaer Potter wrote, paraphrasing the great conservationist Aldo Leopold: we are in great need of a Land Ethic, a Wildlife Ethic, a Population Ethic, a Consumption Ethic, an Urban Ethic, an International Ethic, and so on (14). This type of ethic, as Leopold saw it, is an evolutionary step in our ethical life. Our first ethical concerns were interpersonal; they dealt primarily with relations between individuals. This new ethic deals with our relation to the ecosphere the land and its biodiversity. In other words, we need to develop an ethic of survival in a deep ecological sense specifically, for the survival of the biosphere one which embraces plants and animals while underlining the humanity of persons and our interconnectedness with nature or the ecosphere. Extending ethics to the Homo sapiens/environment interactions is both an evolutionary possibility and an ecological necessity (15). As Albert Schweitzer points out: And ethic that does not also consider our relation to the world of creatures is incomplete (16). Understanding the ethical dimensions of our ecological crises by developing a Land Ethic, or ecological bioethics, or global bioethic as Potter calls it, is one crucial path we must follow if we want to change our values, our behaviors, and those attitudes towards nature, the environment, or the ecosphere that are leading us on our present course towards global ecocide and the collapse of our life-support systems (17).

The development of a Land Ethic or global bioethical thinking is currently being undertaken by academicians in universities within the context of philosophy departments and it is on its way to becoming an established discipline (18). But it must also expand into interdisciplinary efforts between the life sciences and the fields of public health, medical geography, environmental medicine, environmental science, ecology, and ecotoxicology, among others. It also needs to penetrate the public arena in order to increase people's awareness of the profundity of our ecological crisis and the ethical questions it generates. This crisis is threatening not only the health and viability of our own species, *Homo sapiens*, but also many of our fellow creatures, whose dwindling numbers still cling to life in our modern highly transformed biosphere. Would not a global society that is well-informed be moved to reconsider the ethical implications of our highly uncaring attitudes and destructive behaviors towards the environment as a whole?

Environmental Ethics: a Matter of Values

At the center of our present ecological crisis is our disturbed relationship with the natural environment or the ecosphere. Ethicist Daniel Callahan reminds us that behind every bioethical system there is an implicit conceptual model of nature and our relationship to it (19). Specific ethical decisions are sustained and derived from this model. The way we interact with the ecosphere or the

biosphere depends on our feelings and ideas about this human/nature relationship. A wide range of these have been expressed in the humanities through religion, visual arts, music, poetry, philosophy, and mythology. We need to understand these feelings and ideas because they form our cultures affective and ideological substrata for our environmentally related actions and concerns. They are the driving forces behind our behaviors that can worsen or alleviate our present environmental crises (20). One task of the environmental ethicist is, then, a descriptive one to assess, analyze, and clarify existing human feelings and attitudes toward environmental issues and to explore the intrinsic values and ideas underlying them. Environmental ethics is thus essentially a question of values and not just feelings or factual beliefs.

In the current literature, researchers have identified at least three cultural models that we use to value nature and our interactions with it: 1) humans apart from nature; 2) humans as a part of nature; and 3) nature in and of itself (21 ,22). In the first model: humans apart from nature, the natural environment is valued as something mysterious and powerful that engenders fear. Because of this, we feel a need to subjugate, dominate, or conquer it. Nature is seen as unpredictable, wild, and an obstacle to progress. Here the underlying sets of values are fear of nature and the obsession to control it. Knowledge of how nature functions is seen only as the key to overcoming our deep-seated fears. Based on our limited knowledge, we use our technology to modify the landscape, kill or destroy other species, and control, manipulate, and change natural processes regardless of the ultimate ecological consequences and the wrongness of our conduct toward the natural world. From this perspective, modern *Homo sapiens* has assumed we are the lord and master of nature and all its creatures. Our destructive behaviors towards the ecosphere are then justified based on an ethical stance that is purely utilitarian and patriarchal. Any ethical problems arising from the use of our power to affect nature are measured in terms of the ends that we want to achieve. Thus, the application of this ethical principle, in modern society, results in an egocentric ethic, which leads to an inconsiderate and unbridled manipulation of the natural environment to serve only our purpose. In the process we ignore that we are destroying our only life-support system.

