

# Ecological Design

A New Post-Modern Design Paradigm. One of Holistic Philosophy and Evolutionary Ethic.

**Ecological design is a design approach based not only on an ecological and evolutionary ethic and value, but more important, on a holistic expansionistic view of the world. It is therefore that the ecological design is a sounder and more useful approach to contemporary design problems than the belief systems of the Modern movement and recent "Post-Modernism" in architecture.**

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Though the terms Modern environmental design (or design of environment) and Post-Modern environmentalistic design (or ecological design) may appear to be minor semantic variations, they in fact reflect a significant paradigmatic revolution: a change from a reductionistic Modern approach to a holistic Post-Modern approach to design. Besides, and perhaps because of this change, the modifier "environmental" in the case of environmental design, refers to -the environment that is designed- whereas the modifier "environmentalistic" or "ecological" refers to -the approach taken- to the design of an object or environment, or the design of human-environment systems.

This paper will present Ecological Design as a new paradigm in design, explain its significance, and argue for ecological design as a better paradigmatic alternative to the modern movement led by the Bauhaus, and as a sounder and more socially relevant approach than the "Post-Modernism", which during the last several years has received growing and perhaps undue publicity in architectural publications, considering its shallow philosophical and ethical foundation.

To do this, I will contrast reductionistic "design of environment" with holistic "ecological design" by articulating their philosophical positions and the implication of those positions to design practice. This contrast inevitably risks involves some simplification and distortion of actually complex issues; yet it serves to articulate the important differences that are frequently unnoticed by many a lot of design practitioners and educators alike.

Ecological design as an approach is in a word a *transformation* of Ian McHarg's ecological approach to planning, finding its value not only in its social relevance but also in the philosophical soundness of a holistic, evolutionary view of world.

## **Philosophical orientation**

*Design of Environment as Reductionistic Paradigm in Environmental Design*

Physical design disciplines and professions have always been concerned with the design of the environment. However, what makes the approach of Modern design distinguishable from its Classical and Middle Age predecessors is its reductionistic view of the environment and its exclusive and elitist view of environmental design. It was reductionistic in that the environment, and in fact man and nature themselves, was believed to be reducible down to a combination of an immutable atom or "basic element". It was exclusive in that the designer's focus was on high art. It was elitist not only in that the designers were presumed always to know better, but in that they were the ones, they believed, who could and should shape and determine our living environment.

The Modern paradigm of design in sum stood on two interrelated philosophical positions, positivism (or dualism) and determinism. First, the environment was believed to be an entity that could and should be "objectively" described and "scientifically" evaluated, so that "good" environments or design solutions could be "rationally" prescribed by designers, independent of users' personal, social, and cultural variations and the site's physical and symbolic environment. Second, it was believed that human well-being and behaviour can be improved and modified directly by changes in the physical environment, independent of "free will" and users' motivation, subjective perceptions and experiences (Lang 1978, Koh 1981).

## **Ecological Design as Holistic Paradigm**

The philosophical orientation of the Post-Modern paradigm of environmental design that I call ecological design is characterized by a holistic view of the human-environment system and by an evolutionary and open-ended view

of culture and of design and building. Design is regarded viewed as an inclusive art, or a culture, rather than as an exclusive fine art. The term “ecological”, in this case, does not point so much to the disciplines of ecology, ecological anthropology and ecological psychology as to the holistic and evolutionary approach adopted by these disciplines and by environmentalistic designers.

Although the term ecological design is frequently used to denote a design which is sensitive to ecological processes, e.g., climate, ecological design as a new paradigm that I suggest here is more inclusive than energy conscious design. Its conception of environment is at once physical, biological, cultural and psychological. The energy-efficiency of an environmental structure and the protection of the human environment are here considered as interrelated and mutually complementary outcomes of the ecological and evolutionary fit between the built structure and its natural and cultural environment. Similarly, ecological design is not just a simple extended application of the approach taken by “ecological planning”. This is because the former stands on intellectual holism of matter and mind, thought and feeling, functionalism and expressionism as well.

The attention of the ecological designer is not so much on the environment as product as on the interrelationship between humans and their environment. The concern is not so much the design of environment as the design of the human-environment system and the human experience of it. The ecological designer is, therefore, as concerned with the evolving process of the human-environment system as with the product.

