

Research on the Differences of Pedestrians' Stay between Ground Space and Underground Space

—Taking the Examples of Umeda District of Osaka—

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1. Background

In the big city like Osaka, with the highly developed commercial facilities and metro system, the public space is also wildly expanded. Recently, at the downtown area of Umeda in Osaka, with the existence of a large number of ground space, the underground space is highly developed. There are already plenty of studies on the pedestrians' stay at ground space, but there are few researches on the comparison of pedestrians' stay between ground space and underground space considering of space composition.

2. Purpose

We did a lot of researches on the movement of pedestrians at public space in Osaka City^{1),2),3)}. And we also did the survey on physical environment and using situation at the ground space and underground space at Umeda Area in Osaka. This research aims at to be helpful to know the relationship between stay activities of pedestrians and the space construction at the urban design of ground space and underground space in future.

3. Research Method

3.1 Literature Search

We searched the data on physical environment at ground space and underground space in Umeda Area in Osaka, including the development of the areas.

3.2 Field Study

We choose ground spaces and underground spaces in Umeda Area in Osaka as our study area (Figure-1). In this study, the planning, environment, factors around the public space are been researched.

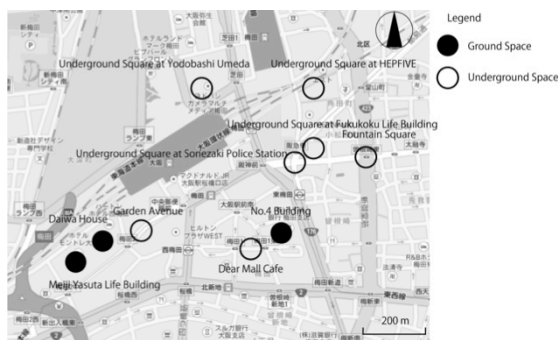


Figure-1. Ground Space and Underground Space in Umeda Area in Osaka



Figure-2. Underground Space at Umeda Area in Osaka

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Ground Space: Public space around Meiji Yasuta Life Building, No.4 Building and Daiwa House.

Underground Space: there are Four main underground space at Umeda Area, which are White Umeda, Hankyu 3rd Street, Dear Mall Osaka and Dojima Underground Center, which is shown in Figure-2. Here we choose underground square at HEPFIVE, underground square at Fukoku Life Building, Fountain Square, underground square at Yodobasi Umeda, underground square at Sonezaki Police Station, Dear Mall Café, Garden Avenue as our study objects, which is shown in Figure 1.

3.3 Movement Investigation

We did some survey on stay activities of stayers at the spaces mentioned above. The age, sex, stay position, location of the pedestrians are recorded.

3.3.1 Situation of Ground Space

Location of benches, plants, buildings and public space are shown in Figure-3 to Figure-5.

