علوم محیطی ۱۲ ، تابستان ۱۳۸۵
ENVIRONMENTAL SCIENCES 12 , Summer 2006
67-78

# Ecological Meaning in Landscape

**Cyrus Reza Sabri, Ph.D.**
*Associate Professor, Architecture Landscape Architecture Department, Virginia Polytechnic Institute and State University*

**Abstract**

This article deals with the dilemma of man's expectations from the environment and the responsiveness of the environment to man's desires. Can we find harmony between these opposing forces? The important issue is to pursue our honorable goals, hopefully, in the expectation of finding every element of harmony we can in the relationship between ourselves and the rest of nature, rediscovering old harmonies and perhaps finding some new ones too. This study focuses on some sample studies such as the Kohala Coast on the island of Hawaii and Abbas Abad hills in Tehran, to clearly play the concepts of preference and affordance against each other and use the criteria for sustainability as a framework. It concludes that in interpreting nature man reeducates himself and in the process his value system changes. Therefore in the long run a new culture will emerge which is more in harmony with the natural processes.

*Keywords:* ecology, preference, affordance, sustainable development, interpretation, schemata, perception, observation, values, meanings, biodiversity, harmony.

## معنای بوم شناسانه منظر

**رضا سیروس صبری**
*دکترای معماری، دانشیار دانشکده معماری، دانشگاه ویرجینیا*

**چکیده**

این مقاله در باره انتظار مردم از طبیعت و میزان پاسخگویی طبیعت به خواسته‌های انسان است. آیا می‌توان هماهنگی میان توان محیط و آمال انسان‌ها در ایجاد تغییرات در محیط یافت. موضوع اساسی در فرآیند پی‌گیری اهداف ارزشمند انسانی در رابطه با محیط تعریف رابطه هماهنگ بشر و سایر اجزا و عناصر طبیعت است. بررسی فرضیه‌های مطلوبیت (Preference) و قابلیت (Affordance) و رابطه بین این دو در نمونه‌های موردی چون سواحل کوهالا (Kohala) در جزیره هاوایی و تپه‌های عباس آباد در تهران به آزمون گذارده می‌شود. در این فرآیند اصول پایداری به عنوان معیارهای تأثیرات محیطی شکل می‌گیرند. نهایتاً در تفسیری نوین از طبیعت، بشر با ارزش‌هایی منطبق بر شرایط هماهنگ در طبیعت تغییری را از طبیعت انتظار نخواهد داشت که با فرایندهای طبیعی ناسازگار باشد.

*کلیدواژه‌ها:* بوم شناسی، مطلوبیت، قابلیت تحمل، توسعه پایدار، تفسیر، تصاویر ذهنی، ادراک، مشاهده، ارزش‌ها، معانی، تنوع زیستی، هماهنگی.

## Introduction

The conflict between nature and culture showed itself, in the 19th century landscape paintings. Most painters chose to downplay evidence of human incursion into the wilderness: by tucking trains away in the corners of pictures, blending farms bucolically into natural scenes, or depicting burnt tree stumps as evidence of human presence and its latent destructiveness. But the photographers, who came on the scene later, lugging their own image-making technology, were a different generation with a different outlook on the new frontiers of human advancement (Weintraube, 1984). Though many of them were concerned about preservation, and all shared religious awe of the sublime aspects of nature, they were still implicitly on the side of progress, technology, and civilization. Joshua Taylor declares that "The first appraisals of nature by man probably were made with an eye toward production: how a patch of landscape would favor agriculture, settlement, shipping or prosperity in general. Of course, there were remarks about agreeable vistas and natural curiosities but wilderness was there to be won, not admired." (Weintraube, 1984). That attitude had changed significantly by the early years of the 19th century in the United States, as more and more people moved westward and industrial forces became more evident in our lives, and questions arose as to the relationship between human beings and the land they inhabited. It was from this point until now that the interpretation of landscape began to play an important role in our lives all over the world.

Now let us imagine this scenario. During the next century as many as half of the Earth's species, representing a quarter of the planet's genetic stock will either completely or functionally disappear. The land and the oceans will continue to teem with life, but it will be a peculiarly homogenized assemblage of organisms naturally and unnaturally selected for their compatibility with one fundamental force: us. Nothing—not national or international laws, global bioreserves, local sustainability schemes, nor even the wilderness fantasies—can change the current course. The path for biological evolution is now set for the next million years. And in this sense "the extinction crisis"—the race to save the composition, structure, and organization of biodiversity as it exists today—is over, and we have lost (Meyer, 2004).

