Hiroba-ka Open Space as Japanese 'Public' Space within Tokyo's Contemporary Architecture

by

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Abstract

As a concept imported from the West during the Meiji period, the notion of 'public space' did not exist in Japan before. Besides, the cultural differences in understanding 'space' and 'form', resulted in the newly coined Japanese term '"public" space' – *'kōkyō kūkan'*– and its spatial materiality with more complexity, ambiguity, and multiple meanings contained today, showing the uniqueness and geographical, historical, and socio-cultural differences in theorizing, and evaluating 'public space'.

Hiroba is usually regarded as functionally equal to the Western plaza or square and the prototype of Japanese public space. A retrospective review of the typological evolution of *hiroba* in Japanese public space development is explored. The research resurrects the term of *hiroba* as a concept in Japanese-type *hiroba* or Japanese *hiroba*, instead of *hiroba* usually as a model through formal imitation imported from the Western-type *hiroba* and later be applied in Japan. It finds the changing notions of 'public' (and its physical form in the typology of *hiroba*) in Japan and the close relationship between place-making and *hiroba-ka* in open space, Japanese *kōkyō kūkan* and *hiroba-ka* open space generated through architectural design by Japanese architects.

The research aims to understand the Japanese *hiroba-ka* open space within contemporary Japanese architecture and interpret its notions of 'public' behind it. Four case studies are chosen to explore the three main questions: typology, human behaviour, and their interaction and relation in generating *hiroba* and the notions of 'public' behind this process. The research finds that a series of spatial elements and attachment elements are conducive to the constitution of the physical setting of *hiroba-ka* open space. The spatial configuration of those elements is closely related to human behaviour. The open space typologies of those spatial elements in making *hiroba* in the four cases are extracted and analysed on their spatial meanings and characters. It argues that both typology and human behaviour are indispensable to the generation of *hiroba-ka* open space within Tokyo's contemporary architecture. The *hiroba-ka* open space, therefore, is socially constructed place-making open space through the interaction between people and space through time. The research concludes that different from the lament on the fall of public space in most Western cities, Japan, as a country that lacks the notion of 'public' and spatial conditions to provide public space in the Western sense, has made a considerable achievement today. Japan has developed its own interpretation of 'public' and unique 'public' space –*kōkyō kūkan* by synthesis and dialogue between Western public space and Japanese *hiroba* adapting to the changing society.

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Glossary

Akichi:

Vacant or open land with same meaning of *kūchi*

Asobiba:

Playground.

Chikatsūro:

Concourse

Cho:

Town. Basic planning unit in Japan

Chōnaikai:

Neighbourhood association

Danchi:

Social housing in Japan

Fukkō kōen:

Restoration Park

Furumai:

Japanese word of behaviour

Genkei:

Prototype

Hamayuki:

Sea beach strolling

Hanabi:

Fireworks

Hanami:

Flower viewing

Hankagai:

Busy and prosperous street

Harappa:

Open field

Hashizume:

Foot of bridges

Hiragana:

One of the two types of Japanese syllabary, which is primarily used for native Japanese words.

Hiroba:

Hiroba literally means broad open space. It functions like the Western plaza or square in Japan and therefore is regarded as the prototype of Japanese public spaces.

Hiroba-ka:

Place-making

Hirokoji:

A wide street

Hiyokechi:

Firebreak land

Hokōshatengoku:

Pedestrian paradise

Idobata:

Side of a well

Jichikai:

Self-government association

Jinen:

Occurring naturally (without human influence)

Jinmin:

People

Ka:

Hypothesis, imagine

Kaiwai:

Activity space

Kami:

Japanese gods

Kanji:

Chinese characters

Kaishochi:

Open space in the block

Kata:

System, including compositional elements and spatial configuration

Katachi:

Specific shape as model

Katakana:

One of the two types of Japanese syllabary, which is primarily for translating foreign words.

Kenchiku Keikaku:

Architectural planning

Ki:

Spirit, intention, feelings

Kō:

Public

Kōen:

Japanese park

Kōkyō:

Japanese word of ‘public’ in *hiragana*

Komon supēsu:

Common space

Kūchi:

Open space

Kūkan:

Japanese word of ‘space’ in *hiragana*

Kyō:

Together, share, and common

Ma:

Interstices. Japanese space *ma* contains both the meanings of ‘time’ and ‘space’ in Western concept.

Machigado:

Street corner

Machizukuri:

Town making and community building

Matsuri:

Festival

Meisho:

Famous places, usually those places of interest

Michi:

Street

Mikoshi:

Portable shrine

Mise no ma:

Shops

Mizube:

Riverside space

Mokei:

Model

Nakamise:

Shops lining a passageway

Oku:

Deepness

Omote:

Front

Paburikku:

Japanese translation of the Western ‘public’ in *katakana*

Roji:

Alleyway

Ruikei:

Type

Sakariba:

Busy places, usually those hustle and bustle entertainment places

Sakui:

Artificiality

Satoyama:

Undeveloped woodland near populated rural area

Sendō:

A sacred road approaching a shrine

Shikii:

Threshold

Shimenawa:

A sacred rope in Shintoism

Shitamachi:

Lowland in Edo

Shōtenkai:

Commercial association for shopkeepers

Supēsu:

Japanese translation of the Western ‘space’ in *katakana*

Taishū:

Masses

Ura:

Back

Watashi:

Private

Yamanote:

Highland in Edo

Yatai:

Street food cart

Chapter 1. Introduction

1.1 Research Background

1.1.1 The term of ‘public’ space in Japan

Kōkyō kūkan (公共空間) in Japan

As a concept imported from the West during the Meiji period, the notion of ‘public space’ did not exist in Japan before, and even no correspondent words equal to that meaning could be found. The transcribed Western ‘public’ –*paburiku* (パブリック)– in *katakana* directly based on the phonetic approximation based on pronunciation only denotes the terms was a foreign item without interpreting its meaning. Later, *kanji* (Chinese characters) was adopted and combined into a new word –*kōkyō* (公共)– to explain ‘public’ in the Japanese context. However, the newly coined word cannot be translated appropriately to match the original meaning. Many related concepts embedded in ‘public’ behind the western public space in general, such as ‘publicness’, ‘democracy’, ‘civilization’, ‘autonomy’, and ‘free’ are missing, very weak, or narrowly and limitedly understood in Japanese history (Seidensticker, 1983; 1990; Yamamoto, 1999; Satoh, 2000; Sorenson, 2002; 2005; Shinohara, 2007; Bharne, 2010; Tanaka, 2010; Baba and Open A, 2013; Lida and Hamaoka, 2017). The much-valued public space has been widely debated as not well developed historically in Japanese society and even today (Hani, 1968; Ueda, 1986; Jinnai, 1995; Doi, 1997; Cybriwsky, 1999; Sorensen, 2002; Dimmer, 2008; Isozaki, 2011; Sakai, 2011; Shelton, 2012; Cayer and Bender, 2019; Okabe, 2020).

Besides, there are cultural differences in understanding ‘space’ between Japan and the West. Japanese ‘space’–*ma* (間, interstices) , which contains both the meaning of ‘time’ and ‘space’ in Western concept, is space-time continuum. *Ma* underscores the principle of place-making in contrast with the Western understanding of space as three-dimensional and neutral space; it stresses activities taking place in a particular space through a period of time (Nitschke,1966; 1993; Isozaki, 2009). It is common to see Japanese ‘public’ space (公共空間) to be translated into English as public space, and

the two terms are interchangeably used in people's daily conversation, academic work, and government policies and rules in Japan, however, the meanings of the two are different (Satoh, 2000; Dimmer, 2012; Satoshi, 2015). *Kōkyō kūkan* as a term also does not have a legal definition or position in Japanese law. In the Japanese dictionary, only a single translation of *kōkyō* (公共) and *kūkan* (空間) can be found, and their combination does not exist. Therefore, the new coined Japanese term *'kōkyō kūkan'* (公共空間, 'public' space) contains more complexity, ambiguity, and multiple meanings need to be explored, especially its materiality in spatial form in Japan today.

The global trend in public space development

The global trend in public space development through worldwide research see the transformation of the meaning of the 'public' (absolutely open, free, inclusive, democratic, and precisely defined) and the changes (privatized, commercialized, controlled, surveillance, exclusion, and segregation), questions (declined or revival or expanding), and complexity (e.g., the expansion of privately owned or managed public space, semi-public, or so-called pseudo-public space) in recognition of whether space could be considered as a public space (Lees, 1994; Goss, 1996; Fyfe, 1998; Banerjee, 2001; Hajer & Reijndorp, 2001; Gehl & Gemzoe, 2006; Worpole and Knox, 2007; Imamura, Koizumi and Takahashi, 2013; Carmona, 2021). The diversities in culture, custom, ideological visions, economic context, and socio-political situations among the different cities in different areas also inform the public space could not be and need not be universal and judged on equal criteria everywhere (Mitchell, 1995; Marcus and Francis, 1998; Miao, 2001; Carmona et al., 2010; Dimmer, 2012; Kuma and Jinnai, 2015; Wang, 2019). In confronting new urban conditions, pressures, and challenges, the emergence of new typologies of urban spaces (Cho, Heng and Trivic, 2016), renovation and regeneration of existing urban space (Baba and Open A, 2013; 2015), and informal 'not your everyday public space (Hou, 2010) appropriated and creatively used by the general public together in unconventional and unusual ways challenge how we define public spaces and further stimulate the necessity to re-theorizing and

re-evaluating the motion and definition of public space in a more flexible and inclusive manner(Carmona, 2015).

Carmona (2010a) critiqued and recognized a general decline and deterioration in the new forms of public space development today in comparison with the inclusive and idealized notion of public space originated from the historical antecedent of ancient Greece and Rome. Carmona (2015) commented that 'it is also probably true to say that public space has rarely, if ever, achieved such a utopian state … the "public" in "public space" is not a coherent, unified group, but instead, a fragmented society of different socio-economic (and, today, often cultural) groups, further divided by age and gender … this diverse society will inevitably relate to public space in a different and complex way.' Therefore, Carmona (2010b) concluded that, from different perspectives (design, socio-cultural, political economy), different typologies of public space could be classified, and different definitions can be conceived. The current research figures out the entangled relations and evolutions between the Japanese *kōkyō kūkan* in specific and the Western public space in general, which have not been associated and discussed in depth before. It helps to comprehend a different understanding and making of 'public' space through *hiroba-ka* open space in Japan, contributing to the public space study in different geographical and socio-cultural contexts.

1.1.2 The concept of '*hiroba*' and '*hiroba-ka* open space'

Western public space in general and Japanese *hiroba* in specific

Even though it is argued that there is no public space equal to the meaning of the Western 'public' in general with the foundation of democratic citizenship and civic participation even today in Japan (Hani, 1939; 1949; Yoshizaka and Tonuma, 1960; Toshi dezain kenkyū-tai, 1971; Ueda, 1986; Sand, 2013; Kuma and Jinnai, 2015; Radović, 2020), actually, there indeed is an alternative in Japan. *Hiroba* (広場)*,* which in Japanese consists of two individual *kanjis* (Chinese characters): *hiro* (broad) and *ba*

(place), and literally means broad open space, is the essence, origin, and foundation of understanding Japanese public space evolutions and *kōkyō kūka* (公共空間, 'public' space). It is usually regarded as functionally equal to the Western plaza or square (the symbol of the Western public space can be dated back to the Greek agora and Roman forum as the core of city-state *polis,* which is a well-constructed political community) as the prototype of indigenous public space in Japan, however different from it (Toshi dezain kenkyū-tai,1968; 2009; Ueda, 1973; Kato, 1985; 1993; 1998; Miura, 1993; Doi, 1997; Toyoda, 2005; Kuma and Jinnai, 2015; Okabe, 2017), showing different 'public' meanings. For example, the political dimension closely related to civic life and democracy, such as the assembly of citizens for free speech, political elections, intellectual debates, enacting legislation, and administrations of the polis, in *hiroba* was missing in Edo (1603-1867); or it was very weak, profoundly directing to 'officialdom' rather than 'people' after Meiji (1868-1939) before World War II. Not until later improvements through a struggling evolution, characters like 'democracy', 'freedom', 'autonomy', and 'civic life' behind the 'public' discovery were gradually strengthened although not completely achieved (Yoshida 1999; Schwartz and Pharr, 2003; Hasegawa, K., 2004; Dimmer, 2012; Sand, 2013; Brown and Bender, 2016; Radović, 2020).

Japanese-type *hiroba* and Western-type *hiroba*

Hiroba in Japanese is usually written in two different ways: one is in kanji (Chinese characters) as '広場', and the other is in hiragana as 'ひろば'. The former is usually direct to the symbolic central open space in western cities (plaza, square, piazza, platz, etc.) as Western-type *hiroba* (西欧型広場), which was imported and imitated (based on the shape, 形) by Japanese as the direct model for *ekimae hiroba* (駅前広場, station-front plazas) and *shimin hiroba* (市民広場, plazas in front of government building). However, the latter is intended to mean specifically Japanese *hiroba-ka* (place-making process in generating the use of open space) open space (広場化空地) as the Japanese-type *hiroba* (日本型広場) alternative to the lack of the Western-type

central open space in Japan. In speaking *hiroba* (日本の広場) in the thesis, it means the Japanese-type *hiroba* (日本型広場), which contains Western-type *hiroba* (西欧型広場).

Japanese scholars (Ueda, 1973; Kato, 1985; Miura, 1993; Jinnai, Mitani and Itoi, 1994; Narumi, 2009; Toshi dezain kenkyū-tai, 2009; Kuma and Jinnai, 2015; Nagayama, 2015; Onodera, 2015) are clear about the differences between the Japanese-type *hiroba* as a concept or idea and Western-type *hiroba* as one formal type of open spaces. According to Ueda (1973) (figure 1.1), *hiroba* in a broad sense included *Jiyū hiroba* (自由広場, free *hiroba*), which did not have the name or shape of *hiroba* in a narrow sense of classic *hiroba* (古典広場) and unfixed *hiroba* (非定形広場), but formed through the gathering of people and their interactive communications, for example, *michi* (street) and children's *asobiba* (playground) at *uradōri* (backstreet). Kato (1985) underscored the non-physical organization and formation of *hiroba* in terms of *basho* (場所, place). He differentiated the Western-type *hiroba* (plaza, square, piazza, platz, etc.) in the form of exterior open space enclosed by buildings (建築的広場, architectural *hiroba*) with Japanese *hiroba* based on human behaviour and put forward *basho teki hiroba* (場所的広場, place *hiroba*) with a specific place and amorphous character, and urban *hiroba* (都市的広場) without specific place (figure 1.2). Jinnai, Mitani and Itoi (1994) analysed the genealogy of the development of plazas or squares by collecting global cases (mainly Western-type plazas or squares in Europe and North America, with only some cases in Asian cities). Jinnai (2015) commented on his book in 1994 by stressing the differences between Japanese-type *hiroba* and Western-type *hiroba*, supporting the arguments made by Toshi dezain kenkyū-tai's (2009) seminal work on Japanese *hiroba* in 1971. Kuma and Jinnai (2015), Onodera (2015), and Nagayama (2015) further demonstrated and explained that Japanese *hiroba* are actually different forms *of hiroba-ka* open spaces (i.e., not the imitated model of piazza-like open space as public space used in the West), defined not only by the materiality of open space, but also, more importantly, to be needed by people's demands and desires, and further

to be activated by people's behaviour and activities through time into a meaningful and collective place. Narumi (2009) coined the concept of *toshi no jiyū kūkan* (都市の自由空間, urban free space) to define urban space for going through and playing collectively and freely. He and Miura (1993) demonstrated that many *hiroba-ka* open spaces (i.e., Japanese-type *hiroba*) were used as equivalents of Western-type *hiroba* without denoted or written in laws or regulations as *hiroba* (such as open spaces in streets, waterfront, temples, and parks, etc.). As Narumi (2009, p.138) argued: 'the fact is that *hiroba* is actually widely understood regardless of legal provisions and names.'

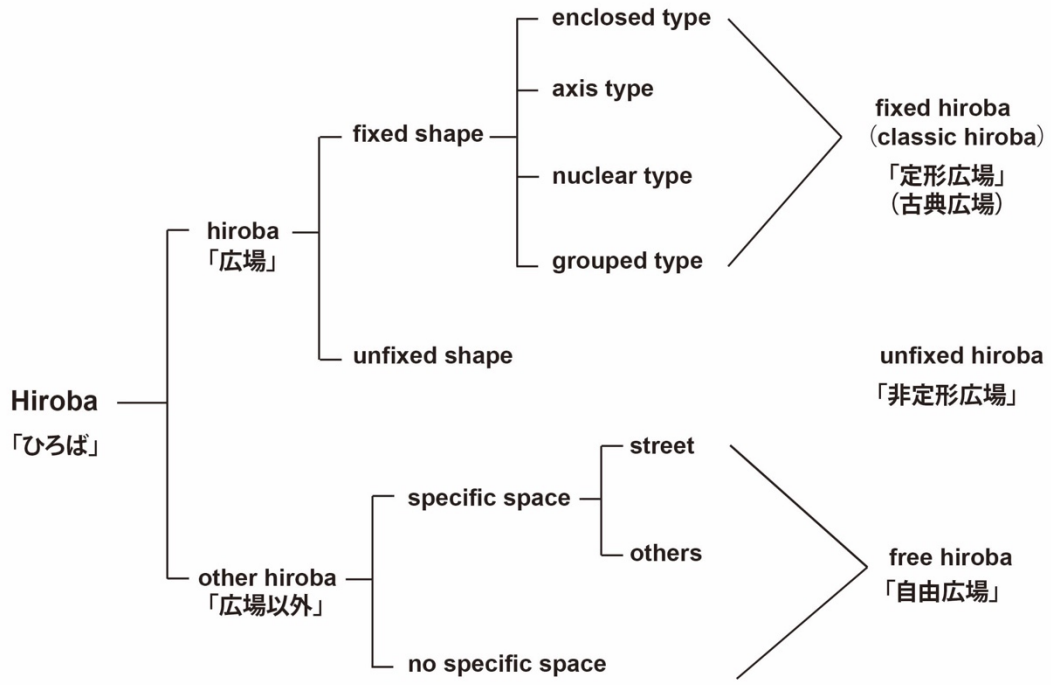


Figure 1.1 The definition of *hiroba* by Ueda. (Source from: translated by the author from Ueda, 1973)

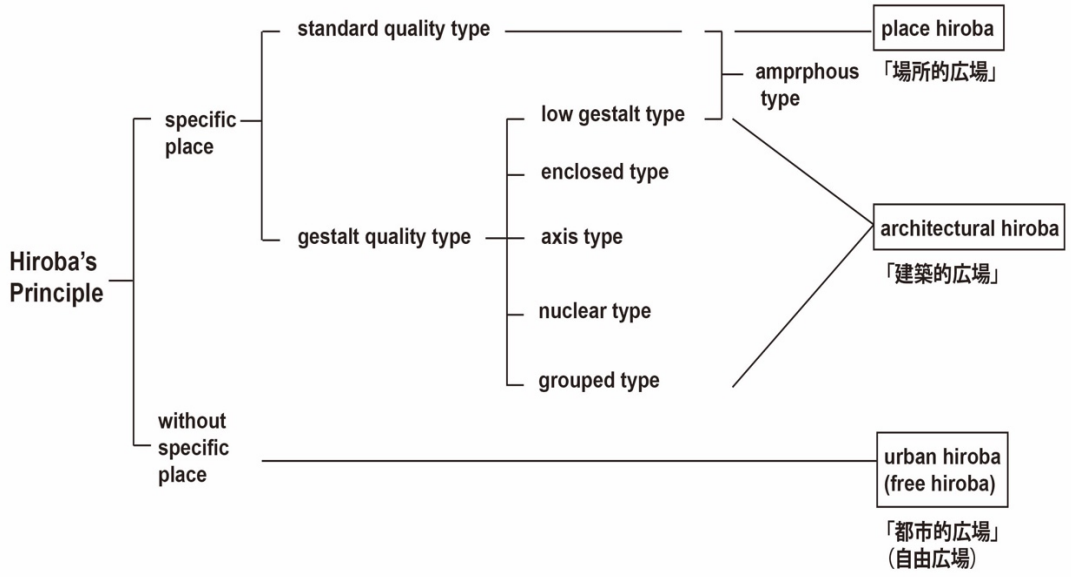


Figure 1.2 The definition of *hiroba* by Kato. (Source from: translated by the author from Kato. 1985)

Hiroba-ka **and Japanese** ***hiroba***

Japanese *hiroba* is *hiroba-ka* open space. *Hiroba-ka* open space is Japanese-type *hiroba* (concept-oriented through *hiroba-ka* open spaces), which is different from the Western-type plaza or square (form-oriented presented by Western-type *hiroba*), which is much discussed in the package 1 of the response letter (Ueda, 1973; Kato, 1985; Miura, 1993; Jinnai, Mitani and Itoi, 1994; Narumi, 2009; Toshi dezain kenkyū-tai, 2009; Kuma and Jinnai, 2015; Nagayama, 2015; Onodera, 2015). *Hiroba-ka* is described as the action and process of people for carrying out their demanded activities in open space, addressing the unique Japanese spatial culture of *ma* (space-time continuum) mentioned above. The '*hiroba-ka*' is drawn an analogy to the concept of 'place-making' in open space in comparison, which is discussed in package 2 of the response letter. Through the introducing of human behaviour within the physical setting of open space, *hiroba-ka* process help to turn and activate a neutral 'open space' into a lively 'place' binding with people and activities. *Hiroba-ka* process can be found in Japanese *kaiwai* (Toshi dezain kenkyū-tai, 1968, p.44-45). *Kaiwai* (界隈), which is translated in the book *Nihon no toshi kūkan* as 'activities space' in English, is characterized by 'more social than spatial' and 'not by formal design features but by

the spontaneous uses of occupants' in Japanese spatial essence (Sand, 2013, p.49). *Hrioba-ka* also resonates with Japanese spatial culture, which addresses more on the 'spatial and performative' distinguished with the 'constructive and objective' of the Western architectonic will (Hamaguchi, cited in Isozaki, 2011, pp. 23-31). Therefore, 'behaviour' (performative) is important to the making of 'typology' (spatial) in discussion of Japanese *hiroba and* urban space.

According to *Nihon no Hiroba* (日本の広場), which is the seminal work on Japanese *hiroba* study firstly published in the journal of *Kenchiku Bunka* in 1971 (Toshi dezain kenkyū-tai, 1971) and reprinted in 2009 (Toshi dezain kenkyū-tai, 2009) in a book version, there are three conditions needed for making Japanese *hiroba*: (1) physically provided open space, (2) activities in use, and (3) desire of using. The discussion of *hiroba-ka* open space in the research through the perspective of 'typology' is related to (1) the form of open space; the discussion *hiroba-ka* open space in the research through the perspective of 'behaviour' is related to (2) activities and (3) desire of using. Moreover, as discussed in the respondence letter 2: place-making in open space, the process and action of *hiroba-ka* is linked to 'place-making', which is built on the three foundational themes: (1, form or physical setting; 2. activities; 3. meaning/value/image) that significant for constituting a sense of 'place' (Punter, 1991; Montgomery, 1998; Carmona, 2003; Doi, cited in Satoshi, 2015; Satoshi, 2015; 2019). The exploring of 'typology', 'behaviour' and 'public' in the research resonates with 'form', 'activities', and 'meaning' of making the sense of place respectively in *hiroba-ka* open space (figure 1.3).

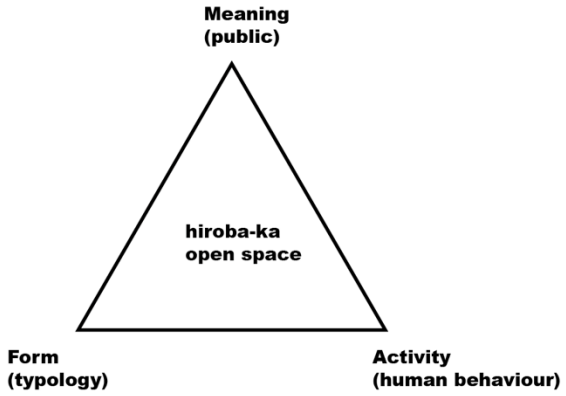


Figure 1.3 The relation between place-making in open space and *hiroba-ka* open space. (Source from: drawn by the author)

Japanese *hiroba* and open space

In summary, *hiroba* is different but associated with the term 'open space'. *Hiroba* is spatially related to *kūchi* (空地), which means open spaces in Japanese. However, *kūchi* needs to be '*hiroba-ka*' (converting physical open space through desired activities by people) and then become *hiroba* (a meaningful place in use by people instead of leftover space). The '*hiroba-ka*' is drawn an analogy to the concept of 'place-making' in open space in comparison, on which the suggested literature review of Chapter 2.1 is based and developed. *Hiroba-ka* is described as the action and process of people for carrying out their demanded activities in open space. Through the introducing of human behaviour within the physical setting of open space, *hiroba-ka* process helps to turn and activate a neutral 'open space' into a lively 'place' binding with people and activities. *Hiroba-ka* process can be found in Japanese *kaiwai* (Toshi dezain kenkyū-tai, 1968). *Kaiwai* (界隈), which is translated in the book *Nihon no toshi kūkan* as 'activities space' in English, is characterized by 'more social than spatial' and 'not by formal design features but by the spontaneous uses of occupants' in Japanese spatial essence (Sand, 2013, p.49). *Hiroba-ka* reflects Japanese 'space'–*ma* (間, interstices) , which contains both the meaning of 'time' and 'space' in Western concept, as space-time continuum. Ma underscores the principle of place-making in contrast with the Western understanding of space as three-dimensional and neutral space; it

stresses activities taking place in a particular space through a period of time (Nitschke,1966; 1993; Isozaki, 2009). *Hrioba-ka* also resonates with Japanese spatial culture, which addresses more on the 'spatial and performative' distinguished with the 'constructive and objective' of the Western architectonic will (Hamaguchi, cited in Isozaki, 2011, pp. 23-31). Therefore, 'behaviour'(performative) is important to the making of 'typology'(spatial) in discussion of Japanese *hiroba.*

Hiroba itself owns the character of temporality, which is rooted in Japanese spatial culture and represented in the *hiroba* in the Edo period. Kato (1998) commented *hiroba* concept in Japan is ambiguous and argued *hiroba* is different from open space by involving human activities as humanized place independent of the concept of open space. *Hiroba* is *hiroba-ka* open space; therefore, the word itself owns the abundance and depth that open space does not show. Besides the materiality of *hiroba* as an open space, *hiroba* also indicates the human activities within and people's desires to engage. In summary, *hiroba* is a concept that goes beyond open space with specific types (such as street, avenue, plaza, square, waterfront, park, garden, etc.). It is a concept that contains the collection of the above-motioned open space types identified according to different form characters.

1.1.3 *Hiroba-ka* open space within Tokyo's contemporary architecture

The changing form of Japanese *hiroba* typologies in history

Hiroba is presented in different forms of *hiroba-ka* open spaces in different periods of Japanese history. In the feudal society of Edo, the urban space was strictly classified by top-down power into two parts: the *Yamanote* for the elite and *Shitamachi* for the ordinary people. The unequally divided living space and the separated spatial anthropology (Jinnai, 1995) in Edo decided open spaces (the materiality of *hiroba*) was not officially to be granted as the emblem of the unity and democracy of the state for the citizens. However, *hiroba* was turned from 'leftover' open spaces – *kūchi* (空地),

akichi (空き地), or *harappa* (原っぱ) – for other functions in or around residential alleys (figure 1.4), riverside, bridgehead (figure 1.5), and precincts of shrines (figure 1.6), etc. Those open spaces were creatively appropriated and collectively used for various activities as a non-private place for public life by local people (Waley, 1991; Jinnai, 1995; 2015; Sorensen, 2002). *Hiroba* was therefore generated from *kūchi* (open space) in a bottom-up way through *hiroba-ka,* turning the physically neutral space into a meaningful place (Aoki, 2004; Kitayama, Tsukamoto and Nishizawa, 2010; Jonas and Rahmann, 2014; Nagayama, 2015; Onodera, 2015; Maki and Makabe, 2019). Edo's public life in *hiroba-ka* open spaces was often vividly depicted in *sakariba* (busy places), *meisho* (famous places), and *matsuri* (festivals), addressing a diversity of scenes on collective living while neglecting the pursuit of many virtues cherished in Western public space in general, such as 'ownership', 'management', 'citizenship', 'democracy', 'right' and 'free', etc.

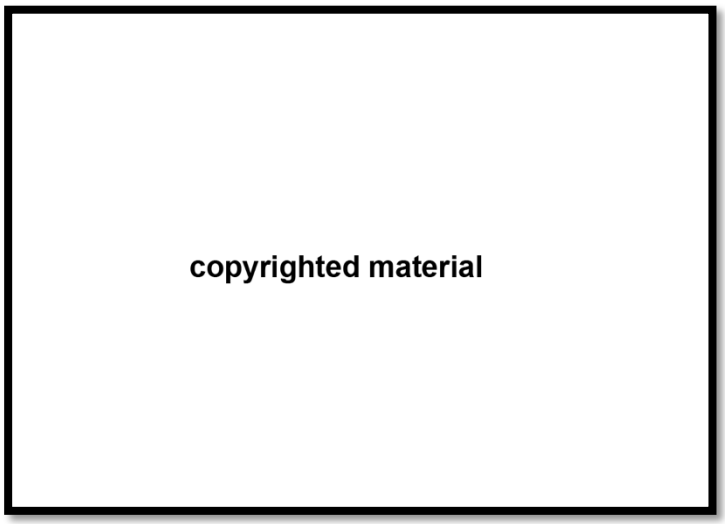
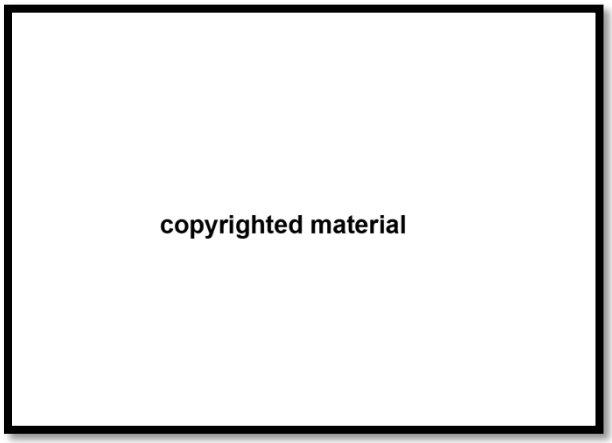


Figure 1.4 The open space around *idobata* (side of a well) and community shrine work as *hiroba* for public activities in a private residential area. (Source from: Jonas, 2007)



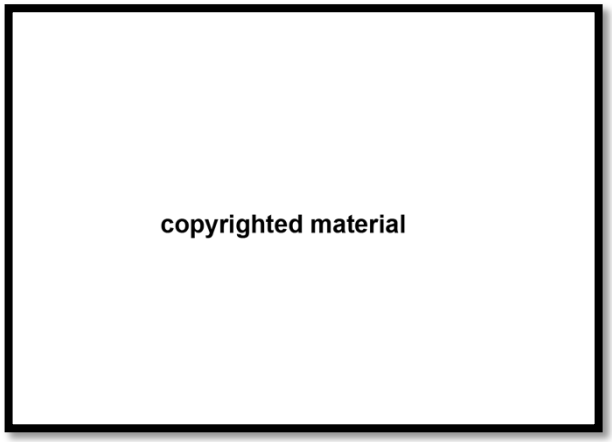


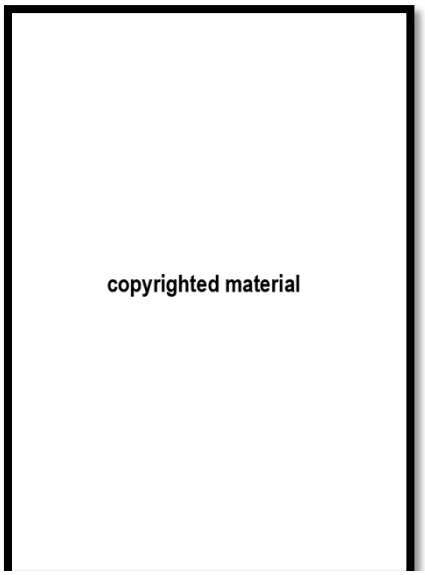
Figure 1.5 (left) *Hanabi taikai* at Ryōgokubashi. (Source from: Jinnai, 1992)
Figure 1.6 (right) The precinct of Asakusa Temple. (Source from: Yoshida, Nagashima and Itō, 2005)

Generally, two approaches (traditional and modern) were adopted in creating the physical setting of Japanese *hiroba* after Meiji. One is to adopt the Western public space typologies directly and adjust them with the open spaces inherited from the Edo through urban planning, for example, converting private gardens from the land of the emperor and previous feudal lords into parks, widening streets for broad avenues, and readjusting land for corner plazas around bridges and crossroads. The other way is to creatively generate open spaces within, around, or outside the buildings through architectural design for Japanese *hiroba* production (Kawamoto and Nakajima, 2013), especially during the rapid acceleration of urbanization in chasing and competing with

Western cities in the post-war period under various form of incentive zonings (Miura, 1993; Dimmer, 2013).

