REGIONALITY OF THE OBJECTIVES IN ENVIRONMENTAL PLANNING

—A CASE PRESENTATION*—

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In spite of the close mutual cohesion of the countries and regions of the Pacific realm, pronounced geographic diversity is its distinguishing mark. While the lands of the western Pacific that border the main body of Asian continent are characterized by their age-old and advanced civilization peopled with the dense and industrious nations, Australia and New Zealand are the veritable New World with a small number of enterprising nations on vast lands. The island countries of East Indies are in reality the developing countries in the true sense of words, which is evidenced by the notable population growth within a span of a century.

When we turn our attention to the other side of the Pacific, we notice that it was only a little over a century ago when Anglo-American shore was colonized in full scale, from where the Westward Movement has succeeded in reaching the insular portion of the Asian shore in the latest part of the last century. Latin American shore has long been the home ground of the indigenous people of high culture which has later been blended with Hispanic culture and has founded the basis for the present Latin America. Northern waters of the Pacific is endowed with abundant sea products which is the background for the present complicated international contact. Various sorts of island, large and small, that are scattering on the vast expanse of the Pacific have personalities of their own.

In as much as such a diversity of backgrounds, the problems involved in the environmental plannings are inevitably manifold. Plannings which bring about successful results in one country may prove for one reason or the other less advantageous in another. It is obvious that in the industrialized countries, the biggest problems are closely concerned with the growing conurbations, and public nuisances will attract the greatest attention for some time to come. However, in the developing countries, the optimum use of land in agriculture and exploitation of natural resources are the foreground of the present concern.

The term environment in its true sense of the word implies the conditions of the earth's surface that surround humanity. Therefore, it includes both natural and cultural element in their complex interrelated forms and is rated from the anthropocentric point of view. In addition, location factors, international relationship and some others that characterize the personality of regions should be included. Thus defined, environmental plannings involve a very multifarious and complicated problems. Varieties of their objectives enhance the perplexity. However, here, these may be roughly lumped together into the following three groups.

The first group includes most of the regional plannings that are undertaken for other objectives than the environmental plannings such as the solution of population problems or the increase of production, although due attention may be consciously paid to environment in

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carrying out the projects. In short, consideration for environment is only incidental to other purposes. The second group aims at just one or a few most urgent elements of environment out of the whole environmental complex. This is very appealing to the general public and is also a simpler undertaking than the other groups. Majority of what are now in vogue under the label of environmental plannings belong to this category. It includes such objectives as the conservation of nature and cultural heritages, solution of water problems, prevention from natural and man-induced disasters and pollution of air and water. However, this is not the whole of environmental planning.

The third group involves environmental plannings in their true and veritable meanings: that is, plannings for their own sake. This is, however, only to be applied to such regions as "New World" or some parts of Soviet Union where historical or conventional obstacles that hinder the free and speculative performance of the projects do not exist in advance. This can only be done also by enterprizing nations endowed with industrialized technology and commercialized spirit whether successful or not, various projects under the label of multi-purpose development undertaken by the U.S.A. and U.S.S.R must have had such an intention.

Here in this treatment, examples are chiefly taken from Japan with which I am most familiar. Generally speaking, no positive measure has ever been taken in Japan as well as in other countries of the Western Pacific for the environmental planning as a prime objective. However, since the incipient stage of human history, no people have ever neglected to try to adjust themselves to their milieu. Ample evidences have been provided regarding the modes of adjustment to natural environment in carrying out chronic land development projects through human history. Especially the agricultural occupance of the land testifies the adaptation to natural conditions to a degree that nobody can deny. A glance at a distribution of rice fields in Japan clearly tells that it virtually coincides with alluvial lowland such as sea board plains, intermontane basins and river valleys. After the introduction of rice culture some three centuries before Christ in northern Kyushu, the process of land development propagated to the peripheral lands and sporadically extended as far northward into northeastern Honshu in the third century after Christ. The sites preferred were chiefly gently sloping alluvial fans on the seaboard plains and intermontane basin and also on terrace surfaces in river valleys. These prove to be easily irrigable and rather free from flood damage. After these easily arable lands had been developed, reclamation of tidal flats in front of the advancing deltas was first inaugurated in Kyushu and the Inland Sea area around the 13th century, but vigorously after the 17th century when nationwide peace and order restored under the Tokugawa regime. Reclamation also began in northeastern half of Honshu after the 17th century, but not on tidal flats but mostly on marshy deltaic lowlands. Tidal flats of this portion of Japan were touched as late as after the collapse of the feudal regime in 1868.