The second model: humans as a part of nature, proposes that we humans are one unique species among all the other species, differing from them in certain aspects and degrees. In this model, *Homo sapiens* is seen, not as the center of the ecosphere; neither its superior species, nor its most important one, but fundamentally one with a special responsibility that of being stewards of the natural environment because of our increased understanding of its processes. In the scheme of nature, this uniqueness is a result of the higher capacities of our brains due to our natural evolution and of our cultural achievements due to our psycho/spiritual evolution. This view has two main exponents one religious, one secular. In western spiritual tradition, St. Francis of Assisi is the foremost exponent of this view. In his writings, he refers to animals and plants as our little brothers and sisters and calls celestial bodies Brother Sun and Sister Moon.

The secular expression of this view of human/nature relationships is found in the writings of American philosopher and naturalist David Thoreau, whose *Walden Pond* influences the environmental movement in the U.S. and abroad. In its secular expression the model places man and nature as one; both have an intrinsic value; both should be respected in and of themselves. As Thoreau wrote: I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived. I wanted to live deep and suck out all the marrow of life (23). He concludes, after having his unique contemplative experience of nature, that what he had learned is that the main purpose of human existence is to glorify and enjoy God forever. In this model, contact with nature is didactic?it is a heuristic aid one in which we can discover things for ourselves, intuitively. Living intimately with the natural environment in solitude or with company can teach us how to live in harmony with the ecosphere and thus with ourselves and our fellow creatures. The ultimate goal of ecology and an ethic of care!

The third model: nature in and of itself, is ecocentric in spirit. It could be described as a teleological model, which asserts that there is a *teleos*, a purpose and a logic to be found in nature independent of any awareness, interest, or appreciation of it by any conscious being. This model sees nature or the ecosphere as an ever-changing and evolving whole including species, populations, individuals, materials, gases, and habitats with both human and nonhuman cultures. This view is expressed in the platform statement of the deep ecological movement: The well-being and flourishing of human and nonhuman life on earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purpose (24). In essence this model is a rejection of a homocentric, egocentric-, authocratic-based ethic. This model allows humans to use and manipulate nature but by paying attention to it. Nature itself provides some guidelines and important insights about its limits as a life-supporting system that can be used to modify our cultural patterns and behaviors, to maintain the dynamic balance. In terms

of an ethical system derived from this model, Keiffer suggests that humans must create their own ethical norms but do so by carefully listening to nature, as it can provide us with some guide for developing the good moral life (25). Therefore, to have a valid environmental ethic we must affirm the intrinsic value of every component of the ecosphere (26).

In conclusion, these three models portray how humans think and feel about the natural environment and thus concomitantly each will predict the way *Homo sapiens* interacts and utilizes nature for its own survival. Establishing a right relationship between humans and nature or the ecosphere is essential if we are going to save the environmental life-support system from total chaos and collapse. From an ethical viewpoint, the right relationship with nature is one in which humans act on the principle of interconnectedness that fosters interdependence and reciprocity or mutual obligation between all of its parts. Based on this *holocoenotic* (holo=the whole; coenotic=without walls) concept of the environmental life-support system, it can be stated that to act destructively to the ecosphere is ultimately destructive to all. A land or nature ethic based on the principle of interconnectedness would promote a dynamic homeostasis or equilibrium by fostering a harmonious relation between our needs, desires, and activities and the rest of the ecosphere or nature. Bioethics as a discipline is based on this model of human/nature interactions. This new value system may break the wrong or unethical habits we have learned in the past.

Global Bioethics: Its Development

To work toward this new value system, in 1971 Van Rensselaer Potter proposed a new discipline which he called bioethics and later global bioethics (27). Modern bioethical thinking is propelled by the strong moral concerns raised with the advances in scientific knowledge, technology, biology, biomedicine, and biotechnology that began in the 1950s (28). Since the Industrial Revolution a gap has existed between humanistic thinking and scientific considerations. Anthropocentric views of our position within the ecosphere have been the central motive shaping not only our behaviors and scientific ethos but also our research and development paradigms.

As an evolving species we have always manipulated the natural environment and the biosphere for our survival. We measured our ability and success in terms of how many more mouths we could feed or how many more people we could fit into a limited space. Unquestionably, our ability to do this has grown enormously since the first agricultural revolution 10,000 years ago, when we initiated the development of a unique technology that of plant and animal domestication. By 1850 our species had reached its first billion mark, what had seemed to us at that time a reasonably sustainable number.