After World War II, Japan's embrace of democracy shifted the state power from the previous emperor to the *jinmin* (people), emphasizing the value of *taishū* (masses). Many architects and urban designers, including Kenzo Tange, intentionally applied *hiroba* (imitated Western-type *hiroba*) in their civic-minded design projects as an alternative to Western plazas or squares, practicing and reflecting the missing notion of 'public' by discovering appropriate formal and spatial languages. Many typologies were adopted in architectural design to shape various forms of open spaces for conceived Japanese *hiroba* (through *hiroba* as a traditional concept for formal derivation instead of the Western model of plaza or square based on formal imitation) within and around buildings with different functions, for example, the train 'station-front plazas' at city nodes connecting suburban to the city center, the 'corner plazas' of buildings in traffic road intersections (figure 1.7), the 'courtyards' and 'rooftop plazas' in the city halls (figure 1.8), the 'arcades' with canopy and 'promenades' in commercial streets between buildings, and the underground 'passageways', etc. (Cybriwsky, 1999; Kaijima, Kuroda and Tsukamoto, 2001; Koolhaas et al. 2011; Dimmer, 2013; Jinnai, 2015). Many urban conditions as causing factors from social, cultural, political, and economic dimensions still further propel and ask for the making of *hiroba* through open spaces in architectural design in Japan today. For example, the high-density city living, the scarce of open green space compared to other populous Western cities (Miao, 2001), and the skyrocketing land price in Tokyo urge Tokyoites to make full use of every inch of space. Japanese *hiroba*, therefore, is developed in a three-dimensional way in architecture. There are also political issues in Japanese history, which caused many 'workable public spaces' (*hiroba*) to appear 'interiors as an alternative to the (Western) plaza' in buildings in Japan (Isozaki, 2011, pp.78-80). Those different urban conditions stimulate new open space typologies in response to the changing form of typologies

(i.e., the materiality and the physical setting) in Japanese *hiroba* development, which the research wants to discover.



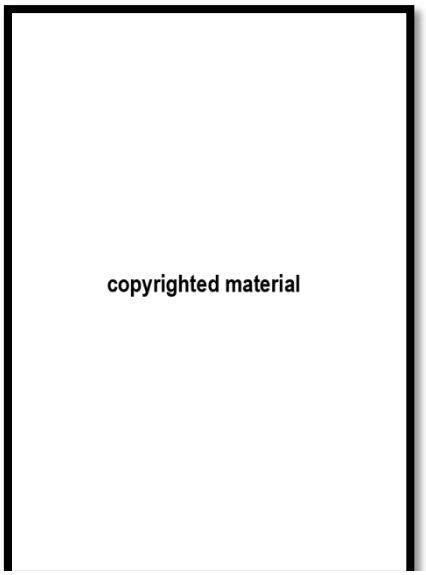


Figure 1.7 The corner *hiroba* of Sony Building with a tree at the intersectional road. (Source from: Sony Corporation, 1966)

Figure 1.8 The *hiroba* with Japanese garden style in Kagawa Prefectural City Hall. (Source from: Tange Associates, 1958a)

The position of Japanese *hiroba* in the research

In response to the complexities discussed on the meaning of coined Japanese public space – *kōkyō kūkan,* the prototype of its concept –*hiroba* and its physical form – open space*,* and their entangled relations with the notion of 'public' in Japan and public space in the Western sense, this research aims to figure them out by focusing on the typology and human behaviour (with regard to the three required conditions raised by Toshi dezain kenkyū-tai in the 1971 seminal work on Japanese *hiroba* study for generating Japanese *hiroba*) in *hiroba-ka* open space within Tokyo's contemporary architecture after the 1970s.[1]

[1] In an interview with Japanese architectural historian David B. Stewart carried out by the author at his office in Tokyo Institute of Technology on January 13th,2020, he answered there is no specific period for the

The thesis follows the historical discovery of Japanese *hiroba* studies by Watanabe (1969; 1970; 1971), Toshi dezain kenkyū-tai (1971), and Ueda (1973) in a chronological way from the primitive and medieval period to Edo and post-war Japan in the 1970s; comparative studies of Italian piazza (or Western plaza and square) and Japanese *hiroba* by Kato (1985), Miura (1993), Jinnai, Mitani and Itoi (1994) across the 1980s and 1990s; and the brief introduction of new types of Japanese *hiroba* through architectural design in relation to Western public space by Kuma and Jinnai (2015) in the 2000s without in-depth case studies. It continues to detail the three fundamental conditions in making Japanese *hiroba* through typology and human behaviour in *hiroba-ka* open spaces within Tokyo's contemporary architecture. Especially, the research pursues to resurrect the term of Japanese *hiroba* as the indigenous concept (*hiroba-ka* open space) instead of the imitated model imported from the West through globalization in the form of broad exterior open spaces of *shimin hiroba* (Isozaki, 2011; Sendai and Sekiya, 2015a; 2015b) and *ekimae hiroba* (Mizushima, Ambo and Itoi, 2004; Sakai, Hagishima and Arima, 2004; Yasumori et al., 2007; Yasumori, Sakamoto, and Terauchi, 2008; Inamochi and Okuyama, 2011; Toki and Kaijima, 2012; Tang, Kwak and Kitahara, 2012; Yamaguchi, Murota and Akaba, 2017), which have been much practiced and studied referring to the foreign concept, and to be misunderstood and regarded for granted as the prevalent image about Japanese *hiroba* (i.e. Western-type *hiroba*).

'contemporary', which means 'the latest', in Japanese architecture. The 'contemporary' used in this thesis refers to the architecture of Tokyo from the 1970s until today, according to Hiroshi Watanabe (2001). The year 1970, which was the opening of the Osaka World Exposition, marked the final significant national-scale events held by the Japanese government with intense patriotism and top-down bureaucratic leadership. Following that year, the administration power of the central government was gradually handed over to the local government and non-government institutions, especially after the 1990s.

1.2 Research Questions

1. What are the typologies applied in making the *hiroba-ka* open spaces within Tokyo's contemporary architecture?

2. What is the users' behaviour in the *hiroba-ka* open spaces within Tokyo's contemporary architecture?

3. What are the relations between the typology and human behaviour in generating the *hiroba-ka* open spaces and the notions of 'public' space in Japan behind their integration?

1.3 Research Aim and Objectives

The research aims to understand and evaluate the *hiroba-ka* open space within Tokyo's contemporary architecture and the notions of 'public' behind in Japanese 'public' space (*kōkyō kūkan)*.

The aim above is addressed by achieving the following six objectives:

1. Studying *kata* applied in creating the different forms of *hiroba-ka* open spaces within Tokyo's contemporary architecture through architectural design.

2. Finding out *ka* as the concept that give rise to the formation of *hiroba-ka* open spaces within Tokyo's contemporary architecture.

3. Exploring physical behaviour on both micro and macro scales in the *hiroba-ka* open spaces within Tokyo's contemporary architecture.

4. Knowing people's sensuality, demands and desires, and opinions in using the *hiroba-ka* open spaces within Tokyo's contemporary architecture.

5. Understanding the relations between typology, human behaviour, and their integration for the generation of *hiroba-ka* open spaces within Tokyo's contemporary architecture.

6. Rediscovering the Japanese *hiroba-ka* open spaces within Tokyo's contemporary architecture in use and the 'public' notions behind in relation to Japanese *kōkyō kūkan* and Western public space.

1.4 Research Methodology

1.4.1 The scope of the whole research methodological framework

In response to the two perspectives (typology and human behaviour), which are indispensable to establish and understand *hiroba* discussed in the research background, the whole research is designed under a methodological framework with the following five methods (1) literature review, (2) architectural composition analysis, (3) case study, (4) participant observation and (5) semi-structured interview in four stages.

Stage One:

Literature review is selected to achieve three main goals. Firstly, through investigating the evolution of Japanese *hiroba* in history, to find form considerations(*katachi*), spatial configuration and compositional elements (*kata*), and non-form factors (*ka*) that provide the physical settings of *hiroba* as well as the changing notions of 'public' behind. Secondly, through reviewing the architectural projects in Tokyo published in *The Japan Architects* (*JA*) magazines, to identify hypothesized compositional elements in *kata* which are applied to design the physical settings of *hiroba* in Tokyo's contemporary

architecture, preparing for the architectural composition analysis in the second stage. Thirdly, to acquire knowledge and understand the differences on typology, human behaviour through the literature from previous studies between Japan and the West.

Stage Two:

An 'architectural composition analysis map' on the *hiroba* in Tokyo's contemporary architecture is developed by the author based on Kazunari Sakamoto's *Studies of Architectural Composition* as the foundation.[2] The hypothesized compositional elements (spatial elements and attachment elements) in *kata,*[3] which is applied to design the physical settings of *hiroba-ka* open space in Tokyo's contemporary architecture, are extracted based on the 'architectural composition analysis map' (Appendix 2) in the first-round architectural composition analysis. These spatial elements and attachment elements are prepared for further examination of their spatial configuration and specific open space typologies in *hiroba-ka* open spaces through four case studies in stage three.

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[2] See more details in Chapter 2.2.3.

[3] Spatial elements provide open space for human activities and behaviour in making *hiroba*, such as 'atrium', 'plaza', 'courtyard', 'platform', etc. Those spatial elements are from the architectural elements under Western Modernism languages and applied in the design of Tokyo's contemporary architecture. Attachment elements, such as furniture (table, chair, bench, food cart, parasol), greens (trees, grass, pot plant), constructions (tori gate, shrine, column), signs, water, lightings, etc. that assist spatial elements, informing the potential use of *hiroba* and contribute to the construction of the physical setting of *hiroba*.

Stage Three:

The field works of the four chosen case studies are carried out. Participant observation is selected to collect data on the users' physical behaviour in the *hiroba-ka* open space of the four case studies without impacting their activities in a natural setting. Participant observation method is also used to investigate spatial configurations of extracted compositional elements in *kata* from architectural composition analysis in Stage Two. Users' physical behaviour is observed and recorded on notes, drawings, and photos to examine whether the hypothesized compositional elements in *kata* help to develop the physical settings of *hiroba* (open space) for people to use. The process of how *hiroba* is generated through the interaction between *hiroba's* open space typology and uses' physical behaviour is also learned through observations.

The semi-structured interviews with the users in the *hiroba-ka* open spaces of the four chosen case studies are conducted for learning their regular behaviour and usage patterns in cooperating with the participant observations. The semi-structured interviews with the developers (or managers) of the four chosen case studies are carried out to inquire data on non-form factors *ka* in shaping the physical settings of *hiroba* and thoughts and rules that influence users' behaviour in *hiroba*. The semi-structured interviews with the chief architects of the four chosen case studies help to know *ka* and *kata* in their design of the *hiroba* and the initial considerations on human behaviour planning.

Stage Four:

The raw data collected from the interviews in three groups: (1) developers (or managers), (2) chief architects, and (3) users in stage three are gathered, transcribed, interpreted, and coded to find out non-form factors in *ka,* compositional elements and spatial configurations in *kata,* and the general patterns of users' behaviour in *hiroba-ka* open space in Tokyo's contemporary architecture. The second-round architectural composition analysis of the *hiroba-ka* open space of the four case studies is conducted

to generate specific open space typologies within each case. A third-round architectural composition analysis gathers the typological findings in the second round and further leads to a final collection of open space typologies in making the Japanese *hiroba* within Tokyo's contemporary architecture in the research. The spatial characters and meanings in those open space typologies are investigated. Observation data from notes, drawings, and photos are analysed based on the users' interactions with the physical settings of *hiroba* by depicting the users' body gestures, appropriations, and movements on a micro scale, and contents of activities and their process on a macro scale. Based on that, the relationships between typology and human behaviour are determined. The spatial configurations of the compositional elements in *kata* of the four chosen cases are analysed through the circulations and sightlines of the users. The results are then synthesised with spatial configurations in *kata* derived from the interviews with architects and developers (or managers) in the previous steps. Japanese *hiroba* is evaluated in relation to the Western public space based on the notions of 'public' behind the *hiroba* (as space of representations), the users' behaviour (as spatial practice) in *hiroba*, and the physical settings of *hiroba* based on typology–*ka* and *kata* (as representations of space).

1.4.2 The selection and design of research methods for the research

Literature Review

The reasons for selecting this method for two purposes: First, to identify the research gaps and generate research questions. Second, to acquire background information and knowledge on the researched topics in responding to the research questions. The types of literature collected in the research are classified into five categories: (1) Literature on *hiroba* and public space in Japan. This kind of literature is used to have a retrospective review of the concept of *hiroba*, the evolution of *hiroba* typologies in

Japan, and the related notions of ‘public’ behind in the Japanese history. It provides the context for evaluating and discussing of the *hiroba* in Tokyo’s contemporary architecture in the conclusion part. (2) Literature on place-making in global open space studies to respond to *hiroba-ka* open space in the research. It helps to know the value of open space on different dimensions, the perspectives researcher chose in exploring and assessing open space, and the methods applied in the historical open space research, which are applicable in the current research. (3) Literature on typology in architecture and urban studies. This kind of literature helps to discover the differences on the form reasoning concerning typology and its application between Japan and the West. It also contributes to developing of ‘architectural composition analysis map’ on *hiroba* in Tokyo’s contemporary architecture based on Kazunari Sakamoto’s *Architectural Composition* method as the foundation. (4) Literature on the environment behaviour studies. Especially the methods, tools, and perspectives in environment behaviour studies and their applications in the public space research on users. It helps to choose research angles and appropriate methods to carry out case study on human behaviour in the fieldwork. (5) Literature on the information of architectural projects published in *JA* magazine. Projects’ texts, photos, and drawing plans about the *hiroba* in Tokyo’s contemporary architecture published after the 2000s (when the government began to start urban renaissance projects in Tokyo, and most of the newly generated public spaces are from architectural projects) are reviewed. A series of compositional elements (including spatial elements and attachment elements) hypothesized to help to form the physical settings of the *hiroba* in Tokyo’s contemporary architecture are identified through the architectural composition analysis.

Architectural composition analysis

The primary purpose of adopting the method is to extract hypothesized compositional elements (spatial elements and attachment elements) in *kata* used for designing the physical settings of Japanese *hiroba* (open space) in Tokyo’s contemporary architecture. It prepares for further examination of whether the hypothesized

compositional elements help to develop the physical settings of the Japanese *hiroba* in the case study. An 'architectural composition analysis map' on *hiroba-ka* open space in Tokyo's contemporary architecture is developed by the author based on the Kazunari Sakamoto et al. (2012)'s *Studies of Architectural Composition* as the foundation.[4] On the one hand, it is made to tackle *hiroba* typology through architectural design in a three-dimensional approach (on different levels: under the ground, on the ground, and above the ground and with different inside-outside relations: exterior space, semi-exterior, and interior space), which is different from the conventional Western-type *hiroba* typology on the ground level and in the form of exterior open space in Japanese history. On the other hand, there are differences between Japan and the West on typology mentioned previously. The architectural composition analysis is fit to the Japanese *hiroba* discovery under the Japanese context. Through the literature review of the published architectural projects on the *JA* magazines, many spatial elements and attachment elements hypothesized to develop the physical settings of *hiroba-ka* open space are extracted. To take some examples, such as the spatial element of 'platform' in the project of Toranomon Hills (*JA* 96) (figure 1.9), the spatial elements of 'plaza' and 'courtyard' in the design of Hillside Terrace (*JA* 36), Sarugaku (*JA* 72) (figure 1.10), and Daikanyama Tsutaya Books (*JA* 88), the spatial element of outdoor 'staircase' in the design of La Kagu (*JA* 104) (figure 1.11), etc. A total of 135 completed architectural projects in Tokyo published on *JA* magazine are selected and coded based on the categories of 'position on the block', 'position on the site', 'volume typology', 'spatial position', 'volume manipulation', 'spatial form' and 'on-site elements' according to the 'architectural composition analysis map'. Besides the spatial elements, many attachment elements (such as 'water', 'table', 'seating', 'tree', 'grass', etc.) are extracted. The spatial elements and attachment elements with the most occurrences are quantitatively counted and extracted. They are brought to the four case studies for

[4] See Appendix 2 about 'architectural composition analysis map'.

the second-round architectural composition analysis through a set of criteria based on characters significant for defining the spatial composition of open space. By collecting the second-round findings in architectural composition analysis from each case study, a third round of architectural composition analysis in the conclusion chapter further discovers the open space typologies of *hiroba* in four cases together and interprets the spatial meanings and characters in the finally classified open space typologies.

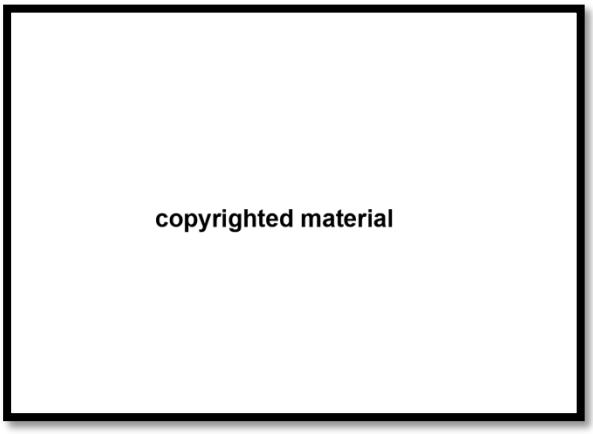


Figure 1.9 The elevated green *hiroba* of Toranomon Hills is created through the spatial element of 'platform' (left); many outdoor activities, such as the yoga course (right), were held there. (Source from: CTBUH, 2014)

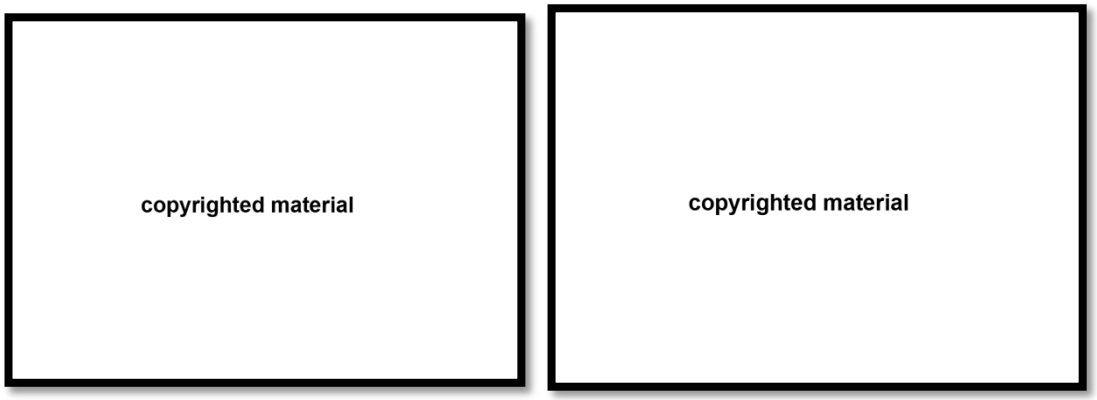


Figure 1.10 (left) The *hiroba* of Sarugaku is designed based on the spatial element of 'courtyard'. (Source from: ArchDaily, 2007)

Figure 1.11 (right) The *hiroba* of La Kagu is designed based on the spatial element of 'staircase'. (Source from: Kengo Kuma & Associates,2014)

Case Study

There are three purposes for selecting the method. First, to examine the extracted spatial elements and attachment elements on whether they help to build the physical settings of the *hiroba* in the case study. Second, to explore the spatial configurations of them, knowing the *kata* of the *hiroba* through the case study. Third, to study the relationships between typology and behaviour and their interactions in generating *hiroba* in the case study.

Four case studies are Fumihiko Maki's Hillside Terrace (1969-1992), Itsuko Hasegawa's Sumida Culture Factory (1994), Riken Yamamoto's Shinonome Canal Court (2003-2005), Hiroshi Nakamura's Tokyu Plaza Omotesando Harajuku (2012). The criteria for choosing the four cases are listed below:

(1) According to the result based on the coded statistic data list (Appendix 3) in the first-round architectural composition analysis (Appendix 2) from the 135 published projects (Appendix 1) in Tokyo in The Japan Architect (JA), a series of spatial elements and attachment elements repeatedly applied in making *hiroba-ka* open spaces within Tokyo's contemporary architecture across different functional building types are found in figure 2.44 in Chapter 2. Those spatial elements and attachment elements are hypothesized to develop the physical settings of *hiroba-ka* open space in Tokyo's contemporary architecture. The chosen four cases cover all the extracted spatial elements and attachment elements discussed above in the first-round architectural composition analysis (Appendix 4). The hypothesis of those spatial elements and attachment elements can be examined in the four case studies for justification and drawing further typological conclusions in the second and third rounds of architectural composition analysis.

(2) The ownership status of the four cases are different and cover the three general

types of land ownership in Japan dated from Meiji government in 1873 argued by Matsuo (2018) from the law perspective: 1. *kan'yū-chi* (官有地, state-owned land) 2. *min'yū-chi* (民有地, private land) 3. *kyōyū-chi* (共有地, land owned by the local public organizations in a situation between *kan'yū-chi* and *min'yū-chi*). Hillside Terrace is owned by a private family (i.e., *min'yū-chi*); Sumida Culture Factory is owned by the government (i.e., *kan'yū-chi*); Shinonome Canal Court is owned by a semi-government organization UR (i.e., *kyōyū-chi*);[5] Tokyu Plaza Omotesando Harajuku is owned by a private company (i.e., *min'yū-chi*). The meaning of 'public' behind *hiroba-ka* open spaces of four cases can be explored and reflected through the relation between the differences in public-private ownership status of *hiroba* and the users' public use status in terms of human behaviour.

(3) The four projects are on different architectural compositions and scales, with different dense of landscape, and with open spaces on different levels and indoor-outdoor relationships. Tokyu Plaza Omotesando Harajuku is an individual building with one architectural volume on a single plot. Sumida Culture Factory is an individual building with three connected architectural volumes on a single plot. Hillside Terrace has separated buildings developed in different phases on two separate plots. Shinonome Canal Court contains several buildings on one superblock composed of six individual blocks. The differences between the four cases in architectural composition and scale can largely represent Tokyo's contemporary architecture, which can be included in the three types of volume

[5] Urban Renaissance Agency (UR) was initially a public government organization established in 1955 as Japan Housing Corporation to address housing shortages after World War II. In 2004, it revolved into an institution for urban redevelopment and regeneration as an independent administrative institution while still having a close association with the Japanese government for many national projects today.

typology (single, connection, and disperse) mentioned in the architectural composition analysis map in Appendix 2 with different scales. Hillside terrace and Tokyu Plaza Omotesando Harajuku own abundant landscape background inherited from historical site of Daikanyama area and Omotesando. Shinonome Canal Court is built on a landfilled site around the waterfront as a 'new' city under modern planning between natural and artificial landscape. Sumida Culture Factory is in the not-well-developed and decayed *shitamachi*, where open space and landscape are hardly found there in a dense condition. Four cases include *hiroba-ka* open spaces on different levels (the underground, the ground, and the above-ground levels) and indoor-outdoor relations (exterior, semi-exterior, and interior conditions).

(4) The four projects were built from different periods: Hillside Terrace was started to build in the 1960s until the 1990s with *hiroba-ka* open spaces built in the 1960s, the 1970s, the 1980s and the 1990s in different phases; Sumida Culture Factory was built in the 1990s; Shinonome Canal Court was built in the 2000s; Tokyu Plaza Omotesando Harajuku was built in the 2010s. Four cases together complement each other and provide a continuous study of the Japanese *hiroba* within Tokyo's contemporary architecture built at different times after the 1970s, which is a period regarded as the benchmark of the 'contemporary' period in Japanese architectural development (Watanabe, 2001). Japanese *hiroba* discovered through four chosen cases built after the 1970s respond to the thesis title '*hiroba-ka* open space in Tokyo's contemporary architecture'.

(5) Architects' design theories or concepts (Fumihiko Maki's *oku* from the late 1970s to the beginning of the 1980s, Itsuko Hasegawa's *harappa* from the late 1980s to the 1990s , Riken Yamamoto's *shikii* from the 2000s, and Hiroshi Nakamura's *furumai* in the 2010s) in four case studies are succeeding exploration of the uniqueness of Japanese spatial culture in urban space design following the

‘movement to embrace elements of traditional townscapes that had been lost as rational urban planning took hold from the mid-1950s to the mid-1970s’ (Oshima, 2016) firstly led by the Toshi dezain kenkyū-tai’s rediscovering of Japanese urban space (Toshi dezain kenkyū-tai, 1968) in general and Japanese *hiroba* (Toshi dezain kenkyū-tai, 1971) in specific. The design theories or concepts in four chosen cases inherited from Japanese traditional culture influence the formation and the spatial characters of *hiroba-ka* open space development within Tokyo’s contemporary architecture in the different periods after the 1970s. These four theories and concepts are related to the typology of *hiroba-ka* open space: *oku* and *shikii* relate to the position and indoor-outdoor relations of *hiroba-ka* open space; *harappa* relates to the formation of the physical setting and free atmosphere of *hiroba-ka* open space; *furumai* relates to the action and process of *hiroba-ka* in *hiroba-ka* open space.

In summary, four cases are chosen as they meet the above-discussed five criteria. The research hypothesizes that even with so many differences between the four projects discussed above, four cases still share similar open space typologies through architectural design in building the physical settings of *hiroba-ka* open space within Tokyo’s contemporary architecture. The shared *hiroba-ka* open space typologies are asked for in the research question of the thesis. If the hypothesis is incorrect, the differences above can be investigated on whether those differences impact the form of *hiroba*. Based on these reasons, the four projects are chosen.

Participant Observation:

Participant observation can guarantee that the users in *hiroba* do not notice they are observed. It helps to acquire human behaviour with more natural responses to the surrounding environment. Moreover, participant observation creates opportunities to build connections and get familiar with potential interviewees through talks before formal interviews. It helps to dig out more in-depth answers to inquired questions later.

The on-site observations are carried out several times within one year to gain a comprehensive understanding of users' behaviour on different days of different seasons and cover some important days for planned *matsuri* posted in advance online (table1.1). Users' physical actions in human behaviour are observed focusing on its interactions with the environment (especially the physical settings shaped by the spatial elements and attachment elements in *kata* extracted from the architectural composition analysis) of the *hiroba* in the four case studies from following two scales: (1) On a micro scale addressing on the body, such as facial expressions, gestures, positions, consciously and unconsciously actions, appropriations, and movements in relation to the environment. (2) On a macro scale focusing on activities, such as the types of activities, processes, numbers of people, durations, and frequencies. The human behaviour data collected on-site is recorded in the forms of notes, sketches, photos, and videos, which are widely used by many researchers previously (Whyte, 1980; Fujimori, 1987; Jacobs, 1992; Akasegawa, Fujimori and Minami, 1993; Gehl, 2013) in human behaviour studies.

Table 1.1 The observation dates in the four case studies. (Source from: drawn by the author)

Time / Building	2019								2020
	April	May	July	August	September	October	November	December	January
Hillside Terrace		5th, 21st	20th	8th, 24th	21st	13rd, 14th	3rd, 9th	6th	
Sumida Culture Factory		29th		29th		26th	7th, 10th		
Shinonome Canal Court	25th					1st, 6th		14th, 21st	
Tokyu Plaza Omotesando Harajuku		1st, 23rd		31st		26th	3rd	4th	5th

For data analysis, users' behaviour and activities recorded from notes, sketches, photos, and videos are gathered and coded in terms of the locations of different *hiroba*. Behaviour within one location is further classified and studied on the perspectives of the body on a micro scale and activities from a macro scale. The factors that influence

users' behaviour are extracted. The relations between the factors and users' behaviour are interpreted through texts and diagrams accompanied by annotations. These factors are further combined to have a discussion of their relations to the form and typology (*ka* and *kata*). The relations between typology and behaviour are studied by assorting the previous coded behaviour according to related spatial elements and attachment elements into one table. Their integration in relation to *hiroba* is depicted by the process of *hiroba-ka* on how the physical settings of *hiroba* based on spatial elements and attachment elements are activated by users' body actions and activities. The spatial configurations of the spatial elements and the attachment elements in *hiroba* are discovered and analysed through users' circulations and sightlines as two threads based on on-site observations.

Potential ethic issues are considered. Observations are carried out in public settings with both visually and physically accessible space under the permission of the management policies on site. Therefore, the users' and the researcher's privacy and safety are secured and guaranteed. Participant observation helps the researcher be well covert as one of the users, avoiding causing users any uncomfortable reactions. The collected data through participant observation is well kept and locked in the cabinet in the office, with a digital copy stored in the researcher's personal laptop placed in a safe place. All descriptive information on the observation data is anonymous in case of disclosing any information about the observed users.

