

Ecovillage as Ecosystem



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In a systems view of the world, Nature can be conceptually divided into distinct levels of hierarchical order – systems within systems – all contained within an overarching supra-system. In this view, each system is given definition by its ability to be a self-organized, self-repairing, self-maintaining ‘whole’ unto itself, with irreducible properties of its own, intimately embedded within the larger whole systems of which it is a part, and comprising the smaller subsystems from which it is constituted. An ecological level of organizational hierarchy, in the systems view, would look like this (from Odum, 1997):

- 1) Biosphere (Gaia)
- 2) Biogeographic Region (Bioregion)
- 3) Region or Biome
- 4) Landscape
- 5) Ecosystem
- 6) Biotic Community
- 7) Population (Species)
- 8) Organism

In this discussion, Level 5, Ecosystem, is our primary consideration.

The ‘ecovillage’ is a nascent movement that could be considered a thoughtful response and solution to the unsustainability of Western civilization. Its goal is to provide sustainable models of human settlement that can begin to be implemented as the 21st century unfolds. The most comprehensive and often used definition of ‘ecovillage’ to date comes from Gilman (1991): The ecovillage is a: (1) Human scale, (2) Full-featured settlement, (3) In which human activities are harmlessly integrated into the natural world, (4) In a way that is supportive of healthy human development, and (5) Can be continued into the indefinite future.

Point (1) gives the ecovillage a well-defined boundary, a necessary characteristic of all living systems. Points (2) and (4) give the ecovillage unique, irreducible properties, a characteristic that is essential for any organized whole. Point (3) defines the ecovillage as a natural system, organically embedded within larger natural systems. Point (5) ensures the ecovillage is sustainable by definition. With these points in mind, the ecovillage becomes a natural living whole system, integrally nestled within the larger

living systems of which it is a part, and containing smaller subsystems that are its constituents. The potential ideal is for the ecovillage to become a biological entity – a living system with “teleological, nature-encoded, and soul-like properties, expressing an end-goal of equifinality” (von Bertalanffy, 1968).

In its potential ideal state, then, the ecovillage becomes a living system able to be embedded within the ecological levels of organizational hierarchy. It is proposed here that that the ecovillage need not specify an additional level, but that in its ideal state it contains all the characteristics inherent to an ecosystem; the ecovillage can be conceived as an entirely human-designed and constructed ecosystem.

“In ecology, the term *population*, originally coined to denote a group of people, is broadened to include groups of individuals of any species that live together in some designated area...*Community*, in ecology, is used in the sense of *biotic community* to include all the populations living in a designated area. The community and the nonliving environment function together as an *ecological system* or *ecosystem*. A parallel term often used in German and Russian literature is *biogeocoenosis*, which translated means, “life and earth functioning together.”” This beautiful description by Eugene Odum (1997) was used to define ‘ecosystem,’ but can be applied equally well to the definition of the actualized potential of the ‘ecovillage.’ Thus, at an essential nature-encoded level, a well-designed ecovillage will be a functioning ecosystem of “life and earth functioning together.”

This is, perhaps, a simpler description than Gilman’s, so “ecovillage as ecosystem” could use further ramification. According to Homann (1998), an ecosystem exhibits distinct functions, processes, and concepts. Functions include: productivity (especially of carbon) and energy flow, nutrient cycling (carbon, nitrogen, phosphorous, potassium, calcium, and metals), water cycling, and habitat for biodiversity. Processes include: photosynthesis, reproduction, metabolism, entropy retardation, and evolution. Concepts include: hierarchy (or holarchy), balance, and homeostasis. The context for ecosystem function and process is the ecosystem structure. Structure includes primarily boundary and biomass (soil and vertical stacking). Within the structure, there are forces and imbalances: physical, chemical, energetic/thermal, and momentum. If an ecovillage is to be considered a genuine ecosystem, and if it is to maintain an organic, symbiotic relationship with the landscape of which it is a part – that is, the next higher level in the organizational hierarchy – then monitoring and evaluation of these important ecosystem parameters need to be included in/as design feedback loops, becoming inchoate design criteria for the ecovillage.

Further, if an ecosystem is defined as “the community and nonliving environment functioning together,” and if an ecovillage is a human-designed ecosystem, then important consideration needs to be afforded to the constituents of the village

'community,' community being all the populations living in the designated area. This is where pure creativity, disciplined ecological knowledge, and accumulated design experience can be employed to full synthesized productivity and harmonious integration. There are an almost endless variety of 'guilds' that can be experimented with, using all five kingdoms of Life.

Yet, we may conjecture that in order for the ecovillage-ecosystem to be symbiotically integrated into its local *landscape* environment, it must incorporate primarily native species. Exotic species will invariably be introduced, and can be used productively, but only after careful consideration of containment and specific function/benefit/utility evaluations. Nature provides an abundant diverse palette but it is the responsibility of the Village Designer to discriminate and consider long-term consequences, thus choosing intelligently. Reflection on the long history of ill-conceived species introduction by European colonialists will provide temperance.

In summary, then, the ultimate work of Village Designers is to create human-made ecosystems – and this implies important ethical considerations. Perhaps these ethical considerations are best expressed in the philosophy of Deep Ecology: in Deep Ecology, all life-forms are given inherent value and are regarded with comparable respect. To be a Village Designer – to consciously create meta-biotic communities, to choose which species will interact and comprise the built ecosystem, to set long-term evolutionary life processes in motion – certainly requires a strong ethical foundation. This spiritual-ethical foundation, combined with knowledgeable scientific evaluation of empirical observations, will ensure that the ecovillage-ecosystem is established and evolves in accord with the health and vitality of the larger living systems of which it is a part. Only then can it achieve its goal of being “continued into the indefinite future.”

References:

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