

Earth Stewardship

Eugene Odum

We are hearing a lot these days about "stewardship of the earth," an entreaty that hardly anyone is against, but many are not strongly for it. Few, if any, politicians actually come out and say they don't approve of it, yet many hesitate to introduce legislation to promote it. And we don't see people on the street with signs exclaiming "down with stewardship," yet we see many people on the street acting in a very unsteady-like manner. As with many strategies that seem desirable in the abstract, people want to know what it means to individuals and human communities to practice earth stewardship; how will it affect life styles and taxes, and why is it important? It is a little bit like N-I-M-B-Y; a good thing and we ought to do it, but Not In My Back Yard necessarily!

The word "steward" comes from roots meaning "keeper of the house." We use the word widely for a person who takes care of property, money, a ship, restaurant, airplane, and so on. We expect, of course, a steward to act in the best interest of both the owner and the public; that is, a proper steward is ethical and does not cheat. And, in general, society incurs severe penalties if a trusted steward does otherwise when it comes to private or government property. Now the question is: Has the time come in history when developing a stewardship relationship between humans and the earth's life-supporting common property (air, water, soil, biodiversity, etc.) is necessary for our continued well-being or even our survival? Is the time coming very soon

when it will not only be unethical to mistreat Mother Earth but unlawful as well? I believe that we can make a good case for answering these questions in the affirmative. Let me now present a biblical and an ecological analogy to illustrate why and how it is in our best interest to become better "keepers of the house."

Messages from the Scriptures

Early in the scriptures we are told to multiply and take dominion over the earth, but later in these same scriptures we are also told to be stewards and take good care of the earth. A reasoned interpretation is that these messages are not contradictory, nor a matter of right and wrong, but are a sequence in time; that is, whether we focus on "dominionship" or "stewardship" depends on the stage of development of human society. In the early or pioneer stages of civilization, exploitation of the earth's resources (clear the land for agriculture, mine the earth for materials and energy, and so on) and a high birth rate are necessary for survival. But as society matures and becomes increasingly crowded and technologically complex, there is less need for large families and, more importantly, various earth limitations force us to turn to stewardship in order to avoid destroying our life-supporting "house," the biosphere.

The transition from youth to maturity, like adolescence in the individual, is a difficult and dangerous time. If we are to survive the transition and continue to prosper, we now have to be willing to divert more ingenuity and more of our tax revenues or other wealth to servicing, that is maintaining the functional health of the natural environment as well as the quality of the

built environment. Accordingly, efforts now underway to develop infrastructures for recycling, energy conservation and diversification, natural area preservation, and reasonable family planning need to be accelerated. Also, cooperation among nations in regard to these needs is desperately needed. Survival of our nation involves a lot more than just confronting "evil kingdoms" (Soviet Union and Iraq).

Let me emphasize that stewardship strategies are not "anti-growth" as many vested interests would have us believe. We all know, deep down, that there are limits to growth in the size of the individual, the community, or the population of the earth. But as far as we know, there is no limit to growth in quality. The youth-maturity transition involves a gradual shifting from quantitative to qualitative growth.

For example, our city of Athens (Georgia) is at a point in its history where management is beginning to consider how to become a better city, not just a bigger one. Our University has already set such a course. It is encouraging that the newly elected government for the combined Athens-Clarke County area has come out for an emphasis on quality of life. It is also encouraging that Georgia (as well as many other states) has recently enacted "growth strategies" legislation intended to promote local and regional planning.

But don't expect change overnight. The "bigger is always better" philosophy is strongly entrenched in American thought, and there are many economic, political and tax procedures, and traditions that actually promote rapid, haphazard growth (build now and worry about the consequences later). Many of these excessive growth-promoting procedures and attitudes will have to be modified if any kind of long range planning is to be successful. And this won't happen until our political representatives are convinced that a majority of us are in favor of stewardship policies.

The Parasite-Host Model

Since humans are, ecologically speaking, "heterotrophs," we depend on other organisms for food, and we depend on the natural environment in general for air, water, and many essential materials. Large cities with their huge demands for energy and resources require very large areas of nonurban environment to support them, and it is this life-supporting environment that we are concerned about as the world becomes increasingly urban. In a very real sense, humanity is parasitic to its host, the biosphere. To speak of ourselves or of our city as parasitic is not to belittle, but to be realistic.

Ecological research on parasite-host interactions in nature is revealing that natural selection operates to promote reciprocal adaptations so that the parasite does not exterminate its host and thereby itself. Given time and freedom from excessive outside disturbance, hosts develop resistance and parasites reduce their virulence. For example, when the myxoma virus was introduced in Australia to control rabbits, the parasite was at first very virulent and killed the rabbit host very quickly. But, believe it or not, the virulent strain gradually replaced itself with a much less virulent strain. Thus, both parasite and host survive to this day. We even see in some parasite-host systems what we call "reward feedback" where the parasite actually promotes the welfare of the host, just as we promote the welfare and continued survival of cultivated plants and domestic animals on which we depend. A recent article in *Science* describes how a protozoan parasite of a rodent alters the degree of its virulence according to season. During the breeding season of the rodent, when there are lots of individuals, the parasite is virulent, but, during the nonbreeding season the parasite becomes avirulent, thus allowing plenty of hosts to survive until the next

breeding season. In nature, the greatest danger of extinction of host and parasite is early in the interaction, before there is time for adjustment, or when there is external disturbance that interferes with the “coevolutionary” process.