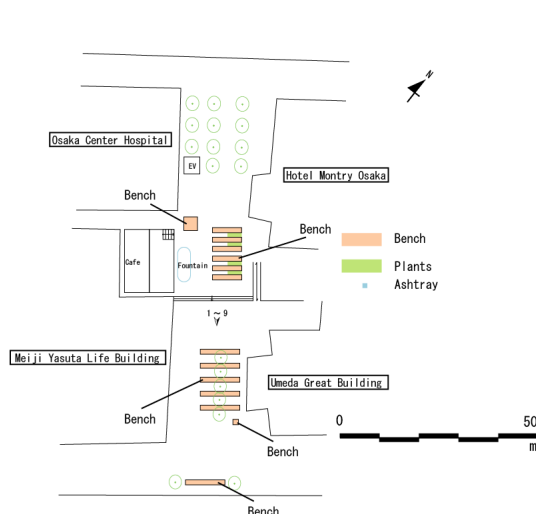


Figure-3. Stay Activities at Meiji Yasuta Life Building

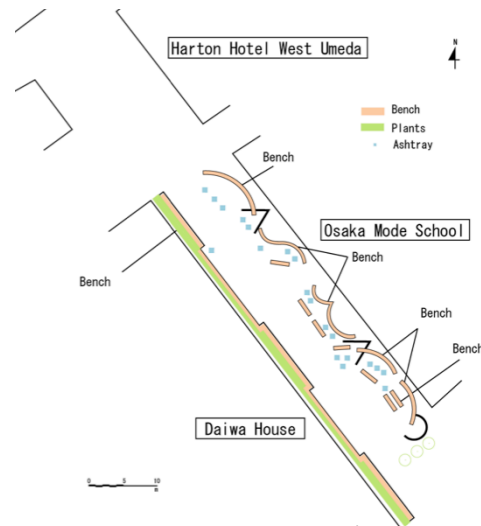


Figure-4. Stay Activities at Daiwa House

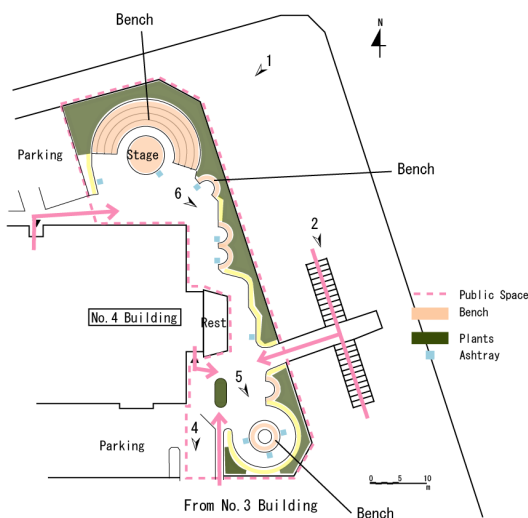


Figure-5. Stay Activities at No.4 Building

3.3.2 Situation of Underground Space

The age, sex, stay position, location of the pedestrians are recorded in Fig-6 to Fig-12. And the locations of stayers at each place are calculated in Table-1.



