

User Awareness and Use of Public Spaces in Newtown with Commercial Facilities and Balancing Reservoir as the Core

-Case Study in Koshigaya Laketown Northern Region-

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Traditionally, Newtown is built for providing dwellings but Koshigaya Laketown opened in 2014 was equipped with not only dwellings but also large-scale commercial facilities and balancing reservoir as its core. In this research, in order to understand user awareness, use of public spaces in Laketown and the relationship between design concepts and actual users' activities in public spaces, field surveys, interviews to actual users of public spaces and to private organizations were done. Also, users' activities in public spaces according to location and time zone as well as user awareness of the balancing reservoir's function and water quality were revealed. Besides, it is confirmed that the basic design concepts of Laketown: 'Harmonious city life in waterside', 'An area with good landscapes' and 'Environmentally symbiotic community' are expressed among the spatial designs. In consequence, the issue about management and utilization of public spaces was found.

Keywords: *Newtown, Landscapes, Public space, Commercial facilities, Balancing reservoir, Koshigaya Laketown*

1. Introduction

1.1 Background and Research Objective

Development of Newtown started after the World War II in order to solve the problems of insufficiency of living space and urban sprawl in metropolis. In 1960s, construction of the first Newtown in Japan called 'Senri Newtown' began. After that, much more Newtown was built near big cities all over Japan. After solving rigid demands of living space and urban sprawl in metropolis, the importance of living environment was emphasized. 'Landscape Act', 'Urban Green Space Conservation Law' and 'Outdoor Advertisement Act' were announced in 2004 in order to promote the formation of good landscapes [1]. The concept of 'landscape' became more and more important in people's daily life and also valued in the development of Newtown. In this research, the target area is called 'Koshigaya Laketown' (Abbr.: Laketown), a Newtown located in Koshigaya City centered on commercial facilities and balancing reservoir. The concept of 'Landscaping' was actively adopted among developing Laketown and the balancing reservoir was designed to be a lake which can provide the place for people to relaxation. The research objective of this research is to find out user awareness and the use of public space in Newtown with commercial facilities and balancing reservoir as the core. The relationship between design concepts and actual users' activities in public spaces will also be found. At the same time, Laketown, as an

exemplary and innovative Newtown which obtained several awards of city planning, the feasibility and promotability of combining different facilities into a Newtown will be known in this research. The results of this research may have the reference meaning for the maintenance of Laketown and the other Newtown.

1.2 Preceding Studies

(1) From the perspective of roles of public spaces to citizens:

Gehl (2003) [2], did the research from the perspective of people's activities in the streets, focusing on how the design of cities affects people's activities by doing research in different cities all over the world.

Takashima (2018) [3], focused on people's activities on the play streets and investigated that how these play streets have been used to find the roles of play streets to the community.

(2) From the perspective of how design of commercial facilities effects people's activities:

Kobayashi, Nakamura, Unno (1999) [4], did the research from the perspective of how design of commercial facilities effects people's activities about how lighting components in shopping streets psychologically effect on people with different purposes at night.

Oida, Tanaka, Uehara (2015) [5], researched the preferred places and roles in commercial facilities by elderly people in Aeon Town Meisei by distributing questionnaires to 155 elderly people.

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(3) From the perspective of ex-post evaluation of landscape:

Motoshige, Nakama (2001) [6], researched the reward system of urban landscape in Kitakyushu City. By comparing the awarded items in the reasons of award and the actual situation of these items, the ex-post evaluation of landscapes was done.

Kuwagi, Uchimura (2006) [7], focused on the effect of elevated railroad of train station. By using questionnaires to find the changes of people's recognition of the area and activities in this area.

(4) Choosing 'Laketown' as the target area:

Sugitani, Ikuta (2018) [8], using questionnaires to the residents of 'Koshigaya Laketown' area in order to research the relationship among the places residents often go to, purposes when residents go to specific places and residents' addresses.