Semi-structured Interview:

Semi-structured interview is chosen for answering the two research questions in the thesis. First, to know the typologies (*ka* and *kata*) in shaping the physical settings of *hiroba*. Second, to learn human behaviour (actions and perceptions) of the users in *hiroba.* Perceptions including sensuality perceived from five senses and phycological activities (demands, desires, and opinions in use) in dialogue with the environment, which can reversely influence physical behaviour.

Semi-structured interview is carried out for acquiring data from three groups of actors: (1) Developers or managers of the building, who have decisions in planning *hiroba* or making rules to manage users' behaviour in the building. (2) Chief architects in designing the *hiroba.* (3) Users in *hiroba.* Information acquired from the three groups of actors is helpful to understand the process of making *hiroba* in response to the three conditions in forming *hiroba.* It also contributes to the understanding and evaluation of *hiroba* by interpreting *hiroba* through 'space of representations' (from developers or managers), 'representations of space' (from chief architects), and 'spatial practice' (from users), according to Lefebvre's (1991) conceptual triad on the production of social space.

Semi-structured interviews with users are conducted in the different *hiroba-ka* open spaces of the building on different days in each case study. Details on dates of interviews with users can be found in table 1.2. Five main semi-structured interview questions for users can be found in Appendix 5. Participants of the users' group are chosen on site based on the observations of their behaviour. In terms of the categories of actions and activities, users on-site were classified into different groups. One representative user is chosen within each group as an interview participant for around fifteen-minutes interviews. At least ten interviewees are included in each case study. The Interviews with the developers (or managers) and the chief architects of the buildings in the four case studies are carried out in different days (table 1.3) and with specific interview questions for different interviewees (see Appendix 6 and 7).

Table 1.2 The interview dates with the users in the four case studies. (Source from: drawn by the author)

Time / Building	2019						2020	Interviewees
	May	August	September	October	November	December	March	
Hillside Terrace	5th		21st	13rd, 14th				13
Sumida Culture Factory		29th			7th, 10th			12
Shinonome Canal Court				20th		14th, 21st		10
Tokyu Plaza Omotesando Harajuku		31st					15th	18

Table 1.3 The interview dates and places with the developers (or manages) and the chief architects in the four case studies. (Source from: drawn by the author)

Interview / Building	Landowner or Manager			Architect		
	Time	Place	People	Time	Place	People
Hillside Terrace	May 5th, 2019	Central plaza in Hillside Terrace, Tokyo	Developer Asakura Kengo	July 21st, 2019	Waseda University, Tokyo	Fumihiko Maki
Sumida Culture Factory	Aug 29th, 2019	Sumida Culture Factory office, Tokyo	Anonymous Manager	Mar 18th, 2020	Itsuko Hasegawa Atelier, Tokyo	Itsuko Hasegawa
Shinonome Canal Court	Dec 21st, 2019	Shinonome Canal Court leasing office, Tokyo	Manager Nakagawa	Feb 8th , 2020	Riken Yamamoto & Fieldshop, Yokohama	Riken Yamamoto
Tokyu Plaza Omotesando Harajuku	Feb13rd, 2020	Tokyu Corporation Urban Development Division, Tokyo	Manager Wakatsu & Suga	Feb 5th, 2020	Nakamura & NAP, Tokyo	Hiroshi Nakamura

In the data analysis process, recorded audios of interviews are transcribed firstly. Secondly, the related answers sorted to accord with the main questions are then categorized and assembled (see Appendix 5, 6, 7). Thirdly, the processed interview data in the second step is coded by finding keywords from answers of different users to the same questions. These extracted keywords are further gathered, classified, comprehended, and grouped as a representative interpretation of the questions in the four case studies.

Potential ethic issues are considered. The interview questions do not involve any sensitive or private topics for the interviewees. The interviewees can skip questions that he or she does not want to answer, or even abandon the interview without any reason. Before conducting any interview, the ‘participant information sheet’ (Appendix

9) is introduced with explanations by the interviewer for potential interviewees to know what the study is. A 'consent form' (Appendix 10) is read, understood, and signed by the potential interviewees before taking part in the interview in the next step. Interview data is well stored without the disclosure of any private information of the interviewees. For potential participants involving elderly people, their ability to attend the research is double-checked; otherwise, he or she is discarded from the interview. For possible participants involving children, consent from their parents or interviewing their parents as an alternative way for acquiring data (if necessary) is adopted.

1.5 Research Contribution and Significance

1. The research figures out the entangled relations between the Japanese *hiroba,* open space, *kōkyō kūkan,* and the Western public space in history, which have not been associated and discussed in depth before. It helps to comprehend a different understanding and making of 'public' space (*hiroba*) in Japan, contributing to the public space study in different geographical and socio-cultural contexts.

2. The research continues the previous *hiroba* studies in Japan dated back to the 1970s with a particular focus on *hiroba-ka* open space in contemporary Japanese architecture from the perspectives of typology and human behavior in detail based on three required conditions for Japanese *hiroba* making. It helps to resurrect the term of *hiroba* (ひろば) in *hiragana* as a concept or idea in Japanese-type *hiroba* (日本型広場) or Japanese *hiroba* (日本の広場), instead of *hiroba* (広場) usually in *kanji* as a model through formal imitation imported from the Western-type *hiroba* (西欧型広場) and later applied in Japan.

3. The study reveals and explains how the foreign culture influences and later integrates with local Japanese culture, as well as how Japan-ness is inherited as a tradition through the lens of the evolving typologies in Japanese *hiroba* making.

4. The study confirms the significance of the integration of typology and human behaviour in the generation of Japanese *hiroba (hiroba-ka* open space*)*. It explains in detail about the *hiroba-ka* process through time in the open space of Tokyo's contemporary architecture in four case studies, which was not much illustrated in previous studies. It also re-addresses the different architectonic wills between the Western (constructive and objective) and Japanese architecture (spatial and performative) through highlighting human behaviour as a non-form attribute in shaping Japanese understanding of space, typology, and *hiroba*.

5. The research explains the differences and associations between Japanese interpreting of form through *ka, kata,* and *katachi* and Western theories on form and the form reasoning from prototype, typology, and model. Methods on analysing form in the West (typological analysis in study typology) and Japan (architectural composition in study *kata*) are compared.

6. The understanding of non-form factors *ka*, and spatial elements and attachment elements in *kata* detected from the research can be applied to guide the design of the physical settings of Japanese *hiroba* (*hiroba-ka* open space) in future architectural practice.

1.6 Thesis Structure

The whole thesis consists of eight chapters and is arranged as follows:

Chapter 1: Introduction

This chapter introduces the background and motivation of the research and provides an overview of the research topic, methodology, and contributions in the study. Research questions are raised to focus on the research subject *hiroba-ka* open space (the prototype of Japanese public space) in Tokyo's contemporary architecture. The *hiroba* is explored from the two perspectives of typology and human behaviour, which

accord with the three required conditions (1. desire of using, 2. a physically provided open space, 3. available in use) in generating Japanese *hiroba*. The research aims to comprehensively understand Japanese *hiroba* through its typology in form, users' behaviour in use, and the notions of 'public' behind it in relation to the open space, Japanese *kōkyō kūkan,* and Western public space. Detailed objectives are put forward according to the research questions under the research aim. The abstract of each chapter is listed at the end of the introduction chapter. The rationality of structuring the thesis is outlined based on a sequential logic of choosing research topics and raising research questions in Chapter 1; literature review to learn research perspectives, findings, and methods borrowed from related previous studies globally in Chapter 2; Japanese context provision for locating the current research gaps and positions in history in Chapter 3; case studies chosen for detailed exploration of researched topics and questions in Chapter 4, 5, 6 and 7; and weaving the findings in previous chapters for a final summary and conclusion in Chapter 8.

Chapter 2: Literature review on open space, typology, and environment behaviour study

This chapter focuses on literature review in three parts: open space, typology, and environment behaviour studies. The significance, meaning, and value of open space study are explained; the trend of global open space study is summarised in three main themes (physical form, human behaviour, and meaning, image and value) through place-making. Various open space classified by typologies (street and avenue, plaza and square, park and garden, waterfront, unnoticed small open space, open space system, and open space within, between, and around buildings) is reviewed by scholars from different countries from the perspectives of above discussed three themes. Methods applied in the research were explored. The concept of typology, its applications, and related knowledge, theories, and methods on form in the previous studies are explored. The differences in typology and form-shaping process between Japan and the West are discussed and highlighted. The research perspectives and

methods in the environment behaviour studies and their applications in the urban research in Japan are investigated.

Based on the review of the theoretical discussion of typology, the 'architectural composition analysis map' on *hiroba-ka* open space within Tokyo's contemporary architecture is developed by the author based on Japanese scholar Kazunari Sakamoto's *Architectural Composition*. The first-round architectural composition analysis of *hiroba-ka* open space within Tokyo's contemporary architecture is carried out based on the 135 projects in *JA* magazine published from 2000 to 2018 (*JA* 36 to *JA* 109). A series of spatial elements and attachment elements hypothesized to create the physical settings of *hiroba* (open space) within Tokyo's contemporary architecture are extracted. Four case studies covering the most occurrences of spatial elements and attachment elements in the first-round architectural composition analysis are chosen. Further explorations of specific open space typologies of *hiroba* in contemporary Japanese architecture in each of the four case studies are carried out in Chapters 4, 5, 6, and 7, respectively, for second-round architectural composition analysis. A third-round architectural composition analysis in the conclusion chapter brings the second-round findings in four cases together, leading to the final summary of open space typologies of architectural *hiroba* in the research.

Chapter 3: 'Public' space, *hiroba* and the notions of 'public' behind

This chapter gives a retrospective review of the typological evolution of the Japanese *hiroba* development in four different historical periods: Edo (1603-1867), Meiji to Showa (1868-1939), post-war years until the Osaka Exposition (1945-1970), after Osaka Exposition to today (1970-). It aims to understand Japanese public space development and its very concept –*hiroba* (*hiroba-ka* open space), which literally means broad open space and is usually regarded as functionally equal to the Western plaza or square but different from it as the prototype of indigenous public space in Japan. Examples of different *hiroba-ka* open space typologies in different periods

based on the different ways of making the physical settings of *hiroba* through *kūchi* (open space) are listed and explained in parallel with the social, cultural, political, and economic backgrounds as the non-form factors *ka*. Based on Henri Lefebvre's conceptual triad on the social production of space, through discovering *hiroba-ka* open space typologies as 'representations of public space' and people's behaviour and activities through spatial practice as 'perceived public space', the 'representational space' of Japanese *hiroba* and the changing notions of 'public' behind it can be found, critiqued, and evaluated.

The chapter confirms the significant role of the non-form factors *ka* in shaping the *hiroba* as a concept, especially the changing notions of 'public' in different periods. The chapter re-addresses the differences and associations between Japanese *hiroba, kōkyō kūkan,* and the Western public space. It also highlights the latter's influences on the former, resulting in the Japanese *hiroba* with the hybridization of both traditional and foreign thoughts as something in-between. Besides the struggle in gradually absorbing the Western ideas of 'public'*,* the chapter argues Japan also cultivates new notions for its own understanding of the 'public' (*kōkyō)* today.

Chapter 4, 5, 6, 7: Four case studies

These four chapters discover and evaluate *hiroba* in Tokyo's contemporary architecture in four case studies from the perspectives of typology (*ka* and *kata*) and human behaviour (actions and perceptions). The context of each project is introduced in each chapter to understand non-form factors shaping typologies of *hiroba*. The four architects' related concepts and theories (*oku, harappa, shikii, furumai*) that influence the formation of *hiroba* through architectural design are studied. The spatial elements and attachment elements of *hiroba* extracted from the architectural composition analysis in Chapter 2 are explored concerning users' human behaviour through observation to understand their relations in generating *hiroba-ka* open spaces in architecture. The typology of those *hiroba-ka* open spaces in each case study is

explored through a second-round architectural composition analysis. Interviews with three groups of actors – (1) developers or managers, (2) chief architects, and (3) users– in the four case studies are conducted to investigate the generation of *hiroba-ka* open spaces through typology and human behaviour in architectural design and planning.

Interviews found users have a strong demand and desire for using architectural *hiroba* in four case studies*,* whether for daily activities or organized events and festivals at a specific time. The landowner's initiatives for events, rules made by managers, and architects' pre-design considerations on potential activities are decisive for the human behaviour within *hiroba.* As a result, they indirectly influence the typologies of *hiroba-ka* open spaces reversely as external non-form factors *ka*. The form of *hiroba-ka* open space in the research is the natural result of these external non-form factors and internal form considerations, reflecting the influences of the Japanese architectonic wills of spatial and performative. Observations find that the compositional elements of *hiroba-ka* open spaces are arranged in the three layers (exterior, semi-exterior, and interior) of the four building projects. The compositional elements are connected mainly through users' circulations and sightlines into a system. Compositional elements applied in the design through the architectural language under Western Modernism provide physical settings of *hiroba* (i.e., open space in the building). Human behaviour activates *kūchi* with activities and events under the process of *hiroba-ka*, turning the neutral, open space into *hiroba* as a meaningful place filled with people's collective activities. With this regard, the study argues *hiroba-ka* open space within contemporary Japanese architecture is not only defined as a static form (i.e., open space) but also created by human behaviour in an invisible, borderless, and dynamic form changing through time (i.e., *hiroba-ka*).

Chapter 8: Conclusions

This chapter summarizes the overall findings of the whole research on *hiroba-ka* open space in Tokyo's contemporary architecture in three parts: (1) typology, (2) human behaviour and its relations and integrations with typology in generating *hiroba* in Tokyo's contemporary architecture*,* and (3) the interpretation of *hiroba* and the notions of 'public' behind it in association with the Japanese *kōkyō kūkan* and Western public space. It found that the external non-form factors as *ka* play significant roles in shaping the form of *hiroba* (derived from a concept) by considering human behaviour and related activities rather than reasonings on form internally. The primitive state of form *ka* is further developed into *kata* based on the compositional elements (including a series of detected spatial elements and attachment elements) and their spatial configurations in the architectural composition. A statistical analysis of those compositional elements in the four case studies is summarized. A third round of architectural composition analysis in the conclusion chapter further discovers the open space typologies of *hiroba* within Tokyo's contemporary architecture by collecting previous findings from four cases together. The conclusion chapter then interprets the spatial meanings and characters in the finally classified open space typologies.

The research re-addresses the importance of the three required conditions (open space, desires of using, and activities) in generating Japanese *hiroba. Hiroba* is initiated and activated by the users' behaviour, and it needs the physical settings of open space provided by typology as a platform to contain people's activities. Typology does not directly lead to (but assists) the formation of *hiroba,* and typology itself is influenced by human behaviour on its formal reasoning. Human behaviour adds an invisible but tangible layer in addition to the concrete shape of *hiroba* formed based on typology. The formation of Japanese *hiroba* represents a hazy, vague, borderless, and amorphous form changing through time, similar to the presence of *hi* as spirit (Isozaki, 2011). The thesis, therefore, argues that Japanese *hiroba* in architecture is defined by the integration of both typology and human behaviour.

The *hiroba-ka* open space in Tokyo's contemporary architecture is interpreted and evaluated in terms of its social roles oriented by public government and private developers, conceived form by architects, and spatial practice by users based on Lefebvre's conceptual triad on the social production of space. A comprehensive overview of the notions of 'public' behind the *hiroba-ka* open space in Tokyo's contemporary architecture is re-evaluated by bringing the findings from observations and interviews in four case studies into the discussion of Japanese *hiroba's* historical evolution in Chapter 3. The study emphasizes the differences and associations between Japanese *hiroba, kōkyō kūkan*, Western Plaza or square, and public space. It argues that different from the lament on the fall of public space in most of the Western cities, Japan as a country that lacks the notion of 'public' and spatial conditions to provide public space in the Western sense, from a long and historical overview, has made a considerable achievement both in quantity and quality today through the making of the Japanese *hiroba* and *kōkyō kūkan* as the alternative. Japan has developed its own interpretation of 'public' (*kōkyō*) and its unique form based on *hiroba* (as a concept rather than a form), which shows the Japan-ness inherited from culture and tradition and adapted to the changing society through time. Research limitations and implications for future research are presented at the end.

Chapter 2. Literature review on open space, typology, and environment behaviour study

2.1 Place-making in Open Space Study

2.1.1 Introduction

This chapter draws an analogy of '*hiroba-ka* open space' (i.e., Japanese *hiroba*) and 'place-making in open space' within development studied by scholars with different analysis perspectives using different methods globally.

Hiroba-ka, in the introduction chapter, is described as the action and process of people for carrying out their demanded activities in an open space. By introducing of human behaviour within the physical setting of open space, the *hiroba-ka* process helps to turn and activate a neutral 'open space' into a lively 'place' binding with people and activities, and even further linking to Japanese cultural and socio-political history behind open space. The '*hiroba-ka*' is similar to the concept of 'place-making' in open space in comparison, on which the discussion of Chapter 2.1 is based and developed.

2.1.2 Place-making

The sense of place comes from the engagement of people; its formation is based on people's perceptions, emotions, and experiences when perceiving space (Hay, 1988). Among the much literature on the concept of place in the fields of geography and humanities, Yi-Fu Tuan and Edward Relph had a significant influence on the formation of the 'place' concept. In his book Topophilia, Tuan (1974) states that topophilia is the emotional and experiential connection between people and places or environments, pointing out that the meaning of the place has a connection with people. In addition, Tuan (1977, p.6) further clarifies the relation of space and place by saying '"space" is more abstract than "place". What begins as undifferentiated space becomes place as we get to know it better and endow it with value'. Relph (1999) defines place-making as a spatial attachment and a close relationship with human beings through their behaviour interactions in transforming a space into a place with meanings, identities,

belonging, memories, and feelings, etc. He summarised three components for persistent identity which allow the identity of place to be differentiated from others: (1) 'the place's physical setting'; (2) 'its activities, situations, and events'; and (3) 'the individual and group meanings created through people's experiences and intentions in regard to that place'. These three aspects of 'place' are also underscored by other scholars as three fundamental themes (1, form or physical setting; 2. activities; 3. Meaning or image) in making 'place' in the fields of architecture, landscape, and urban design fields (Punter, 1991; Montgomery, 1998; Carmona, 2003; Doi, cited in Satoshi, 2015; Satoshi, 2015; 2019) (figure 2.1, 2.2, 2.3, and 2.4).

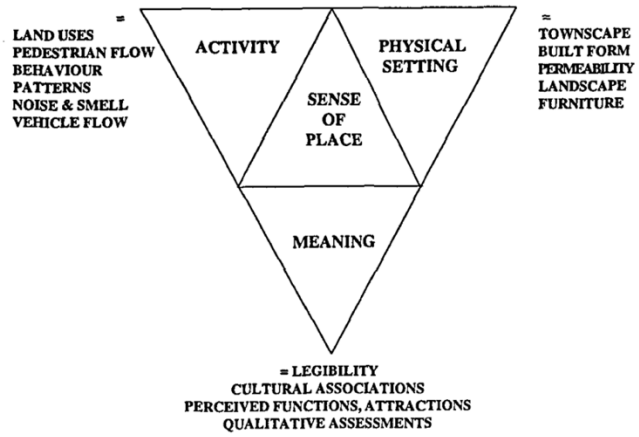


Figure 2.1 Components that are needed for turning open space into a sense of place. (Source from: Punter, 1991)

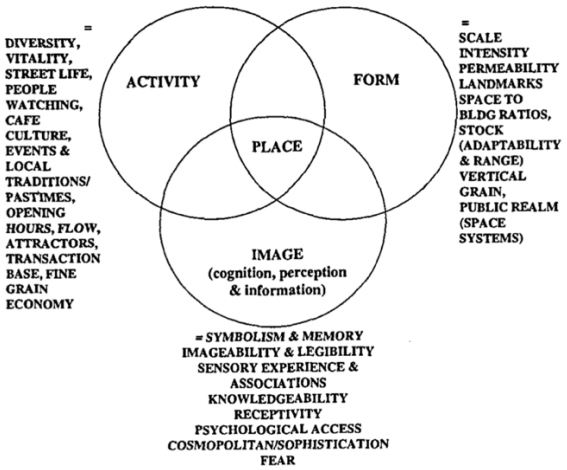


Figure 2.2 The elements to foster an urban sense of good place or place-making. (Source from: Montgomery, 1998)

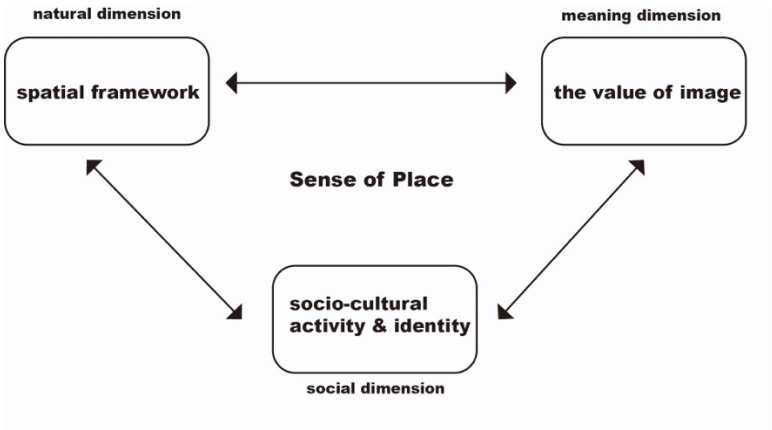


Figure 2.3 The concept of 'sense of place' by Doi et al. (Source from: Satoshi, 2015)

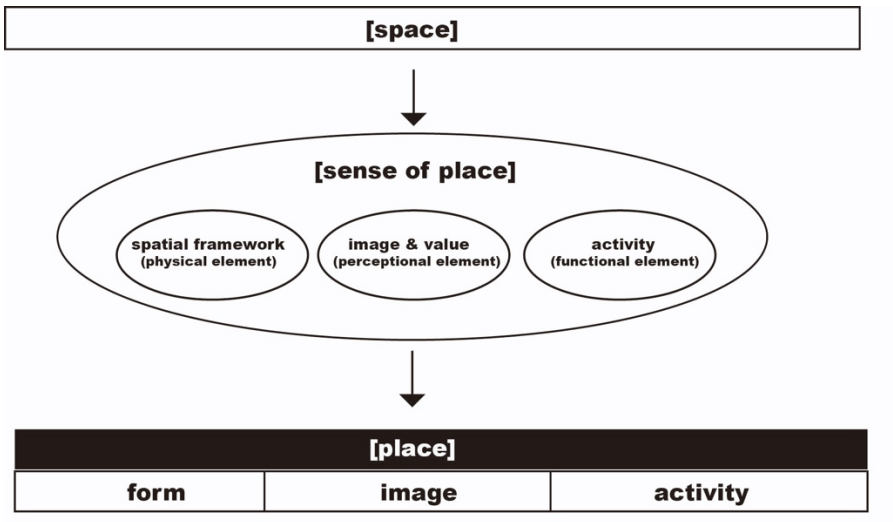


Figure 2.4. The composition of 'sense of place' and 'place' by Satoshi. (Source from: Satoshi, 2015)

In the introduction chapter, the three conditions (1. providing an open space; 2. developing activities; 3. meeting users' demands) of making Japanese *hiroba* are introduced. The above-mentioned three conditions plus the embedded 'public'(specifically Japanese *kōkyō kūkan,*公共空間) meaning/value/image behind *hiroba* resonate the three fundamental themes (1, form or physical setting; 2. activities; 3. Meaning or image) that significant for constituting a sense of 'place'. By combining the discussion of 'place-making' and '*hiroba-ka*', the author wants to bridge the literature review of place-making in open space and the Japanese *hiroba* in the research.

Therefore, three aspects related to ‘place-making’ (i.e., form, activities, and image/ meaning/ value) in global open space study, which is organized through different open space typologies (e.g., ‘street and avenue’, ‘plaza and square’, ‘park and garden’, ‘waterfront’, ‘small open space’, ‘open space system’ and ‘open space within, between and around buildings’), are discovered through past research and literature:

2.1.3 Main contents of the literature review

Place-making in open spaces from the perspective of “form”

(1) In discussing and analysing the reasons and methods of turning different open spaces into beautiful, successful, and high-quality places, researchers emphasize the people-oriented design features and strategies (such as human-scale, visual and circulation accessibility, perceivable textures, natural environment, etc.) applied in form making of open space as design guidelines.

Cullen (1961) summarized three main design points (‘movement’, ‘position’, and ‘content’) that help to build a beautiful, coherent, and concise townscape that people can perceive through various projects in case studies. ‘Serial vision’ (figure 2.5), by exploring a sequence of existing and emerging views through time, interpreted urban space in a four-dimensional strolling by adding and overlapping different scenes experienced. He addressed ‘place’ to define the position of people in relation to the experienced environment, directing tension and reaction from people’s emotions. ‘Content’, including colour, texture, scale, style, character, and personality in townscape composition, was advised to be consistent in design and plan. Cullen’s interpretation of urban space was a combination of physical and phenomenological dimensions. In discussing the street, he advocated the building at the cross as a focal point, pedestrian-only and priority, street lighting, scale, kinetic unity, and detailed interface (wall and billboard) in artful street design.

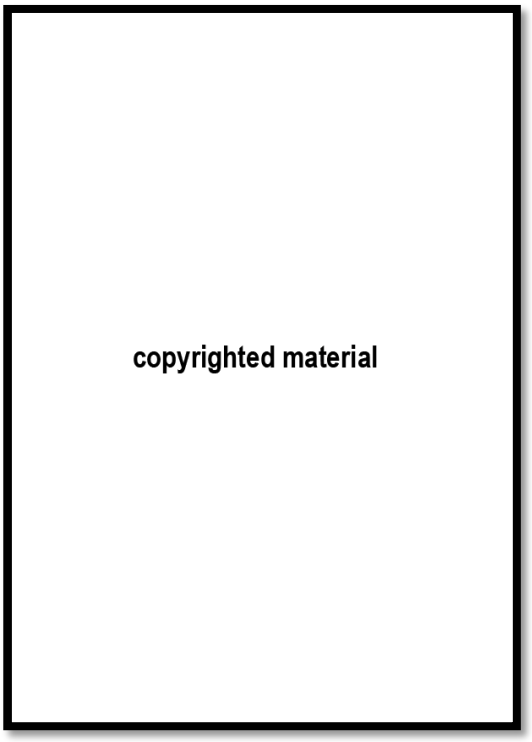


Figure 2.5. Serial vision in the spatial exploration by Gordon Cullen. (Source from: Cullen, 1961)

Sitte (1965) examined many plazas and squares in medieval European cities (figure 2.6) and analysed the reasons for the formation of truly successful urban plazas through the cross-reference of floor plans and perspectives of different plaza layouts (such as building interface, fountain, and stature). He argued that: not grand palaces and large-scale squares but scattered, consistent, echoing, and picturesque city scenery make a plaza successful. He emphasized the free, human-scaled spatial design in the plaza, visual and physical access, and the mutual coordination and balanced integration between buildings, streets, plazas, and monuments within. The continuity and enclosure of the plaza, openings to the adjacent streets, etc., were parameters to determine the artistic principles of plaza design.

Figure 2.6. The figure-ground plan of European plazas and squares. (Source from: Sitte, 1965)

Ashihara (1983) underscored the strong and weak inverse relation of figure-ground in European and Japanese streets respectively based on gestalt psychology. He further studied the spatial composition of the street's D (distance) and H (height) of the buildings on both sides. Bentley et al. (1985) summarized a design guideline for turning the inhuman and repressive design of urban open spaces into a people and environment-responsive place. Detailed guidelines in design, including permeability in circulation, variety in uses, legibility in spatial recognition, robustness in inclusiveness,

visual appropriateness in appearance, richness in experience, and personalization in identification, are supportive of building a high-quality performance urban open space.

Jacobs (1995) compared hundreds of streets and boulevards worldwide and tried to find out what kinds of characters make these streets great. He took empirical field research and observations of different streets by drawing and analysing their plans and sections with dimensions, details, and context. He summarized design guidelines for building the great street: attractive interface with clear boundaries (façade, tree, and material), buildings with consistent height, windows to look inside, defined zones for a walk and stop, interactions between pedestrians and cars, and good maintenance and management measures.

(2) By summarizing the common features of open space based on formal features (such as shapes, compositional elements, scales, width, styles, mental images, and themes), hierarchies of significance, and functions, typologies of different open spaces are classified.

Ashihara (1970) designed two types of exterior open space between buildings (figure 2.7). The positive open space owned clear boundaries that participated in constructing a firmly shaped, coherently connected, and humanly natured urban environment. The other was negative outdoor space in which objects dominated an extensive space without boundaries. He further demonstrated the crucial techniques (scale, texture, enclosure, hierarchy. sequence, addition, and subtraction) in designing the exterior open space. Ashihara compared the east and west cities based on their figure-ground plan. The differences in open space layout in terms of the polarity of yin-yang, solid-void, and inside-outside on the gestalt relationship were identified.

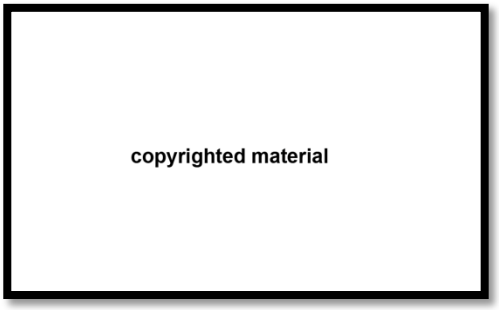


Figure 2.7. Negative space (left) and positive space(right). (Source from: Ashihara, 1970)

Zucker (1970) studied typologies of European squares built in different times and places and categorized them into five archetypal forms: the enclosed square (space self-contained), the dominated square (space directed), the nuclear square (space formed around the centre), grouped squares (space units combined), and amorphous square (space unlimited). He identified three space-confined elements: (1) the sides (e.g., buildings, trees, etc.), (2) the ground, and (3) the ceiling (e.g., the sky above). He claimed the significant role of the square in structuring the townscape in planning as the heart of the city and the building of community in its function. He argued that the square's aesthetic (visual appearance) and function (civic life) were more needed to be paid attention to than open space or void in the square.

The square classification (or square typologies) by Krier (1979) was categorized into the following six types in terms of geometrical form: (1) rectangular squares with variations; (2) orthogonal plans for squares; (3) circuses and variations; (4) triangular squares and their derivatives; (5) spaces which are angled, divided, added and superimposed; (6) geometrically complex systems.