However, as we were able to feed and accommodate more people by developing new technologies for survival and at the same time decreasing death or mortality rates, we began to experience an exponential growth and the doubling times of the human population became shorter and shorter. Our potential for growth and development seemed, for a while, to be unlimited and undamaging to the global biosphere and our life-support systems. Ideas of continuous progress in the future and the superiority of the human species dominated our ethical thinking and considerations for many decades. Scientific discoveries, industrialization, and technological innovations seemed to only further convince us of these notions. As we sought to improve living standards, refine and perfect our transportation, communication, and data storage and retrieval systems, our desire grew for loosening the constraints that nature imposes on *Homo sapiens*.

These constraints, together with our species concomitant dependence upon nature for survival, are a clear remainder of a primordial bond that was forged long before the era of modern technology (29). Through the humanities, humans have explored this primordial bond. As we enter this new millennium, we have come to a better understanding of the nature and functions of this primordial bond of our interconnectedness with the natural world. Through ecology and other scientific disciplines we are learning about the physical, biological, and cultural world underlying our relationship to the environment and the biosphere as a life-support system. Through this multidisciplinary approach, we have realized that the survival of not only many species in the biosphere, but our very own, is endangered by the rapid change we have introduced into the ecosphere and into many specific ecosystems within the biosphere by ATIs. In the light of more recent and accurate physical and biological data, we must return to our cultural heritage to find ways to express the values that can help to orient our choices and our actions. A multidisciplinary approach, one, which blends scientific and humanistic knowledge, is essential for exploring the connections between humans, art, science, ethics, and the present ecological crisis. Since our behaviors, choices, and actions toward the biosphere and the environment are value laden, in exploring specific issues of conflict we need to return to humanistic thinking to help us shape and guide our decision-making process. For example, a major concern from a humanistic and bioethical point of view is how, in our struggle to prevail, we may destroy? intentionally or unintenionally? keystone

species. Keystone species are those species in a food web or chain whose rapid decline or disappearance may cause a ripple or domino effect leading to the collapse or extinction of many other species even an entire ecosystem or a biotic community.

Global Bioethics: Its Definition

Having surveyed the development of bioethical thinking in general and in relation to environmentalism, we are now in a position to understand Potters definition of global or environmental bioethics. In 1988, he proposed the following broad definition of bioethics as biology combined with diverse humanistic knowledge forging a science that sets a system of medical and environmental priorities for acceptable survival (30, 31). This definition is better understood within the context of what today is known as deep ecology and the moral concerns about humans threatening the survival and stability of the ecosphere and its biodiversity. These moral concerns are delineated in eight major points discussed elsewhere in the literature (32). This broad definition of bioethical thinking, as you can see, is based on the premise that ethical considerations cannot be separated from biological facts or realities. It is based on the integration of biological knowledge and human values. These are the two most important ingredients in achieving the new wisdom or value system needed for addressing our ecological crises.

This ecologically oriented and holistic definition was not foremost in the minds of professionals in the field. Bioethicists became primarily concerned with medical ethical issues (those related to the practice of medicine and research in biology) instead of ecological ethical issues (those related to animal rights, species extinctions, and the diminishing of biodiversity). Today bioethics has been expanding to include not only medical concerns and issues such as organ transplantation, reproductive technologies, abortion, bioengineering, euthanasia, and teenage pregnancy, among others but also broader nonmusical ones (33). Some examples are: 1) our moral obligation to respect the intrinsic value of human and nonhuman life; 2) our moral obligation to future generations; 3) an ethic of responsibility for our environmental problems; 4) an Earth ethic or a nature ethic which is essentially holistic; and 5) our moral obligation to control population growth while dealing with the rights of individuals to self-determination versus the rights of society to control procreation.

Environmental or global bioethics can then be defined as: the study of how we humans should or ought to interact with the ecosphere or the natural environment as a life-support system for the preservation and maintenance of a dynamic balance that promotes an optimal environment for biospheric, ecosystem, and human health and well-being.

Environmental Bioethics: Guiding Principles

The primary concern of environmental bioethics is how humans ought to behave toward the natural environmental system as a whole. The word ethics, as Schweitzer points out, means right human conduct (34). In other words, ethics is about how we should live and what we ought to do: what kind of behavior is right or wrong and what our moral obligations might be. This is what is known in ethical theory as the normative dimension of ethics. This normative or prescriptive element is a very important consideration in deliberations about global bioethical thinking the task of offering guidance or ethical principles about what might constitute ethically correct behavior toward the ecosphere and what kinds of actions are right or wrong. Moral philosophers and ethicists have argued for millennia about what principles might serve as the basis for ethical judgments or reasoning. One thing, however, upon which they all agree is the fact that we need some norms or principles to sustain and help us in the ethical or bioethical decision-making process.

