

Necessary Conditions for the Development of Waterfronts as Desirable Environments

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Problems of waterfront development in Japan are discussed and summarized. Each point relates to water conservation problems directly or indirectly. The expectations of water vary from stage to stage, but the key factors are water and human needs in the small sites. The necessity of networking core sites, and the necessity of making water data open to residents, along with exchanging information between sites are discussed. Social scientific ways of conserving water are emphasized in this paper, because the preservation of sea water is related to all activities in the vast area of every river basin, and it is the problem of culture in related districts.

Many projects related to waterfront developments have been developed or planned recently. There have been many well-preserved historical waterfronts on coastal as well as inland areas. They have played important roles in creating graceful environments in towns and villages, though as of late many of them have been deteriorating due to urbanization. Waterfront is now becoming a space on which the expectations from public and private organizations and from citizens are concentrating. However, in the background of the movement there is emerging as a strong desire to preserve nature. Even in constructing intelligent buildings there is an expectation to provide clean water at waterfront areas. If the development planning is not based on such a philosophy, waterfront areas will again become unattractive and the sea will again be polluted as in the 1960's. We should not forget that the fundamental element of any waterfront area is water.

The State and Problems of Waterfront Development in Japan

Recently, waterfront developments have been planned and operated in many coastal and inland areas in Japan. In the 1960's coastal development by land reclamation was aimed at developing new factory sites for steel, petroleum and other industries (Research group of Urban Environment, 1988). Natural seashore was changed into reclaimed land and access to the coast along such factory sites is usually difficult. In this situation it takes only 10 to 20 years for sea coasts and river mouths to be polluted by uncontrolled sludge and garbage. When natural coasts and rivers are isolated from our lives physically by levees and socially by laws, the open spaces tend to become open dump areas.

The value of coast as a land resource for urban use is very high. These areas have special meaning in urban spaces for they provide fine views, an abundance of water, and peace of mind and spirit in the sea breeze. Beside these comforting characteristics, they have useful socio-environmental characteristics; their good location as new urban zones near the center of cities, convenience for mass transportation, the abundance of extensive land which is not being utilized due to changes in industrial structure, and so on.

The charm, restfulness, and originality of a city are some of the main factors in recent urban planning. Amenity, landscape, urban culture, historical legacy, etc. are now considered to be more important than in traditional planning which had put emphasis on rational space utilization. Waterfronts are expected to be the experimental areas in new environmental arrangement planning. However, there are some special problems, detailed below, which require new approaches.

1) Waterfronts are valuable as an urban space, and should be maintained in a high level of environmental quality. However, the coast near urban areas is not easy for public access as mentioned above, and water discharged into this environment is not good in its quality. Another problem is the private occupation of waterfront areas. Reclaimed land is private, and not always well maintained. It depends on the concern of the owner whether the environment is well taken care of or not.

2) It is eagerly discussed to develop such land and their coastal properties that have marketability. On the other hand such environmental characteristics as natural view and historical landscape, which have lower marketability, are damaged in waterfront developments. A problem for environmental development planning is how to maintain historical characteristics which are essential elements for regional identity.

3) The natural coast and the surface of the sea are treated as public property in Japan, but the public utilization of the coast for swimming or other activities is not admitted as a citizen's right. The access to the coast and beaches is allowed within the limits defined by an administrator. It is important for the coast to be more open to the public since people are becoming more and more concerned with amenities. In this case new thought to the responsibility for safe management will be required.

4) It is difficult to have a comprehensive and long-term planning and management system of coasts, because the planning and administration of coasts is divided into different governors, ministries, and harbour management bureaus. A system with full responsibility for the waterfront development should be created, for example from the third sector, for the better management and the environmental preservation of coastal areas.

5) Resort districts have been planned in various parts of Japan since the so-called Resort Act was passed in 1987. They are open to the public and people enjoy themselves with the recreation facilities, but often paying an expensive fee. A problem is how to plan the site without damaging the traditional natural resources of the district and how to maintain the environment. Data base and technology for waterfront developments are not prepared enough as we have seen in the treatment method of saline soils, removing sludge and garbage, and the establishment of suitable plants and trees at coasts. Without having an exact idea and adaptation techniques for the environment, realizing plans and works of resort areas may be very dangerous for our environment.

Waterfront Development for Our Environment

The life or death of cities depends on the availability of water flow. However the control of water quality will be a key to the success of future coastal cities and waterfront developments(see Fig. 1). There are many ways to preserve water by using sewage systems. The research group to which the writers belong is studying water purification and management by percolating water through soils (Sugawara,1989). Moreover there is clearly a need for opportunities for citizens to think about maintaining and purifying water.