Urban Design Group (1981) regarded the city's essence as the combination of different types of publicly engaged open spaces in a collective form. Therefore, the book divided urban open spaces into five categories: (1) street (including bridge as transport space), (2) plaza or square, (3) park, (4) green space, and (5) waterfront open space. It further combined open space within the construction site (courtyard, publicly opened space in

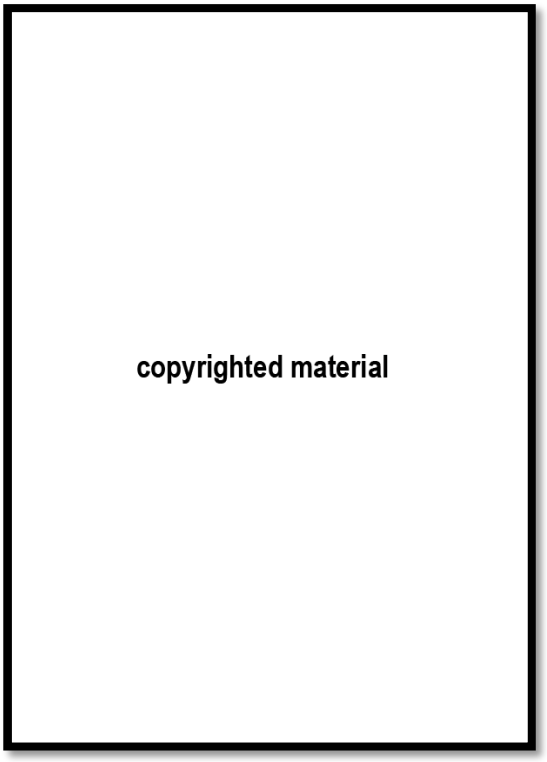
the building defined by the law), performance elements (urban furniture, billboard, tree, and water), and landscape (townscape and festival space) to detail the contents of urban elements in the city.

Moughtin (2003) studied indispensable elements constituting urban design, including buildings and important open spaces (the square or plaza, street, seafront, river, and canal), about their function, structure, and symbolism in city design. It critiqued those open spaces by incorporating previous literature, theories, and comments from different researchers, including plazas or squares focusing on the characters of 'node' and 'centre', streets focusing on the characters of 'length', 'proportion', 'unity', 'axial', and waterfront focusing on the 'function', 'form', and 'theme'. The author introduced the basic design concept of arranging those individual elements into an organic whole by putting the 'order', 'unity', 'proportion', 'symmetry and rhythm', 'rhythm, harmony, and contrast'. Case studies related to the theoretical discussion were carried out by detailed explanations and analysis of the above characters in specific projects.

Woolley (2003) discussed different ways (hard landscape, scale, land use, functions, etc.) of categorizing urban open space by different themes. She proposed her way of classification, focusing on the quality of the space from the users' side instead of conventional types based on the planner, designer, and manager perspectives. She suggested three groups of open spaces representing three social levels and physical distances. Domestic (including housing, private gardens, community gardens, allotments), neighbourhood (park, playground, playing field and sports ground, school playground, street, city farm, incidental space, and natural green space), civic (commercial, health and education, transport, recreational).

Marshall (2005), based on the physical characteristics of the street, summarized different classifications of street typologies and their hierarchy in the table 2.1 by reviewing previous literature.

Table 2.1. Examples of range of street typologies. (Source from: Marshall, 2005)



Lynch (2006) studied human mental maps on structuring American cities in 1960 through site observation, questionnaire survey, and interviews, providing a new way to read and understand the city. He proposed five basic elements (“paths”, “edges”, “districts”, “nodes”, and ‘landmarks’), which were helpful in forming people’s urban spatial awareness and in building the uniqueness of the city. Many open spaces discussed in the thesis, such as street (path), waterfront (edge), park (district), node (plaza), and landmark (open spaces within a building), are among one of five elements.

(3) Proposals for architectural and urban design solutions for creating new open space typologies are explored by different researchers.

In Corbusier’s (1929) design proposal of Radiant City (figure 2.8), skyscrapers were elevated by the pilotis to have a continuous free open space on the ground level

connected with park space. By guaranteeing the open space between residential blocks, those natural elements (such as air, light, sound, wind, and rain) that human needs can be functionally obtained.

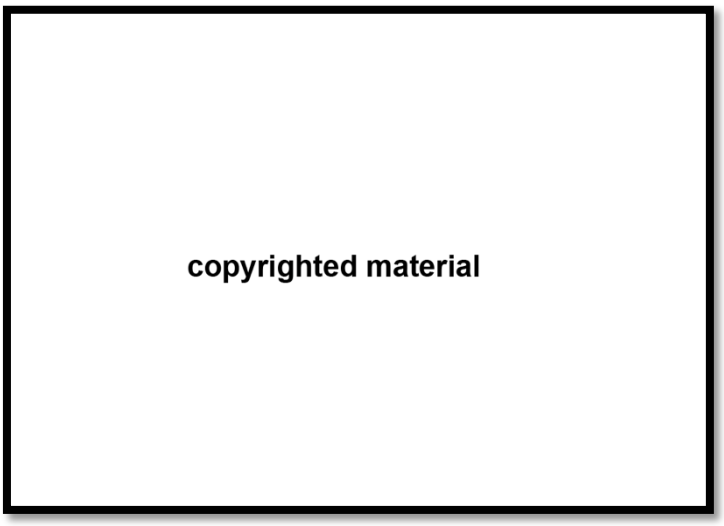


Figure2.8. Ville Radieuse by Le Corbusier. (Source from: ArchDaily, 2013)

Maki (1964) showed the same interest as Ashihara (1970) by focusing not on the building but the exterior open space between buildings (such as garden, courtyard, plaza, etc.) at the city scale. He developed his design theory of collective form to actively engage in producing positive urban open spaces through the composition of architectural elements by three patterns: compositional form, mega form, and group form.

Banham (1976) introduced many both unrealized (for example, Le Corbusier's Fort L'Empereur project for Algiers in 1931, Archigram's City Interchange Project in 1963, and Plug-in City in 1972, Kenzo Tange's proposal for Planning of Tokyo in 1960 and his pupils' futuristic ideas in Metabolism movement in Japan afterward) and realized projects (for example, Moshe Safdie's Montreal Habitat in 1967, Place Bonaventure Montreal by Ray Affleck in 1967, Centre Pompidou by Renzo Piano and Richard Rogers in 1970, etc.) for open space design. After Banham's seminal study on megastructure urbanism, many contemporary architectural designers and theorists

revisited the concept and applied new knowledge in contemporary society. Kenneth Frampton (1999), Stan Allen and Marc McQuade (2011), Andrew Blauvelt, Jennifer Yoos, and Vicent James (2016), Casey Mack (2022) built the connections and integrations of infrastructure, landscape, and multilevel urbanism with architecture for a new terrain of urban living through new technologies, design techniques and strategies by global architects.

Rem Koolhaas (1978), after his theoretical discussion of his city model of culture of congestion represented by indoor urban open spaces (for example, the Downtown Athlete Club in his book Delirious New York) for diverse programs inserted into the different levels of the skyscrapers in the high-dense city condition of New York, moved to new directions on studying shopping spaces, where people's public activities and urban life were deeply entangled under contemporary urban conditions at the beginning of the twenty-first century (Koolhaas et al., 2000). He claimed that 'shopping is arguably the last remaining form of public activities. The book traced the evolution of shopping spaces around the world, exemplifying the multiplicity of programs, activities, and behaviour contained in the open space of shopping malls in different building's functional typologies (arcade, market, museum, hospital, airport, etc.). The internal environment and the bigness of the indoor open space supported by the advanced new techniques and inventions provided a new urban interior (Koolhaas and Mau, 1995), which can be detached from the outside urban space for public gatherings and interactions through consumption.

Shelton, Karakiewicz and Kvan (2011) examined the unique urban morphology of Hong Kong by highlighting the city's characteristics of concentration, density, complexity, and verticality, along with the geographic, socio-cultural, political, and economic reasons behind the urban phenomenon. In response to the urban conditions mentioned above, Hong Kong developed a unique way of blending the historical low-rise residential community, modern high-rise buildings, and undulating terrains with

multiple levels of artificial platforms, creating a three-dimensional volumetric city to strengthen the connections between people and intensity of activities. The book summarized a list of architectural design strategies (for example, covering, elevating, connecting, and layering) that Hong Kong applied to create alternative urban open spaces to cope with the dense model of urbanism, giving practical contributions to other high-density cities around the world.

Frampton, Solomon, and Wong (2012) claimed that Hong Kong was built on slopes without a ground plan. A traditional figure-ground plan is meaningless to be applied to the Hong Kong case. Thus, the authors provided axonometric drawings and x-ray diagrams to illustrate the mixed programs in different levels of urban spaces hidden behind the urban fabrics, redefining ambiguous public-private spatial relations. Various urban elements, such as sky bridges, escalators, podiums, interior thoroughfare, staircases, rooftop platforms, etc., connect buildings and infrastructure (underground passages, subways, ferries, cable cars) for a high-efficient city for urban flows (figure 2.9).

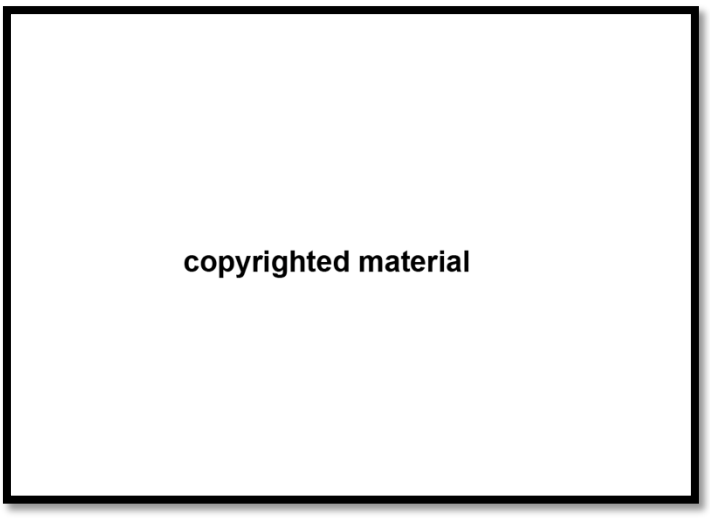


Figure 2.9. Indoor and outdoor open spaces of buildings are organized three-dimensionally in Hong Kong. (Source from: Frampton, Solomon, and Wong, 2012)

Cho, Heng and Trivic (2016) focused on the new urban public spaces created in the high-density context in contemporary cities (the majority of chosen cases were Asian cities). Through the studies of recent architectural and urban design projects in Singapore, Beijing, Tokyo, New York and Rotterdam, many projects with emerging types of publicly accessible urban open spaces through architecture and infrastructure (for example, Link hybrid in Beijing, Roppongi Hills in Japan, Ion Orchard in Singapore, Highline Park in New York), which is out of the models of classic urban open spaces (such as street, square, plaza, parks, etc.), were extracted to study their spatial configurations, programming, usage patterns and managements.

Besides the design strategies in creating new urban open spaces in cities through new architectural typologies, many experiments and innovative uses and designs of undefined open space for public use within the building (Aiba and Nishida, 2010) (figure 2.10), vacant houses (Ono, Sato and Nishiyama, 2010) and renovations of abandoned buildings for new public use are also popular in shrinking and aging society (Hayashi, 2010; Baba+Open A, 2013; 2015), such as Japan.

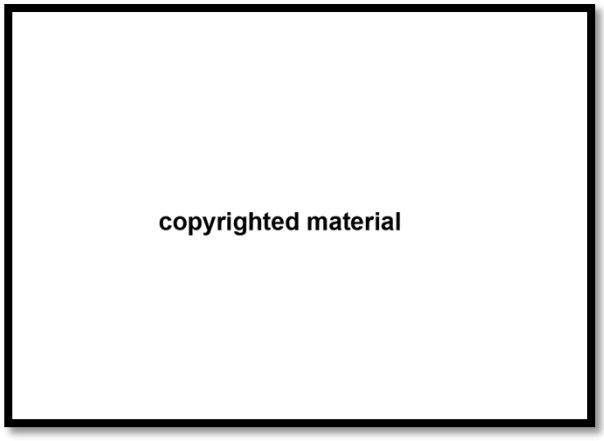


Figure 2.10 The appropriation of building rooftops in Tokyo for cinema party (left) and social activities (right). (Source from: Aiba and Nishida, 2010)

Place-making in open spaces from the perspective of "activity"

(1) The quintessential position of open space's social significance for people's encounters and communications beyond its role for traffic, circulation, and specific

function use according to zonings and planning programs are acknowledged and claimed by many researchers for good city design. The plan and design of open space to be integrated with human activities are considered and encouraged with design guidelines from different perspectives.

Jacobs (1961) critiqued functional urban planning under Modernism and large-scale urban renewal proposals. She objected to the sacrifice of the pedestrian in favour of car and traffic use, which accelerated the decline of the liveness of the street and neighbourhoods in the United States. She advocated the social function of the street for citizens' gathering and communication, exposing the street to more public eyes for security considerations, human scale, mixed-use development with diverse types of shops on both sides of the street (to weave everyday human lives by people of various ages and walks of life), and walkable and permeable street, which can be easily accessed by everyone and away from the car.

Rudofsky (1969) critiqued the American's contemporary urban landscape, specifically the object of the street design as a project and program. Instead, he argued that streets should be paid more attention to the inhabited life within by people and a mindset of enjoyment in the experience. For that purpose, the author visited and surveyed the history, form, periodical and temporary activities, and experiential perceptions of the global streets (such as paseo, course, alley, promenade, etc.), drawing lessons for the future American city development.

Whyte (1980) studied the public life of several building-front plazas in North America, including the ground plaza at Seagram Building and sunken plazas at Rockefeller in New York and The First National Bank in Chicago. He rated the quality of the plaza based on the number of people sitting in them at different periods within one day to discover the factors impacting people's stay. The research found possible key factors in defining a plaza, such as surrounding enclosure, the shape of the plaza, amount of

space, and sitting space. The study argued sun, a good position for sitting place in the city, was more significant than the physical shape and aesthetical characteristics by urban designers for good plaza design. Whyte suggested that a northern plaza without sun exposure shall provide amenities, such as planting beds with seasonal plants, works of art (fountain or sculpture), outdoor furniture, light stands, etc.

Gehl (1971) found that public life, which has a direct relation with human behaviour, was excluded and not well studied and designed in today's urban open spaces. He argued that a good quality of the physical environment is the precondition for generating public life in urban open spaces. Good design can help trigger an active process from necessary to optional and social activities. Through the studies in Copenhagen (Gehl, 1996; Gehl et al., 2006) and other different cities in the world (Gehl and & Gemzøe, 2006), Gehl developed his '12 key quality criteria' for evaluating the quality of public open space (figure 2.11). Gehl (2013) also summarized his research methods to study the ephemeral and constantly changing patterns of public life in urban open spaces. For example, 'counting' (the number of people before and after), 'mapping' (activities and people's position), 'tracing and tracking' (people's movement), and other tools such as 'looking for traces', 'photographing', 'keeping a diary of test walks'. These tools have been widely used in public life in urban open spaces.

Figure 2.11. Twelve key quality criteria designed by Jan Gehl. (Source from: Gehl et al., 2006)

Marcus and Francis (1998) demonstrated that the demand to contact nature and social communication were two main reasons for people coming to the park. Park provided overt and covert activities, which were important and needed to be reflected in the design. Two types of overt human behaviour were concluded by the author: (1) going to the park with others to eat, (2) going to the park to meet with someone usually going there. For covert human behaviour, such as seeing others without talking, the elderly was the majority. Providing a bench was necessary for the elderly to observe others without interruption. Marcus and Francis suggested paying more attention to the park design for special user groups, including the elderly, the disabled, preschool children, and adolescents. Related design guidelines in park design for those special user groups were listed based on their behaviour preferences.

(2) The quality of open spaces in different cities is examined and critiqued by observing people's use and activities within through case studies. The reasons behind the active or abandoned appropriation of open space are analysed, which provides inspiration for future architectural and urban design practice

Trancik (1986) criticized many (sunken, ground, and elevated) urban plazas (for example, Boston Hancock Building and New York Broadway No. 1633) in front of modern high-rise buildings and indoor business commercial streets and bridges (figure 2.12), which were spatially separated from the street on the ground for a coherent urban environment. Those spaces were seldom used by people, lacked a feeling of place, and were negative to the streetscape, causing a disorienting experience.

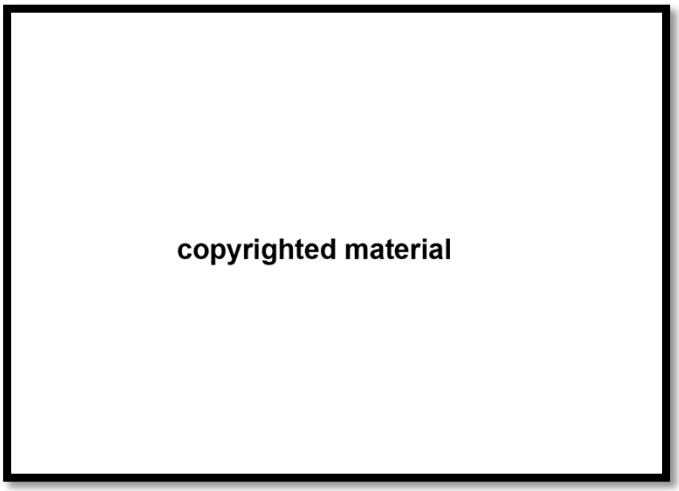


Figure 2.12. 1633 Broadway, New York. Urban space has been eroded by sunken plaza, which rarely function as successful gather place. (Source from: Trancik, 1986)

The phenomenon of the privatization of Hong Kong's plazas was explained by Cuthbert and McKinnell (2001). Hong Kong's public plazas usually appeared in open spaces in front of important government and company buildings. Some of those plazas were owned by or sponsored by private companies. Restrictions on the opening time for users were common. Many building-front plazas as the POPS, were the result of gaining bonus area granted by the government. Through observation, the study found

Hong Kong's plaza spaces in the Central Plaza and HSBC only intended to allow people to pass through as a thoroughfare and expelled any potential activities.

Lin and Zaino (1994) Studied the correlation between street furniture (benches specifically) and human behaviour in the interior *hiroba* (indoor atrium in the train stations, commercial buildings, and cultural centers). The usage frequency, duration of stay, usage patterns (contents of activities), and visual scope were recorded. The research underscored the street furniture to the spatial composition and quality in urban *hiroba*.

Yamanuki, Sawaki, and Narumi (2000) researched the activities of stay and action (for example, standing, sitting, sleeping, resting, meeting, staring, phone calls, reading, etc.) of people in relation to the physical setting of JR Osaka Station (for example, where above-mentioned activities happened) (figure 2.13). They further analysed the correlation between human activities, genders, and ages.

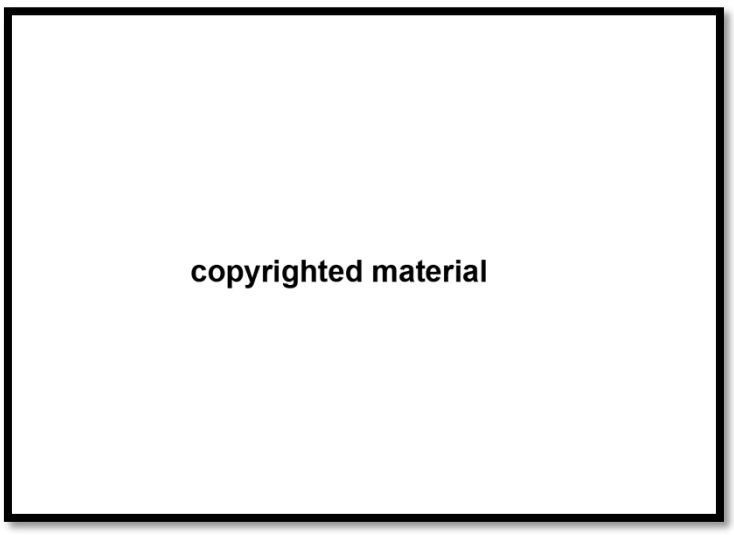


Figure 2.13. The stay activities at JR Osaka station on weekdays. (Source from: Yamanuki, Sawaki and Narumi, 2000)

Hiroshi Tsumita and Hiroshi Tsuchida conducted a series of research to discover the composition of public open spaces in architecture to foster good places for users to

rest, wait, and talk while standing (Tsumita and Tsuchida, 2005; Tsuchida and Tsumida, 2005; 2010). By quantitative calculating the number of users' positions, types, contents, and durations of time of behaviour and actions through the case study using tables and visual maps (figure 2.14), the attributes in building the specific areas (atrium, square, sunken garden, passageway, etc.) and the physical settings of public open space in architecture were discovered.

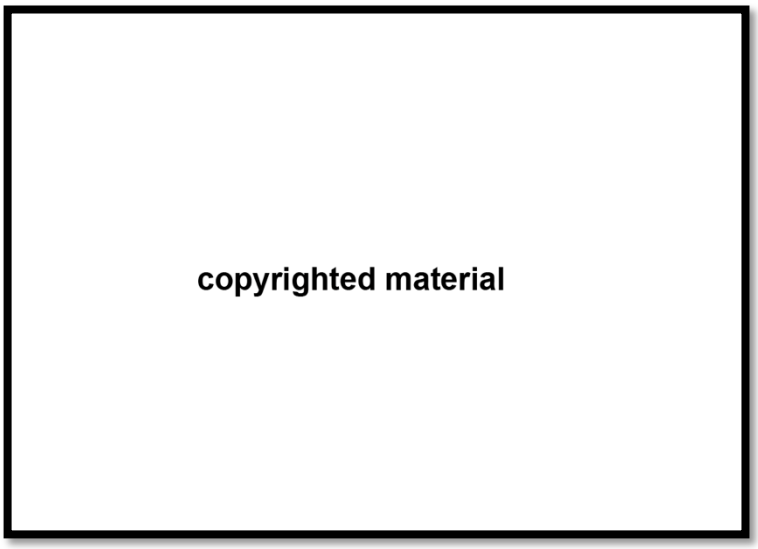
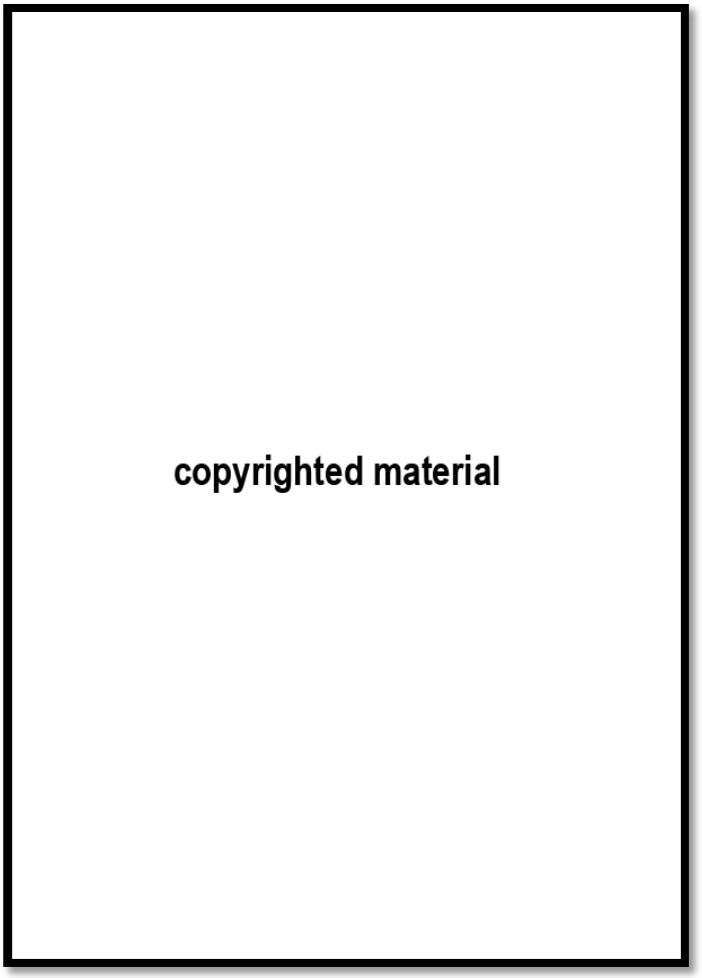


Figure 2.14. The tracing map of users' actions and behaviour in open spaces within and around buildings. (Source from: Tsumida and Tsuchida, 2005)

Saito, Soshiroda and Tsutsumi (2008) investigated human behaviour and activities, usage density at night, devices, and installations in the open spaces of contemporary Japanese architecture and put them in the table (table 2.2).

Table 2.2 The planning concepts, attachments and behaviour within open space in contemporary Japanese architecture. (Source from: Saito, Soshiroda and Tsutsumi)



(3) The spatial engagements of people with different backgrounds playing roles in making the global open space are explained to show the entangled forces behind the development of open spaces.

Hou (2010) explored many insurgent public spaces that were temporarily appropriated, reclaimed, adapted, and transformed by citizens and urban activists in their everyday life for creative use in an unconventional and unusual way. Many global studies were provided to re-examine the current situation of our public space and to challenge its

previous definition of public space as ‘not your everyday public space’ today under contemporary urban conditions (figure 2.15). Insurgent public spaces in the book revealed new spatial and social relations constructed in our global cities today.

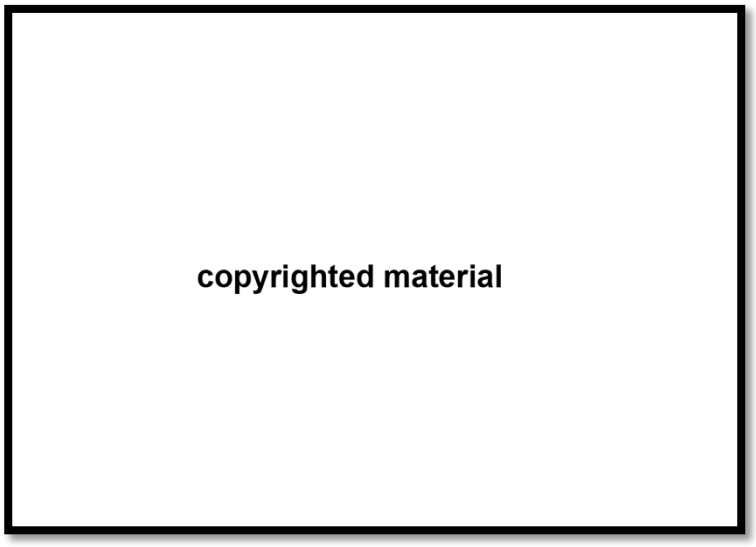


Figure 2.15 Filipina workers appropriated the ground floor of the HSBC building in Hong Kong every Sunday. (Source from: Hou, 2010)

Smith and Ferrari (2012) focused on the process of interactions, negotiations, and experiences among spatial actors (landowners, planners, designers, politicians, community groups, etc.) involved in constructing the physical environment of the waterfront open space and the city-building activities through different case studies world-widely under the discussion of ‘allocative structures’, ‘authoritative structures’, and ‘system of meaning’. Challenges of future waterfront regeneration from the conflict interests of socio-economic and political perspectives were discussed. Sustainable renewal of waterfront open space was encouraged, although it was challenging to carry out in long-term planning.

Stevens (2020) put more focus on the people’s bottom-up engagement (such as informal appropriations, temporary interventions, collaborative designs, and discussions between various groups) in designing and activating waterfront places within a practical and short-term period at a relatively small scale instead of the visionary and long-term planning at a large scale previously. The author advocated

flexible on-site placemaking actions instead of pre-determined planning made by designers for waterfront development.

Jonas and Rahmann (2015) and Meredith and Sample (2022) respectively collected many cases on how the urban voids in Tokyo and the urban vacant spaces in New York were creatively made by architectural interventions and engaged by people through different activities. The authors of the two books showed the potentiality and diversity of many unnoticed open spaces in the corner of the high-density city than imagined.

Place-making in open spaces from the perspective of "meaning"

(1) The value, issues, and challenges of open space development are highlighted and critiqued in society by different scholars in various fields from different perspectives.

In facing the uncertainties and the conflicts between tradition and modernity in future urban planning, Rowe and Koetter (1978) suggested having a position beyond the polarity of the future utopia (figure-oriented model dominated by objects) and nostalgia past (texture-oriented townscape model enclosed by positive outdoor open space), keeping a balanced tension between figure-ground proportion in city planning (figure 2.16).

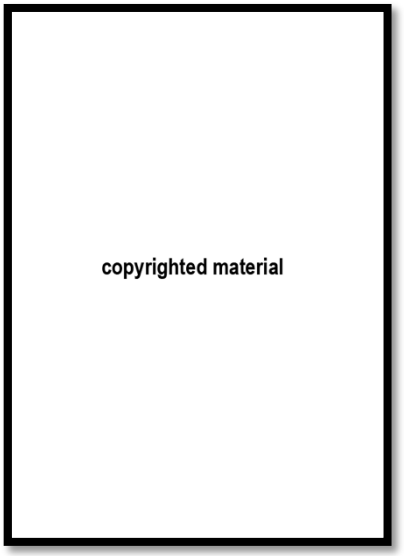


Figure 2.16. The figure-ground plan of Wiesbaden, c.1900.

Trancik (1986) critiqued the lack of human scale and loss of positive urban open spaces between buildings and their contextual environment in modern urban development and growth. In other words, buildings were isolated from each other. They showed no connection to the urban landscape, causing a large amount of negative leftover and unconstructed spaces, which the author called ‘lost space’. The author proposed possible contemporary redesign solutions, including lateral enclosure, to tackle those undesirable lost spaces produced in urban planning.

From a historical perspective, Otani (1979) reviewed the value of urban open spaces in ancient European cities (Greek agora and Rome Forum). He critiqued the loss of open space causing sunlight issues between many mansion constructions in the post-war period, and the functional treatment of open spaces in Japan excluded human activities. He further promoted the application of inclusive, open space design in Japan for fire-resistant, aesthetically beautiful urban redevelopment.

Jinnai (2001) claimed the significant role of the waterfront as a public space from Edo (old Tokyo) to today’s Tokyo. Unlike most European countries, which took the plaza or

square as the most prominent public space in the city, in Japan, there was no Western plaza or square before. As a city channelled by the water network (figure 2.17), open spaces between water and land, bridges above, and boats below were the main gathering places for daily public activities and seasonal festivals. However, with the introduction of Western culture and public space typologies (park, square, plaza, avenue, etc.), the waterfront landscape was much damaged by filling the canals and rivers for new building constructions. The author and many other urban researchers, for example, Kawazoe (1979) and Hasegawa (1975), mourn the loss of Edo's close connection to nature (green, water, mountain) and appeal to recover Tokyo's waterfront open space and city's identities after the 1970s. Four stages (entertainment, living, culture, and business) were introduced by Jinnai for the waterfront regeneration in Tokyo. Future challenges in Tokyo's waterfront development were listed.