Basically, according to bioethicist Raymond Devettere, the major ethical approaches in the traditions of Western culture fall into two main categories: the *deontological* (approaches based on obligations, rights, duties, divine or natural laws, and consequences) and the *virtue-based* (approaches based on at least six major claims). These six are: An action is right if it is in accordance with what a virtuous moral agent will do in similar circumstances; Goodness is prior to rightness; The intrinsic goods in virtues are plural; virtues are objectively good; some intrinsic goods are agent-relative; and acting rightly does not always maximize the good (35, 36). Both of the major approaches are also described in the bioethical literature as principle-based, that is, they hold that some general moral norms or action guides are central in moral reasoning. And that these moral norms or action guides may be construed either as principles or as norms (37).

Of the different principle-based approaches described in the literature, three will be presented here with examples of how they can be applied to environmental bioethical decision-making. The first principle-based approach to environmental bioethics is *reverence for life*. The individual responsible for the development of an ethic based on reverence for all life was the great humanitarian Albert Schweitzer (38). He describes in his writings that he arrived this principle while traveling upstream on the

Ongooue River to take care of one of his patients. Deeply absorbed in solving the problem of how a culture could be turned into one with greater moral depth and energy than ours, he became weary, a sense of despair paralyzed his thinking (39). But at sunset during that trip, he said: "in my great tiredness and discouragement, the phrase reverence for life struck me like a flash" (40). He immediately realized that this principle carried within itself the solution to the problem that had been torturing him. He came to understand that the first step in the evolution of ethics is an enlargement of the sense of solidarity. A system of values, which concerns itself only with our relationship to other people, he affirms, is incomplete and thus lacking in power for good. Ethics that govern only the conduct of humans towards other humans can be exceedingly profound and vital, but only the ethics of reverence for all life is complete (41). Only in this way can we establish a spiritual and humane relationship with both people and all living creatures within our reach.

Through reverence for life we come into a spiritual relationship with the universe and through this realization we gain the will, the power, and the capacity to create an ethical set of values that enables us to act on a higher plane, because we then feel ourselves truly at home in our world (42). A thinking human feels compelled to approach all life with the reverence he has for his own, thus all life becomes part of his experience. From this viewpoint, Schweitzer concludes, good means to maintain life, to further life, to bring developing life to its highest value. Evil means to destroy life, to hurt life, to keep life from developing. This, then, in his view, becomes the rational universal, and basic principle of ethics (43).

The principle reverence for life could be classified as a nonmaleficence principle a norm avoiding the causation of harm which is one of the four clusters of basic principles of bioethics, according to Tom Beauchamp and James Childress (44). However, Reverence for Life is a step forward in the evolution of ethical thinking extending the ethical domain to nonhuman forms of life. The movement to prevent cruelty to animals is an expression of this new mode of ethical consciousness introduced by Schweitzer, and it is the motivation for wildlife conservation and the biology conservation movement of the 1990s in the U.S. As early as 1789, Jeremy Bentham the father of utilitarianism or the consequentialist approach to ethical reasoning had raised this issue when he wrote of animals: The question is not Can they reason? Nor can they talk? But can they suffer? But the extension of ethical considerations to the nonhuman world remained neglected by ethicists. It was not until the early 1970s, when another utilitarian philosopher, Peter Singer, wrote his book, *Animal Liberation*, that the issue surfaced again (45). Today, his book is seen as one of the key works in the animal rights and environmental movements within the U.S. Singer sustains that inflicting suffering to animals is ethically wrong, unless by doing so greater suffering is averted. For instance, causing pain and suffering to animals for experimental and commercial reasons (such as using animals to test chemicals employed in agribusiness for pest control and in the cosmetic industry to improve appearance) is immoral.

This new level of moral reasoning was taken a step further by environmental ethicists that are concerned with the preservation of biodiversity. They argue that, rather than focusing on the pain and suffering of individual animals, we should be focusing on the well being of all creatures in the biosphere when approaching global environmental problems. The proponents of this view hold that well being is a much broader, encompassing term that could be applied to all organisms not only to animals but also to plants, insects, and microbial life as well.