Figure-6. Stay Activities at Underground Square at HEPFIVE

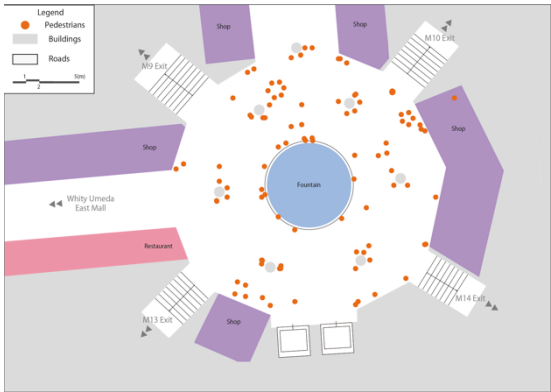


Figure-7. Stay Activities at Underground Square at Fountain Square

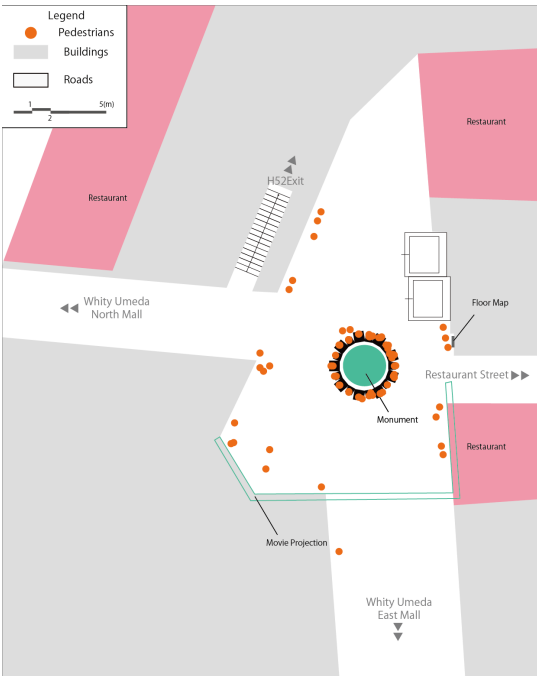


Figure-8. Stay Activities at Underground Square at Fukoku Life Building



Figure-9. Stay Activities at Underground Square at Yodobasi Umeda

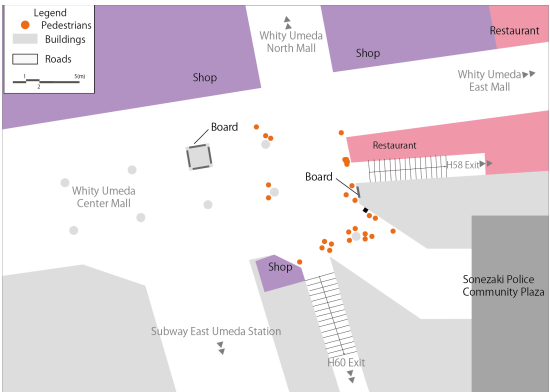


Figure-10. Stay Activities at Underground Square at Sonezaki Police Station

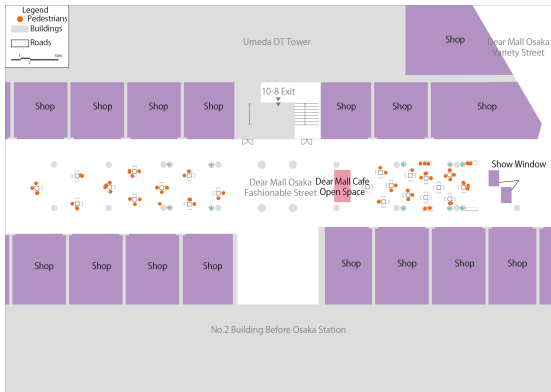


Figure-11. Stay Activities at Underground Square at Dear Mall Café

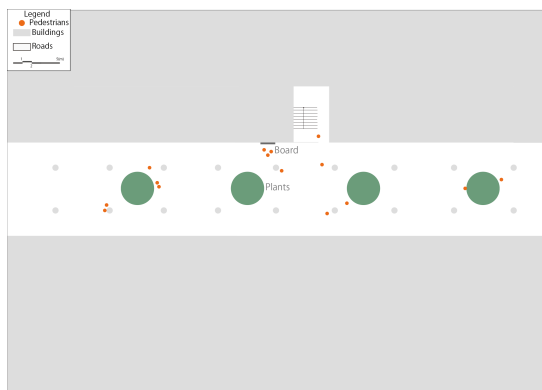


Figure-12. Stay Activities at Underground Square at Garden Avenue

Table-1. Numbers of Stayers who Locate at Each Place

People	Wall	Pillar	Board	Bench	Plants
Location A	30	14	13	0	0
Location B	23	0	0	0	25
Location C	20	30	0	14	0
Location D	12	5	0	0	0
Location E	15	11	0	1	0
Location F	2	0	0	68	0
Location G	5	0	3	8	3
Total	107	60	16	91	28

4. Comparison and Analysis

For comparing to the space construction, types of stay activities, catalogs of stay activities, space factors infecting stay activities. At the ground place, we found there are more people sitting than standing. Most stay activity is smoking, followed with talking, eating, phone, reading and so on. At the underground place, we found stayers are easily to stay near wall and bench. There are more people standing than sitting. Most stay activity is waiting, followed with resting, phone, reading, eating and so on.

5. Conclusion

We made the conclusion that: the catalogs of stay activities are influenced by the physical factors of space constructions. The stay activities of pedestrians at ground space and underground space are different. There are more smoking activities at ground space and meeting activities at underground space. At both ground space and underground space, there are more pedestrians standing than pedestrians sitting.

Keywords: *ground space, underground space, stay activity, pedestrians*

Reference:

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