### Preference Versus Affordance

From a mosque in the old texture of Kashan to a garden in the middle of desert in Kerman, from the majestic mountains of the Sierra Nevada to the natural quality of the Central Park in New York, we discover that environmental design and landscape architecture are closely tied to people and what they seek, people as elements of landscape, people as values, people's perception and people's criteria. Why do we go wrong in the management of our natural resources? Do we have a full understanding of what is involved in the management of our resources? In one simple statement, what we **prefer** is usually out of the realm of what an environment **affords.** We talk about the **sustainable development** in terms of what resources the environment offers and produces and what it is capable of generating. But do people **prefer** what is offered by nature or do they have their own ideas and expectations of nature? Are they **satisfied** with what they find in the middle of a desert as an oasis or they are after something "more"?

A good case study to consider is the Kohala Coast in the Big Island of Hawaii. Kohala Coast is located on the West side of the island of Hawaii. The land is made up of lava flows. Developers have created deep green color landscapes with many exotic plants, golf courses, and soft sandy beaches which tourists prefer. But what does that environment afford? The most critical issue is water. The subject of water management is very sensitive. For years, traditionally, people used to collect rain water for their daily use. Before the big tourist rush to Hawaiian Islands, the Hilo side of the Big Island with a much higher annual rain fall ratio was a more suitable place to work and live. But the potential of more sunny days coupled with expansive beaches and the growing tourism has

engulfed the dry side of the Big Island and made it the more desirable place to work and live. In another part of our world, Tehran is endowed with some hills in an area called Abbas-Abad. These are barren hills which because of their topography were not developed. On the edge of these hills where a freeway has separated the hills from the existing neighborhoods there is a park on the hillside. The name of the park is Park Jangali Seid Khandan. We, the people who live in the adjacent neighborhood, call it "Tapeh" or "the hills". Tapeh Park used to be just some barren hills, a landform distinct in a dominantly flat topography in Tehran. Placing a water reservoir on top of the hills replenished from deep wells underneath has created the opportunity to grow many trees with the focus on the types that need little or no water after their initial period of transplantation. This addition to the natural equilibrium has provided a quality that was absent considering the affordability of the natural elements in the environment. The quality that these hills provide the neighborhood would have been missed if we only would have counted on the sustainability of the natural resources. As soon as the water source is eliminated from the equilibrium all the qualities that the vegetation has caused will disappear. Sustainability has different faces and sides. Besides the ecological factors, the economic and social factors at times are decisive.

**Interpretation of the Environment**

The environment is not a place. These concepts are not interchangeable. The catalyst that converts any physical location—any environment into a place, is the process of experiencing deeply (Sabri, 2006). A place is a piece of the whole environment that has been claimed by feelings. We are homesick for places, reminded of places, it is the sounds and smells and sights of places which hunt us and against which we often measure our present. Perception and interpretation are inseparable. The perceptual process is itself influenced by all those cultural, experiential, and individual factors that are supposed to underlie interpretation. Preference is subjective. Sometimes the objectivity is achieved by having people rate scenes in terms of landscape features rather than in terms of preference. Also preferential judgments are not random and they turn out to have correlates in the classic aesthetic and landscape architecture literature. The qualities of certain natural places have gained recognition since certain men and women have responded to with love. These men and women were artists and writers, they left a record of their encounter with the land for others to see, read and understand. This is really all that sets them apart—that talented connection between eye, mind, and hand. Robert Frost often referred to poetry as a voyage of discovery (Sabri, 2006). All of us have felt the sense of belonging to parts of the earth, whether we know it or not, we are the products of our sense of place.

We have to realize that through mistaken ideas of progress, we continue our increased demands to surpass the affordability of space and wilderness. The best weapon against that unending demand is a revival of man's sense of place. The places that we have roots in, and the flavor of their light and sound and feel when things are right in those places, are the wellsprings of our serenity. There must be something in them as important to us as a home slope is for a Douglas fir, for example, an importance such as a geneticist has in mind when he says, "Plant local seed stock." Alienation does not come easily to living things; even in migration they contemplate a return. Granted, the affinity for the milestone places in a man's life is an affinity that is largely unstudied, and this is not the place for extensive delving; we simply know that nostalgia has a purpose. The appreciation of natural environments needs an understanding. If we can interpret the environment, we are likely to appreciate and prefer it. William Cole reports his inability to find any suitable poems about the desert. He recalls a painter who told him how long it has taken him to adjust his eyes and brush and palette to New Mexico. At first the dunes, mesas, mountains and sky had impressed him as vast, empty, and

paralyzing, and he had made out only four or five colors. It was not less than six months before he apprehended great motions in the landscape and a granular subtlety of color. Observation, the adaptation of his technique, and the discovery of what in himself the scenery might declare, and at least made it possible for him to understand and interpret the nature and paint (Gussow, 1979). Could one not just as well say that the desert, in requiring of the painter a fresh self, had in its own good time imagined him?