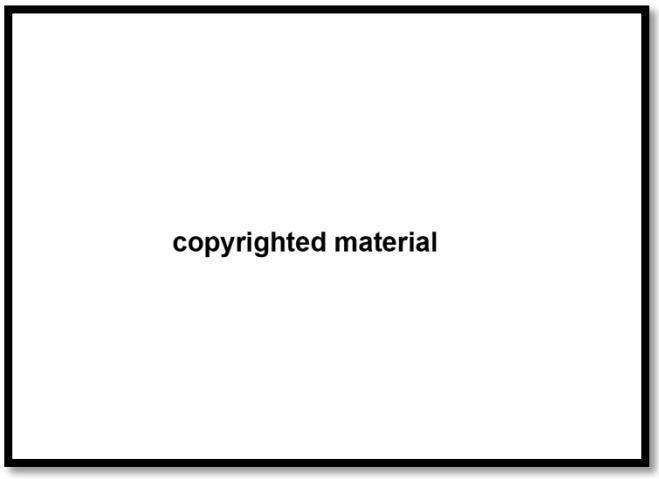


Figure 2.17. Tokyo's waterfront in the early stage of Meiji's industrialization. (Source from: Jinnai, 2001)

Pineiro (2020) collected over 200 terms through previous literature in architectural and urban histories, theories and studies used to name urban voids, such as the 'terrain vague' coined by the Spanish urban designer Ignasi Sola de Morales (1995) as the space of possible and ambiguous, which exemplified urban voids in different countries about their physical settings and situations with or without human engagement. The author wanted to claim the potentiality of the city's unnamed and undefined urban open spaces on the social, cultural, political, and economic dimensions. The urban void was

sometimes misunderstood as a term that contained negative meanings in architecture and urban design disciplines. However, it can generate positive values and amenities for ecology and society.

(2) The impacts of cultural and historical interactions between domestic and global open space typologies are discussed to understand the original meanings, functions, and changes of open space evolutions in a certain context, especially those Asian cities colonised by the West.

Various Japanese scholars (Kato, 1985; Miura, 1993; Jinnai, Mitani and Itoi, 1994; Kuma and Jinnai, 2005; Narumi, 2009; Toshi dezain kenkyū-tai, 2009) compared the differences between the Japanese *hiroba* and the Western plaza (or square). They argued that the Japanese *hiroba*, an urban open space generated by public activities, functions equally with the Western plaza as the city's public space but is different in form and other socio-cultural and political meanings. Those authors addressed the uniqueness of Japan-ness in Japan's urban and spatial culture, which varied from conventional concepts and rules made in the West.

Both Philippine and Japanese plazas were imported urban elements from the colonized countries. Their initial open spaces within the groups or tribes under blood or caste clans functioned similarly to the Western plaza, but with different forms and applied meanings. Alarcon (2001) explained that the plaza in the Philippines was initially only a symbol of colonialism and later became an organic part of the city and met the demand of multiple activities of everyday life by bringing new foreign types of buildings around the plaza, such as entertainment (shops), culture (school), religion （church）, commercial (market) and politics (municipal facilities) in the local community. The author also illustrated the vicissitude development of the plaza and issues confronted and responding solutions.

Miao (2001) explored the short history of the Chinese plaza evolution. The prototype of the Chinese plaza was transformed open space based on the model of the Western plaza around the 1950s, such as Tiananmen Square in Beijing and Renmin Square in Shanghai. Those plazas were mainly used for the government's review of troops and had strict control over activities in them. Its giant scale and cheerless image made the early Chinese plaza not well used. In the 1980s, many 'plazas' were built in the form of open spaces in the building atrium or rooftop plaza. They were not well used either due to being away from the street and the high expense of building and maintenance.

Xue and Manuel (2001) further demonstrated that Hong Kong's plazas owned a limited area, usually below 100 square meters, and most could not hold big events. The author argued that Hong Kong lacked a unique central plaza to represent the city as a symbol. Those plazas were concentred in the city's commercial zones, which is inconvenient for local people to use.

The historical evolution of parks' advent in Asian cities has been discussed by many scholars. Xue and Manuel (2001) introduced the three most prominent urban parks (Victoria Park, Hong Kong Park, and Kowloon Park) built after World War II, indicating that no indigenous park existed in Hong Kong before. Today's Hong Kong parks were adapted from former open land for other functions. Their shape and layout were not regular compared to the conventional Western parks. Their styles were a combination of Chinese gardens and Western landscapes, showing the impact of colonial culture on local culture. Many programs were congested in Hong Kong's parks, such as sports courts and pavilions, museums, restaurants, registry of marriages, and birdhouses. The research argued that parks played the role of the urban square in Hong Kong. It provided not only many social and entertainment places for local citizens but also held political roles for democratic gatherings and forums. Besides the three large-scale city parks, he showed that different forms of pocket parks were built in reserved land and unplanned open spaces between buildings. The total number of pocket parks in Hong

Kong was around 400, but they still could not meet local citizens' demands; their quality was also not so good. Issues like no trees or benches in the pocket parks (sheer open space as an extension of the street), the hard pavement reflecting strong sunlight during summer, lack of appropriate equipment, etc., made the pocket parks not good public places for use.

Similar to the findings of the advent of Hong Kong's plaza by Xue and Manuel (2001) as an imported model from western countries, Miao (2001) underscored that there was no tradition of building parks in China before, and most of the existing parks were built by the Western colonists before 1920s. Many parks in China were built with a mixture of classic European style and traditional Chinese style. This integration of different cultures in the park design was also mentioned in Sakai's (2011) history of Japanese park development. The author suggested that in the high-density condition of China, parks were (and should) used more as a greenery public hall (for using) than an inaccessible part of nature in the city (for watching).

Wang (2019) discussed that the materiality of the physical open space did not always guarantee its function, meaning and publicness in the city. Under the different national ideologies and urban policies, the nature of the open space changed. Wang took the examples of city streets, parks, and squares (e.g., Tiananmen Square) in Maoist China that were never for citizens' public use but as a place of anti-revisionist demonstrations and mass rallies and ceremonies by Red Guards for political intentions under the government surveillance.

(3) The socio-cultural, economic, and political roles, meanings, and power of open space, and its changes in history through different periods are explained in relation to their designed form variations.

Eisner, Gallion and Eisner (1993), Morris (1994), and Otani (2012), from an urban historian's perspective, analysed the spatial and compositional characters and the changing morphology of Greek agora and Rome's forum developed chronologically (figure 2.18). Those studies indicated that those urban open spaces changed from a democratic place with political autonomy to an autocratic place with absolute power under different ruling ideologies in different periods with different political powers.

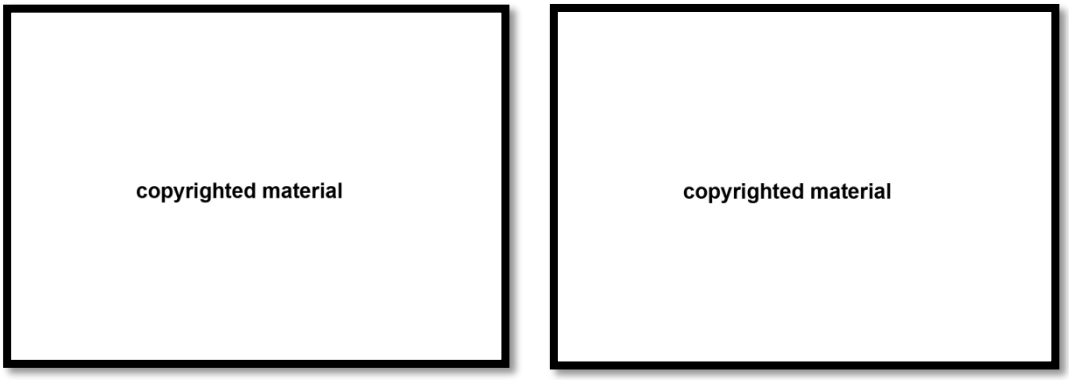


Figure 2.18 The agora shown in the north-western part of Athens in the second century AD (left). The plan of Forum Romanum (right). The open space (with dark pavement) in the centre of the forum is enclosed by a series of important public buildings. (Source from: Eisner, Gallion and Eisner, 1993; Morris, 1994; Otani, 2012).

Dovey (2004) researched the decline of the industrial and economic base of Melbourne, asking for the revitalization of its riverscape (Yarra River Front), dockscape (Melbourne Docklands), and bayscape (Port Philip Bay) in order to achieve new economic transformation. Desfor et al. (2010) concluded that the dynamic process of waterfront changes in regeneration was influenced both by fixities (existing conditions, such as environment, policies, and culture) and flows (unexpected with no estimated impacts, such as capital, information, and knowledge).

Harvey (2006) gave examples of street design in relation to political space. He demonstrated the wide boulevards with direct connection and quick access in replacing the narrow street in reshaping Paris by Baron Haussmann's urban planning strategically facilitated the government's military control of the public space in case of

mass protest and riots using barricades. The street, as a public space for citizens' everyday gatherings and activities, was erased. He critiqued the ironic situation of cafes (commercial space) on the side of the boulevard becoming a space for a selective public (the wealthy) and excluding the poor from the controlled boulevard (the public). He implied that Haussmann's work also influenced Robert Moses' reshaping of later New York city's urban planning from a starting point of politics in social segregation and racial agendas by adding 'restrictions' for accessing different city's open spaces and parkways.

Canniffe (2008) provided a historical review of the Italian piazza and discovered the political role of piazza played in civic government and urban networks through architectural approaches to languages and expressions in Italian cities. Examples of the piazza were chosen, analysed, and critiqued on their political discourses in a chronological sequence in accord with the evolution of the urban form of Italian cities in different development periods through photos, drawings, and diagrams for detailed spatial studies. Those tools helped to evaluate the relationship between public space and its materialized representation as a piazza, and its meanings as political order.

William S.W. Lim (2013) indicated the privatization of public space in urban Asia today under the influence of economic globalization and market forces for consumption. The advent of quasi-public spaces, such as shopping malls and private gardens, was popular in Singapore under this context. The non-commercial open spaces and resting areas, promoted by shopping mall pioneer Victor Gruen for the interactions between users and malls, were replaced by rentable spaces for stalls in Singapore's shopping malls under market-oriented planning codes.

Millington (2015) introduced a successful urban regeneration project High Line Park in 2009 in New York City, which turned an abandoned railroad track of the 1930s (a city wasteland) into an elevated park with green space open to public use. High Line Park

demonstrated a new type of urban park, elevated above the ground, and closely associated with the city's infrastructure. The author discussed the unexpected gentrification of the surrounding neighbourhood with the boom in land value after the project became a popular tourist spot, addressing the complexity of designing and understanding public open space not only from a physical dimension but also from a socio-economic aspect behind.

An urban renovation project of old Miyashita Park into an elevated three-dimensional park is proposed in Tokyo, Japan. It resonates with the vertical urban theory by hybridizing commercial buildings and urban parks. In this way, collecting funding based on the public (for the park)-private (commercial)-cooperation system brings economic benefits but also causes issues of expelling the homeless to leave the old park. Dimmer (2017) explored this contested urban park in Tokyo for an intensive and long period of protests and debates by local citizens with different opinions and interests on the redevelopment of the city's public space (figure 2.19), indicating the struggles of different spatial actors in the democratic design process in Japanese public space progress.

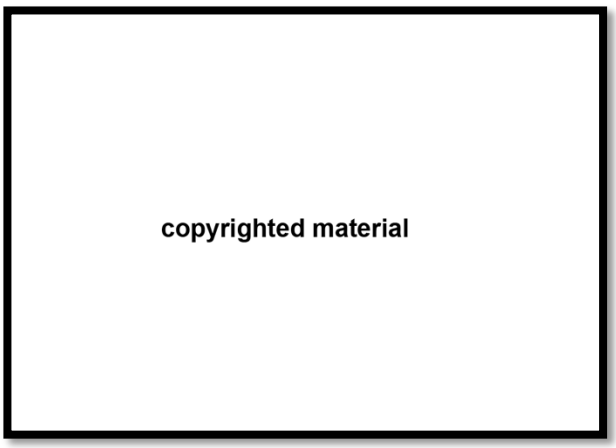


Figure 2.19 Occupations and protests in Miyashita Park by local residents. (Source from: Dimmer, 2017)

Wang (2019) symmetrically explored the history of the development of pseudo-public space (private property and management with publicly accessible open space) as a

new kind of urban space in China. He explained the socio-economic and political background of pseudo-public space's rapid growth and the popularity of consumption spaces since the 1980s on the basis of institutional changes after Mao's regime. The publicness of open space provided for citizen's everyday life and its consequence from economics, environment, and sociology for Chinese urbanism were analysed. The book rediscovered the interrelationship between the state, developer, and customers. By comparing the publicly owned space and pseudo-public spaces, Wang argued that the evaluation of publicness should go beyond the polarization of public-private property in Chinese urban space.

2.1.4 Intermediary conclusion

Learning from open space meaning in literature

As we have seen so far, open space contains multiple meanings beyond a sheer void space when turning into place through place-making; the sense of place does not simply represent the spatial characteristics of the open space (i.e., form), but also the background of the place, the activities there (i.e., human behaviour), and the peculiarity of the place formed by the accumulation of years of history, culture, and tradition behind (i.e., meaning, value and image).

Learning from open space typology in literature

From the perspectives of choosing the criteria of classification in typological analysis, many spatial characters studied from literature can be adopted to set up criteria for typological classification (i.e., the architectural composition analysis on the *hiroba-ka* open spaces in the four cases through 'accessibility', 'enclosure', 'identity' in Chapter 2.2.3) in the research: such as the 'visual accessibility' from Jacobs (1961) and Cullen (1961); 'enclosure' from Zucker (1970); 'scale' from Ashihara (1970); 'identity'of geometric form and related figure-ground drawings in recording *hiroba* through graphic from Krier (1979) and Sitte (1965), 'permeability' from Kinoshita (2001) and Imai (2018).

‘circulation’ and ‘level’ from Frampton, Solomon, and Wong (2012) and Cho, Heng and Trivic (2016). ‘attachment’(the natural elements and furniture, such as trees, water, chair, and table) from Gehl (1971), Whyte (1980), and Saito, Soshiroda, Tsutsumi (2008).

In terms of the research on open space typologies, from a global perspective, many classic and seminal works in Europe and North America focus mainly on outdoor open spaces (street and avenue, plaza and square, park and garden, waterfront, small open space). Until at least after the late 1970s, scholars (such as Banham, 1976; Koolhaas, 1978; Whyte, 1980) began to pay attention to theoretical and empirical discussions of the intrusion of new urban spaces inside architecture and through architecture. Indoor open spaces on a building level gradually become popular in research, which can be seen in the works discussed above (such as Carr et al., 1992; Marcus and Francis, 1998; Hou, 2010).

Through globalization (e.g., translated books, lectures of academic scholars, the 1960 world design conference in Tokyo and the following Metabolism movement, the 1964 Tokyo Olympic game, the 1970 Osaka world exposition, global investments and practices in Japan at bubble economics around the 1990s, etc.), the communication between Japan and the West becomes frequent, which further influences the direction of Japanese urbanization and the discussion and development of *hiroba-ka* open spaces within architecture (as the new type of Japanese *hiroba*) in literature and design practices. From an internal gaze of *hiroba* development in Japan, the seminar book on Japanese *hiroba* studies by *Toshi dezain kenkyū-tai* (2009), first published in 1971, paid much attention to those historical *hiroba-ka* open spaces in the Edo period (waterfront, alleys, open spaces at the temple, the foot of bridge and as firebreak land, etc. that much discussed in Chapter 3); it mentioned cases of the development of *hiroba-ka* open space within architecture but without deep research further. In parallel with the global exploration of interior open space typologies after the 1970s discussed

above, until 2015, Kengo Kuma and Jinnai Hidenobu re-addressed the same topic of *hiroba-ka* open spaces through architecture design popular in Japan with a collection of updated discovered cases on *hiroba* making by Japanese architects.

The review finds Asian cities (such as Beijing, Hong Kong, Singapore, and Tokyo), for historical background, traditional demographic, and geographical reasons, are conscious of their lack of classic open spaces of the West. Therefore, on the one hand, the translingual practice of open spaces imported from the foreign culture in Asian cities shows unique domestic characteristics of 'high population density', 'large cities', 'mixed uses', 'government-cantered and pro-development culture', 'the east-versus west bipolarity', 'small amount', 'absence of large node and overall structure', 'intensive use', 'ambiguous boundary'(Miao, 2001); on the other hand, those Asian cities develop new types of open space with multiple layers and levels generated by architectural design as a result and respond to the high-density and intensity urban conditions (Kaijima, Kuroda and Tsukamoto, 2001; Frampton, Solomon and Wong, 2012; Cho, Heng and Trivik, 2016), which forms the background and justification for the current discussion of *hiroba-ka* open spaces within contemporary Japanese architecture.

Learning from behaviour study of open space in literature

Through the review of human behaviour and activities in open space studies by different researchers globally, methods of observation and case study are adopted to investigate the interrelationship between people and the physical environment. Interview and questionnaire survey methods are used to know the reasons behind users' behaviour and users' thoughts, demands, and attitudes in the researched space. Through the analysis of the activities that happen within, the meaning, value, and image of the space can be interpreted. Tools of note, sketchbook, watch, and the time-lapse camera are used for mapping the trace of movement, the types, and positions of different activities, counting the number of people for the usage frequency and evaluation of the quality of space, measuring the duration of stay in a certain place,

and recording the process of how people appropriate and change the studied space. Analysed results are shown in tables, visual maps, and analytical diagrams. Those methods, tools, and approaches of the representation of analytical results in the literature review above can be learned and applied in the current architectural *hiroba* research in the thesis.

2.2 On Typology

2.2.1 Western theories on typology

Literally speaking, typology (from the suffix '-ology') denotes the knowledge and study of types. In the architecture discipline, type and typology are terms about and directed to the studies of form. Type is more conceptual in describing the idea of form, and typology is a process of formal reasoning in searching for the type. According to Moneo (1978, p.23), type 'can be simply defined as a concept which describes a group of objects characterized by the same formal structure … architecture is not only described by types, and it is also produced through them.' Architects start from the type and apply it to identify formal solutions when confronting design problems. The concept of typology is the essence of the structure and meaning of form. It provides instruments or tools for categorizing formal characters, reasoning by analogy, representing a constructive logic in building production and reproduction. Instead of direct borrowing, copying, or imitating the original formal features in a static approach, typology addresses the dynamic concept of abstraction derived from the original form and creates the new derived forms different but related to and developed from the original one. Typology embedded in architecture reflects and discloses the historical, socio-cultural, political, and economic facts behind the physical form. It always links architecture with the past and creates a connection with the nowness and future. As Jacoby (2015a, p.931) summarized 'the introduction of "type" as a conceptual and "typology" as a formal means of comparison in architecture provided complementary

ideas through which both an existing *knowledge of form* and a modern *form of knowledge* could be consolidated.'

The concept of type and typology in history was rich, and their meaning varied. In different periods, different focuses and perspectives of understandings were represented by different people. As a result, the notions on type and typology evolved, and their original meanings were transformed and developed through time by new knowledge and new thoughts. According to Vidler (1998), the historical transformations of type and typology in architecture could be divided into mainly three stages based on the methodological and historical interpretations: (1) Type theory in enlightenment philosophy (type as nature basis), exampled by the figure of Antoine Laugier, de Quincy, Giulio Carlo Argan, and J.N.L. Durand. (2) Type theory in modernist ideology (type as mass production and machine for industrial demand), exampled by figures like Le Corbusier and Mies van der Rohe. (3) Type theory in neo-rationalist perspective (type as city history and citizens' collective memory), exampled by figures from both architects, such as Aldo Rossi, Leon and Rob Krier, O.M. Ungers, Rafael Moneo, and urban morphologist in three leading schools. An overview of all the three types of concepts will be discussed below.

(1) The first typology

The first typology came from the inspirations and imitations of the nature. This is reflected by Laugier's primitive hut. It is regarded as the prototype of and original basis for the later architecture. Laugier extracted the column, beam, and gable from the primitive hut as the three basic elements and derived the applied laws and orders for combining these three elements. The primitive hut (figure 2.20) used nature materials and followed natural orders, which became principles of conceiving and building architecture. In terms of the above process, type and typology gained a notion of order deeply rooted in nature for constructing form.

This ‘nature’ theory of typology was substantiated and further explored by the work of Antoine Chrysostome Quatremère de Quincy, who is widely recognized as the first person to introduce ‘type’ into the history of architecture discipline (Jacoby, 2015a). Unlike Laugier, for Quency, the form of architecture was not about the imitation of nature but about invention based on the informing laws in nature. Quincy started to give a further definition of ‘type’ by comparing of the distinctions between ‘type’ and ‘model’. In his third volume of *Encyclopédie méthodique:* Architecture in 1825, he claimed that ‘type’ was the vague essence and structural principle embedded in architectural form, and it could not be reproduced simply by repetition and copy in the form represented by ‘model’ (Argan, 1963). Compared to ‘model’, ‘type’ was more about form generating. In other words, type underscored exploring the mechanism and principle in form-giving, implying the idea of ‘change, or transformation’ (Moneo, 1978, p.24).

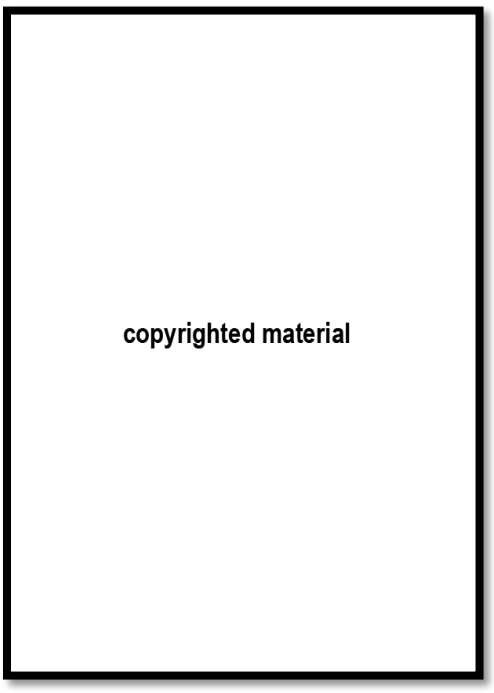


Figure 2.20 Column, beam, and gable from the primitive hut as the three basic elements in architecture. (Source from: Eisen, 1755)

Based on de Quincy’s notion of type, Giulio Carlo Argan (1963, p.564-565) claimed the formation of type was ‘never formulated a *priori* but always deduced from a series of

instances.' He regarded typology as a historical process of architecture through analysis. The types in architectural theories and practices that had appeared in history provided answers to current problems. The type was obtained by collecting, classifying, and finally defining 'definite formal ends' based on the various existing forms. Through this process of typological reasoning, the inner structure of the form can be detected and attained. Argan (1963, p.564-565) also categorised architectural typologies into three categories: 'a complete configuration of buildings', 'major structural elements' and 'decorative elements in response to the architects' design process to conceive a building. Argan's understandings of type and typology in terms of assembling and categorising were much reflected in J.N.L. Durand's representation of architectural form through a series of diagrams. The typology thus was interpreted as abstract iconography in geometries with axis and grids.

Durand's typological method of interpreting form relied on the analysis of collected architectural precedents by scientific taxonomy. In his major work, *Precise of the Lectures on Architecture Lessons* at the École Polytechnique during 1802 and 1805, he raised the idea of studying architecture according to the systematic analysis of the existing architecture's geometric forms (figure 2.21) and components (figure 2.22). He collected architectural plans, researched, and summarized the precedent types of different building elements (entrance hall, courtyard, porches, vestibules, staircases, courts), and compiled them in drawing plans, elevations, and sections on the correspondingly same scale together (figure 2.23). Through the compilation and comparison of many historical artifacts, shared characters on the form were extracted as building components archived for a later formal organization in design.

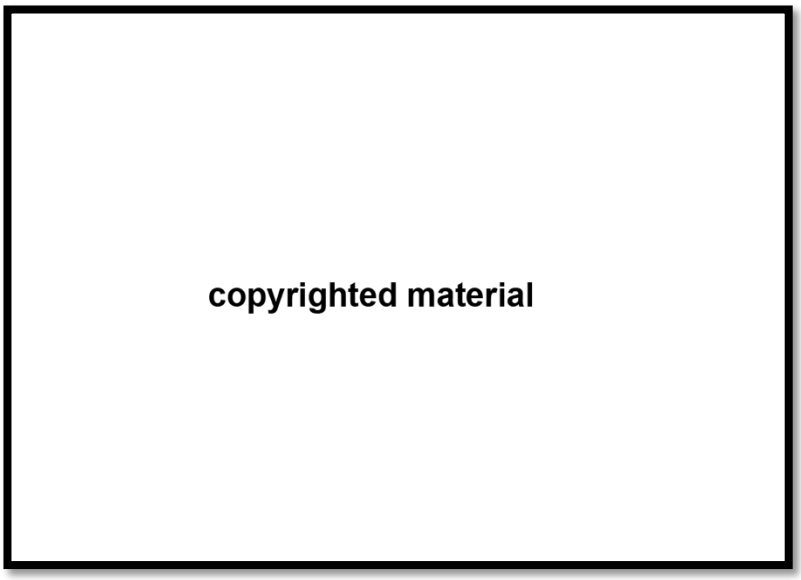


Figure 2.21
Building forms was abstracted and represented by simplified geometries through plans by J.N.L Durand. (Source from: Moneo, 1978)

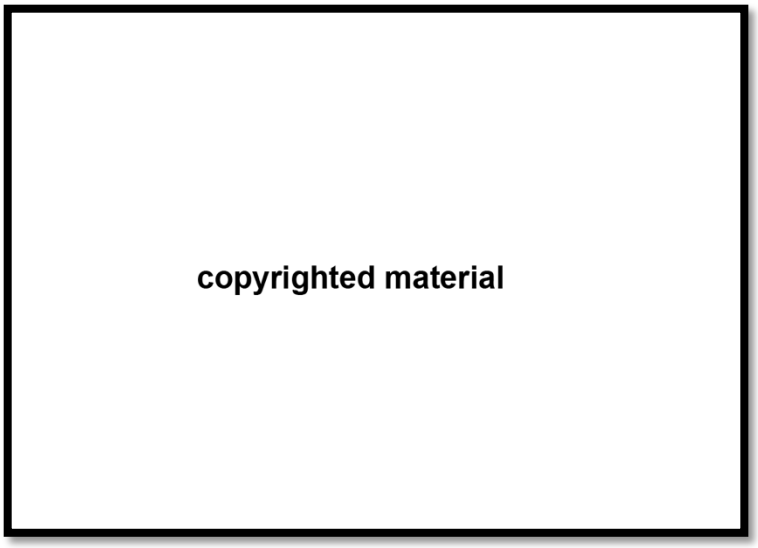


Figure 2.22
A study of architectural elements: the comparison of various arcades from plans and sections by J.N.L Durand. (Source from: Biermann et al., 2015)

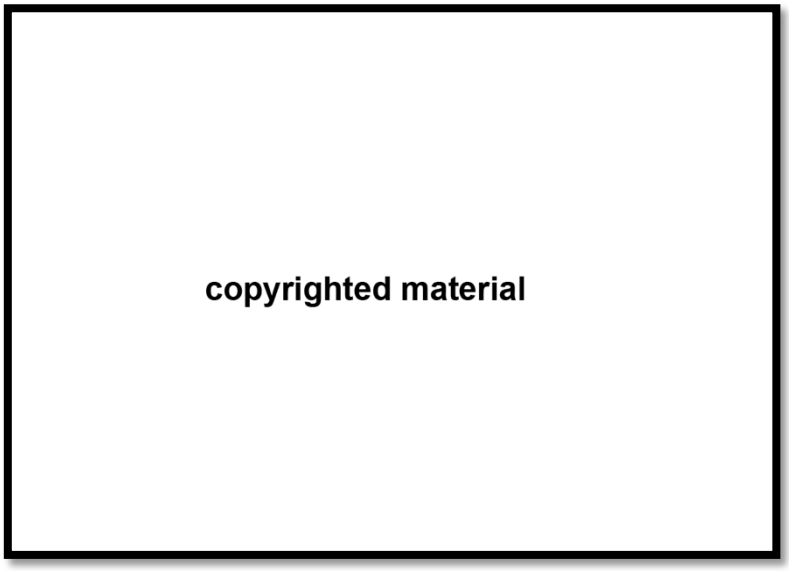


Figure 2.23
A study of Roman temples from plans and elevations collected by J.N.L Durand. (Source from: Biermann et al., 2015)

Durand's understanding of typology 'according to the *genre* and not their organizational and structural diagrams of typology' made form was considered to assemble discrete elements into complex entities (Jacoby, 2015b, p.938). The complexity of part-to-whole relations was simplified through functional and graphic classification in a methodological approach statically, lack of epistemological reasoning and understanding of form promoted by the de Quincy dynamically (Jacob, 2015a). Therefore, such mechanical reproduction of form was similar to finding a repertoire of models from the historical materials. It discarded a creative process of form invention embedded in type as the principle of form generation. For that reason, Durand's applying of typology was akin to the latter modernist's type and typology application as the standardized stereotype for mass-production and provided an operational method that can be applied in any building as a design manual (figure 2.24). The typological analysis of building form for categorizing building types based on formal commonalities fell into grouping buildings shared with the same functions. In this regard, Durand's discourse of typology was directed to and anticipated the dilemma of relations between form and function associated with social utility prevalent in Modern architecture (Jacoby, 2015b).

