

Study on Park Design from the Perspective of Spatial Structure and User Activity on TEN-SHIBA, Entrance Area of Tennoji Park

-Focusing on the Lawn and Surrounding Space-

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Abstract

In this study, we explored the relationship between the spatial structure of TEN-SHIBA and user activity. The spatial structure was divided into three areas: the planting space, lawn space, and parkway. User activity in each area was observed via a field survey. Results showed that in TEN-SHIBA, people engage in static (resting and eating) as well as dynamic activities (entertainment and exercise). Further, the roles of the planting space, lawn space, and parkway were clarified. Additionally, we found that the current spatial structure of TEN-SHIBA causes people to congregate in some situations, which is a concern given the COVID-19 social situation. Therefore, an improvement plan is needed. Accordingly, we proposed that a new park design for TEN-SHIBA should include dense and sparse planting spaces in the east and west, a lawn space in the center that can accommodate dynamic activities, and benches with parasols on the parkway.

Keywords: *spatial structure, park design, user activity*

1. Introduction

In recent years, there has been a growing global trend to focus on user activity in public spaces and improve the design of such spaces.

As Japan faces a declining birth rate, an aging population, and a decreasing working-age population, the need to transform public spaces, such as streets, parks, plazas, and private open spaces, into human-centered spaces is being advocated for urban renewal.¹⁾

The Urban Park Law¹⁾ was revised in 2017, and a new public establishment and management system, Park-PFI (Park-Private Finance Initiative, referred to as P-PFI) was established.²⁾ Accordingly, a public bidder is selected to establish park facilities that contribute to the convenience of park users. Such facilities include restaurants and stores. The revenue generated from these facilities is used to maintain and renovate the surrounding parkways. To revitalize the Abeno-Tennoji district,²⁾ the entrance area of Tennoji Park, which is the core of the district, was renovated and made more attractive through a public-private partnership.³⁾

TEN-SHIBA is the redeveloped 25,000m² entrance area of Tennoji Park, a 26ha park in Tennoji Ward, Osaka City. It is a new lively zone with a 7,000m² expansive lawn that can be used for multiple purposes. A spacious lawn space is the center of the area, around which low-rise restaurants, cafes, children's playgrounds, dog runs, futsal courts, and other facilities are located. Since the renovation, the park sees crowds of a wide variety ranging from visitors from local and surrounding areas, as well as domestic and international tourists and shoppers. It is expected to become the core of further revitalization in the Abeno-Tennoji area.

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In their study evaluating activities in public spaces, Arima et al.⁴⁾ examined the relationship between activities and behavior-inducing elements (e.g., tents, chairs, benches) relevant to shopping streets and street spaces and clarified the need for management of central city areas, including building and store designs in the private sector. Tooya et al.⁵⁾ focused on various activities of users through social experiments in public spaces. After obtaining findings based on changes in usage within the social experiment area, they advocated for improving the quality of space in the entire area to enhance the attractiveness of the public space. Suzuki et al.⁶⁾ grasped the behavior and awareness of visitors in the city and clarified the relationship with various evaluations, such as the preference for resting spaces in the city.

Additionally, as a study on the utilization of parks and the P-PFI system, Hsiao⁷⁾ focused on TEN-SHIBA, an advanced example of park management based on a project agreement involving the establishment of a management permit system.

Although there have been studies that have evaluated public spaces based on user activity and clarified the actual conditions of use, as well as studies regarding the P-PFI system in urban parks, no other study has evaluated user activity.

The aim of this study was to examine the relationship between the spatial structure of urban parks and user activity in these public spaces.

2. Methodology

The spatial structure was analyzed by exploring the historical transition of the park, organizing design concepts based on interviews with park managers, and researching the landscape components through field surveys. User activity was divided into staying and moving and was surveyed from 8:00 a.m. to 7:30 p.m. in the autumn of 2020.