Continuity between art and the land implies harmony between humans and nature (Sanfish, 1983). Discrete and obtrusive forms on the other hand, reveal a literal attempt to separate humans from nature. In an era when the balance between humans technology and nature is so precious, it seems prudent to seek guidance among those who, along with politicians, philosophers, and writers, have traditionally assumed the role of spokesperson for society—the artists. We have to learn to explore the environment and understand it deeply. This knowledge should become a part of our belief system. Not every fact that a person is offered – or even learn by heart – will 'fit' any of that person's existing schemata; and if it does not fit, then it can have no useful function, and will be ineffective: 'Effective knowledge is a matter of neat architecture, not of random piles of building bricks, however high they may be heaped' (Terence Lee 1991). Interpreters must have one thing in mind, in exposing the visitor to the feature, 'not quantity, but quality' (Pierssene, 1999). Interpreters never stop learning. The *schemata* concept has a great relevance to interpretation. It recognizes the 'grains of sand" principle. The big ants' nest is constructed by thousands of ants, each making hundreds of journeys: each time they bring one grain of sand or fragment of leaf to add to the pile. Such is the gradual process by which *schemata* are built. But the simile is helpful in understanding the way people learn only if we think of grains of sand as each having to fit into place. This is the difference between learning parrot-fashion and insight.

Charlesworth (1976) has pointed out, a species has not only to be able to recognize the sorts of environments it functions well in, it has to prefer them (Kaplan, 1979). Animals have to like the sorts of settings in which they thrive. It could be costly for a species to spend years barely subsisting in unsatisfactory environments in order to learn that such environments were in fact unsatisfactory. Therefore, one can view preference as an outcome of a complex process that includes perceiving things and spaces and reacting in terms of their usefulness and supportiveness. In this perspective aesthetics must, at least to some degree, reflect the functional appropriateness of space and things. It should be noted that this view of preference towards suitable environments does not imply to what is currently functional. The research on preference has repeatedly pointed to two underlying purposes which people are concerned with throughout their waking hours. Rachel Kaplan (1977) called these persisting purposes "making sense" and "involvement". Making sense refers to the concern to comprehend, to keep one's bearings, to understand what is going on in the immediate here and now, often in some larger world as well (Kaplan, 1979). The two subjects of coherence and legibility are the components of making sense category. Involvement refers to the concern to figure out, to learn, to be stimulated. The two subjects of complexity and mystery are the components of involvement. Certainly there are environments that one can comprehend and at the same time be stimulated by. Likewise, there are environments that offer neither possibility. In fact, all combinations are possible; knowing that an environment makes sense tells one nothing about whether it will be involving or not but they provide means of assessing landscape quality that are empirically based while at the same time intuitively meaningful. Some of the most reliable differences between groups as far as preference is concerned, interestingly enough, turn out to be between experts and everyone else (Kaplan, 1973; Anderson, 1978 and Kaplan, 1979). Experts are the ones who change the world in drastic measures. While

experts are invaluable resources when used appropriately, they are a dubious source of "objective" judgment as to what people care about in the landscape. What drove the artists to the land in the 19th century? What kind of men have they been who could see beauty and interpret it to us? They followed a vision that our future was in the land, and the artists scrambled to explore it (Malloy, 2003). Can we as experts follow their footsteps to have a wider interpretation of the environment? As T.S. Eliot so eloquently put it in this poem:

We shall not cease from exploring
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time (Gussow, 1979).

We shall understand the environment before making altering decisions about it. Roaming the land is a casual approach in becoming familiar with the environment. The right to roam is becoming more and more restricted as the environments develop rapidly. Hawaii is a case in point with the development along side the shore lines restricts the public access to the shore. The indisputably widespread predilection for countryside walking, or rambling as it is known in England, is stirring passions in England's normally tranquil rural hinterland, particularly as the government wades in with new laws calling for every last square inch of countryside to be mapped so that everyone knows who may roam where. The Ramblers' Association, a charity representing some 140,000 members and 450 walking groups across Britain, says that ramblers are upstanding people whose presence might keep real villains and ne'er-do-wells at bay - a kind of private watchdog (Gibson, 1979). At the same time the interest in roaming educates public about the environment.

