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CHALLENGE OF ENVIRONMENTAL EDUCATION

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Perhaps it was at the time of Earth Day that the public became aware of environment and ecology, but the voices that rushed forward to say what ecology was were from sources that really did not know or know how to explain the principles.

People thought that it had something to do with poison to humans, neatness of grass plots, or litter in the streets.

Even institutions set up under the name Environmental Health had more to do with protecting humans from environment than protecting the environment from humans. The ecological view protects humans by protecting the life support environmental system as first line of defense. Many thought environmental technology was the answer, making jobs and polluting even more by operating environmental technology industries to protect environment.

Ecology has to do with a hierarchy of ecological populations, communities, ecosystems, and that level of organization of landscape with humans in it. This latter scale of organization has its parts studied in familiar fields as economics, sociology, planning, geography, forestry, etc., but few are aware that the landscape as a whole has order, cycles, pattern, and causes, and probably is as deterministic as any size realm. The science of whole environment realm has suffered by being called inter-disciplinary when it is really the discipline of another size realm. Environmental education also suffers from being regarded as inter-disciplinary, whereas its realm of concern is itself a discipline.

Another difficulty is that people believe they have free choices about environment, whereas they really have only the choices that fail and the ones that work and become adapted - these being the ones that follow the principles of ecological systems. People shift with consensus as a group to that which succeeds - probably that which processes more power to the system of themselves and their environment.

There are many enigmas in present environmental attitudes. There is over-devotion to neatness and simplicity as with the grassy lawn. Approach to wastes and resources has been peacemeal. Many believed the environment is not essential: the life support concept is not believed. The degree to which economics is based on stored resources of minerals, soils, and wood, is not understood. Need for total habitat preservation to conserve valuable gene pools is not understood. Real-value measures of the externalities of environment are much discussed.

The temporary, short-sighted frenzy of using up environmental storages succeeds, but only in the way beetles and fungi succeed while consuming a log. Their reign is temporary.

The greatest contribution that we might make is to show from ecological principles how the humanity-nature pattern will be shifting and, especially after 1990, the increasingly important percent of human existence to be derived from a renewable basis, reorganizing humans to live symbiotically with the ecosystems on a more local scale once again.

The real challenge in environmental education is to substitute the principles of harmonious systems and humanity's role as a member for the notions of the environment as an external thing.

Humans are members of the biosphere rather than users. Can we substitute concepts of usable cycles for sources and sink; substitute fitting together for designing the environment. Substitute understanding of growth, succession, climax, and regression for faith in perpetual growth; substitute responsibility to one's place for maximizing the individual's roles.

My wife and I try to educate about environmental systems by using the energy symbol language to generalize the principles of energy, kinetics, economics, and structure. We have written a textbook with this approach (Odum and Odum, 1976). It uses an overall systems view of energy flows to teach the important basic principles for understanding the environment.

Whatever the methods, we have a long way to go in establishing sufficient holism in people's view of their environmental system to

see their best roles. The many creative approaches in this international conference should help.

LITERATURE CITED

Odum, H. T. and E. C. Odum. 1976. Energy Basis for Man and Nature. McGraw-Hill, New York.