This way of thinking brings us to the second principle-based approach to environmental bioethical analyses the *reciprocity principle*. This was established by those subscribing to the deep ecology movement. Deep ecology is a term introduced by philosopher Arne Naess in 1973, when he pointed out that the ecological movement has two strands: the shallow and the deep. The shallow branch is anthropocentric and concerned primarily with human welfare and the issue of the exhaustion of renewable and nonrenewable natural resources. The deep ecological movement is ecocentric and concerned primarily with the whole the relationships of interdependence and reciprocity among the biotic and abiotic components of planet earth's ecosystems.

The reciprocity principle goes even farther than the reverence for life principle as it wants to include in ethical reasoning not only the animate or biotic world, but also what is known to ecologists as the abiotic (nonliving) components of the environment the soil or pedosphere, the air or atmosphere, the water or hydrosphere, and the polar caps and glaciers or the cryosphere. We must recognize that we all humans and nonhumans and the material elements of this Earth are interconnected and dependent in one way or another upon the proper or healthy functioning of the planets ecosystems for the continuous flow of energy that makes life possible on this planet. As we increase in this awareness, it will lead us to the recognition that no event in nature or the ecosphere is without some effect on the whole, of which we are a part, and we should therefore value all the components of the natural world. The soil, rocks, gases, water, and the sediments of the ecosphere are important

components in the dance of life. We must stretch to learn how far the web of reciprocities reaches beyond anthropocentric considerations. We must develop, as Keiffer points out, a morality of interdependence (46).

From the perspective of the reciprocity principle, it is imperative that we humans change radically the way we look at the natural world. Although deep ecology has changed since 1973, it is still central to its core that we humans at all levels change our vision of the cosmos and our relationship to it. This change will entail a shift in our value system that ultimately will transform our environmental ethical stance. All approaches to ethical reasoning rest on some understanding of value. It is important that we ask the question: What do we mean when we say something is valuable? Ethical theorists make a distinction between instrumental value and noninstrumental or intrinsic value. Instrumental value is a reference value, in other words, it is a value given to something because of something else, e.g., its usefulness to us; thus, a means to an end.

Intrinsic value, on the other hand, is not related to something else. For example, we do not value our lives for any reason beyond itself. This distinction is central in global bioethical thinking, where questions about value are predominant. That is why deep ecologists in the first three points of their platform introduce the issue of values. They argue, in the first point, that all living beings should be regarded as having intrinsic value. The point is stated in these words: The well being of human and nonhuman life on earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes (47). The second point stresses that the richness and diversity of life forms contribute to the realization of these values and are also values in themselves. And from this realization comes the third point, which states that: Humans have no right to reduce this richness and diversity except to satisfy their needs (48). By our needs, deep ecologists mean vital needs, those essentials for our survival.

Examples of the use of the reciprocity principle in global bioethical reasoning include dealing with issues concerning the right to own property. If everything is interconnected, can certain parts of the environment be considered a commodity to be possessed? Can someone buy a mountain, own a forest, lease an oilfield, or cut trees to sell? In practical ethical decision-making, the principle may mean, for example, not allowing the drainage of marshland or wetlands because they serve as flood control and play a key role in recharging aquifers vital to agricultural productivity. It may mean also not allowing the construction of a highway through a forest or building housing on productive farmland. According to this principle, to diminish biodiversity is wrong because it threatens the well being and flourishing of life on Earth. To defend and protect biodiversity is good because it recognizes the intrinsic value of everything within the ecosphere.

The third guiding principle in bioethical thinking comes from the ecofeminist movement in the U.S.: the *caring principle* or what can be called the *empathy-based principle*. Ecofeminist Deane Curtin, in defining an ecological ethic of caring or empathy, stated that care must be understood as part of a radical political agenda that allows for the development of contexts in, which caring for can be nonabusive (49). In a society that oppresses women, care must be seen as a dynamic phenomenon that promises liberation from the forms of oppression that link women and the environment, or from the social structures that makes it all too easy to abuse that care (50). Ecofeminists are deeply committed to social transformation. Society needs to be transformed from its adherence to the images of women and nature held for centuries by cultures dominated by a patriarchal mode of social organization, which has facilitated the exploitation of both (51).