This philosophical orientation of the ecological designer is a change toward a belief in the complementary and indivisibility of thought and feeling, and of human and environment. This holistic,

systematic and expansionistic view has proven to be more useful to contemporary design problems (which have been characterized by their complexity and rapidity of change) than the scientific positivism and reductionistic view has been. In fact, the revolutionary nature of this change makes the change from the Modern design of environment to the Post-Modern ecological design paradigm far more significant than the evolutionary changes in design philosophy from the Renaissance to the Baroque to the Modern. All of these shared the same intellectual foundation, if not the same cultural context, i.e., reductionism and determinism. In other words, the significance of the change from Baroque Ecole des Beaux Arts design to Modern Bauhaus design seems to lie more in its cultural aspect than in its philosophical one.

In all, the primary tenets of the ecological designer are: first, that there is an intrinsic limit to validity of the objective observation and scientific diagnosis of the environmental design problem, because the perceived value of the built-environment is the function not only of the personal, social, and cultural differences among people, but also of its relationship to the larger context of which it is a part. Second, the improvement or modification of the physical environment does not by itself lead directly to improved experiences or modified behaviour, and that user behaviour is not affected or determined directly by the physical environment but by the users’ image or subjective perception of it.

This new focus upon the interrelationship of the built environment with the users on one hand and the site context on the other can be termed as contextualism or environmentalism in that the source of “value” and “meaning” of a design product is not considered intrinsic. Instead, it is seen to lie in relationship to, and fitness with, its

human purpose (or more broadly defined, function) and the site and site environment.

Contextualism does not only imply that one cannot correctly perceive and conceive of any things and events without relating them to their context, but also that the value and the meaning of the design and the design product derives from their relationship to the context, which itself is in a process of evolution.

Finally, the belief system of ecological designers is relative in that they consider the value of a design product and built environment to be relative not only to human purpose, needs, and desires, but also to the physical and symbolic context. No design product and built environment is therefore considered by the ecological designer intrinsically superior, or inferior, to any other design and built environment.

This ethical aspect linked to the second tenet of ecological design (i.e., the two-way transactional view of human-environment systems) makes ecological approach at once dynamic and evolutionary: dynamic in that the attention is focused on process rather than on product; evolutionary in that it sees the act of human adaptation, including the acts of designing and building, as on-going interactive processes, continuously improving, yet always leaving room for further improvements.

Ecological designers therefore do not accept the view that humans mechanically respond to external stimuli. Contrarily they recognize people as self-motivating, goal-oriented, active, and creative. Since human beings are believed to co-evolve with environment, there is no place in the mind of the ecological designer for “timeless” design or for an absolute “order of form”; there is only the timeless “order of process” and principle of evolution.

The ecological designer therefore values adaptability of the environmental structure to change and growth over time as well as adaptedness to a specific time. Provision for the necessary continuity to inevitable and often rapid, change in the Post-Industrial world becomes one of his/her central concerns in design process because continuity through change and the synthesis of tradition and innovation are necessary evolutionary strategies in the face of the rapidity of change of Post-Industrial society. Otherwise, it would tend to produce a growing sense of personal alienation and social disintegration.

Now that we know the difference in philosophy, we will focus on the influence this philosophy has on the way landscape architects and planners practice their craft.

#### **Design practice.**

##### *Design of Environment as Reductionistic Paradigm in Environmental Design*

Environmental designers of such philosophical position normally worked in “multi-professional” teams to solve design problems under the coordination of one master designer who usually defined the problems. For example, architects and landscape architects, in such a case, might consult structural, mechanical and electrical engineers after they generated preliminary designs; but rarely did they involve sociologists, psychologists, or businessmen in the analysis of problems and problem boundary. Frequently (and ironically) they, in turn, found themselves asked to solve problems according to policies made by public officials, corporate executives, or various other client groups.

Because such environmental designers believed that design problems could be rationally defined by designers exclusively and that best solutions could be prescribed by the so-called expert or specialist, the participation of user groups or the consideration of contextual variations were rarely called for.

They claimed that the users and clients were neither as informed of their needs or desires nor as tasteful as to appreciate what designers’ value is meant to be. The designer believed that public and clients needed to be “educated” to properly appreciate their design solutions; good ends were believed to justify poor means. As much as they saw the value of designs being independent of differences in the perception of the users and their social, cultural and ecological systems, they frequently aspired to “transcend” the practical, utilitarian concerns of the present, such as economy and function. Therefore designs frequently became professionally excellent but socially irrelevant, unresponsive to the ecosystem, and alienating to user groups.

The positivistic belief in an objective world also nurtured a false conviction in the existence of universal truth and beauty, absolute good and ideal form. The designers who subscribed to this belief employed or often were possessed by the Divine proportion, and promoted the International Style and Utopian new town planning.

