Agro-activities in the Fringe of Asian Mega-Cities

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Abstract: Urban fringe landscapes with a juxtaposition of segmented agricultural lands and urban land uses, seen to result from the incomplete application of Western urban planning concepts, have been regarded as a symbol of disordered Asian urban fringe areas. However, such a mixture of urban and agricultural land uses in the fringe is not a modern invention of Asian cities but may be identified in their history. Almost half of the land area of Edo, the former Tokyo, was in agricultural use, even up to the end of the Edo era. This was despite Edo being already one of the largest cities in the world with over one million populations. Various activities relating to agriculture can be found today in the fringe of Asian mega-cities including professional farming, poverty alleviation programs, community gardens and backyard gardening. These facts suggest that the order of land use in the fringe of Asian mega-cities should not be achieved by a simple application of Western urban planning concepts, but by an application of a fresh approach, which regards agro-activities as a vernacular element of the area. The integration of agro-activities in the urban fabric is one of the key issues for bringing a new order to the urban fringe landscapes of Asian mega-cities.

Key Words: Asia, mega-city, urban fringe, agro-activity

1. Characteristics of suburban land use in Asian mega-cities and the implementation of modern urban planning concepts

As referred in many precedent publications the growth of major Asian cities during the 20th century was enormous both in speed and scale. The population of London, UK, gradually increased during the 19th century and reached 8 million people at the beginning of the 20th century, while Tokyo, Shanghai and Seoul grew to 8 million people within the 25 years since the end of World War II. Today 15 out of 28 of cities in the world of more than 8 million people are to be found in Asia (Chen and Heligman, 1999).

Such rapid growth inevitably resulted in many social and environmental problems including overpopulation and environmental degradation in urban cores and the depopulation and degradation of rural areas. Hayashi *et al.* (1993) reports on the immense urbanization in Bangkok, initiated in early 1970s, that resulted in insufficient urban infrastructures including disordered transportation systems

and poor sewage and drainage systems, causing serious air and water pollution problems. Today, the traffic congestion in the Bangkok Metropolis is regarded as one of the worst in the world (Kidokoro *et al.* 1993).

Among the problems caused by rapid growth, one of the most frequently observed serious problems in Asian cities is the disordered suburban land use. Micro-scaled juxtaposition of urban and rural land uses, as the result of uncontrolled urban developments scattering into surrounding rural areas, has been regarded as a cause of insufficient urban infrastructures and degraded agricultural environment of the area (Ishida, 1992). Of course such disordered land use has been one of the most frequently and substantially tackled problems in Asian cities. In Japan the zoning system was first introduced by the City Planning and Zoning Act enacted in 1968. Traditional European cities, where urban areas are sharply separated from surrounding rural areas by a clear boundary line, were the target image of the act. However, even more than 30 years have past since the installation of the act, a landscape with small agricultural land patches surrounded by micro-housing developments can easily be found in the suburbs of major Japanese cities. Similar trials and

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受理 2006 年 2 月 23 日

realities can be found not only in Japan but in most cities throughout Asia.

2. Agricultural lands in Edo

However, is the landscape with micro-scaled mixture of agricultural lands and urban fabrics only a symbol of the absence of an adequate control on urban growth? It may be true that such a landscape represents insufficient implementation of the modern urban planning methods originating in Europe and North America. But, as reported by Yokohari *et al.* (2000) a mixed landscape with agricultural lands in the urban area can be regarded as a historic and vernacular landscape of Asian cities.

Japanese cities are not exceptions. Although the grid urban pattern, which initially aimed to realize ordered and thorough urban development, has been introduced from China at the beginning of 8th century and implemented to cities including Heijo-kyo (Nara) and Heian-kyo (Kyoto), cities in Japan did remain to include agricultural lands in the urban fabric. Edo, former Tokyo, the oldest city with reliable information on its land use and landscape, is a good example of such Japanese cities. The city of Edo was established as the practical capital city of Japan in 1603 by Ieyasu Tokugawa, and the shogunate government by Tokugawa family, commonly known as Edo era, has lasted for over 250 years until the Meiji Restoration in 1868. Before the establishment of Edo by Tokugawa family Edo was merely a maritime village, but the population of Edo sharply increased during Edo era. In fact at early 19th century the population reached 1.3 million, which made Edo one of the largest cities in the world at the time.