1.3 Characterization of Thesis

In the preceding studies, there are not many researches chose Newtown as the target of ex-post evaluation. Although there are researches about people's activities in the public spaces, there are few researches considered the effect of commercial facilities and balancing reservoir on people's activities in the public spaces. At the same time, Laketown, as an exemplary and innovative exurban area which obtained several awards, the researches about landscapes in Laketown are too few. This research focuses on the public spaces in Laketown, a Newtown with commercial facilities and balancing reservoir as the core, to find the effect of commercial facilities and balancing reservoir on user awareness and use of public spaces.

1.4 Research Framework

As the framework of this research, after organizing the preceding studies, design concepts of public spaces in Laketown were collected.

Then, field surveys were done for several times to find the characteristic of landscapes and public space in Laketown. At the same time, the data of people who were in each site in Laketown was collected during the field surveys.

After understanding the design concepts and characteristic of landscapes, interviews were done to users in public spaces of Laketown by using questionnaires.

In order to understand the details of design concepts and actual situation of operation and maintenance of Laketown, interviews were done the

private organizations called 'Tourism Association of Koshigaya' (越谷観光協会) and 'Hometown Project (越谷ふるさとプロジェクト)'. Fig.1 shows the framework of this research.

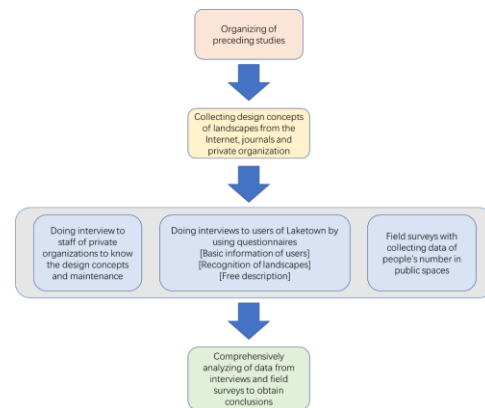


Fig.1 Framework of the research

2. Basic information of Laketown

2.1 Geographical population information

Laketown is located in Koshigaya City, a city belongs to Capital Area in the southeast of Saitama Prefecture. There is about 22km between Laketown and the city center of Tokyo and about 2km far from the Tokyo-Gaikan Expressway (東京外環自動車道).

As Fig.2 shown, the area of Laketown is about 226ha, the length of north-south direction and east-west direction is both 1.5km [9]. Nakagawa river(中川)flows on the east of Laketown. Motoarakawa river(元荒川) flows on the north of Laketown and then flows into Nakagawa River. In Laketown northern region, there are three large scale commercial facilities belongs to Aeon Group, a balancing reservoir called Ohsagami balancing reservoir(大相模調節池), an ecological reserve, an enjoy-water space, two enjoy-water terraces, a park connected with station square. Lakeside walk was built around the balancing reservoir. The location of each facilities in is shown in Fig.3.

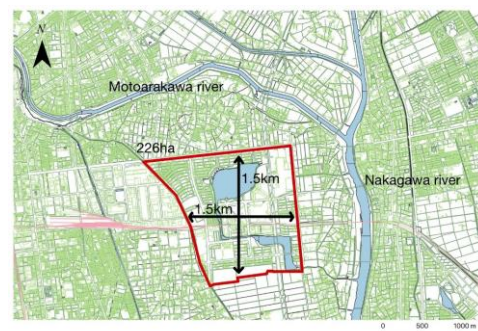


Fig.2 Location of 'Koshigaya Laketown' area with marked Laketown area

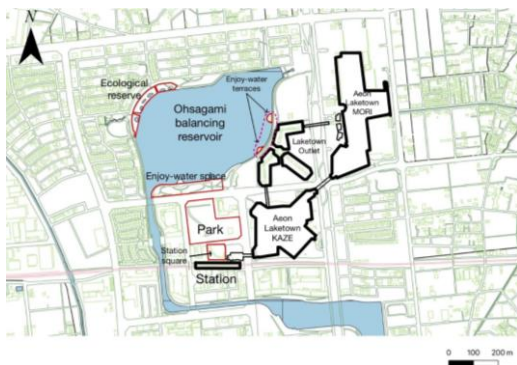


Fig.3 Location of each site in Laketown with marked

The planned population of Laketown was 22,400 and the number of planned households was 7,000^[10]. From 2016, The population growth in Laketown keeps higher than the population growth in Koshigaya City^[11].