Ecofeminism is a grassroots environmental movement that sees a connection between the exploitation and degradation of the natural world and the subordination and oppression of women (52). It is a complex movement with many layers, representing the union of deep ecology and feminist thinking which emerged in the 1970's (53). The history of this movement can be found in its writings, in the wide range of women's involvement in environmental issues and in the grassroots struggles around the world. There are several kinds of ecofeminists: liberal, cultural, socialist, and social (54). However, a commonality among ecofeminists is the belief that there is a link between the domination of nature and the domination of women. They argue that the oppression of women and the environmental destruction and degradation triggering our ecological crisis are two faces of the same coin and both need to be addressed together.

An ethic of care approach to environmental or global bioethics has its roots in the pioneer work of ethicist Carol Gilligan (55). Gilligan applied the same tests given by developmental ethicist Lawrence Kohlberg to only male subjects to female subjects of various ages. Her findings reveal that women use a different ethical reasoning strategy than the one described by Kohlberg in his research with male subjects. Women, in solving ethical problems, appeal to what Gilligan calls an ethic of care. According to bioethicist Rita Manning, an ethic of care is based on five central principles: moral attention; sympathetic

understanding; relationship awareness; accommodation and response. These principles have many implications for bioethical moral reasoning and can be applied to virtually every issue in bioethical analyses (56).

An ethic of care is seen by ecofeminist Karen Warren as a shift from a conception of ethics as primarily a matter of rights, rules, or principles predetermined and applied in specific cases to entities viewed as competitors in the contest of moral standing to one that makes a central place for values of friendship, trust, love, and care (57). This ethic is based on the assumption or presupposition that our relationship with the natural world, if based on empathy, is central to our understanding of who we are. Feminist moral theorists, with their new emphasis on an ethic of care, have begun to show that ethics is not so much the imposition of obligations and rights, but rather a natural outgrowth of how one see the self, including ones relation to the world (58). This is a view of ourselves with an expanded empathic self. According to ecofeminists, when one expands ones caring attitudes to the land our little self expands. With this new expanded self or identity, we will not harm nature because harming nature is harming ourselves.

Therefore, it is not an axiological ethical theory that will protect the environment from destruction, but our expanded self, the caring empathic self that includes the nonhuman world in ethics. An ethical approach to the environment based on empathy and caring takes us beyond egocentric, androcentric, homocentric, or ecocentric concerns in our moral reasoning, as discussed by ecofeminist and radical ecologist Carolyn Merchant (59). With an empathic approach to the natural world or the environment, we feel connected to it. And by means of this connection, moral dilemmas are identified as those involving the breakdown of our relationships with everything created. The empathic relation that links us together humans and the environmental complex generates an overriding feeling of solidarity with the natural world that transcends ethical approaches based on separateness, thus rendering ethics superfluous. In this view, traditional ethical approaches based on rights, duties, or obligations are superseded by a transpersonal ethical approach (60).

The ethics of the empathic approach views the ideas of obligations, duties, and rights towards others as nonsensical because in ultimate instance there can be no real others. As bioethicist Clare Palmer puts it: No one and no thing can be fully separated from ourselves; we are too closely connected. Our selves extend into the world around us; our actions in the world are thus really actions toward ourselves; other peoples actions toward the environment are actions towards us (61). When one expands, through empathy, ones identity to the land or to the natural world as a whole, nature will be protected, since to cause harm to the environment would be to harm oneself as well.

The ethical criterion for an ethic of care and for judging a course of action was given to us also by Aldo Leopold when he stated: A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends to do otherwise (62). If we analyze environmental problems from this perspective, for example, an oil spill which destroys the integrity, stability, and beauty of the oceanic and land biotic community is evil or wrong because it is a violation of ourselves, a cause of grief and suffering (63).

Conclusions

Learning to respond or to relate to nature in caring ways is not an abstract exercise in ethical reasoning. It is an exhibition of psychic or emotional health, indeed a source of joy badly needed in the western world. A caring relationship with nature is one that acknowledges that it is the quality of the relationship that is most important. Hence, in order to expand the boundaries of the moral community to include the nonhuman world, it is not enough for us to set abstract moral principles to define our relationship with nature. As Aldo Leopold points out: "Human beings must develop a relationship with the nonhuman world based on love, respect, and admiration of the land" (64). This dominant theme of an environmental ethic based on care and empathy is expressed also by of one of the greatest minds of our time, Albert Einstein (65), when he says:

"A human being is a part of a whole, called by us universe a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest...a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty".

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