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Indexes of Visual Structure

Thanks to modern economic growth and the development of transportation facilities, the people of Japan are better able today than ever before to indulge their propensity for going places and seeing things. The population density of our cities having reached a critical point, urban inhabitants feel a stronger and stronger urge to flee from their cramped everyday surroundings and find havens where, if only briefly, they can enjoy the smell of the earth, feel the embrace of nature, revel in scenic beauties that traffic-clogged streets and high-rise apartment buildings deny them.

Sightseeing is not new to Japan. In prehistoric times the ancestors of the modern Japanese made an annual event of going to the nearby mountains at the beginning of spring and worshiping mountain deities hitherto cut off from them by the winter's snow. Local and national rulers made ritual journeys to the hills to survey their domains. In later centuries, after cities had developed, outings to view the cherry blossoms in spring or the crimson maple leaves in autumn became national pastimes. Even religious pilgrimages to famous temples and shrines became in many ways a form of group recreation, sufficiently secular in character to cause the appearance of a whole category of towns whose principal incomes derived from the premodern equivalent of tourism. Today travel has become the foundation of a burgeoning leisure industry. Resorts of one kind or another have sprung up, and are springing up, all over the country, even in places not blessed, as the resorts of a few decades back were, by the presence of some celebrated natural or historical attraction.

Natural beauty has a natural appeal to mankind. Confucius said, "The wise man loves the rivers and lakes; the benevolent man loves the mountains." For the Japanese poet Matsuo Bashō (1644–1694), "he who would

live elegantly is a friend of the four seasons in their natural state." The neo-Confucian scholar Fujiwara Seika (1561–1619) declared, "The person who is fond of natural scenery creates the opportunity for discovering the Way." Somewhat more specifically, Shiga Shigetaka (1863–1927) wrote: "There is nothing like a mountain peak for converting, elevating, and sanctifying human nature." From this it is clear that the beauty of nature has, since ancient times, had many different meanings to many different observers. Yet the quotations given seem to bear out Hegel's assertion: "Natural beauty can justify its name only in its relationship to that which is spiritual."[1]

In comparison with Bashō, who traveled about the Japanese countryside as a mendicant priest, or with the white-robed pilgrims who made their way to Kumano's land of the dead, the modern traveler has an easy time of it. That, however, in no way alters the fact that to return to nature and drink in its beauties is a restorative and inspirational experience for human beings in general. In the words of Nakai Masakazu (1900–1952), a well-known art critic, "To come into contact with nature, to suddenly see oneself as one ought to be and understand what one must hold onto, to become aware of what is truly important, healthy, and valuable to oneself—this is a tremendous happening. It signifies one's discovery of what there is in oneself that must be guarded to the death."[2] Whether all the contemporary sightseers who travel in droves to Japan's famous scenic spots are as deeply moved as Nakai is debatable, but in any case their urge to go is not in itself cause for lament.

Consciously or unconsciously, we all distinguish between various types of views, and it is instructive to consider the conscious or unconscious criteria we employ. When we speak of a bird's-eye view, the view from the top or the view from below, we are drawing a distinction with respect to the point at which the observer is situated. When we talk of a long-range view, or a middle- or short-range view, the criterion is the distance of the object from the observer. When we distinguish between the main object in sight and the background, we are usually thinking not so much of distance as of the visual structure of the prospect. And when we mention vistas or panoramas, we are drawing a contrast on the basis of breadth or scope.

These common distinctions offer valuable hints as to how we should proceed with a scientific analysis of views in general, and landscapes in particular, for they tell us, in effect, the features that are meaningful to the ordinary eye.

Uehara Keiji, in his important work on Japanese landscapes, attempted to analyze the nature of a view in terms of the following five elements: (1) viewpoint, (2) range of vision, (3) direction, (4) principal feature, and (5) distance.[3] Adopting a somewhat different approach, R. B. Litton, Jr., of the University of California proposed six analytical factors: (1) distance, (2) observer position, (3) form, (4) spatial definition, (5) light, and (6) sequence.[4]

Uehara's five elements are without doubt basic, and Litton's contribution is valuable because he added not only the concept of sequence—the transformation that takes place when the point of view shifts—but also the idea of a projecting form against a receding spatial definition.

A more thoroughgoing examination of the visual structure of landscapes was provided by the nineteenth-century German architect and urban planner Hans Märtens, who held to the principle that the total aesthetic impression is related to the range and distance that a normal human eye can encompass. Märtens's ideas with respect to distance and angle of elevation have become standard in the field of urban design.[5]

Having reviewed various earlier theories, we have arrived at the following eight criteria or indexes for determining the visual structure of landscapes:

1. Visibility or invisibility. This concerns the fundamental question of what can be seen and what cannot be seen from a given viewpoint.

2. Distance. This has to do with the changes that take place in the appearance of an object as the distance between the observer and the object varies.

3. Angle of incidence. When a landscape is conceived of as a concatenation of surfaces, the angle at which the line of vision strikes each surface determines to a large degree what can be seen of it. This index evaluates the comparative visibility of the various surfaces in a given landscape.