Despite such enormous accumulation of population Edo was a city with agriculture. A number of varieties in vegetable on market today are given their name by the area in Edo where they were grown during Edo era, e.g. Komatsu-na (variety of Chinese cabbage), Nerima-daikon (variety of radish), and Yanaka-shoga (variety of ginger). Fujii *et al.* (2002) estimated the land use of Edo in 1850s by using various documents and maps, and achieved the results as Figure 1. In the figure the number of cells identified as agricultural exceeds 40 %. Fujii *et al.* (2002) also discuss that the actual coverage of agricultural lands may have been even higher than 50 %, as it is well known

Figure 1. Land use of Edo in mid 19th century (Fujii, *et al.* 2002)

Figure 2. Segmented paddy fields remaining in a residential neighborhood

that vacant lands in the residence of shogun families were commonly loaned to neighboring farmers for agricultural uses.

Another feature which characterizes the land use of Edo is the mixture of urban and agricultural land uses in its fringe areas. By calculating the join value of agricultural land patches Fujii *et al.* (2002) estimated that the area between 4 km to 6 km from the core of Edo was the area where series of small and segmented patches of agricultural lands remaining inside residential neighborhoods were identified. Figure 2 is a typical example of such residential areas accommodating small and segmented agricultural lands.

Since Meiji Restoration in 1868 Japanese cities have eagerly been trying to apply Western urban planning concepts which set the clear separation of urban and rural land uses as their goal. However, urban fringe landscapes with a juxtaposition of segmented agricultural lands and urban land uses survived through the history and thus characterize Japanese cities even today. Rooted in the historical urbanization pattern, the mixture of urban and rural land uses is indeed a part of vernacular landscapes of

Japanese cities.

3. Contemporary urban agro-activities in Asian mega-cities

Segmented agricultural lands remaining in urban fabrics have formed, both physically and socially, a foundation to allocate various activities on agricultural and horticultural productions in Asian mega-cities. Such activities have been included in the term "urban agriculture", and have been defined by various individuals (Bryant, 1992). Mougeot (1999) has defined urban agriculture as "an industry located within or on the fringe of a town, an urban center, a city or metropolis, which grows or raises, processes and distributes a diversity of food and non-food products". Forster (1997) contrarily defines urban agriculture as "any and all enterprises, commercial or non-commercial, related to the production, distribution, sale or other consumption of agricultural and horticultural produce or commodities in a metropolitan/major urban center". The definition of Mougeot (1999) is rather conventional to have urban agriculture under the scope of 'industry', while Forster (1997) releases such restriction and tries to include all activities related to agricultural and horticultural productions in urban areas.

To avoid confusion in the definition of the term, the term 'agro-activities' is used when not only agriculture as an industry by professional farmers, but also various activities related to agricultural and horticultural productions, such as poverty alleviation programs for poor urban residents, horti-therapy programs for patients with physical and/or mental disabilities, and gardening in allotment gardens and backyards by citizens, are included.

In this paper, contemporary urban agro-activities in Asian mega-cities are discussed by referring to experiences in the two representative cities of Metro Manila, Philippines and Tokyo Wards, Japan.

(1) Metro Manila, Philippines

Although it includes more than 2.6 million square meters of agricultural lands with over 3,300 tons of vegetable and fruit productions, Metro Manila has set in place a policy to totally abolish agriculture from the region. Remnants of farmland patches for professional farming can still be identified in the fringe of the city (Malaque *et al.* 2003), but most of them are planned to be

Figure 3. A representative sites of urban agro-activity in Metro Manila

converted into urban land uses in the near future.

However, urban agro-activities in Metro Manila have been argued to be indispensable especially for poverty alleviation. For example, the Philippine Government's Department of Agriculture, along with barangays of Metro Manila, have been installing urban agro-activity programs to improve the nutrient intake of poor squatters. At the year 2000 more than 460,000 square meters of lots with 4000 beneficiaries are registered under the project to promote urban agro-activities in Metro Manila (Guzman, 2002). The registered lots are mainly privately owned idle lands rent-free, under the memorandum of agreement set between landowners and the people who wish to practice agro-activities. Although poverty alleviation is the main target of the project, landowners, as well as residents surrounding the site, may also benefit by such activities as such areas see a reduction in the number of illegal garbage dumps and of social problems related to drugs and crimes. All of the barangays in Metro Manila now have at least one site for urban agro-activities.