There are many kinds of maintenance systems in which citizens may contribute to cleaning up water. In rural areas farmers establish land improvement

districts (LID) in each agricultural water utilization district based on the Land Improvement Act, for maintaining and managing water and farm land. The water resources and channel systems of LIDs often cover very wide ranges, and urbanized areas usually have problems with water pollution. Floods and pollution by the water discharged into irrigation canals from urban areas are a big problem for a LID. Some LIDs such as Meiji Yousui LID in Aichi prefecture and Jin-an LID in Osaka prefecture have succeeded in controlling polluted waters by constant communication and influence on related municipalities.

Waterfront development districts are usually located at a river mouth, where the quality of water results from all activities in the river basin (Sueishi et al, 1981). These districts are now planned to be where many people gather and settle down. In our opinion, it is necessary for the planners of waterfront developments to propose some means or ways in order to direct the energy of people to environmental preservation. Humans are attracted to the waterfront, and naturally they meditate and interact with the environment there (Fig. 2). There are some ways to motivate the public's interest in waterfront environments. Creating artistic water space which encourages people to take care of the water is one way, and displaying the whole processes of water flow and water purification systems at the location is another way. We illustrate an example and propose some ways as follows.

The example of Takasago City

In the case of Takasago City in Hyogo Prefecture most of the waterfront was reclaimed on a large scale as a factory district in 1961, and the seashore which had been famous for its beautiful scenery facing the Seto Inland Sea from the medieval times, was lost. Mukoujima District, which is an area 200m wide and 700m long between the Kako river mouth and the Takasago harbour, had been left unutilized since the 1940's. The city has developed this district as a city park by planting pine trees and building a lodging house for group training of youth, a stadium and a small zoo since the 1950's. Hyogo Prefectural Office constructed an

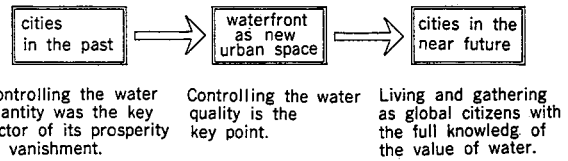


Fig.1 The relationship between urban cities and water.

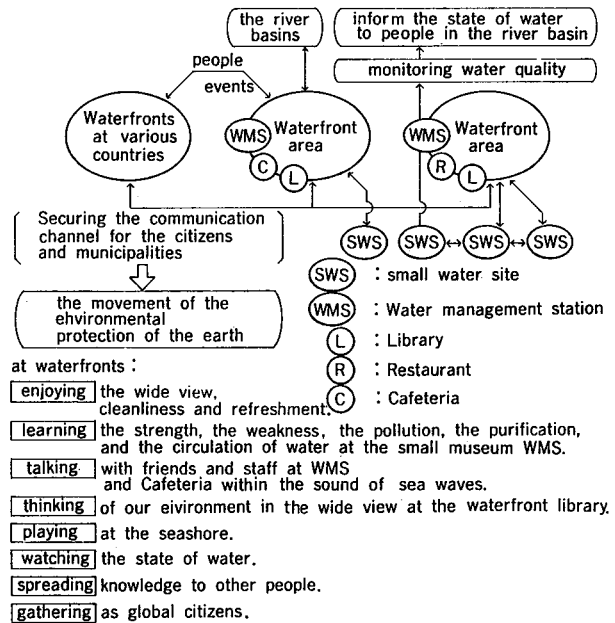


Fig.2 The activities of people at waterfronts and communicating among waterfronts.

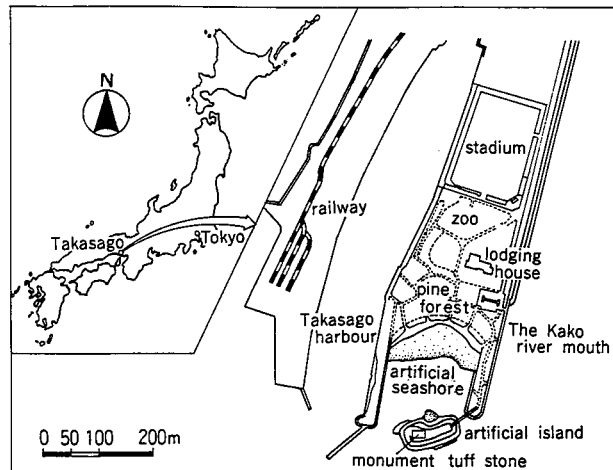


Fig.3 The environmental arrangement along the Takasago harbour.

ity depends on the success or failure in creating a system which easily accesses reliable information concerning waters. And it also depends on the eagerness and ability of the municipal staff and if they can maintain their attitude to learn through communication with citizens and nature. The minimum conditions needed have been presented here, and the problems in waterfront development could be ameliorated by creating the above system. If management systems fail to preserve the environment, the developed area will soon become unattractive. The fundamental element of any waterfront area is water. It is emphasized that creating networks of attractive natural waters and the surrounding areas promote sensitivity to natural resources and humanity. This may take some time, but it is the ultimate goal of environmental protection, and we could expect through this sensitivity to enter into a new stage of our culture.

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