In spite of the thorough and intensive use of alluvial lowlands, the cultivation of flat-topped diluvial uplands far lagged behind. This is partly attributed to the difficulty of the procurement of water and also to the poor acidic soils, but also partly to the attitude of the Japanese farmers who so tenaciously cling to rice and have no cultural background for animal husbandry. The development of Hokkaido was yet to be commenced before middle of the 19th century chiefly because of the climatic difficulties of yielding rice.

Hokkaido, in many respects, is exceptional in Japan. It is, in a way, a miniature model of the New World. In its development, a sort of environmental planning in the genuine sense was undertaken by the new government as the Ten Year Plan since 1872. The objective of the development of this northern island was two-fold. One was the matter of strategy for the defense of this northern frontier, and the other of the solution of the dismissed former warrior's class (samurai) caused by the collapse of the feudal system. The new government emphasized the introduction of modern methods of production along several lines. Technical advisors were brought in from Western countries. American advisors were by far the most numerous, as Japanese authorities felt that their fresh experience in the development of virgin lands at home would be best suited to the problems at hand. Topographic, geologic and pedologic surveys were made of the island. New plants and animals, which had hitherto been unfamiliar to Japanese but believed adaptable to the environment of Hokkaido, were introduced, as were new agricultural implements. Model plants were built for the processing of such materials as flax, sugar beets and dairy products. Flour mills and a brewery were constructed. Facilities were established for the education of leaders. Chief among these was the Sapporo Agricultural School, the predecessor of today's Hokkaido University. Special emphasis was also laid upon the exploitation of natural resources, especially upon coal.

However, these ambitious projects did not bring about very successful results, firstly, the time had not yet ripened into the stage of commercialized type of agriculture and also majority of the products did not meet with the dietary taste of Japanese people at that time and secondly, the leaders failed to recognize the environmental regionality within Hokkaido. The same size of arable land was allocated regardless of the climatic and pedologic differences, and little attention was paid to the marketing of the produces.

Especially among them, Konsen Uplands in the eastern-most Hokkaido have experienced a vicissitude which no other parts can parallel. The uplands were first colonized by militia battalions in 1886, but the result was the most miserable failure in the history of Hokkaido colonization. Later, the land was used for the army horse rearing programs. Only after World War II, when hay and dairy system has been introduced that the land has been stabilized agriculturally.

However, taking Hokkaido as a whole, colonization went on rather smoothly after the success of the planting of cold-bearing rice at the end of the last century. In course of time, agricultural regions of distinct regionality have been formulated as a token of the adaptation to natural environments, although unintentionally. For example, the central basins of Kamikawa with hot summer and easily irrigable gravelly plains have been converted to veritable rice centers. Tokachi plains with short summer and tableland topography are characterized by mixed farming, and both Konsen and Tempoku areas have been devoted to hay and dairy which has hitherto been quite unfamiliar to Japanese farmers.

The example of Hokkaido shows the difficulty of establishing successful environmental planning even in such a simple and small area. This is primarily due to the fact that not only the evaluation of environment is a difficult task, but also the objectives inevitably shift from time to time in accordance with the march of national need and the change in international situation. This is well revealed in the repeated revision of the so-called "Com-

prehensive National Land Development Project" of Japan after 1945. This was first started in 1946 as a Five Year Plan for the rehabilitation of the country. After the establishment of the "Economic Stabilization Agency" in the Prime Minister's Office in 1949, a law for the comprehensive land development was promulgated in 1962, so that plans were to be prepared for the prompt realization. Due consideration was given to the natural environments, but the chief attention was inevitably paid to the economic development. Later in 1969, a revision was made for the plan under the title of "New Comprehensive National Development Project." This was necessary in view of the unexpectedly remarkable economic progress that has been experienced in these ten years. The prospect of this plan is left to the future.

However, if we turn our attention to the gradual change in the course of history, we cannot but realize a sort of the status of adjustment to physical environment in the countries of the western Pacific where little room has been left for true environmental planning. This may be called an *unconscious environmental planning*. In Japan, besides ubiquitous rice whose distribution has already been referred to various kinds of commercial crops have come to be raised in these 100 years. The kinds of crops grown are determined primarily by climate. For example, apple, cherry, hop and white potato in the north, and citrus, loquat, tea, and sweet potato in the south. However mulberry has expanded in central Honshu where climate is not favorable but labor situation and vacant land for its growing do exist.