In terms of staying, user attributes were divided into four categories (single, group, family, and couple). The purpose of use was divided into seven categories (resting, conversation, eating and drinking, entertainment, exercise, working, and walking). We plotted the data hourly on a map to obtain totals. In this analysis, time zone was divided into four categories (morning, midday, afternoon, and evening). The relationship between the spatial structure and user attributes and purposes of use by time zone was analyzed (Fig. 1).

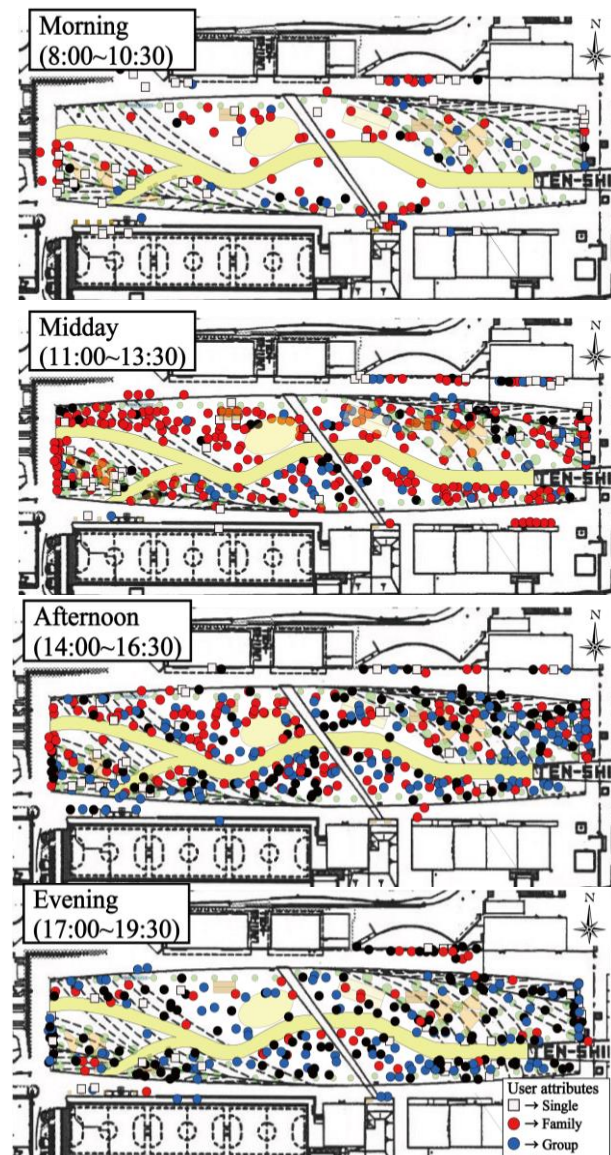


Fig. 1 Changes in staying activities (Reorganized the drawing)⁽³⁾

In terms of moving, we surveyed the number of people flowing in and out at the connection points in the Shinsekai sightseeing area adjacent to TEN-SHIBA and the bustling Abeno-Tennoji area.

3. Results and Discussion

3-1. Spatial structure

In 2012, the Osaka Urban Attractiveness Creation Strategy prioritized the Abeno-Tennoji area for revitalization. Specifically, the entrance area of Tennoji Park was to be made more attractive through a collaboration between the public and private sectors. The park consists of a planting space with a mixture of tall trees and shrubs on the east and west sides and a lawn space in the center. The parkway is equipped with benches, curbs, and has environmental components that can facilitate a variety of user activities, such as the location of commercial stores and sports facilities to the north and south across the parkway.

3-2. User activity

It was observed that single users and families tended to stay in the east and west planting spaces approximately 40–50% of the time in the morning and at midday, and couples stayed there for approximately 50% of the time in the afternoon and evening. Resting was observed at approximately 50% from morning to midday, and conversation was observed at approximately 60% from afternoon to evening, primarily as a static activity. Moreover, families eating and drinking during the daytime lingered near the tall trees.