**The Value System for Environmental Change**

In the process of decision making setting criteria is of importance and the element of change in our values is of major consideration. There are three conditions that affect the value system of an observer. Time, place, and the position of the observer have a lot to do with the viewer's judgment. At different times in life people have different concerns that effect their value system. The qualities that define a place influence a person's perception of the place. Therefore it matters where a judgment is formed. The position of an observer, being a resident or a tourist effects the expectation of the observer from the place. Of course this element will bring many other issues that will complicate the judgment and this research is concerned about this complexity. Gibson assumed that we perceive in order to operate on the environment. Perception is designed for action. Gibson called the perceivable possibilities for action affordances. He claimed that we perceive affordance properties of the environment in a direct and immediate way. This theory is clearly attractive from the perspective of visualization. The goal of most visualization is decision making. In short, Gibson claims that we perceive possibilities for action. i.e. surfaces for walking, handles for pulling, space for navigation, tools for manipulating, etc. In general, our whole evolution has been geared toward perceiving useful possibilities for action.

This is a radical hypothesis, for it implies that the **"values"** and **"meanings"** of things in the environment can be directly perceived. Moreover, it would explain the sense in which values and meanings are external to the perceiver." (J. J. Gibson, 'The Ecological Approach to Visual Perception) Gibson also declares affordances provided by the environment are what it offers, what it provides, what it furnishes, and what it invites. The environment includes the medium, the substances, the surfaces and their layouts, the objects, places and hiding places, other persons and animals, and so on.

Sarah Susanka (2004) declares that over the past few decades, there has been an increasing awareness that as a society we have to redesign the systems that produce and support our way of life so that we don't continue to squander the Earth's resources (Susanka,

2004). This is the concept of sustainability. Before the Industrial Revolution, the only pollutants entering the thin layer of film around the earth came from the movement of the Earth's crust, such as volcanoes and earthquakes. But over the past 200 years, that biosphere has been undeniably affected by the mining of fossil fuels. Coupled with that the way we alter nature with our design needs to have some suggested principles:

- *The principles of inter-generational equity, which requires that the needs of the present are met without compromising the ability of future generations to meet their own needs.*
- *Knowing the limits of design keeping in mind that the design must coincide with the needs of the people and to work with nature not try to control it.*
- *Insist on the right of humanity and nature to co-exist in a healthy, supportive, diverse, and sustainable condition.*
- *Recognize interdependence. The elements of human design interact with and depend on the natural world, with broad and diverse implications at every scale. Expand design considerations to recognizing even distant effects*
- *Respect relationships between spirit and matter. Consider all aspects of human settlement including community, dwelling, industry, and trade in terms of existing and evolving connections between spiritual and material consciousness.*
- *Accept responsibility for the consequences of design decisions upon human well-being, the viability of natural systems, and their right to co-exist.*
- *Create safe objects of long-term value. Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creations of products, processes, or standards.*
- *Eliminate the concept of waste. Evaluate and optimize the full life-cycle of products and processes, to approach the state of natural systems in which there is no waste.*
- *Rely on natural energy flows. Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.*
- *Understand the limitations of design (Norman, 1990). No human creation lasts forever and design does not solve all problems. Those who create and plan should practice humility in the face of nature. Treat nature as a model and mentor, not an inconvenience to be evaded or controlled.*
- *Believe in an interdisciplinary approach. Seek constant improvements by sharing knowledge. Encourage direct and open communication between colleagues, patrons, manufacturers, and users to link long-term sustainable considerations with ethical responsibility, and reestablish the integral relationship between natural processes and human activity*

**The Irreversible Impact**

Through our extraordinary capacity to modify the world around us, we human beings are creating a three-tiered hierarchy of life built around human selection (Botkin and Keller, 1998). The great irony here is that this anthropogenic transformation of the biosphere springs as much from our deliberate efforts to protect and manage the life around us as it does from our wanton disregard for the natural environment. At one extreme we are making the planet especially hospitable for the *weedy species*: plants, animals and other organisms that thrive in continually disturbed, human-dominated environments. Many of these organisms are adaptive generalists—species that flourish in a variety of ecological settings, easily switch among food types, and breed prolifically. And some have their needs met more completely and efficiently by humans than by Mother Nature. In the United States, for example, there are five times as many raccoons per square mile in suburban settings than in corresponding natural populations in "the wild" (De luce *et al.*, 1993). The Kohala Coast of Hawaii is another example described before. A great many of the plants and animals we perceive as healthy and plentiful today are in fact relics and ghosts. This seeming contradiction is