2.2 History of development project of Laketown

Before the development project of Laketown started, there were only farmlands and a crematorium. The development project of Laketown was established in 1988 and started in 1999 by UR (Urban Renaissance Agency). In 2004, in order to know the opinions of citizens about development project, ‘Conference of Water and Green’ was organized. Laketown was opened to public in 2008 with the station started its service and the whole development project finished in 2014.

There are several private organizations participate operation and maintenance of Laketown. After the development project finished in 2014, ‘Conference of Water and Green’ transformed into ‘Hometown Project’ and then became NPO organization in 2014 and kept holding events until now. In 2012, ‘Liaison Group of Waterside’ was organized for providing opportunities for organization to discuss issues about operation and maintenance in Laketown. Fig.5 shows the construction of private organizations.

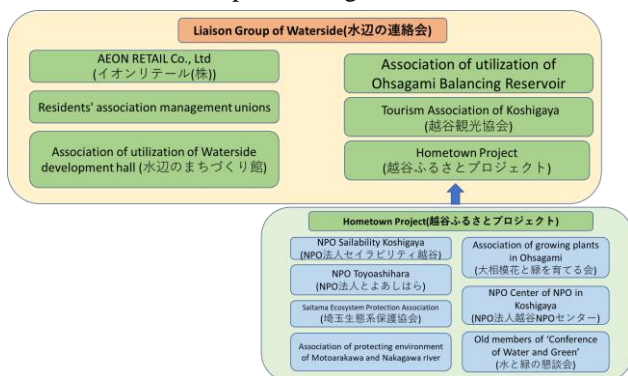


Fig.5 Private organizations which participate operation and maintenance of Laketown

3. Design concepts of each site in Laketown

3.1 Development direction of Laketown area

The development direction of Laketown can be divided into 3 main parts.

Harmonious city life in waterside^[10]: Residents of Laketown can enjoy both convenient city life and beautiful landscapes with water simultaneously.

An area with good landscapes^[12]: In the ‘Koshigaya City Landscape Plan(越谷市景観計画)’, Koshigaya Laketown area is considered as ‘Landscape spot with plenty water and green (水・みどり景観拠点)’ and ‘Landscape spot in commercial and business area (商業・業務地景観ゾーン)’.

Environmentally symbiotic community^[13]: The apartment buildings, detached houses and commercial facilities in this area are designed to be environmentally symbiotic. Importance of environment was highly evaluated in the development project.

3.2 Design concepts of each facilities

Ecological reserve: Ecological reserve is located in the north of Ohsagami balancing reservoir and connected with Lakeside walk. The idea of ‘Constructing an ecological reserve’ was raised by ‘Conference of Water and Green’ in order to remain the natural environment in Laketown.

Ohsagami balancing reservoir: An artificial lake with the area about 40ha and the maximum storage capacity is 120t in order to hold the water from Motoarakawa river for keeping the safety of downstream area^[14]. The maximum water depth is 5m and the normal water depth is 1 to 1.5m^[12]. Ohsagami balancing reservoir was designed to be a lake with beautiful view and was expected to be fully utilized by different kinds of activities.

Area between Ohsagami balancing reservoir and Laketown Outlet: Two enjoy-water terraces, a café terrace and an art work of ‘Ring’ is located in this area. This area is also connected by lakeside walk with cherry trees grown. There are no fences along the lakeside walk and Laketown Outlet.

Commercial facilities: Laketown Outlet was designed as an open mall without gates. People can walk into Laketown Outlet before and after business hours. Dogs are allowed to be in all three Aeon malls. Plenty of resting places are provided in those three malls.

Enjoy-water space: The whole enjoy-water space was built on the dike with very gentle slope of the balancing reservoir. There are no fences and handrails around the balancing reservoir and playing with water was expected in this area during design

Park and station square: The park was designed to be connected with the station square. The park was surrounded by apartment buildings but without fences.