The Modern designer focused either on the analysis of formal expression (function, construction, structure and material) in the case of rationalist, or on human desires, fantasy, vision or will power in the case of expressionist. While their expressed design goals were the formal synthesis of inorganic and organic, as Giedion (1967) pointed out, their reference to people and place remained reductionistic and exclusive. The quantitative approach dominated over the qualitative. The sizing of human physique, family, space and structure followed “statistic” averages or “ideal” dimensions, scale or proportion. Consideration of psychological and cultural factors was rare except on an intuitive basis; site analyses were primarily perceptual rather than symbolic or ecological. The design of the built structure was rarely contextual in

that it did not respond to or respect the surrounding structures. All past solutions were believed to be bad and no longer useful. Thus, change was asserted without the necessary continuity which makes change less stressful.

Evaluation of design was almost always based on the merits of design ideas expressed through drawings and models rather than on the proven success of the built structure, a practice often resulting in the embarrassing situation in which an award-winning structure turned out to be an object of public scorn.

Modern designers liked to distinguish architecture from building, and they wanted to preserve and enhance their self-image as artists rather than as engineers, as designers rather than as builders. They began thereby to alienate themselves from the construction process itself, leaving themselves as “generalists” of various building types, specializing in the design phase alone and excluding building implementation. As a result of this, design process became more restrictive, conservative, and close-ended in that little creative feed-back existed between design and construction processes. Consequently, change in design during construction became very difficult, whereas construction has become a mechanistic process following prefixed and approved design documents, with little room and few incentives for spontaneous creative experiments, on-site ingenuity or inputs from construction workers.

#### **Ecological Design as Holistic Paradigm**

Ecological designers believe that design decisions made without the participation of the users are less likely to be correct, just, or effective. They recognize that, as Lawrence Halprin and Jim Burns (1974) have demonstrated well, the sense of identity, self-respect, and self-fulfilling experience that user groups gain from

the participatory design process and from their own environment make the very process of designing and building with the users more humane, and the product more meaningful.

Ecological designers recognize as essential the ability to explain and predict how people will perceive and behave in a given environment, to base design decisions upon the recent development of behavioral science.

To ecological designers, the value of a designed and built structure is also a function of its fitness to the ecosystem. Because they believe that ecosystem evolution tends toward higher levels of complexity, diversity, differentiation and localization, resulting in higher levels of efficiency and stability in the system, ecological designers evaluate their designs by the degree to which they enhance the complexity, richness and identity of the original environment. This does not mean that the mind of the ecological designer has no room for any meaningful design experiment and/or the expression of individuality, spontaneity, fantasy, or imagination. On the contrary, they accept play as a source of creativity, and carefully select from the accidental mutants of ideas and forms played. They accept the value of singular, rare, whimsical designs -just as they appreciate some rare wildflower in the woods- but only as far as they are the enriching parts within the larger ecosystem.

Ecological designers know that an environmental structure adapted to a local climate can still have the potential of being adjusted to express the identity of local character and diverse personal value and aspiration. Knowing that regionalization of environmental structures and designs is the evolutionary direction of all mature human culture, ecological designers support regionalism rather than universalism.

Dealing more with the delivery of structure-in-place rather than with design-on-paper, ecological designers feel the need to actively participate not only in the pre-design decision-making processes (e.g., land use plan, zoning, building code, and fiscal planning), but also in the post-design processes such as construction, management and post-occupancy evaluation. Such expanding involvement from the pre-design to the post-design phases demands that ecological designers become not generalists-in the-design phase, but specialists-in-the-entire-design-building phase of selected problem types.

Ecological designers do not, in their design process, pursue the optimization of the whole in sacrifice of the parts, or vice-versa; they preferably tend to be rather democratic in that they pursue a balance between optimization of the whole and that of its parts. Hence, they do not neglect parts, just as nature never neglects details. They favour slower, stable, wholesome maturation rather than rapid, stressful, partial growth, in the built human ecosystem, because the creative, self organizing process is necessarily a slow process and system integrity is a necessity not only for social stability and efficiency but for individual freedom as well.

### **Conclusion**

It was not my objective to claim that all current designers are practising either reductionistic environmental designs or holistic ecological designs. Perhaps it would be more correct to say that the majority of informed environmental designers today are at some point in the transition from the reductionistic to the holistic design. They reject the reductionistic notion of design in their words, yet they are not quite fully practising as holistic designers in their total deeds. This must be ascribed attributed to a lack of clear comprehension of the full ramifications of the holistic and evolutionary approach to design.

The displacement of the reductionistic approach by a holistic approach in environmental design means a fundamental restructuring of the way contemporary environmental designers should view the role of their profession and the structures they design/build as well as the way they design/build.