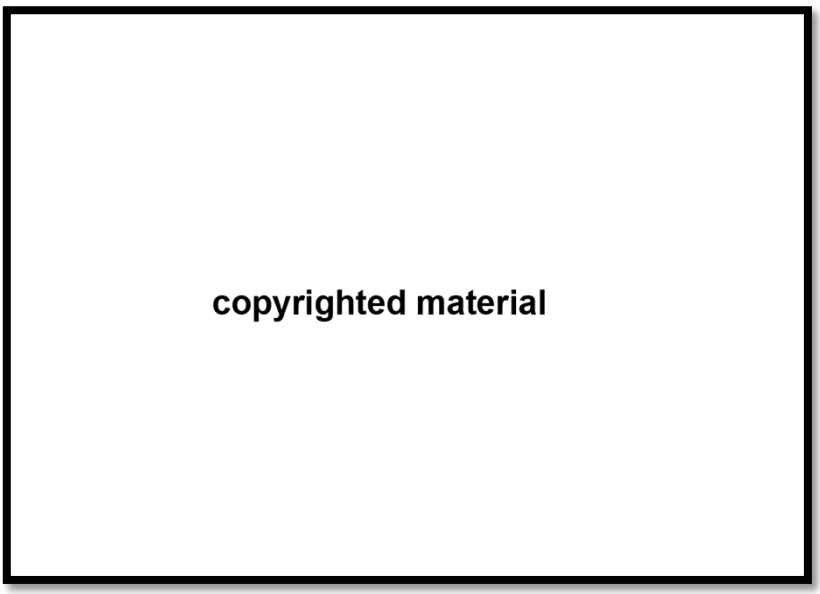


Figure 2.24
Different forms of building were developed from a square as the basic unit for different compositions by J.N.L Durand. (Source from: Biermann et al., 2015)

Type and typology departed from nature imitations and gradually shifted focuses on the form disposition, which is ‘a new mechanism that resolves the connection between form and program –or form and function– to which a new idea of architecture is wedded’ (Moneo, 1978, pp.28-29). This typological way of thinking and designing architecture gave many inspirations and greatly influenced later architects in discovering and applying knowledge of form. For example, O. M. Ungers, adopted similar design

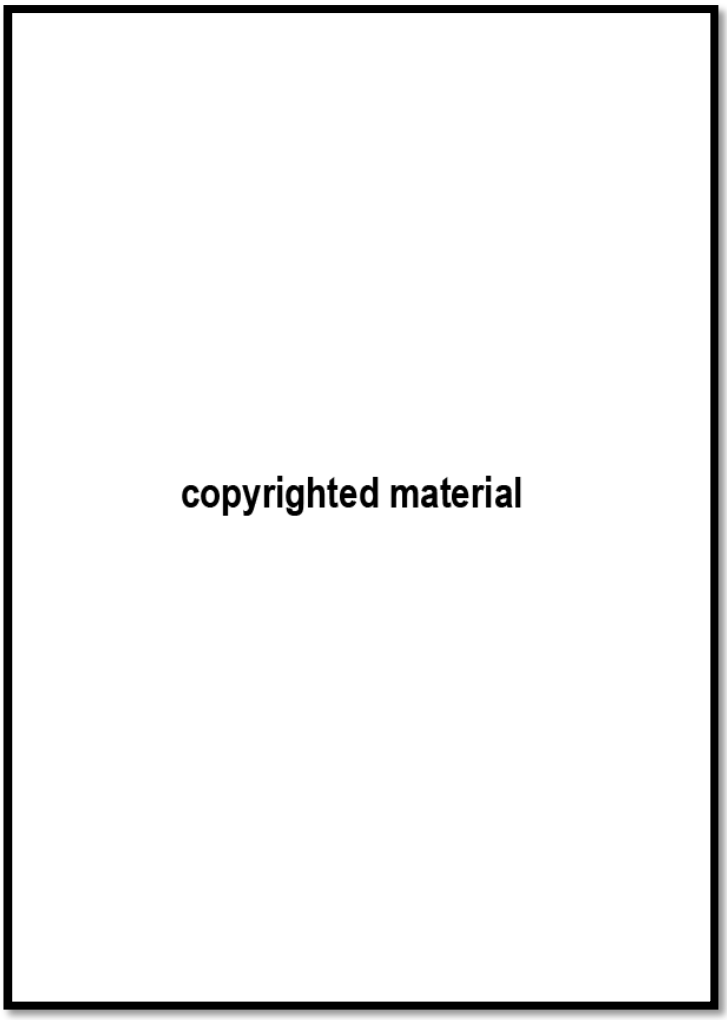


Figure 2.25
Redrawn and translated section of the concept sketches and notes by O.M Ungers for the student housing competition at TH Twente. (Source from: Jacoby, 2018)

methods and formal analysis through diagrams by manipulating lines, surfaces, and volumes of basic geometries to form basic unit and element. He applied modification and transformation on the formed basic unit and element, and then assembled these formal fragments in order (or a proper syntax) for incremental growth of a complex, such as a building or a city (Biermann, et al., 2015; Jacoby, 2013; 2018) (figure 2.25).

(2) The second typology

Under the influence of the industrial revolution and the Modern Movement in the twentieth century, society was pushed forward by the emergent demands for city reconstruction after World War II. The request of mass production in the age of machine directed typology development to search for the perfect and standard 'models' or archetypes suitable for subsequent copy in an efficient way. Typology with a repetitive form for prevailing and dominant type became the theme under the 'technological utopia' (Vidler, 1998, p.13). The typological transition can be identified by the works in Modern Movement, especially clearly stated by the thoughts of Ludwig Mies van der Rohe and Le Corbusier.

Mies' works were typified by searching a spatial model, particularly a generic and universal space, which accommodated any functional programs under the 'free' space and could be applied to any context without further considerations. The resultant international style, such as the Lake Shore Drive in Chicago and Seagram Building in New York, can be placed at any corner of the world. Without considerations on context, his transparent box, for example, IIT Crown Hall in Chicago and Neue National Gallery in Berlin, can be well adapted to the mass production made by steel and glass in an industrial society. As a result, his work becomes 'an uninterrupted attempt to characterize a generic space', and 'a well-known type than a reduplication of it' (Moneo, 1978, p.32). Similarly, Corbusier compared housing (and architecture) as a living machine. Function dominated the development of the final architectural form. The 'form follows function' separated form with relations of the historical, geographical, and tectonic factors from the broader environment externally, therefore limited the form discussion in architectural discipline internally. His manifested five principles of 'the pilotis', 'the roof garden', 'the free ground plan', 'the horizontal windows' and 'the free façade' were the tenets in Modern architectural design. They resulted in the repetitive practice of the 'generic city' (Koolhaas, 1998), which was clearly exemplified in his

Unité d'Habitation and his later unrealized proposal of Ville Radieuse. The type and typology behind form production were refined within industrial value in pursuing efficient and functional correctness. Type and typology lost their diversity in variation and dynamism embedded within form invention.

(3) The third typology

The third typology was exemplified in the work of the neo-rationalists. It stripped off the scientific and technical meanings attached to it and 'refers only to their own nature as architectural elements' and 'the concept of the city as the site of a new typology' (Vidler, 1998, p.14). The neo-rationalist theory of type emerged around the sixties, after the decline and failure of the Modern Movement. The main aim of neo-rationalist was to adhere to the urban fragments caused by functionalism and found history as a tool to build the formal and structural continuity between traditional city and modern city. 'Architecture (at this stage) was considered neither as the single artistic event proposed by the avant-garde nor the industrially produced object, but now as a process, in time, of building from the single dwelling to the total city' (Moneo, 1978, p.35). Once separated from the surrounding physical and historical environment, the individual building design was again brought back to the city context. Under interdisciplinary communication, new forms of knowledge from geography, urban studies, social science, ethnography, etc., expanded the knowledge and understanding of form. The sphere of typological studies was further broadened.

Typology was understood as an analytic moment of artifact, which unfolded the shared socio-culture, religion, nature, lifestyle, histories, etc., according to the specific area (Rossi, 1982). It later drew the scholars from urban morphological studies and yielded new directions in typological studies: typo-morphology (Moudon, 1997). Saverio Muratori was recognized as the father of typo-morphological study. He called typo-morphology an 'operational history of urban form' to acquire continuity by adopting traditional building typologies in re-directing the form of modern cities (Muratori, 1959,

cited in Moudon, 1994; Muratori et al. 1963, cited in Moudon, 1994). As the two significant factors, the geographical context and time were addressed and further influenced his decedents, including Gianfranco Caniggia, Carlo Aymonino and Aldo Rossi (figure 2.26). The notions of variation and flexibility in Muratori's reading of typology re-discovered the generative forces for future city development, contrasting with the time-freezing, site-less and freestanding typology used by Durand.

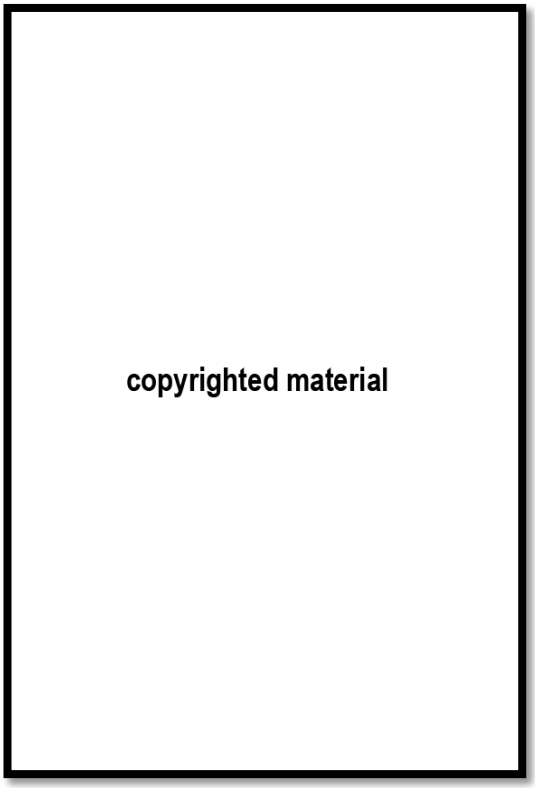
Figure 2.26 Caniggia's typological transformation of courtyard houses on the relation between domus and exterior street across different times. (Source from: Moudon, 1994)

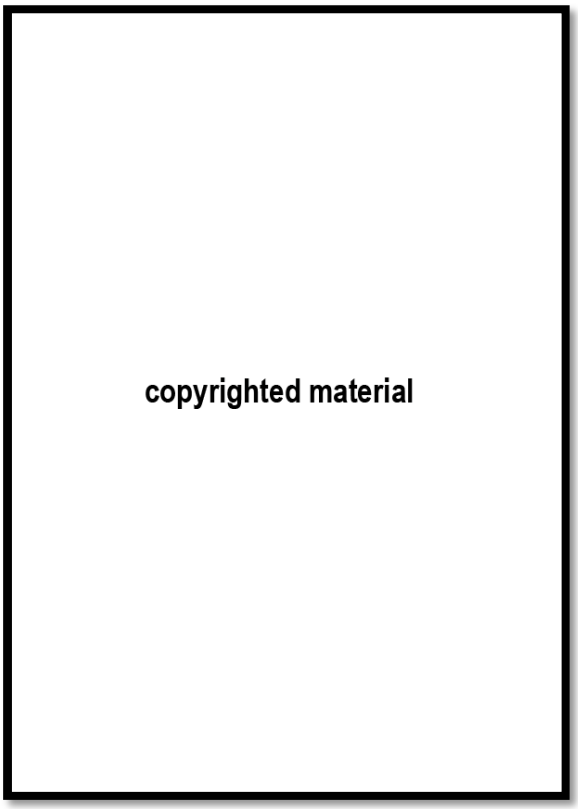
Although the inheritance of typology to a certain degree can heal the fragmentation of modern cities, it may cause a risk of converting type to model by the repetitive use of traditional typology and drop into a nostalgia of the past. Aymonino (1976, cited in Moudon 1994) demonstrated that 'urban analysis does not provide a structure for architectural intervention. In fact, it is wrong to assume a direct relationship of cause and effect between the two.' In historical events, Italian urban morphologists discovered and recognized the ever-changing nature of architectural typology through time, but they were unable to or unconsciously neglected to respond to the renewed demand in updated time for typology at the moment. In keeping the balance between 'continuity' and 'differentiation' in type and typology, Aldo Rossi (1982) interpreted his typological reasoning by the autonomy of architecture –an internal logic in structuring the architectural form both passively influenced by and actively interact with the city development critically. Rossi stood in between the history and future, distinct him from his predecessor Muratori on the interrelationships between time and form. The

achieving of ‘inheritance’ and ‘invention’ character in Rossi’s typology reflected the ‘two moments’ that Argan (1963, pp.564-565; Moudon, 1994, p.294) identified in the design process. (1) ‘The typological moments’, rules in the past were received without invention (yielding a ‘posteriori type’ through ‘historical experience’). (2) ‘The moment of invention’, rules applied with alternations and processing (yielding a ‘priori type’ from ‘artistic creation’). Rossi’s position and approach to typology in a balanced synthesis of the two moments of ‘following’ and ‘departing’ can also be found in the typological applications in design practices from the works of Moneo (2015), Mario Botta, Victtorio Gregotti.

Similar to J.N.L Durand, Rob Krier (1979) resorted to diagrams to understand the form of architecture and urban space. By compiling various studies of historical models of architecture and urban space in a group discussion, Krier (1979, 1988) transcribed typological analysis into compositional diagrams (figures 2.27 and 2.28). He formulated three ‘spatial forms’ (square, circle, and triangle) as the primitive elements and their ‘derivatives’ through a series of formal modifications and operations, such as ‘angling’, ‘segment’, ‘addition’, “overlapping’, ‘distortion’ (figure 2.29). The spatial

structure of architectural form in three-dimension was analysed two-dimensionally through drawings on the building plans, sections, and elevations (figure 2.30 and 2.31).





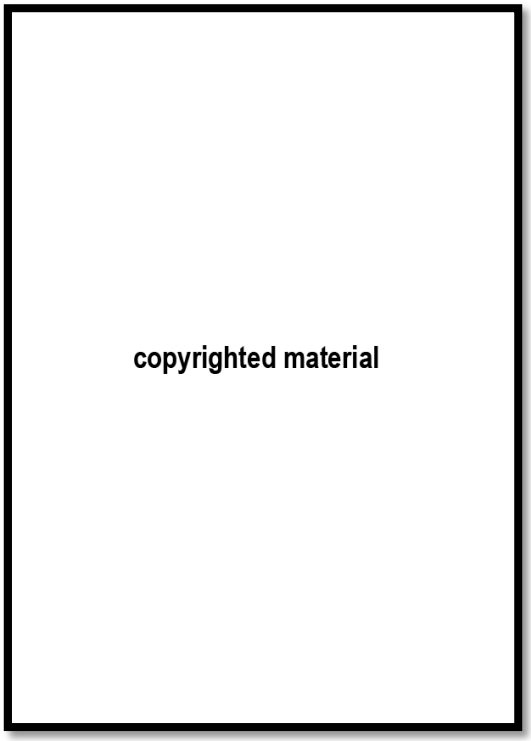


Figure 2.27 (top-left) Typological analysis diagrams developed by Rob Krier in analysing urban space. (Source from: Krier, 1979)

Figure 2.28 (bottom-left) Typological analysis diagrams developed by Rob Krier in analysing architectural composition. (Source from: Krier, 1988)

Figure 2.29 (top-right) Formal modifications and operations on the primitive elements. (Source from: Krier, 1979)

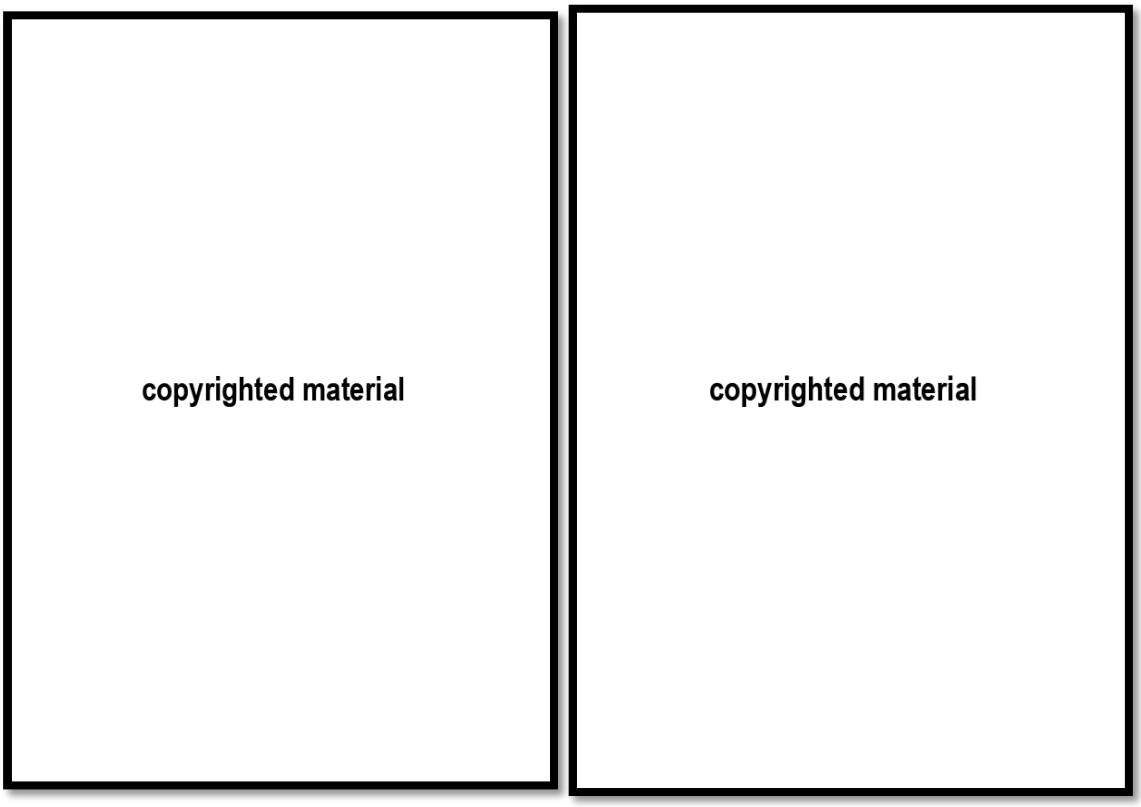


Figure 2.30 (left) Orthogonal plans for square studies. (Source from: Krier, 1979)
Figure 2.31 (right) Study of building facades in elevation. (Source from: Krier, 1979)

With the recognition of the inseparable connections between form and historical, socio-cultural, and environmental context as external factors on the one hand, the typological analysis and reasonings, on the other hand, were confined by diagrammatic interpretations of form, which cannot fully present the impacts of above external relations to the internal form discussed on the plan. The issue of this dilemma asked architects to find an appropriate translation of the ‘abstract’ type and ‘concrete’ form. However, the limitation of instrumental diagrams’ explanations of the form of knowledge only pointed to a discussion of form visually and within a constrained scope of functions, operations, elements, and compositions in architecture. An internally disciplinary discourse of type and typology in architecture from the perspective of aesthetics, geometry, scale, proportion, and material structure based on the materiality of form, lost a kind of essential abstraction in type and typology, which asked for the non-form principals in formal organization and generation.

2.2.2 Typology in Japanese form studies

> *Type is a diffuse concept that contains a constructive solution – one that gives rise to a space and is resolved in a given iconography– but it also speaks of capacity to grasp, protect, and to make sense of those contents that are implicit in its use* (Moneo, 2005, p.105).

Type records the evolutionary stories of formal development; it helps to present and excavate the factors and meanings from historical, socio-cultural, political, and economic dimensions in shaping the form. Type as abstract idea or schema instructs and informs a formal structure to give rise to form generation. Type is not only a readable book to understand form in analysis but also a tool for the formal invention in design. The double meanings of type through typological reasoning on the form also reflected in the Japanese architect Kiyonori Kikutake's (1969) theory of form study in a triangle structure: *ka, kata and katachi. Ka* (prototype)*, kata* (type)*, and katachi* (model) related to the Japanese understanding of form (figure 2.32). The theory helps to understand form and form design in the three phases (figure 2.33). In the process of understanding the form in the sequence of *katachi* to *kata* to *ka*, *katachi* means to feel the phenomenon, *kata* means to understand the structure, and *ka* means the derived principle. This form evolving indicates a process from concrete to abstract and from phenomenon to essence. Reversely, in generating the form in the sequence of *ka* to *kata* to *katachi*, *ka* is the imaginative force for image, idea, and order, *kata* is the technological approach for system, *katachi* is the functional approach for the physical environment. The form evolving denotes a process from generic to specific and from non-form to form. Arata Isozaki (2011, p.64) explained and commented Kikutake's three-phased thesis in the form giving as follows:

Analogous to the development of ancient Japanese phonemes into fully fledged nouns, Kikutake sought an aspect of form production in accordance with each category. Here ka indicates hypothesis, kata, form, and katachi, shape: an order corresponding to the design process itself. That is to say, a designer first poses a hypothesis, next looks for a form (matrix), and at last realizes a concrete shape. This procedure may also have echoed Louis Kahn's assertion in reference to Plato's theory of poiesis that in any design process, form must precede shape. Kikutake added the stage of hypothesis, and transposed the whole into wago, the ancient Japanese language. This was a new turn away from Western concepts (epistemology and poiesis) and a reversion to Japan-ness.

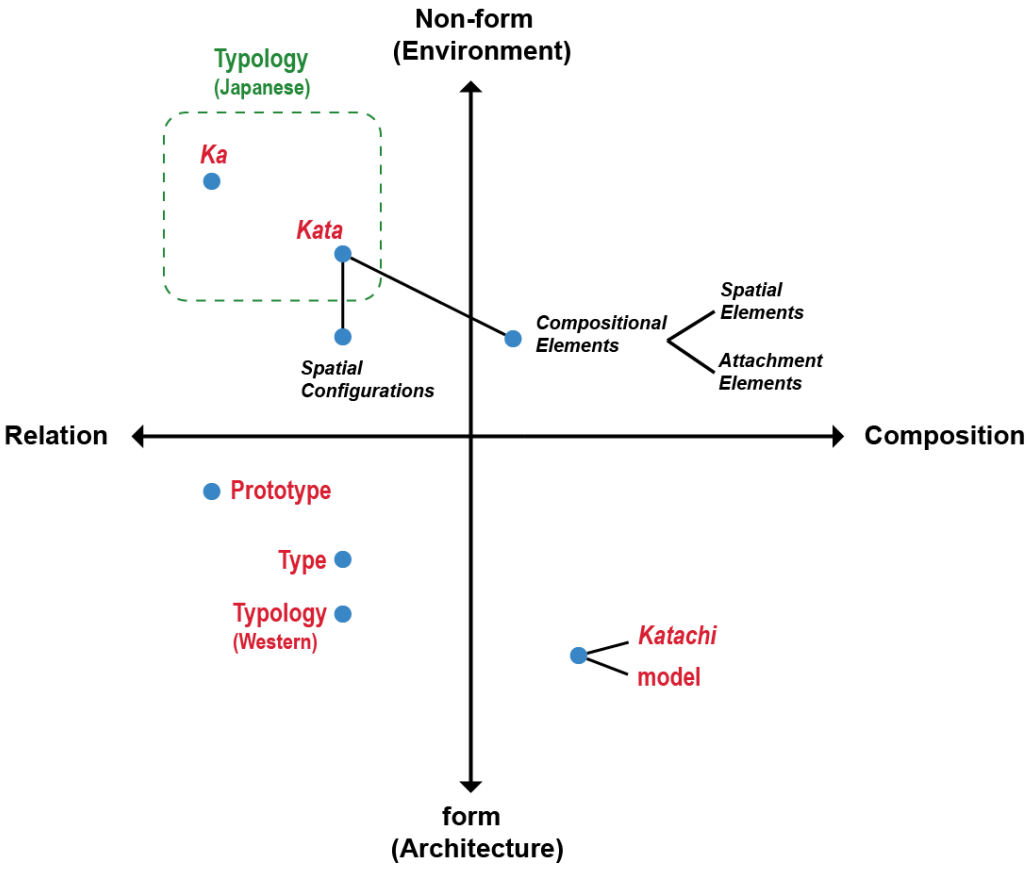


Figure 2.32 The Japanese understanding of form through *ka*, *kata*, and *katachi* and the Western understanding of form through typology. (Source from: drawn by the author)

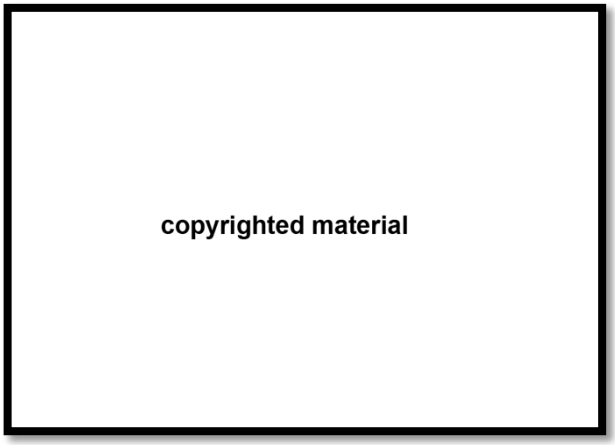


Figure 2.33 (a) The process of understanding form; (b) The triangle structure of form in terms of *ka*, *kata*, and *katachi*; (c) The process of generating form. (Source from: adapted by the author based on the original figure from Kikutake, 1969)

Kikutake (1969) added *ka* in the constitute of Japanese form. *Ka* is the non-form factor that played the role of hypothesis in stimulating the generation of form at a primitive stage before informing the form (*kata*) and arriving at the shape (*katachi*). *Ka* contained meanings above (上, *ue*) and heaven (天, *ame*). Many Japanese words and phrases included *ka* in their etymological constitution. For example, *kami* (神,God), *kashira* (頭, head), *kaze* (風, wind) and *kagayaku* (輝く, to shine), etc. These words with *ka* implied a mysterious force and power, which was very close to and associated with what Isozaki (2011) called *hi* (spirit) derived from the word *himorogi* (primitive shrine) in Shintoism rituals. In inviting gods, *himorogi* was set up using limited ritualistic devoices (figure 2.34). For example, a *yatsuashi-dai* (an eight-leg wooden platform) was surrounded by *tokigawa* (evergreen trees), such as green bamboos. *Shimenawa* (a sacred rope) was stretched around the central *sakaki* (a species of evergreen sacred to Shinto) for a fenced area waiting for gods to arrive. Gods' visit was temporary. When the *himorogi* and other ritual devices were removed, the gods (or their *hi*) were gone. The ritual used designed devices finished by limited elements to generate a virtual place for invisible *kami* through people's participation. The temporary and amorphous place (for *kami*) was not defined by permanent form but by time and people's behaviour and ritual events.

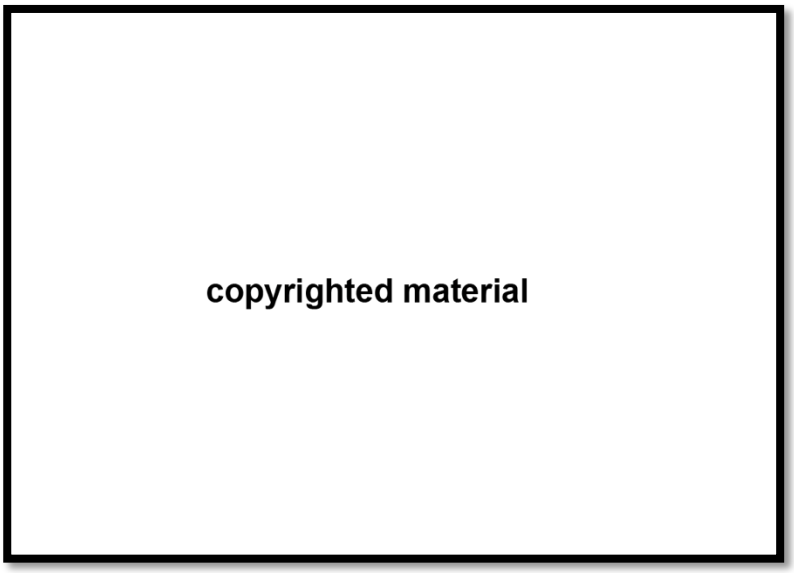


Figure 2.34 Illustration of *himorogi.* (Source from: adapted by the author based on the original figure from Isozaki, 2011)

Ka as non-form actors or forces is significant in giving the form of architecture and urban space in Japan (Suzuki, 1984; Tōkyōdaigaku toshi dezain kenkyūshitsu, 2015). It is the very essence of the beginning of formal development. *Ka*'s abstraction, and vagueness as the essential principle for formal invention, together with *kata*'s interpretations of compositional elements and their spatial configurations for formal structures, resonate with the conceptual idea of form in type and formal reasoning in typology. Maki (1994a, p.4) describe the *ka* as *kukantai* (spatial entity), a not clear form developed from inside to outside at the very beginning of form realization as 'a nebulous whole' in his essay *Space, Image and Materiality*:

> *In the initial image of design, I do not think of the building in question as something with a clear form. I think of it instead as a 'spatial entity' (kukantai). By a spatial entity I mean a space curved surface is still elastic like rubber, and the spatial entity has not yet crystallized into something definite. It is the first task of design to determine the extent and character with which the enclosed space is to be endowed. I follow this procedure because I want to arrive at the final form, not*

merely through manipulation from the outside, but through expansion and contraction from the inside as well.

Ka was evaluated by Mitsuru Senda (2006, p.37) as 'in order to search for *kata (type)*, the *ka* as the idea and concept is very important for sure.' In Takamasa Yoshizaka's (1985) *Iuke-logy* (有形学, form-giving theory), he proposed to include external non-form factors, such as natural features of topography and climate, domestic history and culture, social relation, and participation inspired by ethnography, etc. to the final shape of architectural form to mediate human environment and material environment. Yoshizaka advocates collaboration between different actors in building the final form. For him, human's participation with different ideas also helps to shape the final form of the built environment. He called this form-making process from part to whole a 'discontinuous continuum'. He compared his *Iuke-logy* to ecology and deduced the abstract *ka* to the stimuli or forces from nature. The essence of Yoshizaka's *Iuke-logy,* which underscored a shift from the appearance of the form (*katachi*) to the process of making the form appear (*ka*), was inherited by his descendants in Waseda University. Haruhiko Goto (2017) and his students in the research laboratory developed Yoshizaka's *Iuke-logy* to *mukei-gaku* (無形学, theory of non-form in form-giving) in the book *Mukei-gaku e: katachi ni naru mae no shikō* (To non-form in form-giving: thinking before becoming shape). Goto collected both non-form and form factors in making shapes and divided them based on the two axes: non-form to form and non-visible to visible in four quadrants to better know the relation between the built environment and form design (figure 2.35). Both Yoshizaka and Goto pointed to a close connection between Japanese thinking of making form with the nature and environment. In Japanese history and tradition, *ningen* and *shizen* are an integrated whole before Western ideology was imported to define them into two separated worlds (Okuno, 1983). The understanding can also be reflected in a symbiosis relation between *ningen* (人間, the world of human beings) and *shizen* (自然, nature) promoted by scholars, such as Kisho Kurokawa (1997) and Mitsuru Senda (2006).

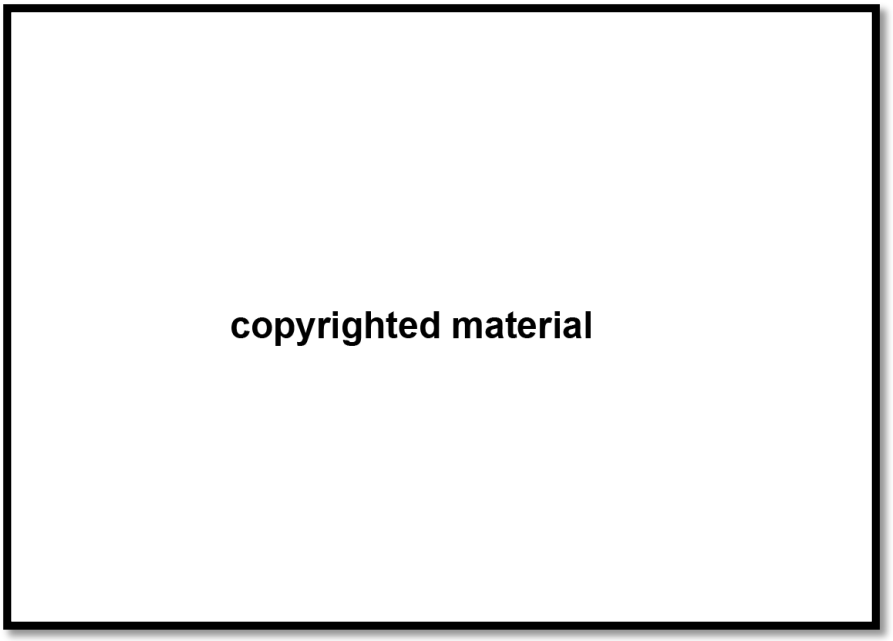


Figure 2.35 Matrix of *mukei-gaku.* (Source from: adapted by the author based on the original figure from Goto, 2017)

The influence of *ka* not only existed in the history of Japanese architecture theories and tradition, but it was also presented by the flexible and disordered shape, formed chaotic urban landscape, and structure of contemporary Japanese architecture. Moneo (1978, p.44) noted, 'to understand the question of type is to understand the nature of the architectural object today.' Under the specific context of Tokyo, typologies behind architectural design reflect the specific social, cultural, economic, and even political context, and these non-form factors much influenced the form of buildings.