The site in Figure 3 is one of the representative sites of urban agro-activity in Metro Manila. The site is located in a subdivision in Quezon City, Metro Manila. People of 20 households mostly living in the squatters' area nearby the subdivision are cultivating the 1 ha site. The land, which used to be an illegal garbage dumpsite, was obtained under the memorandum of agreement between landowners and the people who wished to cultivate the site, coordinated by Barangay "Holy Spirit" which the subdivision belongs to. All products including spinach, kankon (water cabbage), tomato and sweet potato are domestically consumed by the people who cultivate the site.

(2) Tokyo Wards, Japan

Urban agro-activities in Tokyo take place through the action of professional farmers still surviving in the dense urban fabric. Inside the 600 km² of Tokyo Metropolis' central core, more than 900 ha of land is farmed in an array of patches. This land is worked by 6500 professional farmers (Agricultural census, 2000). 900 ha of farmlands, 1.5 % of the land area of Tokyo Wards and 0.02 % of the total farmlands in Japan, is indeed a small number. However, considering the fact that agriculture in Tokyo Wards produces 0.3 % of vegetables and 0.2 % of flowers and ornamental trees produced in Japan, agriculture in Tokyo Wards should not be regarded as such a marginal concern.

The City Planning and Zoning Act of 1968 designated urbanization-promotion areas which were intended to be completely converted to urban land uses and thus for farmland to be lost in such areas. As the Tokyo Wards are completely zoned as urbanization-promotion areas, farmlands found in Tokyo Wards are those which have survived despite 30 years of the Act's prescriptions. Today, nearly 60 % of farmlands in Tokyo Wards are designated as "Seisan ryokuchi (productive green open space)", where continuity as a farmland is ensured by the Productive Green Open Space Act.

The site in Figure 4 is in Setagaya Ward, one of the most agriculturally active wards with more than 3 % of its land area for agricultural use. The farmer who owns the site has a total 1 ha of farmland segmented in 40 patches. Products such as vegetables, fruits and ornamental trees are not brought to the market but directly to consumers living mostly in the surrounding areas. The use of organic fertilizers made on the sites is promoted to meet

Figure 4. A representative site of urban agriculture in Tokyo (Setagaya)

consumers' demands on safe food, as well as to avoid conflicts with residents surrounding the patches on the use of agricultural chemicals.

4. Conclusion

The concept of clearly separating urban fabrics from the surrounding rural areas, which is one of the fundamental concepts of modern urban planning theory, is rooted in medieval European cities where the densely populated urban area was clearly separated from surrounding rural areas by a moat (Spirn, 1984). However, when investigating the history of Asian cities what we commonly find is not a clear separation of urban and agricultural land uses, but a mixture of agricultural lands and urban fabrics even in the central core of the cities (Yokohari *et al.* 2000). The modern urban planning theory may describe such mixture as chaotic disorder, but as Ashihara (1986) describes a "hidden" order may be found behind the chaotic appearance of Asian cities. The mixture of urban and agricultural land uses should not be interpreted as a disordered situation which reflects the absence of sufficient controls, but as a condition rooted in the Asian way of understanding and planning space.

Asian cities repeatedly applied urban planning measures originating in Europe and North America during the 20th century, and were in many cases judged to be incomplete and poorly executed attempts. It is true that not all of mixed land use in Asian cities should be positively understood. There are indeed disordered mixtures which cannot be accepted from any perspective. However, it may also be true that the modern urban planning concept, which we tend to regard as an universal concept, is in fact one of local concepts rooted in European context and may not necessarily be suitable in an Asian context. Respecting ecological functions of agricultural lands in urban areas and including them as an essential element for realizing "mixed land use without disorder" (Takeuchi and Matsuki, 1987) may be regarded as one of the key perspectives for the successful future of Asian cities.

What is now needed for the successful control of urban growth in Asian cities is not to keep applying "western" planning concepts to Asian cities and to judge the results from a western perspective, but to develop a new planning concept rooted in the Asian context which may regard

agriculture as an indispensable element of Asian urban fabrics.

5. Acknowledgement

This study has been funded by the Nissan Science Research Foundation.

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