4. Depth of invisibility. This gauges the degree of invisiblity in terms of the depth of the unseen section with respect to the line of vision.

5. Angle of depression. This clarifies the viewer's sense of position as he looks at a scene from above.

6. Angle of elevation. This indicates the nature of the upward view and the limits of visible space.

7. Depth. This clarifies the degree of three-dimensionality of the landscape as it unfolds before the viewer.

8. Light. The appearance of a landscape changes drastically in accordance with the manner in which the light strikes it. This index has to do with the transformations that take place as the position of the source of light moves from front to side to back.

Although these eight criteria were postulated for the purpose of analyzing natural landscapes, they would presumably be applicable in the study of any view or prospect.

The object of our study is the landscape as a background for buildings or livable environments. The topography of Japan, which lacks deserts or savannas, is by the same token rich in variety. When we who live in this country conjure up images of the place where we and our ancestors sprang from, these images are almost certain to contain mountains and streams. These natural features are an integral part of the environment in which most Japanese live or once lived. And mountains, streams or rivers, forests, lakes compose the settings that Japanese associate with Japan, in the broad sense.

In general, a natural setting may be regarded as the totality of the visual relationships between a point of view and the objects viewed. When natural elements of the settings are considered in research, the research falls in the category of the so-called "science of relationships," but there is a danger that the study can be expanded indefinitely, which is what happened in the past in geographic research.[6]

The study of visual environments does indeed cover a very large range. Even if the area is limited to particular types of natural landscapes, and if we concentrate on what Hegel spoke of as the relationship of natural beauty to "that which is spiritual," we find a number of possible approaches. In attempting to analyze the Japanese view of nature, for example, Tsuda Sōkichi (1873–1961), Watsuji Tetsurō (1889–1960), Ienaga Saburō (1913–), Kamei Katsuichirō (1907–66), Karaki Junzō (1904–1980), and other scholars have considered it primarily in terms of the history of ideas and spiritual beliefs.[7] The landscape was interesting to these men for the spiritual or emotional effect it produced on the viewer, and the objects of their study were, for the most part, books, poems, paintings, or other works of art—creative expressions inspired by the natural environment.

Another important school of thought has delved into Japanese traditions from the ethnological viewpoint and discussed the Japanese terrain in terms of the part it has played in the actual lives of the Japanese people. This approach is to be found in the numerous works of Yanagita Kunio and Origuchi Shi-

nobu (1887–1953), to name only the two most prominent writers in this field. Among the ethnologists, the objects under consideration were not artistic or literary creations but local customs, religious traditions, and the like, which reflect the influence of topographical surroundings on everyday existence. For those of us who see landscapes as belonging properly to our normal environment, the work of Yanagita, Origuchi, and their colleagues is particularly interesting.

In the field of geography we have what is known as the landscape approach, which, having been originated by Otto Schlüter, became for a time the mainstream of geographic studies. Schlüter and his followers restricted the object of their research to that landscape (*Landschaft*) which is the visible form assumed by the world's surface and then attempted to clarify the relationship between nature and man (or society). Attention was focused on specific sites, and an effort was then made to discover the causal relationships between these regions and the societies that had grown up within them.

By way of contrast to these various approaches, we adopt the attitude of the landscape planner or designer, who is in a position to manipulate the natural environment. In considering the relationship between natural beauty and the human frame of mind, or the interconnections between the landscape and the point of view, we are concerned primarily with the external factors. We are dealing, in other words, not so much with psychological effects as with the tangible features of what is seen. The indexes proposed are intended to aid the designer in determining the function of these features, particularly those topographical elements that form the background or foundation of the landscape, and to examine their visual and spatial structure with relation to a development plan. We cannot completely ignore the human element, but the aspect of it that interests us most is the nature of man's visual perception of his surroundings.

Historically, certain physical features tended to cause shifts in human attitudes toward landscapes; we concentrate on this phenomenon rather than on what psychological factors caused certain landscapes to be regarded as remarkable or unique.

As subjects for study we have chosen areas or sites that have long been valued for their scenic appeal. In analyzing the reasons why they have been valued, we employ indexes and concepts that would be meaningful to persons who manipulate environments to explain why certain landscapes have been treasured and are meaningful in a technical sense.

Camillo Sitte, in the preface to his classic study of the European plaza, said the following of his methodology: "I thought it would be proper to study the plazas, roads, and urban structures of the past and discover what it was that made them beautiful. My reason was that if we could find out why they were beautiful, we could apply the same principles to our own cities with similar results."[8]

Principles and indexes that are of objective value to planners and designers often derive from an author's subjective perception of what is beautiful. Perhaps beauty is too nebulous or too profound to be grasped by scientific methods. Landscapes constitute a particular form of beauty and are without doubt both nebulous and profound, but certainly it is not totally impossible to treat them as objects of scientific observation and research. Engineers make scientific analyses of soil, water, and concrete to determine the methods they will employ. In a similar fashion we must ask ourselves what the basic elements in landscapes are and attempt to ascertain their visual and spatial characteristics before we attempt to design environments that are fundamentally physical in character.