The understanding of *ka* was reflected in the work of Atelier Bow-Wow, founded by Yoshiharu Tsukamoto and Momoyo Kaijima in their discovering of 'Da-me Architecture', or no-good architecture (Kaijima, Kuroda and Tsukamoto, 2001) and 'Pet Architecture' (Atelier Bow-Wow, 2002). 'Pet Architecture' showed the buildings' 'smallness' under the high-density of Tokyo's urban condition and the finely divided spaces in relation to human activities under 'smallness'. 'Da-me Architecture' is not a-grade buildings designed by architects caring about shapes, scales, and details, but a result of a combination of different categories (for example, buildings, infrastructures, and

landscape), different structure systems, different programs and functions responding to the economic efficiency in a high-density urban environment. ‘Da-me Architecture’ behaved like the plant, which grew in the city’s crevices, following the directions of sunlight, rainwater, wind in ecology. The ‘Da-me Architecture’ and the hybridity landscape in Tokyo showed their flexibility towards different urban situations and environment with a varied and dynamic form (figure 2.36). In other words, ‘Da-me Architecture’ had no pre-determined form. In Tsukamoto and Kaijima’s later book *Behaviourology* (Atelier Bow-Wow, 2010), they detailed three categories of behaviours explicitly related to the form of architecture and urban space: ‘human beings’, ‘natural elements’ (such as light, heat, water, wind, etc.), and ‘buildings’ (shared common characters in typologies to reflect factors of climate, urban policies, tax regulations, etc. behind the form). Tsukamoto and Kaijima claimed an interplay between these three behaviours with forms of architecture and urban space. They pointed out that:

> *In fact, the building exists only relative to other factors, causing its individuality to disappear altogether. Each is formed according to basic principles of nature, and works to optimize the performance of each factor included therein. In this way, the form of the building is situated to share an ecological relationship with the diverse behaviours of different elements. In order to make architecture intervene in the topic of behaviour, form must be reconsidered as a completement to behaviours already in effect. That is to say, the building allows the elements to behave optimally, and consistent with their very nature* (Atelier Bow-Wow, 2010, p.10).

Figure 2.36 The hybrid landscape of a temple and shops in Ameyoko shopping street is formed by weaving different human activities. The temple's sacred precinct, which is elevated on the rooftop of shops, is used for commercial activities and becomes part of the shopping street. (Source from: Kajima, Kuroda and Tsukamoto, 2001)

Guo Yimin (2016) projected the force of *ka* on the form and morph of structure design as 'ideas' in contemporary Japanese architecture. In addition to the structure selection based on structural technology from a perspective of architectural tectonics, he explored the Japanese ideological concepts for architects and structural engineers to consider the structural form in a de-materialization manner. The form of the Japanese structure (and the form of the building guided by the structure in further development) is in a state of ambiguity between materiality and non-materiality, in which *ka* (ideological concepts) plays a decisive role. These ideas are derived from Japan's traditional culture, social contents, and aesthetics, including 'nature', 'subdivision', 'flatness', 'body', and 'ambiguity'.

Unlike the *katachi*, which is concrete to discuss its shape, the typological reasoning of form through *ka* and *kata* needs a methodology to interpret shared ideas and structural logics in the formal system. Hisao Kohyama (1988) put forward his *Keitairon* (形態論, Morphological Theory) in three steps (morphological element, morphological composition and morphological structure) in accord with Kikutake's three phases of the form (*katachi*, *kata*, and *ka*). For the morphological element, it denoted 'distinctive elements' that can summarize the feature of architectural form (figure 2.37). For morphological composition, it meant to discover the composition of each 'distinctive element' found in the first step and the 'compositional relation' between these individual 'distinctive elements'. For morphological structure, it asked to extract shared centre (principle) to structure the different 'distinctive elements' into the whole architectural form (Kobayashi, 2008).

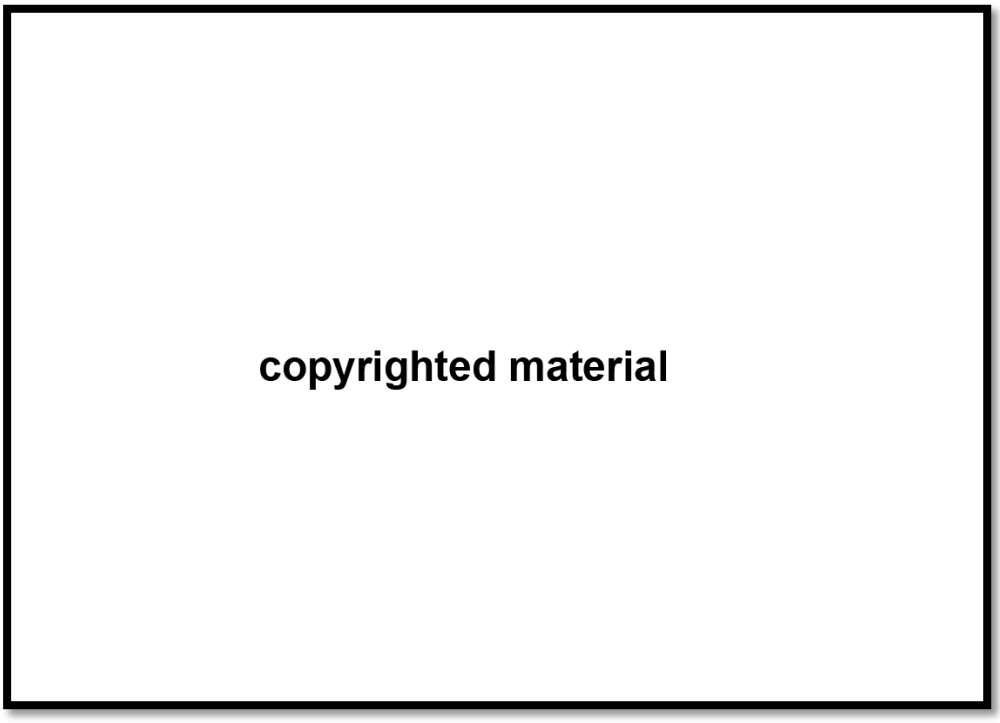


Figure 2.37 A part of the analysis diagram on the design process of Austin Hall. The form of the 'distinctive element' and its transformation is addressed by Hisao Kohyama. (Source from: Kohyama, 1978).

Kohyama's *keitairon* was built on the architectural composition from the perspective of morphology, Kazunari Sakamoto's (Sakamoto et al. 2012) *Kenchiku Kousei-gaku* (建築構成学, Studies of Architectural Composition) was based on the perspective of spatial analysis. Architectural composition for Sakamoto was not only a tool to read form but also was used to create the form in design. Sakamoto believed that architecture needed to be elevated from an isolated object to a broader urban environment. He stressed an interdependent relationship between architecture and environment, asking for a 'freedom' of architectural form related to people's 'living', 'activity', 'feeling' and 'situation' (Sakamoto,1994, p.4-5). Therefore, his typological approach underlined an interaction between inside and outside (interior, semi-exterior and exterior domains), part and whole (at various layers) (figure 2.38), as well as the space and people (figures 2.39 and 2.40). Different from typological diagrams used by Durand and Krier, in Sakamoto's architectural composition, people's behaviour in perceiving the inner architectural space was highlighted mainly from the perspective of circulations and sightlines. It shows the significant roles of non-form factors (people) in the spatial composition in architecture and further influences the shape of architecture in appearance. Typology for Sakamoto was the reasoning of identifying the spatial structure of form through architectural composition. In Sakamoto's architectural composition analysis, compositional element was abstracted based on different spatial units (such as 'room', 'group of room', 'architectural volumes') without detailing their formal characters (geometry, axis, ratio, scale, etc.) and operations (bending, breaking, addition, penetration, etc.). It differs from the 'distinctive element' in Kohyama's architectural composition (addressing both formal characters and operations) and resonates with de-materiality of Japanese form. Instead, spatial relations between compositional parts were emphasized (Inoue, 1969), addressing more 'spatial and performative' than 'constructive and objective' in the Western typological analysis (Hamaguchi, cited in Isozaki, 2011, p.24). He explained his understanding of architectural composition (Sakamoto et al. 2018, pp.8-9):

Architectural composition is concerned with the assembly method of the various parts of the building and the resulting spatial characters and meanings. . . The layout (arrangement) of these spaces is the core of the architectural composition. The composition of the building, or the spatial composition of the building, has a formal type at various levels. The basic architectural composition studies first of all to find the type of architectural composition. . . By comparing and exploring these types, we can extract the characters and meanings of architecture.

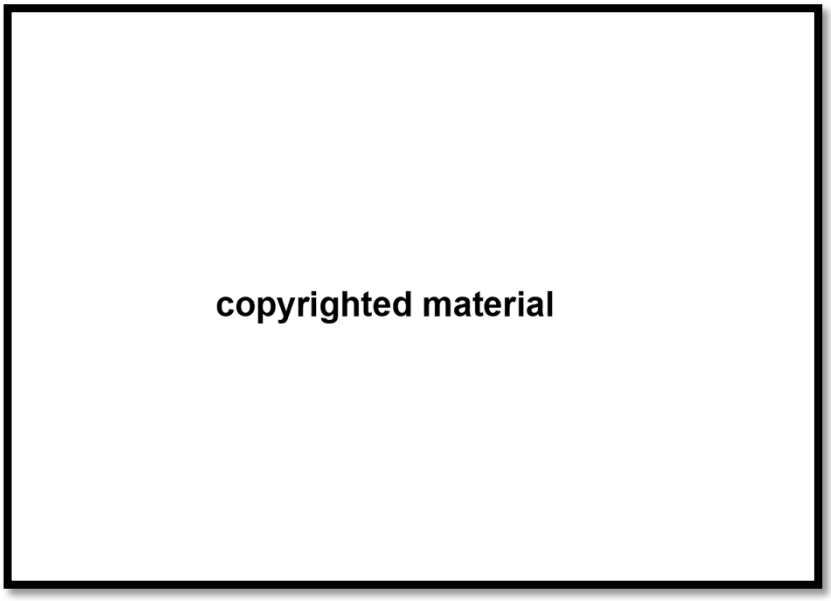


Figure 2.38 The different layers in architectural composition. (Source from: Sakamoto et al., 2018)

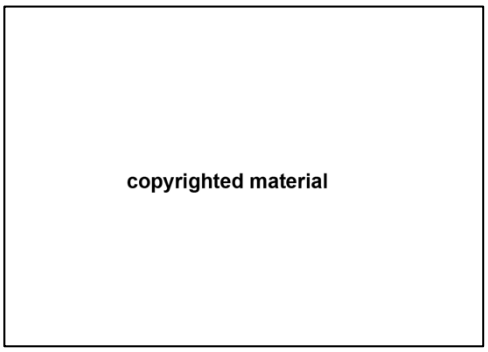


Figure 2.39 The relations of sightlines in architectural composition. (Source from: adapted by the author based on the figure from Sakamoto et al., 2018)

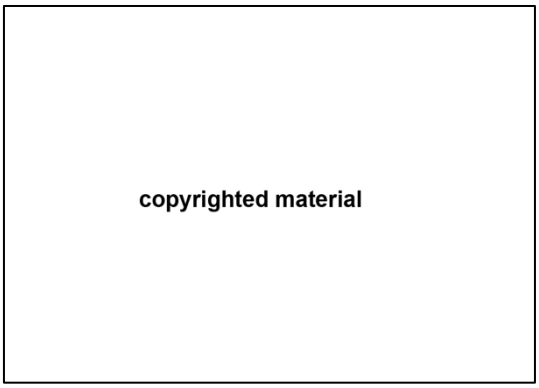


Figure 2.40 The relations of circulations in architectural composition. (Source from: adapted by the author based on the figure from Sakamoto et al., 2018)

Sakamoto compared architectural composition in building to grammar in semantics and believed that architecture and its meaning were established based on the 'syntagmatic' relation and 'paradigmatic' relation. Syntagmatic relation emphasizes the syntactic order (like the grammar in language) of individual parts for a meaningful whole. Paradigmatic relation underlines the uniqueness of part (like the individual word in a sentence) to the meaning of the whole. With a different degree of complexity in architecture, the different 'articulation' of compositional elements (figure 2.41) – including spatial elements ('room', 'group of rooms', or 'architectural volume') and attachment elements ('tree', 'grass', 'water', 'pavement', etc.)– was established, showing the 'paradigmatic' relationship. Different 'syntagmatic' relationship for the 'integration' of articulated compositional elements in the architectural composition was explored by spatial configurations (for example, 'positions', 'openings', 'circulations',

'sightlines', 'materiality', 'structural framework', etc.) (figure 2.42). The meanings and characters of architectural composition through the part-to-whole process were analysed at the end. For the typology in architectural composition, Sakamoto explained:

> *The form of composition is by no means specific shape, but a 'grammar' produced by a variety of spatial constitutions. . . As individual case of architectural composition, a single building reflects the spatial practice in society. As a result, the form of composition based on the internal structure of the building can be socialized. In particular, the architectural composition that is repeatedly used in society will become typified, form a composition that is easy to interpret its intention, and become a linguistic term. The typified architectural composition that is used repeatedly is the 'type' in constitution* (Sakamoto et al. 2018, p.16).

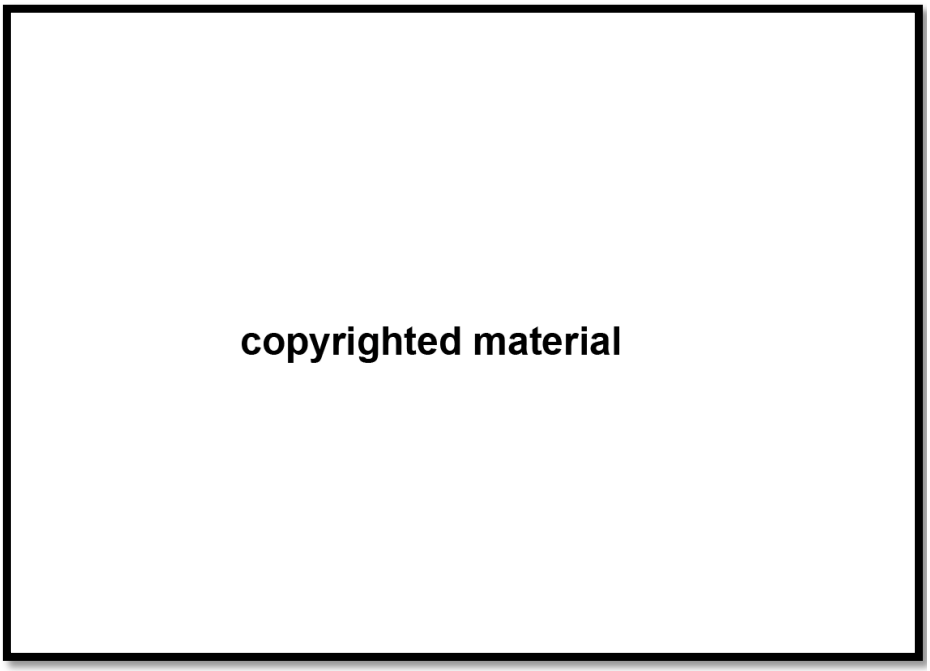


Figure 2.41 Elements of threshold and volume. The attachment elements ('pavement', 'grass', 'water', 'stair', 'trees') and spatial elements ('arcade', 'enclosure', 'hall', 'volume') are included in the discussion of the architectural composition of the threshold in Japanese contemporary architecture located in urban parks. (Source from: FAAS and Tsukamoto, 2014)

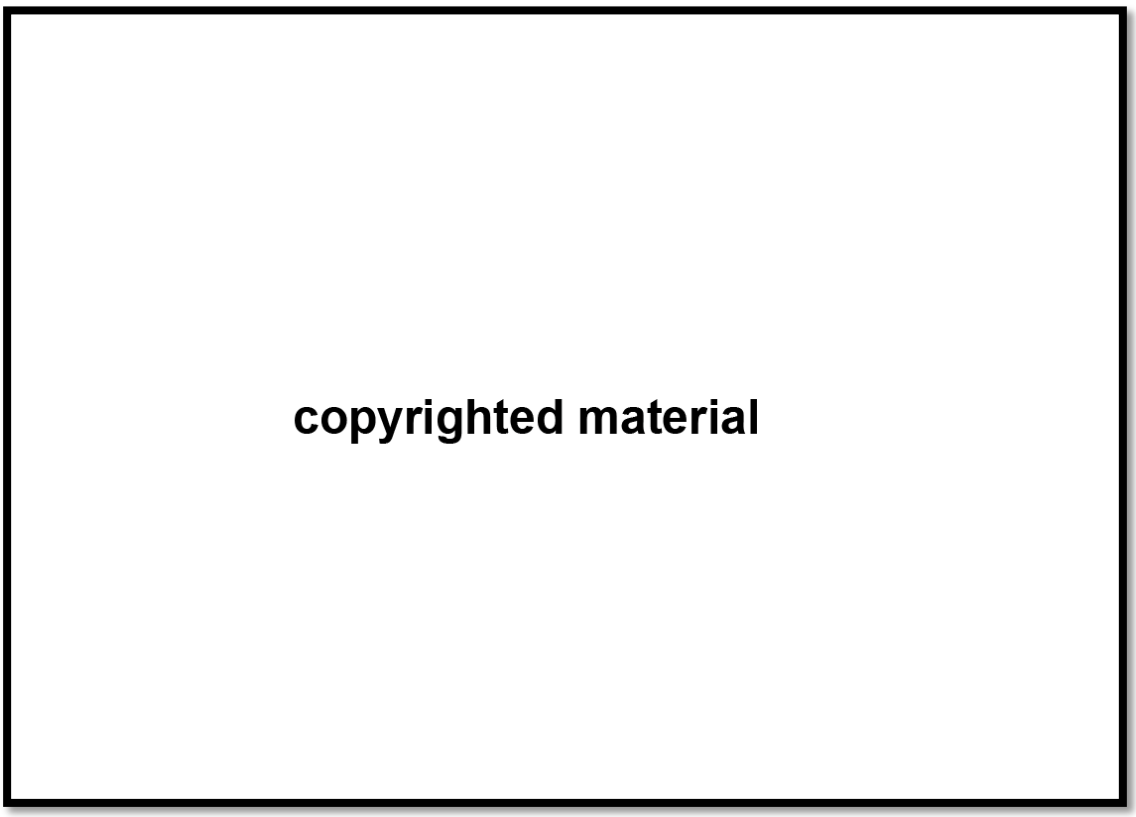


Figure 2.42 The architectural composition of the loggia space in contemporary architecture. The typology of the loggia in architecture is analysed in plan and section by its position with the surrounding environment. (Source from: adapted by the author based on the original figure from Konno, Miyagishima and Tsukamoto, 2010)

The architectural composition was widely used in architectural and urban space analysis across different scales. For example, in the analysis of the typology of 'loggia' as public space in contemporary architecture (Konnon, Miyagishima and Tsukamoto, 2010), in the study of exterior space formed by architecture (Terauchi et al., 2002), and in Tokyo's station square (Yasumori, Sakamoto, Terauchi, 2008).

2.2.3 The architectural composition analysis applied in the research

The typological reasoning (i.e., to search for the *ka* and *kata*) of *hiroba-ka* open space in contemporary Japanese architecture in this thesis was partially based on Sakamoto's architectural composition (particularly on *kata*) from the perspective of spatial analysis.

In order to discover a ‘repetitive’ and ‘socialized’ commonalities showed in the architectural composition of *hiroba-ka* open space*,* data for contemporary Japanese architecture was based on the formal data extracted from 135 published projects (Appendix 1) in Tokyo after the year 2000 until 2018 on *The Japan Architect* (*JA*). The criterion for selecting the case were that the chosen projects provided *hiroba-ka* open spaces for users in architectural space, fulfilling two of the three conditions of establishing Japanese *hiroba*: a physically provided open space and potential activities in use (Toshi dezain kenkyū-tai, 2009). The chosen projects needed to foster people’s collective activities through architectural design based on the description of texts, photos, and architectural drawings (plans and sections) on the magazines (or additional information about the project reported from other resources).

A series of spatial elements that were hypothesized to develop the physical settings of *hiroba* (open space) in Tokyo’s contemporary architecture were extracted, for example, the elevated ‘platform’ of Shinonome Canal Court in *JA* 51, the ‘hall’ space of Shibaura House in *JA* 84, the ‘courtyard’ of Hillside Terrace in JA 36, the exterior ‘staircase’ of La Kagu and rooftop ‘plaza’ of Tokyo Plaza Ginza in *JA* 104, the ‘threshold’ of Tokyo National Museum the Gallery of Horyuji Treasure in *JA* 44, the ‘terrace’ of Ginza Kabukiza in *JA* 92, the ‘parking’ of Shakujii Apartment in *JA* 84, the ‘atrium’ of GYRE in *JA* 68, the ‘sunken plaza’ of The Otemachi Tower in *JA* 96, the ‘corridor’ of Asakusa Cultural Tourist Information Centre, the ‘bridge’ of Shibuya Hikarie in *JA* 88, the ‘ramp’ of Omotesando Hills in *JA* 64 (figure 2.43) , etc. All the above-listed examples indicated the possibilities of the hypothesized open space typologies applied in the design of Tokyo’s contemporary architecture for Japanese *hiroba* making.

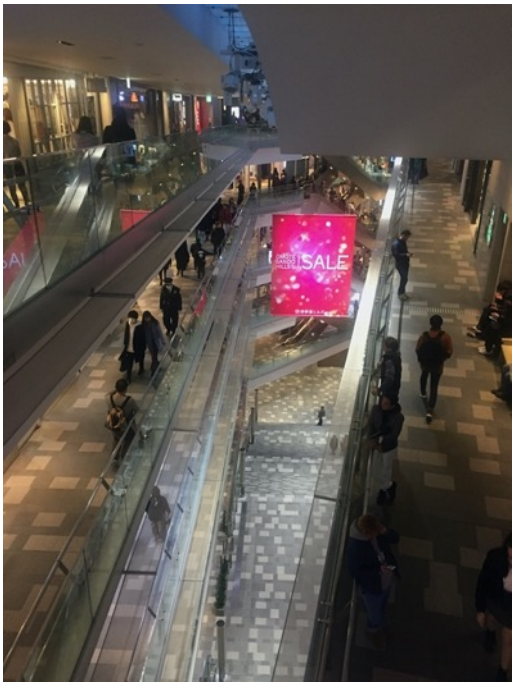


Figure 2.43 The 'ramp' at Tadao Ando's Omotesando Hills project encloses a central atrium that brings in natural light and links the outside street on the Omotesando to the interior space. The spiral ramp plays the role of the 'street' by providing the open space for people's circulations and activities in the building. (Source from: photo taken by the author)

An 'architectural composition analysis map', which detailed the typological category and coding process of *hiroba-ka* open space in architecture, was made in Appendix 2. Every selected project was coded based on the compositional elements and their spatial configurations of the hypothesized *hiroba-ka* open space typologies in architectural composition from the perspectives of 'position on the block', 'position on the site', 'volume typology', 'spatial position', 'volume manipulation', 'spatial form' and 'on-site elements'. The typological reasoning of *hiroba* in each project was interpreted and put in a list of statistic data list (Appendix 3). The architectural composition analysis of *hiroba* in 135 projects found that a series of spatial elements and attachment elements (figure 2.44) were repeatedly applied in architectural design across different functional building types. The spatial elements and attachment elements were hypothesized to develop the physical settings of *hiroba-ka* open space and foster people's collective gathering, communication, and interaction in architecture. They

were distributed not only on the ground level but also underground, above ground, and on the rooftop level.

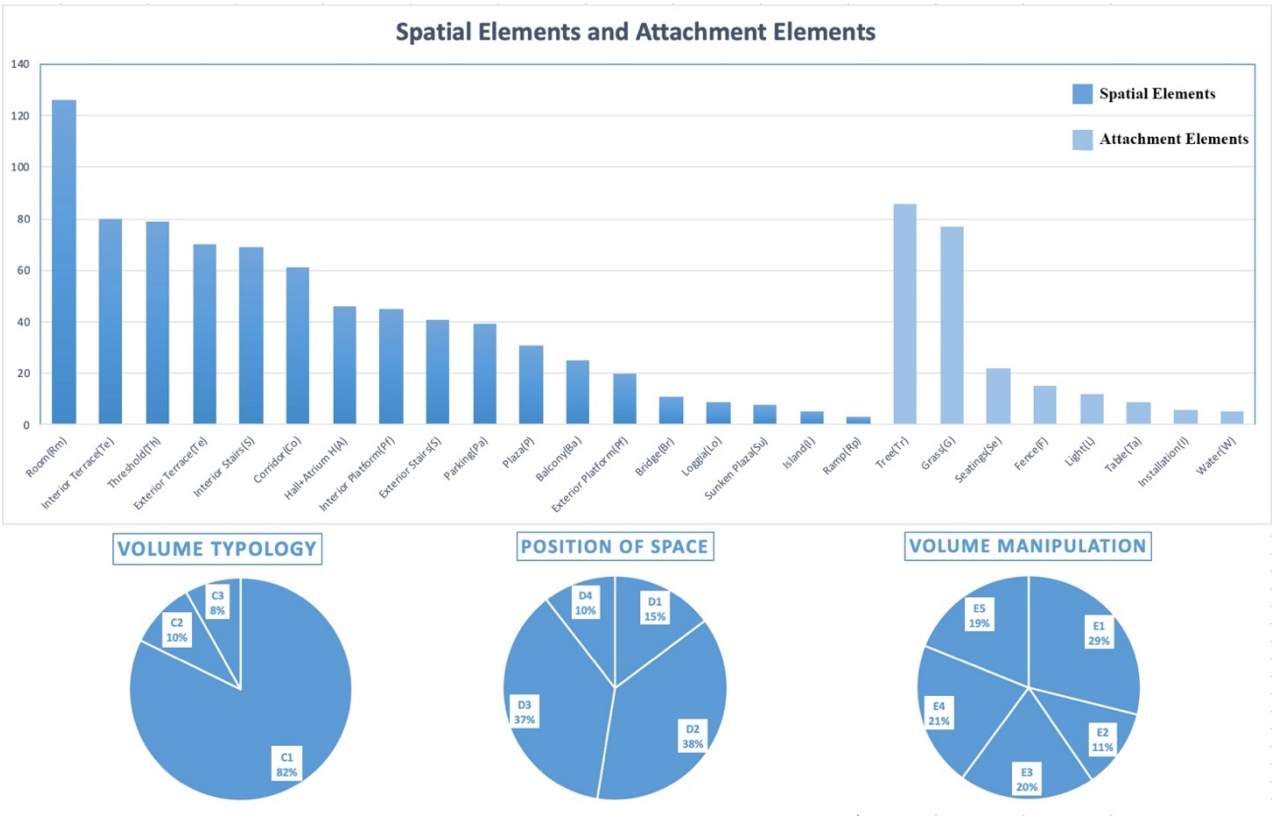


Figure 2.44 The result of statistics based on the architectural composition of 135 projects extracted from *JA*. (Source from: drawn by the author)

Four case studies (Appendix 4) were chosen, which covers the most occurred spatial elements and attachment elements layout in both interior and exterior at different levels (below the ground, on the ground, and above the ground). They were Fumihiko Maki's Hillside Terrace, Itsuko Hasegawa's Sumida Cultural Factory, Riken Yamamoto's Shinonome Canal Court and Hiroshi Nakamura's Tokyu Plaza Omotesando Harajuku. The following empirical studies of the four case studies were carried out.

In each of the four case studies, different open spaces in contemporary Japanese architecture (as the materiality of Japanese *hiroba*) represented by spatial elements were collected for a second-round architectural composition analysis to identify the typologies of those open spaces. In terms of a set of classifying categories that define

the spatial characters of open space (figure 2.45) on its accessibility through ‘circulation’(‘direct’ from the street, ‘semi-direct’ from the site, ‘indirect’), ‘sightline’ (‘direct’ from street, ‘semi-direct’ through other space, ‘indirect’) and ‘level’ (‘sunken’, ‘ground’, ‘underground’); enclosure through ‘opening’ (‘one’, ‘two’, ‘three’, ‘four’, ‘five’, and above), ‘scale’ (‘appropriate’ under three floors, ‘well’ between four to five floors, ‘over’ above five floors), and ‘canopy’ (‘uncovered’, ‘semi-covered’, ‘covered’); identity through ‘boundary’ (‘two’, ‘three’, ‘four’, ‘five’, and above), ‘permeability’ (‘yes’, ‘no’), and ‘attachment’ (‘yes’, ‘no’), the open spaces in each case study were coded and put in one table (for example, table 4.2, table 5.2, table 6.2, table 7.2). The open spaces with similar spatial characters were highlighted and grouped as one type. Parallelly, through the site observation of human behaviour and the interviews with users, chief architects, and developers or managers, the spatial configurations of *hiroba-ka* open spaces in contemporary Japanese architecture were explored.

In the conclusion chapter, the *hiroba-ka* open spaces in four case studies were collected and repeated the process of the second-round architectural composition analysis discussed above for a third-round summary. A final table (table 8.1) of classified open space typologies of *hiroba* within contemporary Japanese architecture in the research was completed. The spatial and compositional meanings and characters of the final classified open space typologies of *hiroba* in the research were explored and discussed in figure 8.1. A statistical analysis of studied *hiroba-ka* open spaces in four case studies was summarised in terms of types of ‘spatial elements’, ‘boundary’, ‘opening’, ‘circulation’, ‘sightline’, ‘attachment’, ‘level’, ‘canopy’, ‘scale’, and ‘permeability’ in figure 8.2.