4. Interviews for understanding the situation of public spaces

In order to understand the user awareness and use of public spaces in Laketown, interviews were done by using questionnaires. The targets of interview were the people who were staying in the public space in Laketown. In the questionnaires, basic information of answerers (transportation method and time, composition of interviewees' groups, frequency and purposes of coming to Laketown) and awareness of public spaces (awareness of landscapes in Laketown, view of lake, balancing reservoir and its reservoir water quality, biodiversity) were asked and there were also the spaces for free description for interviewees to write their thoughts about the points they liked and the problems they found in Laketown. The questionnaire was designed in Japanese. The information of interview date is shown as Table 4.1. Interviewees were divided by frequency as Table 4.2 shown. From the questionnaires, interviewees' local recognition was arranged into 137 items and was shown in Fig.5 and free description was shown in Fig.6.

Table 4.1 Information of interviews

No.	Date	Weather	Temperature during the time zone(°C)	Time zone	Number of collected questionnaires	Location
1	28th, May (Tue.)	Cloudy	26.3 ~ 27.1	2p.m. ~ 4p.m.	17	Park, enjoy-water space, area between Ohsagami balancing reservoir
2	30th, May (Thu.)	Sunny	17.2 ~ 19.5	3p.m. ~ 5p.m.	28	
3	1st, June (Sat.)	Sunny	17.8 ~ 19.5	3p.m. ~ 5p.m.	26	Park, enjoy-water space

Table 4.2 Frequency distribution of interviewees

Frequency	Number of interviewees	Percentage
Low (<2/year)	14	20.9%
Normal (3/year ~ 4/month)	28	41.8%
High (5 ~ 20/month)	11	16.4%
Super high (>20/month)	14	20.9%
Sum	67	100.0%

At the same time, in order to understand the operation and maintenance of public spaces in Laketown, interviews were done to Tourism

Association of Koshigaya in 23rd May, 2019 and Hometown Project in 5th July 2019.

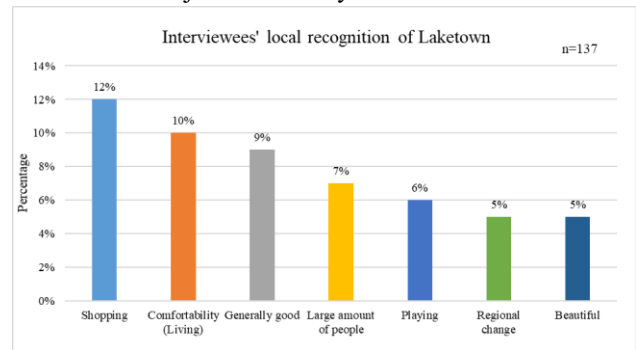


Fig.5 Tendency of users' local recognition to Laketown

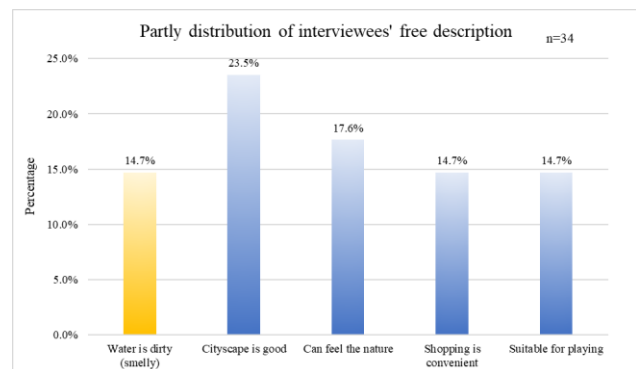


Fig.6 Tendency of evaluation to Laketown from free description

Results from doing interviews were analyzed and concluded as followed:

About the composition of people coming to Laketown: Among the interviewees who spending their time in the public space of Laketown, 79.1% of them come to Laketown more than 3 times a year and 37.3% of them come to Laketown more than 5 times a month. With the increasing frequency, the proportion of Laketown residents among each frequency also increased. However, there were 54.6% of the interviewees in high frequency use trains or cars to come to Laketown. It can be known that the frequenter of Laketown are not only the residents of Laketown but also the citizens living outside of Laketown. Among those who coming to Laketown less than twice a year, picnicking is one of their main purposes but among those who coming to Laketown more the 3 times a year, shopping, having a meal, recreation are their main purposes of coming to Laketown. Also, more people prefer to spend their time in the public spaces of Laketown during daytime in sunny days during weekends and holidays.