The point of all this is that we can learn a lot from ecological studies of development and evolution in nature that provide clues to help us deal with analogous human predicaments. We certainly need to learn how to be a prudent parasite that maintains sustainable parasite-host relationships, rather than continuing to act like a cancer that would ultimately destroy our biospheric host.

Eugene Odum is Professor Emeritus of Ecology at the University of Georgia. He is the author of the *Fundamentals of Ecology*, the introductory course for several generations of ecologists. He is the foremost proponent of the holistic school of ecology, among whose followers most of the staff of the Marsh Institute consider themselves.

Incorporating the Earth *A Thought Experiment*

Political systems are impotent to stop the massive interference in ecosystems by international corporations. The simplest and most direct way to give the earth a voice in the development of the earth by humanity is to incorporate the earth following international law. The entire planet, with its biochemical cycles and nonhuman communities, would become one legal body. Since corporations are human constructs, however, humans would have to represent ecosystems and their wealth of living organisms.

In early civilizations, the advancement of the state was expected to contribute to the welfare of its people. Corporations are recent devices created by states for public purposes. Most early American corporations, for example, were concerned with travel (turnpikes and inland waterways) or safety (fire insurance)—they resembled public agencies more than profit-seeking associations. In fact, the exclusive privileges and political power granted to corporations were based on the implicit promise of social services.

The association of economic development with national wealth allowed incorporation laws to be broadened. The corporation was given the constitutional rights of an individual. A corporation is a legal entity, independent from its founders, with its own rights, privileges, and liabilities. It is, however, required to obey laws and pay taxes; and it is accountable for its deeds in courts of law.

Unfortunately, as private good became identified with public good, corporations became larger, more acquisitive, and less concerned with social services. The quest for profit now has the effect of violating social amenities, such as clean air and clean water, instead of ensuring them. No responsibility is taken for environmental degradation since no right of contract or fair use of property has been breached.

Changes in societies, from rural to urban, from sparsely to densely populated, from culturally diverse to monotone, have transformed corporations and the societies themselves. Business corporations now provide the bulk of goods and services in many states. The scale of these corporations, the processes of production, and the size and needs of human populations, have altered and degraded many ecosystems and biogeochemical cycles.

Successful modern corporations create an identity based on their purpose in providing goods or services; they define their business in terms of

profitability, growth rate, cash flow, and competitive position; they develop a corporate vision, with specific objectives and strategies, including long-term vision, collection of ideas and creative implementation, aggressive manufacturing, and reliable finance.

The purpose of a corporation often transcends simple financial gain—the corporation seeks to maintain its own existence, before profit. Financial objectives (sales, assets, profits) exist to sustain its existence. The goals that most motivate corporate managers are survival, independence, self-sufficiency, and self-fulfillment. Yet, these motives are consistent with the financial objectives of the corporation: to maximize corporate wealth. The responsibility of managers is to maximize the value of the company. Furthermore, because corporations are long-lived, that value should last a long time—a good reason for looking beyond the ten-year monetary horizon and the lives of its managers.

Although current wisdom (Milton Friedman et al.) holds that a corporation's only responsibility is to its stockholders, corporations are being pushed to include social purpose in their strategies, again. Alas, they are doing poorly at it. They do not know how much responsibility to take, or where to put limits, or whether to pursue policies that diminish their profits. Corporations have proved spotty in doing social and environmental good. It would be more appropriate to have them deal with the environment as a corporate entity concerned with maximizing its own values. Of course, that would mean no more "free" resources or environmental services.

The important advantages to incorporating the earth are the same as for incorporating a business.

1. Managerial flexibility: the stockholders are separate from managers; responsibilities are assigned by needs of the corporation.
2. Limited liability: the corporation borrows and repays. It shields its members from hazards to which they would otherwise be exposed.
3. Financial advantage: the ownership of assets can benefit stockholders and the corporation.
4. Tax advantage: investments in the good of the corporation may not be taxed by nations.
5. Estate planning and longevity: the corporation exists indefinitely beyond the lives of its participants.
6. Central management and representation: a large and complex business needs operational and managerial efficiency. Many of the participants have no direct voice in the operation—they must be represented.

The earth incorporated would focus on a core business: to ensure the integrity and continuity of life and all its connections and to secure the opportunity for development free from undue interference. It would operate to optimize values, like any good corporation, but the values would be ecosystem values (fungus values and earthworm values, as well as human values).