Families tended to stay in the lawn space approximately 60–70% of the time from morning to midday, and groups and couples stayed there approximately 30–40% of the time from afternoon to evening. Throughout the day, the tendency to rest was estimated at approximately 40%; eating and drinking at midday, approximately 50%; and conversing in the afternoon and evening, approximately 40%. Thus, there was a tendency to combine static activities (e.g., eating, talking) with dynamic activities (entertainment and exercise).

Families tended to stay on the parkway approximately 40% of the time. This situation suggests that the parkway can be a secondary space to accommodate people from saturation in the planting and lawn spaces. Resting was observed at approximately 60% throughout the day, and the parkway functioned as a casual place to stay.

Visitors near the Shinsekai sightseeing area numbered approximately 2,000, which was lower than in other areas. Therefore, in addition to enhancing the content to attract visitors around the Shinsekai sightseeing area, there is also the challenge of ensuring accessibility based on

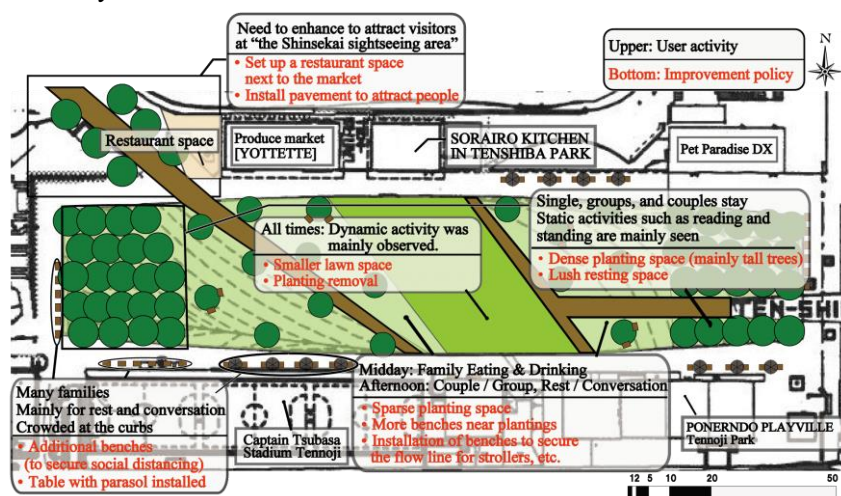


Fig.2 Planning method for the future park design (Reorganized the drawing)⁽³⁾

TEN-SHIBA.

Overall, people tended to be attracted to shaded lawn spaces and curbs along the parkway at TEN-SHIBA. However, based on the social conditions associated with COVID-19, the arrangement of furniture and design of temporary structures should be considered for social distancing purposes. ^(m)

4. Conclusion

Based on the results of this study, we have proposed a plan for the future park design of TEN-SHIBA (Fig. 2).

On the east and west sides, we propose the creation of a dense planting space for static activities. In the interior, a sparse planting space should be created for such activities as eating, drinking, and resting. Additionally, smooth pavements should be maintained for pedestrian flow. We also propose maintaining a lawn space that can tolerate static and dynamic activities in the central area.

Additionally, reorganizing the tables with parasols and benches corresponding to SD may attract more people to the parkway. Furthermore, to attract more visitors to the Shinsekai sightseeing area, the visibility of pavements and plantings should be improved and the vista views reorganized. In the past, Tennoji Park was designed to look like a sunken garden. To recognize this historical background, it may be effective to create a structure with a sparse planting space on the east and west sides and a sunken lawn toward the center. A three-dimensional perspective view can be obtained by utilizing the difference in elevation.

Notes

(1) In response to the devastation of urban parks caused by the occupation of buildings unrelated to the parks' function, this law was enacted to secure urban parks as public open spaces and promote their sound development and public welfare by establishing regulations related to the establishment and management standards of urban parks.

(2) It was positioned as one of the priority areas in the "Osaka Urban Attractiveness Creation Strategy" formulated by the Osaka Prefectural Government and City of Osaka in December 2012.

(3) Based on a survey conducted on August 30, 2020, with Kintetsu Real Estate Co., Ltd.

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