About ecological reserve: 69.6% of interviewees emphasized that they can feel the biodiversity in Laketown and 17.6% of interviewees mentioned that they can feel nature in Laketown in the part of free

description, which means the landscapes were well-designed to let people feel the nature. Ecological reserve also has the effect on letting people feel the nature and biodiversity. Attracting more people to come to ecological reserve can let more people to feel the nature. At the same time, keeping the balance between attracting people to come to the ecological reserve and remaining the natural environment in the ecological reserve is also important.

About Ohsagami balancing reservoir: 40.3% of answerers did not know the lake in LakeTown is a balancing reservoir. Also, it can be known that the knowledge of balancing reservoir does not cause the negative awareness of Laketown. Besides, the awareness of water quality was negative. There were several interviewees mentioned that the water was smelly and dirty.

About commercial facilities: 'Shopping' and "Meal" occupied the second and third places of main purposes among all interviewees and 'Shopping' occupied the first place of local recognitions of Laketown. It can be known that people who coming to Laketown have the trend to consider Laketown as a place for shopping. Also, those who come to Laketown for shopping would also spend their time in the public spaces for relaxing and recreation.

About design of Laketown: Among the answers of local recognition and free description, living comfortably and staying comfortably were mentioned. Laketown was also recognized as generally good and beautiful, which means the combination of commercial facilities and balancing reservoir built in Newtown as the core was positively accepted by people. Besides, it can also be known that the most important is how public spaces were designed. as long as the public spaces were well-designed, the awareness of the whole area could be positive.

About private organizations: There are several private organizations holding events in Laketown, but cleanup volunteer activities were not organized well. As so many people coming to Laketown for shopping and relaxing every day, the frequency of twice a year is far from enough. The cooperation among each private organization should be intensified and private organizations should bear more responsibilities of maintenance in Laketown.

5. Field surveys for understanding users' activities in public spaces

Field surveys has been done for 18 times in Laketown including the days with different weathers and temperatures in order to know the actual situation of public spaces. The data of people's number in the public spaces of Laketown was collected among the survey fields for 9 times.

Through combining the data of design concepts, interviews and field surveys, the relationship among characteristic of design, users' activities and user awareness can be known as followed and summarized as Fig.7.

In order to realize the concept of 'Harmonious city life in water side': Constructing commercial facilities can help residents of Newtown to go shopping conveniently. The design of open mall and allowing dogs be in can help commercial facilities be harmonized with the community of Newtown. Besides, keeping water in balancing reservoir ordinary can make doing water sports be possible in balancing reservoir. Also, the design of making the storefronts to face the lake provides customs of these shops chances to enjoy the view of lake.

In order to realize the concept of 'An area with good landscapes': Keeping water in balancing reservoir ordinary can also create the view of lake. If water sports can be allowed in the balancing reservoir, people who are doing water sports can also be a part of the formation of good landscapes. Constructing an enjoy-water space on the dike of balancing reservoir provides people a place to enjoy the view of lake. If the water quality is fine and playing with water is allowed, many people may come here to play with water which makes this area become active, good landscapes can be formed simultaneously. Besides, the sense of openness is important to both public spaces and commercial facilities in order to create an area with good landscapes.

In order to realize the concept of 'Environmentally symbiotic community': Constructing an ecological reserve has both the positive effect on remaining natural environment and helping people to feel the biodiversity of the whole area.