A temporary Board of Directors (the undersigned) would adopt bylaws, elect working officers, approve stock certificates, open accounts, and arrange a stockholders meeting. The stockholders would elect new directors, possibly from United Nations representatives or directly from elections, and decide on dividend declarations.

Stockholders, as citizens of independent nations, would turn over common and national property to the Earth Corporation, which would issue stock certificates to the stockholders. The corporation would allocate the purchase price of stock to capital at par value. Most of the shares—the percentage to be determined by the board as necessary to the operation of ecosystems—would be treasury shares. Anything more than par value would go to capital surplus, and only capital surplus could be distributed as dividends. Stockholders have the right to receive these dividends equitably, without resort to traditional distributions of wealth.

Stock certificates denote ownership of the corporation. Although the stockholders own the corporation, they do not own the property of the corporation, the earth, which is owned by the corporation itself. Stockholders, as individuals, groups, or nations, could make agreements about how business would be conducted, about what resources would be used or traded.

The elected board of directors would make decisions of distribution and limitation. Percentages would be deducted from the interest for the operation of the corporation and for equitable distribution to nations less favored by chance with biological or geological wealth. Furthermore, since the dividends would be distributed among people according to net ecosystem productivity and resource availability, no advantage would be gained by nations having large populations.

The basic functioning system would be considered capital, thus limiting the amount of human use of resources and probably the size of human populations. Interest would accrue in the form of net ecosystem productivity and diverted percentages of materials, such as gold or water.

The earth incorporated would solve the problem of having to value ecosystems in monetary or quantifiable terms; its systems would be untouchable capital. The human value of resources like

copper, air, or water would be equated to the technological cost of recycling or producing them.

Raw material and energy are only two facets of the capital of a corporation—another is human ingenuity. Thus, human wealth would not be limited by restrictions on the availability of resources, but rather by a shortage of ingenuity.

An incorporated earth would be instrumental in conditioning international corporations to their social responsibility and in internalizing all costs. This corporation and governments could use traditional means, such as credit access, low interest rates, and setting priorities on equity issues, to evoke public interest in smaller and healthier human endeavors.

The suggested articles of incorporation are:

FIRST: The name of the corporation shall be The Earth, Incorporated.

SECOND: The purposes for which the corporation is formed shall include: The protection of functioning ecosystems and their living beings from destructive interference.

The conduct of inquiry into the operation of such systems and the role of humanity therein for scientific and educational purposes.

The taking of appropriate legal steps to carry out these purposes.

The maintenance of all real common property, including all lands, seas, and atmosphere, subject to the restrictions and limitations hereinafter set forth, to use only the interest from income therein, reserving the principal thereof exclusively for the aforesaid purposes, it being intended that the corporation be organized and operated for preservational purposes and not for pecuniary profit.

The corporation is organized as a voice for nonhuman beings and systems. No part of the income of the corporation, if any, shall inure to the benefit of any trustee or officer of the corporation or to any private individual having an interest in the corporation (except for reasonable compensation) and no trustee or officer of the corporation or any private individual shall be entitled to share in the distribution of any of the assets of the corporation.

The corporation shall not be authorized to carry on propaganda, influence legislation, participate in any political campaigns, or discriminate against human cultures.

In furtherance of the foregoing purposes, the corporation shall have the following powers:

To accept and hold by gift or judicial order any real or personal property of whatever kind, nature, or description, wherever situated.

To sell, transfer, or dispose of the interest from any such property, but not the principal or any part

thereof.

To make, accept, endorse, execute, and issue bonds, promissory notes, bills of exchange, and other obligations of the corporation for monies borrowed for the purposes of the corporation.

To invest and reinvest its funds in stock, bonds, or in such other securities and property as its trustees shall deem advisable, subject to the limitations and conditions contained in any grant or gift.

In general, and subject to such limitations and conditions as are or may be subscribed by international law, to exercise such other powers which now are or hereafter may be conferred by international law upon a corporation organized for the purposes hereinabove set forth.

THIRD: The operations of the corporation are to be conducted on the surface of the earth but the operations of the corporation shall not be limited to such territory.

FOURTH: The principal office of the corporation is to be located in the United Nations, currently in the City of New York, State of New York, United States of America.

FIFTH: The number of directors, who shall be known as trustees, of the corporation shall be not less than 30 (a minimum number associated with major ecosystems), nor more than 3,300 (the number of independent cultures associated with biogeographical provinces and subprovinces).

SIXTH: The names and residences of the persons who shall be trustees until the first annual meeting of the corporation, are:

C. J. Hagen, Seattle, Washington
L. G. Nieman, Viola, Idaho
V. L. Reason, Wilmington, Delaware
A. E. Wittbecker, Nashua, New Hampshire
M. H. Wolfe, Cambridge, Massachusetts

SEVENTH: All of the subscribers of this certificate are of full age; all of them are residents of settled places on the Earth.

In witness whereof