**Figure 1 – The patterns of landscape imposed on the existing environment, Kohala Coast, Hawaii**

**Figure 2 – Natural and man-made environments, Kohala coast, Hawaii**

**Figure 3 – Environmental affordance and preference in Kohala Coast, Hawaii**

**Figure 4 – Natural affordance, Kohala coast, Hawaii**

**Figure 5 – Expending the resources to achieve the preference, Kohala Coast, Hawaii**

**Figure 6 – natural and Man-made environments, Kohala coast, Hawaii**

**Figure 7 - Tapeh Park in Abbas-abad, Tehran**

**Figure 8 – Man-made design with natural elements in Tapeh Park, Tehran**

**Figure 9 – man-made natural environment in the foreground and the natural state of the hills in the**

**Figure 10 – man-made natural environment in the foreground and the natural state of the hills in the background, Tapeh park, Tehran**

**Figure 11 – Man-made designs imposed on the environment, Tapeh park, Tehran**

**Figure 12 – The use of natural resources to achieve the preference state, Tapeh park, Tehran**

explained by the fact that species loss is not a simple linear process (Mitchel, 1972). Many decades can pass between the start of a decline and the collapse of a population structure. Climate change and economic globalization are powerful agents of human selection that amplify and make irreversible the traditional and localized human disturbances that undermine biodiversity. In a sense we have changed the nature's culture. The meaning which represents a certain environment is disturbed. Consider one of the world's favorite eco-tourist destinations: the Monteverde Cloud Forest Preserve. This ecologically significant area covers more than 30,000 acres and hosts more than 2,500 plant species, 100 mammalian species, 400 bird species, 120 reptilian and amphibian species, and thousands of insects (Meyer, 2004). The problem is that the cloud forest appears to be drying out. Deforestation is the apparent cause, but not from logging in the preserve. Rather, the clearing of lowland areas outside the preserve for agriculture is causing changes in the local patterns of fog and mist formation, thereby altering cloud formation up in the preserve. Thus, despite strong protections within its boundaries, the cloud forest may soon lack its defining feature: clouds. And the multitude of species that depend on that moisture will go the way of the extinct golden toad.

Much has been said and written about sustainable communities as a social approach to easing the extinction crisis. Sustainability has been something of a crusade for the UN, various international agencies, and many nongovernmental environmental organizations. The argument goes that if local communities could learn to live within the carrying capacity of their environs, the pressures on terrestrial and marine ecosystems would be eased. And this is a valid point shared in this article. In addition, for sustainable development to have an impact on conservation it must be tied directly to local demand, where the costs of overexploitation are borne by those who benefit from it. This makes sustainable economic programs a moving target because communities grow. As medical services and standards of living improve, the size of a community, its economic aspirations, and its demands for resources grow. The notion of sustainable communities, then, is not about the wild. It is about long-term economic efficiency and the wise use of natural resources.

**Conclusion**

Man must place himself in a process of reeducation. This process shall produce many results. All of which shall bring about a change in our value system. Nature should find a new and much deeper meaning for us. Exploring the land shall result in a new interpretation of it, a new viewpoint with respect for other members of our community (Pierssene, 1999). This eye-opening process shall bring about a new culture full of ecological understanding of our world. We learn to enjoy being immersed in nature and desire a respectful relationship with it. This process shall also change our preference since we end up knowing a lot more about nature therefore become more interested about its fate and ours. Finally one day we find ourselves deeply interested in what an environment offers as a result of its ecological potentials. Suddenly we are capable of perceiving the meaning embedded in an environment without trying to exploit it. We must stop looking at nature as property before it is too late. Legal possession of the land has been translated to mean "sovereignty over the land". The inherent rights of owners under this system are at the root of the environmental problems. Aldo Leopold (1949) recognized this decades ago: "There is as yet no ethic dealing with man's relation to the land and to the animals and plants which grow upon it. Land is still property. The land-relation is still strictly economic, entailing privileges but not obligations. A land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such" (Weintraub, 1984). Humans must learn to work with the materials at hand and within the scope of the ecosystem they choose. Selecting native plants in a proposed landscape is a step in the right direction. As professionals we must advocate for the new developments, to establish

suitable policies and then a vigorous pursuit of policies – relationship with the land – that choose well- placed efforts that contribute to the diversity of surroundings, restoring habitats rather than degrading them. Such a planned effort, involving an interdisciplinary team including but not limited to environmental designers, landscape architects, botanists, zoologists, hydrologists, and soil scientists, all with an artistic sense, could produce a landscape in some cases far richer in ecological diversity than what was exploited before.

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