At the same time, there are also some points need to be paid attention: In the case of Laketown, comparing with the park, few children play in the enjoy-water space. Because the slope in the enjoy-water space makes it difficult to play balls or other things, children prefer to play in the park with flat ground. Besides, the design of constructing enjoy-

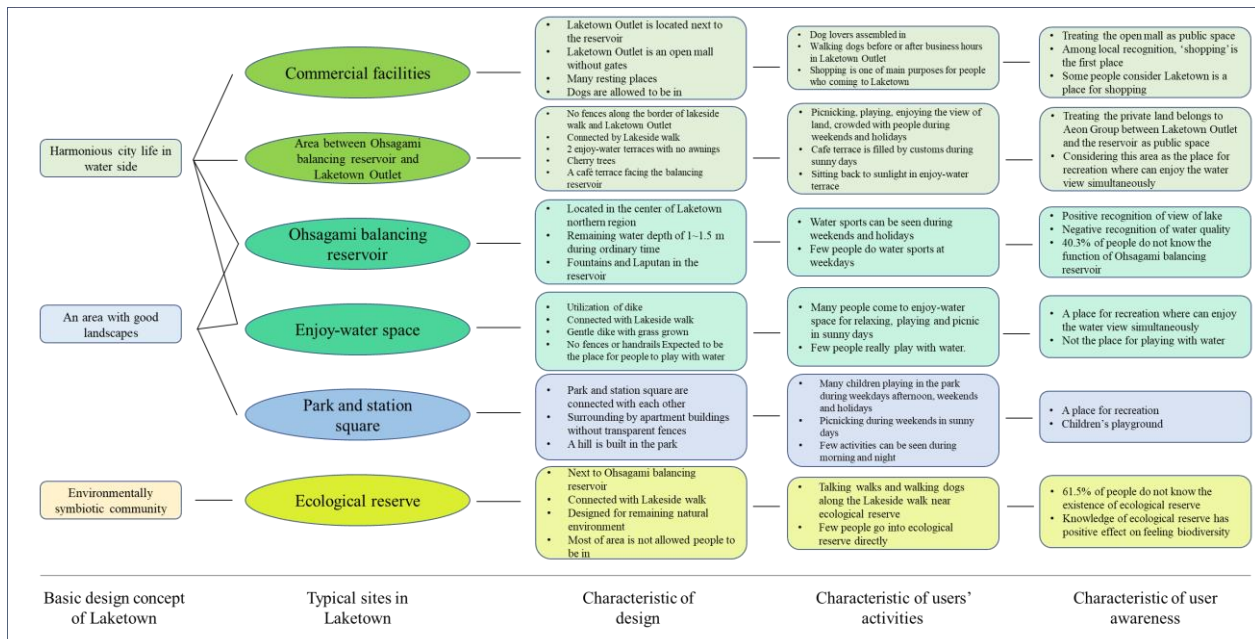


Fig.7 Relationship among basic concepts and characteristics of design, users' activities and user awareness of each typical site in Laketown

water space and enjoy-water terraces under the H.W.L. makes it difficult to create shades for people to take rests. Also, people's awareness of water quality was negative, which may cause the few people want to play with water and do water sports.

6. Conclusion

During the research, user awareness of public spaces in Newtown with commercial facilities and balancing reservoir was revealed. It can be known that the existence of commercial facilities can affect people's local recognitions; the design of open mall can make people to consider the commercial facilities as public spaces and promoting different kinds of activities to be done; the knowledge of ecological reserve has positive effect on helping people to feel biodiversity in public spaces and the knowledge of balancing reservoir's function doesn't have negative effect on the formation of user awareness to public spaces. Also, it was revealed as the use of public spaces is strongly related to location and time zone. Users' activities in public spaces could be different according to whether location of public spaces is next to the lake or commercial facilities.

Besides, during the research, the fact that different design concepts would cause different kinds of users' activities was revealed. It can also be known that keeping the sense of openness and taking full advantage of landscapes are important to create a popular public space.

The issue about management was found as the cooperation among each private organization and

government should be intensified and full utilization of public spaces including balancing reservoir was expected. At the same time, the feasibility and promotability of combining different facilities into a Newtown should be positively affirmed.

Future task: In this research, whether interviewees were residents of Laketown was not asked. In the future, it is possible to find the difference about user awareness and users' activities between residents of Laketown and people who living outside of Laketown.

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