Still more remarkable example of a sort of environmental planning is to be seen in the grand scale land development of the lower deltas of the Mekong, Chao Praya and Irrawadi by British, French and Dutch since the latest part of the last century. The objectives were to provide rice for the growing population of Southeast Asia and India, and the results seem quite successful. Based on more systematic planning is the development of tropical plantation in areas of almost virgin lands or waste lands of eastern Malaya and northern Sumatra. The crops chosen were the ones best suited for the tropical rainforest climate such as rubber and oil palm. I am not sure whether this will fit into the category of the environmental planning, because this is nothing but a choice of a certain kinds of crops that fit for the environment under the favorable international economic situations.

In Japan, projects that are mostly in vogue under the label of environmental planning at present is of negative nature including prevention of damage by natural disasters and of man made contamination of air and water, and conservation of natural conditions. The march of industrialization and the resulting traffic and population congestion inevitably bring about air and water pollution and in addition, many problems such as the land subsidence of seaboard lowlands due primarily to the excessive use of groundwater require prompt solutions. Only recently, the government has taken positive measures for the solution of these problems, and has established on the 1st of July this year an independent agency, called "Environment Agency", consisting of a) Planning Board, b) Nature Conservation Board, c) Air Conservation Board, and d) Water Conservation Board. Here the conservation seems to signify prevention from contamination by artificial processes. At any rate, this administration chart is enough to show the negative character of the role of this Agency to environmental planning.

Lastly, I should like to emphasize two environmental phases that are vital for the whole Pacific countries. One is the problem of the supply of fresh water and the other is the pre-

vention and lessening of damages by destructive earthquakes. In Japan, out of 600 billion tons of rainfall that fall annually on the land of the country, 75 billion tons have already been in use, much of which pour down as torrential rain and run down along the river courses of steep gradient, making efficient use of river water very difficult. There is already a metaphoric parlance that the time will come when fresh water will be more valuable than petroleum. The environmental planning for the rational use of fresh water and the conversion of salt water into fresh water are urgently desired.

As for the earthquakes, no one can imagine to prevent their outbreak nor could anyone expect of forecast their occurrences with the same degree of accuracy as the weather forecast. Because the interior part of the earth, its structure and material movements are difficult to know compared with those of the atmosphere. However, through the experience of the past, as well as through the detailed studies of geomorphology, we can infer the modes and frequency of earthquakes that are possibly seemed to occur in given areas. By such analytical studies some proper measure for the mitigation of damages will be contrived. Three major regions in Japan classified in terms of the relationship between the nature of earth movements accompanying destructive earthquakes and the recent crustal movements inferred from the geomorphological features. They are the Outer Zone, Inner Zone and Intermediate Zone.

In the Outer Zone the crustal movements take on up-and-down-warping, and geomorphic faults are rather rare. Changes of coastal forms go on gradually. Earthquakes of large magnitudes attack the extensive area of this zone but the epicenters lie off in the Pacific. Therefore, no severe shock of the first order is felt on land, although occasionally accompanied by tsunami disasters at the head of the embayments. The earth movements accompanying earthquakes are also in sympathy with the wavy motion and no abrupt change in the amount of vertical displacements of land nor the formation of conspicuous seismic faults is experienced.

The Inner Zone is quite in contrast. Its major terrain configuration is dominated by intricate networks of geomorphic faults, and not infrequently, even diluvial and alluvial deposits have afflicted with such deformations. The coastal features are characterized by complicated juxtaposition of various types in a short distance. The earthquakes that attack this zone are minor in magnitude, but the epicenters are mostly located inland. The earth movements associated with earthquakes well accord with those that have resulted in the formation of the salient geomorphic features. Abrupt differential movements revealed in the seismic faults are common, which, without exception, occur along the preexisting geomorphic fault lines. Intense seismicity is felt within limited localities, especially along the newly formed seismic faults. It is here that the earthquakes are often explained in connection with the renewed activities of fault blocks.

There is also an "Intermediate Zone" stretching along the Pacific side of Central Honshu. Here the geomorphic natures and seismic habits of both the Inner and Outer Zones are displayed. The Nobi Earthquake of 1891, which is world famous for the seismic fault of Midori with vertical displacement of six meters, is an expression of the Inner Zone type with the magnitude of the scale of the Outer Zone. The best known example of the great earthquake of Kanto on Sept. 1, 1923, or during the session of the 2nd Pacific Science Congress

held in Australia, is of the type of the Outer Zone accompanied by minor seismic faults in inland. In addition, periodicity of the destructive earthquakes have been studied by Akitune IMAMURA since 1920s and recently by Hiroshi KAWASUMI. By taking these results into consideration, environmental plannings for the purpose of minimizing earthquake damages are highly desirable not only in Japan but also in the whole unstable belts of the Circum-Pacific Orogenic Zone.