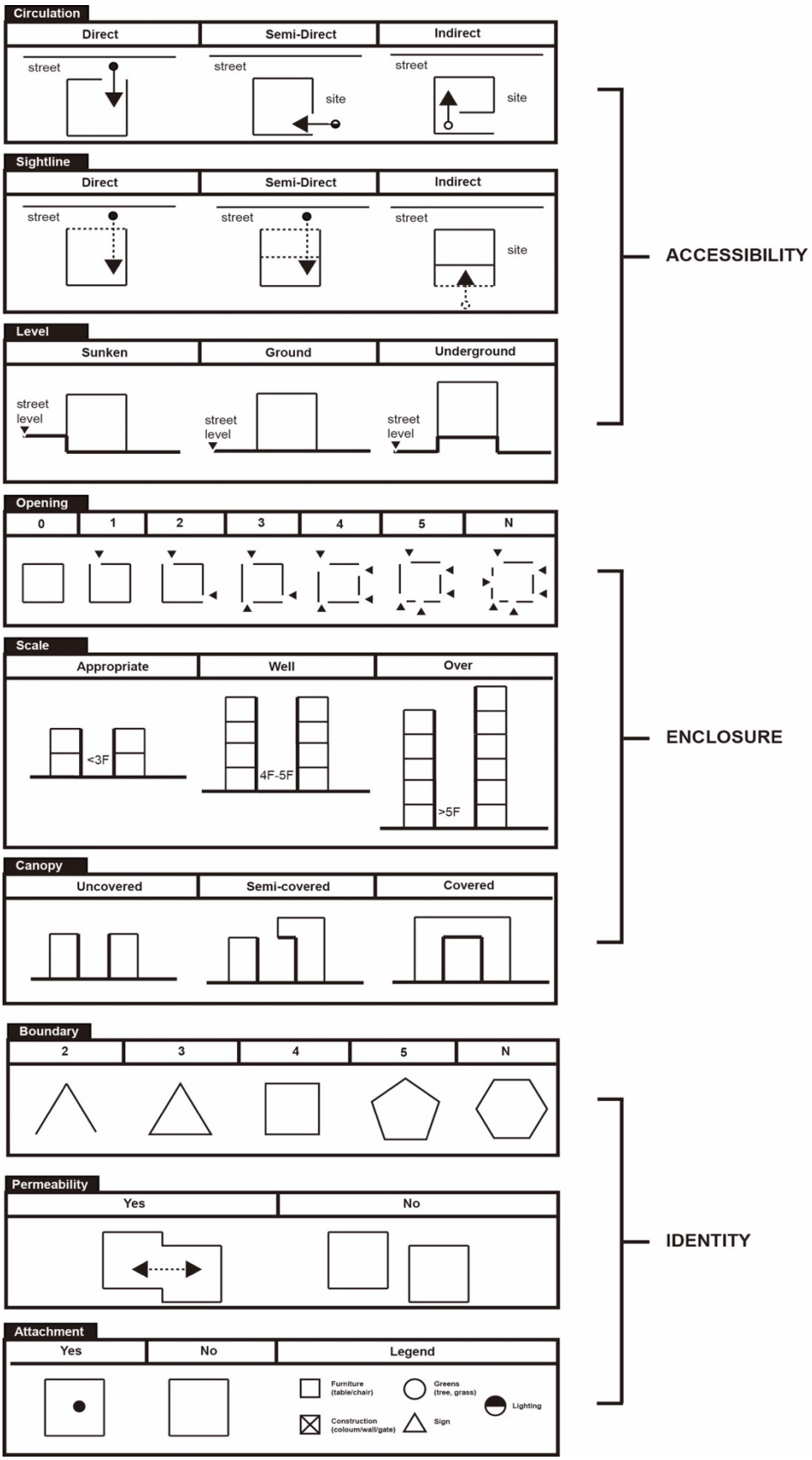


Figure 2.45 Categories that define the spatial characters of open space. (Source from: drawn by the author)

2.3 On Environment Behaviour Studies

2.3.1 Theories and histories on environment behaviour studies

Environmental behaviour study discovers the relationship between humans and the surrounding environment in order to improve people's quality of life. Because of the complexity of environmental factors, researchers from different disciplines gather in this field to research human behaviour from different perspectives, resulting in the multidisciplinary nature of this discipline, such as social and cultural studies (Hall, 1973), psychology (Craik, 1976), geography, environmental sociology, architecture and urban planning (Moore, 1984). Therefore, environmental behaviour studies develop many subordinate branches with different names, for example, environmental design research, environment and behaviour (Moore, 1987), man and environment, environment psychology (Stokols and Altman, 1987; Bechtel and Churchman, 2002), behaviour architecture (Heimsath, 1977), behaviour science in environment design (Lang, 1987), etc.

According to Li (2008), theories in environmental behaviour studies can be roughly categorised into three basic viewpoints.

(1) Environmental determinism: the external environmental factors are the only factors that dominate human behaviour. This view ignores the subjective and initiative of people's adjustments and changes of the environment. In the field of architecture, the idea of environmental determinism is reflected in architectural determinism. A good example is the architectural and city movement under the principles of CIAM, which believed design determined people's life and behaviour.

(2) Interactionalism: interactionalism recognizes people's adjustments and transformations of the environment based on environmental determinism. However, 'environment' and 'people' are defined as two separate parts. Human behaviour is

affected by internal factors within human beings and external factors in the environment separately (Murray, 1938; Lewin, 1951).

(3) Transactionalism: transactionalism emphasizes that people are not only influenced by the environment, but also can modify and change the environment through interactions. In this process, the adjusted environment, in turn, affects human behaviour. Humans and the environment are an inseparable whole. The two influence and depend on each other (Altman and Rogoff, 1987). As Stokols (1987, p.42) argued, 'a fundamental feature of transactional research is its emphasis on … "contexts".'

Environmental design is closely associated and much applied in architectural design practices and architectural theories (Lang, 1987). The introduction of phenomenology by German philosopher Edmund Husserl in the 1910s was adapted to architectural discipline as architectural phenomenology, which emphasized people's perceptions, experiences, and feelings of architecture. In 'the phenomenology of existence' of the German philosopher Martin Heidegger (1971), he proposed the mental cultivation of space besides the physical construction, underscoring dwelling as a way of being in the world. In the phenomenology of perception by French philosopher Merleau Ponty (2012), he stressed the human body's sensory understanding of the environment. Based on Heidegger, Schultz (1980) restated the significance of dwelling by identifying the meaning and spirit of space. The discovering of the *genius loci* became the root in finding and cultivating place by architectural phenomenology. In architectural practice, Steven Holl stressed the excavation of uniqueness of individual sites to anchor his architecture by searching for the land's history and memory. Steven Holl (Holl, Pallasmaa and Pérez-Gómez, 2007) introduced the phenomenology of perception in architectural discipline. User's spatial perceptions and experiences were appreciated over the previously praised rationality in construction by architects. Peter Zumthor (2006a, 2006b) shifted the focus on studying building tectonics to the scrutiny of design materials and details. In this way, atmosphere and emotions in mind were evoked in

architecture. By recording the interrelationship between the architectural and urban space in Manhattan and the stories triggered by human activities through time, Tschumi (1994) emphasized the notions of ‘time’ and ‘place’ through ‘event’ in the constitution of space in addition to the physical attributes of space (figure 2.46). This notion of experiencing architecture through people’s bodies and minds was also developed and underscored in many architectural designers and theorists, such as Rasmussen (1957) and Charles Moore (Bloomer and Moore, 1977).

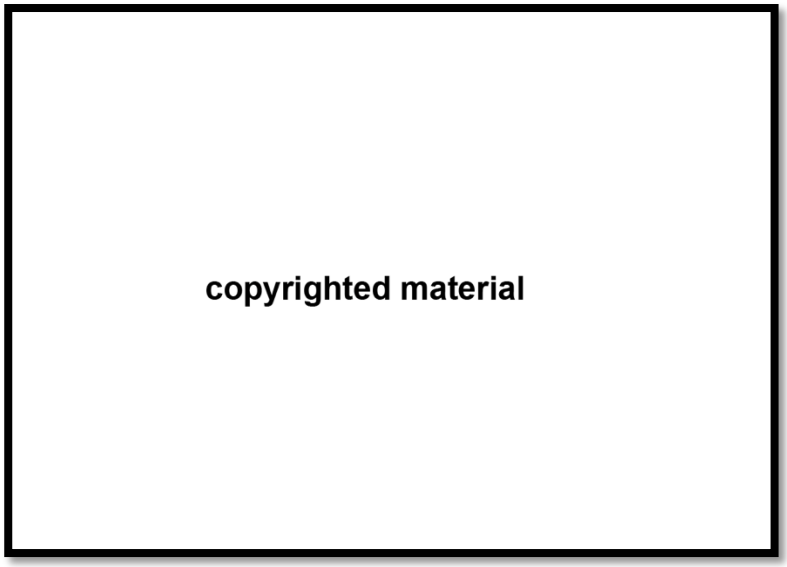


Figure 2.46 Space, movement, and event in Tschumi’s *The Manhattan Transcripts.* (Source from: Tschumi, 1994)

In addition to the discipline of architectural design, the environment behaviour study is also introduced and applied in the research of Western public space. Urban designers and researchers begin to pay more attention on the people than the physical form and design of public space. For example, Camilo Sitte (1965), Gordon Cullen (1971), Venturi, Scott Brown and Izenour (1972), and Lynch (2006) proposed aesthetic standards, visual aspects, and cognitive image of public space in forming people’s spatial awareness in public space. Carr (1992), Carmona and Tiesdell (2007), Carmona et al. (2010), and Madanipour (1999) studied the people’s demands in public space design on a broad socio-cultural dimension. Arendt (2019), Lefebvre (1991), and

Cuthbert (2006) emphasised the political environment of public space on people's spatial behaviour in society. Jacobs (1961), Whyte (1980), Appleyard, Gerson, and Lintell (1981), Gehl (2010, 2011), and his colleagues (Gehl and Gemzøe, 1996; 2006; Gehl et al., 2006) studies the mutual relationships between the form of public space and human behaviour. Marcus and Francis (1998), Tibbalds (2015), and Bentley et al. (1985) appealed for a human-scale place and carried out a series of studies to search for the causing factors on the quality of public space. All these above-mentioned studies on people in public space indicate the tendency of a gradual shifting from considerations on form and space to people and their behaviour and activities in Western architectural and urban design studies. These studies provided different research perspectives and many fundamental methods (observation, interview, survey with questionnaires, mapping and recording with sketches, photos and films) to study people's behaviour and public life, inspiring the following research conducted by Japanese scholars and designers (Suzuki, 2014).

2.3.2 Environment behaviour studies in Japan

Japanese environmental behaviour study is closely related to *kenchiku keigaku* (建築計画, architectural planning). Environmental behaviour and architecture are organically combined through the perspective of architectural engineering for guiding research and design (Architectural Institute of Japan, 2003). 'Environment' in architectural planning emphasizes not only the physical and spatial perspective (Funabashi, in Li 2008) but also involves social, cultural, economic, political and lifestyle aspects affecting people's behaviour in the process of time (Funabashi, in Li 2017). *Kenchiku keigaku* directs to transnationalism, denoting an interaction between environment and human behaviour. Li (2008) added and emphasized that the behaviour-environment interaction research needed to be placed under a specific cultural background to form a three-way relationship (human-environment-culture) in order to have a deeper understanding of the connotation of people and the environment (figure 2.47). In the

content covered by *kenchiku keigaku*, two aspects *chikaku* (知覚, perceptions) and *kōdō* (行動, actions) of human behaviour are emphasized. One is the perception acquired by human's five senses (including people's psychological activities triggered by environmental perceptions). The other is the human's actions and performances, including the ergonomics related to the interactions between the built environment and human, body's scale and proportion, people's occupation of space, communication, move and stay, lifestyle, etc. (Okada et al. 2002). In the *kenchiku keigaku*, form design is not only related to function, structure, and local climate but also human behaviour plays a significant role in shaping architectural form.

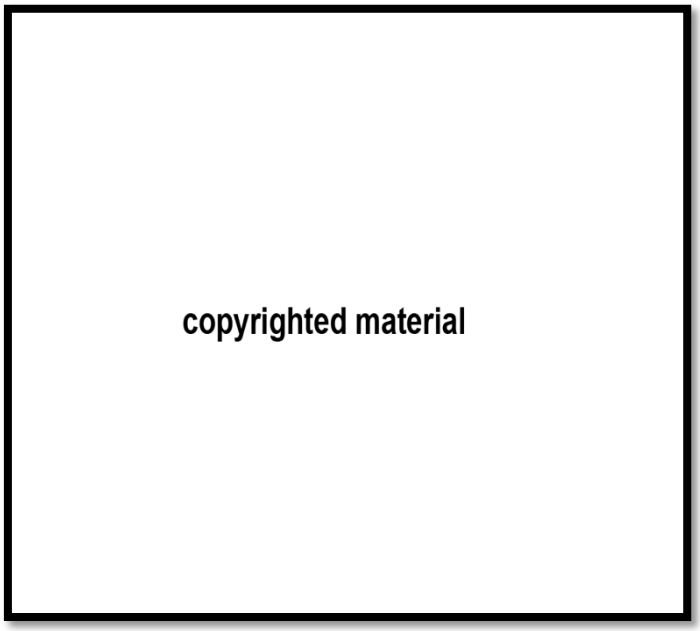


Figure 2.47 The model of relations between human, environment, and culture. The interrelation of people and environment produces form, relationship, and meaning. Under the influence of time, the three are continuously revised and supplemented. The common attributes between them are inherited, and the aggregation of these common attributes is culture. (Source from: Li, 2008)

The aesthetic and spatial awareness of traditional Japanese architecture constantly emphasize the five senses of people in perceiving and experience architecture. For example, Tanizaki (1967) interpreted that the perception of the density of light in the indoor space impacted the Japanese aesthetics of the space. The texture of the material also influenced people's emotions. Unlike the positive effect of bright light on space in the West, Tanizaki pointed out the Japanese praise for the shadow.

Paying attention to human-oriented space and human activities were underlined in the design of traditional Japanese architecture. An agreement on the combination of *ningen* (人間, human) and *kūkan* (空間, space) in architecture was addressed in Japanese architectural design (Suzuki, 2014). Kojiro (1967) criticized the division between interior and exterior space by walls influenced by the Western architectural language. He claimed to have a fluid way of organizing space in Japan by considering people's activities of 'stagnation' and 'flow' instead of division and enclosure by controlling the open-close relations through the compositional elements in architecture. Maki (1994b), in his *Notes on Collective Form,* also addressed the organic group-form and its linkage structured based on the interactions and relations between human activities, social system, and environment. His spatial concept of *oku* in architectural design was also rooted in the behaviour preference and unique perceptions of space by Japanese people (Maki, 1980).

Kisho Kurokawa's (1970) architectural theory '*Kōdō Kenchiku-ron'* (行動建築, behavioural architecture theory) also mentioned the concept of 'behaviour'. Kurokawa proposed that '*Ugoku Kenchiku*' (動く建筑, moving architecture) should adapt to the changing needs of modern society and human beings. Therefore, the determination of architectural space should be different from the space with clear functions advocated by Modernism but should have spatial flexibility that can change with time as the users' demands change. Kurokawa used '*Michi no Kenchiku'* (道の建筑, street architecture) as the best representative of his '*Ugoku Kenchiku'*. He called *michi* '*rikyu* grey' or *engawa* (veranda) space in terms of Noli's black-and -white figure-ground relation in the Western cities, denoting an ambiguous relation between inside and outside, and public and private (Kurokawa, 1988).

Inoue (1969) explained that the asymmetry and irregularity of the traditional Japanese architectural form and layout were mainly derived from the attention to human actions and movements. He pointed out that Western architecture is based on an orthogonal

coordinate system. In contrast, the connections, turning angles in Japanese architecture space depended on people's sightlines and the relationships between people and the external environment during space travel through time. Inoue (1969) summarized the relations between space and human behaviour as follows (figure 2.48):

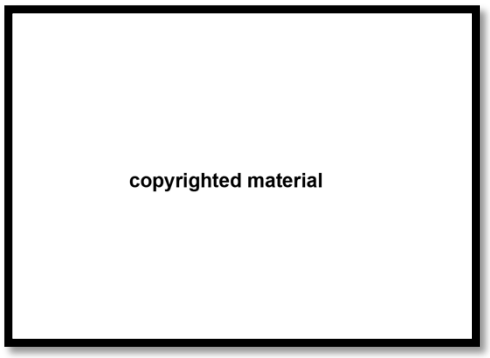


Figure 2.48 The different patterns of the two paths share the same concept of movement space. Inside any one of the according nodes in the two paths from left and right, people are only aware of the existence of the preceding and proceeding nodes. The internal space people perceive inside the path from two patterns is equal despite their distinguished difference from the aerial view above. (Source from: Inoue, 1969)

Takahashi and EBS Team (2003) explored the interactions between the environment and people in relation to the human body on different scales. Their research used the body as the original point and expanded various spatial scales to explore the space generated by the interaction between environment and behaviour through time. For example, the change of sitting postures and the range of hand movements in space were discovered on the one-meter scale. The interpersonal distance and communication were studied on a scale of ten meters. Park and urban facilities were investigated on the scales of ten square meters and one thousand square meters. By the discussions about aesthetics, psychology, and behaviour perceived by people, Takahashi and EBS Team gave examples on how to derive knowledge from the above-mentioned studies on different spatial scales in the design of comfortable spaces for users. They believed that design behaviour is to design space, and the two influenced each other and have a very close connection.

Wajiro Kon (1987) established '*Kōgen-gaku*' (考現学, 'Modernology': studies of modern society), which paid attention to people's everyday daily life based on ethnography and folk studies. He observed a wide range of research objects (including people and objects on the street) spanned on different scales. For observations about people, such as the style and colour of clothes worn by people in Japanese society, the change in the number of people walking on different streets at different times, the structure of the gender, age, and occupation of the pedestrians, and the distribution of different activities on different sections of streets were explored (figure 2.49). For observation of objects, such as different types of fences in fishing villages, drainage pipes in architectural details (figure 2.50), the structure and characteristics of handles of sliding doors, the spatial distribution of houses with different functions on the shopping streets, and the proportions of Japanese-style and Western-style urban residences in Japan were studied.

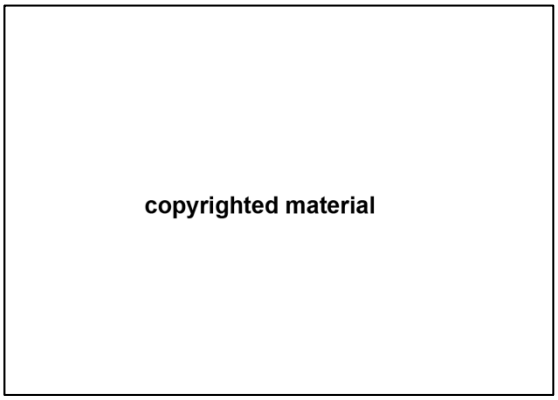


Figure 2.49
The distribution of people in different genders, ages, and activities on the street. (Source from:

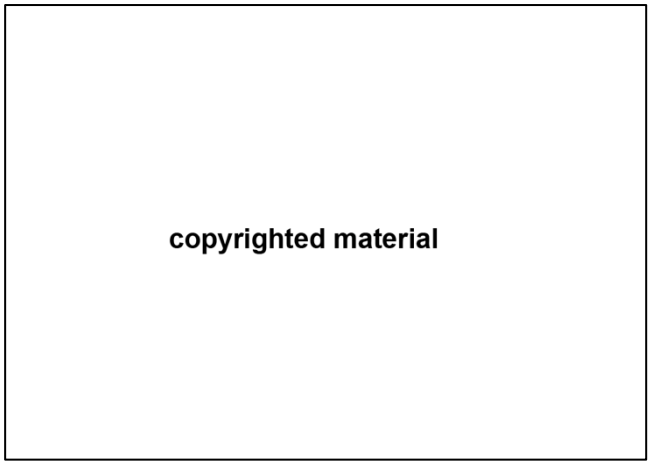


Figure 2.50
The different types of drainage pipes in Japanese vernacular architecture. (Source from: Kon, 1987)

In addition to the individual observations of people and objects, Kon was more concerned about the influence between people and objects in the city and the relationship between the two on the formation of the physical space. For example, the life scenes of people in slums and the status of people's income in relation to their different living conditions were discovered. In his observations, Kon adopted the space structure to be juxtaposed with the activities of people in the space drawn on the plane in the same sketch. In this way, he built the connection between people and things through time and displayed the connection between the two in the form of events (figure 2.51). At the same time, the combination of the chart, table with recorded text, as well as the application of statistics and classification analysis in the research, had a significant impact on Terunobu Fujimori and his Road Observation Association in the 1980s (Akasegawa, Shinbō and Fujimori, 1993), as well as Atelier Bow-Wow in the early 2000s. Tokyo's 'Da-me Architecture' (Kaijima, Kuroda and Tsukamoto, 2001) and 'Pet Architecture' (Atelier Bow-Wow, 2002) reflected the construction of architectural space structured by environmental factors on people. The form of the building reflected the behaviorology of these environmental elements through time (Kaijima, Stalder and Iseki, 2018). For the interrelations between architectural typology and people's behaviour, Tsukamoto (Atelier Bow-Wow, 2014, p.10) summarized that:

> *What architectural typology and people's behaviour have in common is that in a region or city, commonality is repeated across differences between subjects and individuals. And it is the form (form of object and behaviour) that makes it possible. Over a long period of time, the form changes little by little, preserving the characteristics of the form in some way. A form is accompanied by a shape, but it cannot be autonomously established as a pure model. The form is established where various factors such as climate, materials, life, institution, and economy are combined and balanced. Therefore, by looking at the form, we can see that the*

interrelationships between specific things are firmly established in a world where infinite combinations are possible.

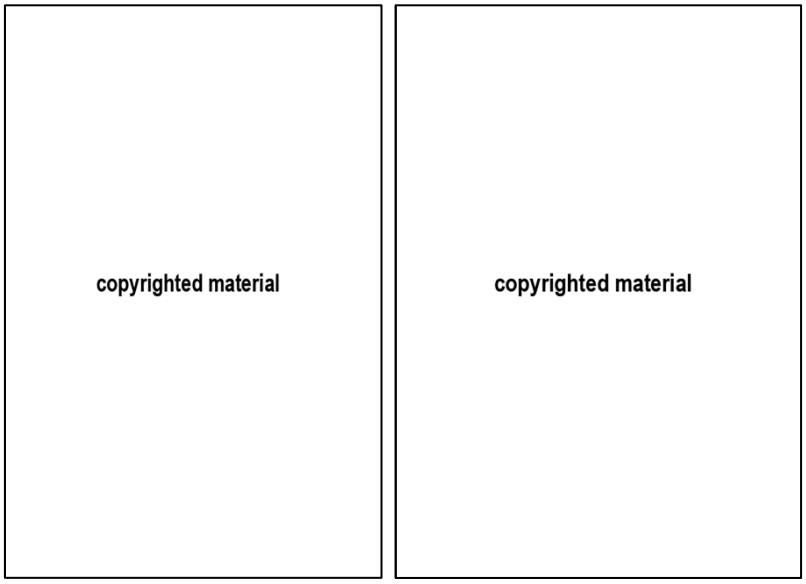


Figure 2.51 The layout of a Japanese house (left) and human activities inside the living room (right). (Source from: Kon, 1987)

In the architectural practice, Japanese architects transformed the acquired knowledge from the research of architectural behaviour into design in different ways. For example, in Ashihara's (1970) *Exterior Design in Architecture*, the scale of the surface divisions, the material of the building surface, and the best viewing angle were determined according to the visual width and distance. The proportional relationship (D/H) between the building height (H) and the building distance (D) (figure 2.52) was manipulated to give people feelings of different degrees of enclosure and oppression (Ashihara, 1983). Based on the theory of transactionalism in environment behaviour studies, Nakamura (2010) developed a human-oriented architectural design method: 'Microscopic Designing Methodology'. By paying attention to the interactions between body, material, nature and society, a unified resonance between people and the physical environment was generated (figure 2.53). Nakamura's approach to form and space design by addressing *furumai* (振る舞い, human behaviour) and environment on the scale of the body through time resonated with Atelier Bow-Wow's theory of 'behaviourology'

discussed previously. In recent years, many designers published guidebooks on the design methods for activating the vitality of urban public places and communities through considerations of users' behaviour and participation as the fundamental principles (Satoshi, 2019; Takeda et al., 2019; Hiraga et al., 2020; Kutsuna et al., 2021).

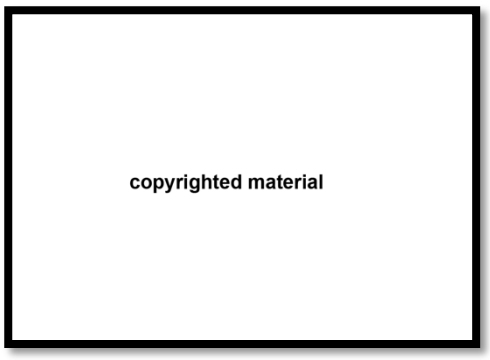


Figure 2.52 Relations between depth (D) and height (H) in streetscape formed by architecture. (Source from: Ashihara, 1983)

Figure 2.53 Interactions between human body and architectural wall in House SH designed by Hiroshi Nakamura. (Source from: Nakamura, 2010)

The application of environmental behaviour study was at both the beginning and after the design of architectural practice. For example, in the process of urban design, a bottom-up *machizukuri* instead of the top-down urban planning was promoted and became popular in Japan (Satoh, S. 1999, 2020). Users' expectations and ideas about the future built environment were brought into the design through workshops in order to obtain information about users' preferences and usage patterns for space making and management. This process called 'pre-design' (Onoda, 2013) was today not only regarded as an important procedure in architectural process and content in *kenchiku keikaku* but also was given legal guarantees in the relevant urban planning laws and building laws. For example, Watanabe (2005) studied Fukuoka and Kure's city policies on the traditional food stalls to improve the better use of public space based on municipal documents. Tenmyo and Kobayashi (2006) reviewed the *SYAREMACHI*

ordinance (beautiful street ordinance) in Tokyo to actively use public space by promoting events through hearings of *machizukuri* organizations in five cases.

The user's post-occupancy evaluation (POE) of the urban space was valued and carried out to understand the changes before and after use, and the reasons or factors in changing people's behaviour for design practices. For example, Hirata and Kajiura (1985) designed different levels of criteria from satisfaction to dissatisfaction to evaluate users' activities in the public open space in front of Osaka city's condominium in terms of utilization status and management issues through questionnaires. Kana, Fuzimoto and Akasaki (2009) analysed the influence of human behaviour by introducing newly established food stalls at park in Kure city. Okudaira et al. (2008) examined the parasol as an effective tool to activate use of street space. The increased number on staying, joined activities, and the difference between before and after of setting up the parasol were compared. In Li et al.'s (2012) research on the usage pattern in pedestrian underpass when setting up events, users' moving paths were traced and mapped on the map, indicating the influence of temporary physical setting to the human behaviour (figure 2.54).

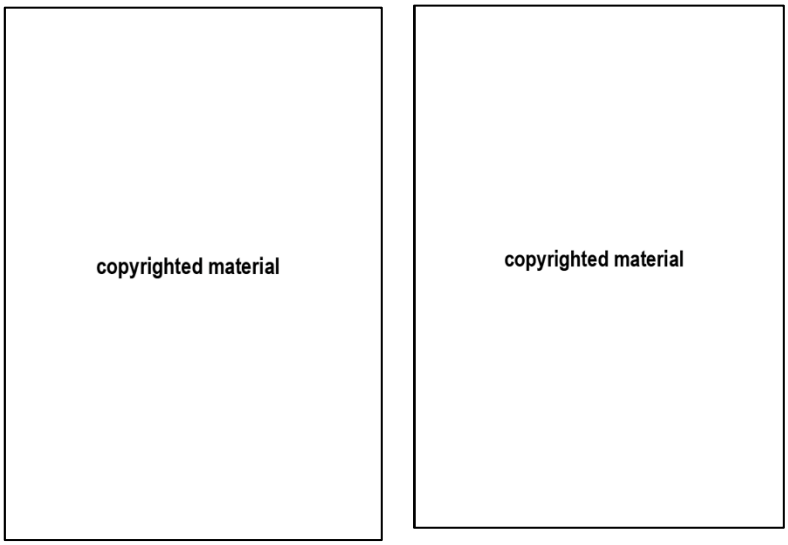


Figure 2.54
People's movement on a regular day (left, for passing through) and event day (right, for parasol gallery) at the underpass in front of Chiba station. (Source

Chapter 3. ‘Public’ space, *hiroba* and the notions of ‘public’ behind

3.1 In Edo Period (1603-1867)

In the early modern period of Japan (1573-1868), the urban space was unevenly divided by people of different classes. Take the example of the city of Edo (the predecessor of Tokyo). The 'spatial anthropology' thus is classified into two parts (Jinnai, 1995). Those upper class were granted around the Edo castle in the high land of *Yamanote*. Those lower class were expelled to the lower land of *Shitamachi*. The small group of former top-class owned the majority land, the later lower-class who occupied the most population of the city was squeezed to limited land.

The inequality of spatial distribution under the political and social system in a feudal society indicated no officially considered public spaces for ordinary citizens. The typologies of Japanese public space in Edo were in the form of various kinds of open space or *kūchi*. They were not usually planned in a large piece of land standing out in the city centre like ancient Greek agora, Roman forum, and piazza, plaza, platz, and square in most traditional European countries as the symbolic urban elements and emblem of civic society. In contrast, they usually appeared as 'informal' small pieces of 'leftover' space, which were hidden in the corner of the city with a sense of *oku*, or deepness (Maki, 1980) at the outskirt of the city centre close to ordinary citizens in *Shitamchi* (figure 3.1). *Kūchi* was usually filled with leisure, entertainment, and commerce activities, stressing collective living and everyday life without any indications on politics (which was also not allowed), which was appreciated as one of the essential values embedded in the Western public space. Through people's appropriations of *kūchi* with different activities (i.e., *hiroba-ka*), *hiroba* is generated with the characters of 'flexibility' (in space) and instantaneity (in time), responding to the Japanese concept of space –*ma*.

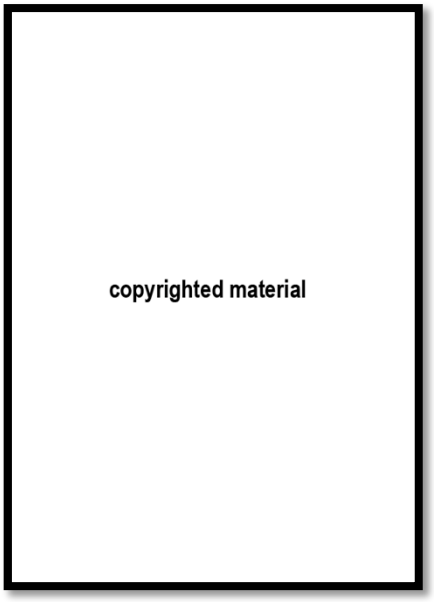
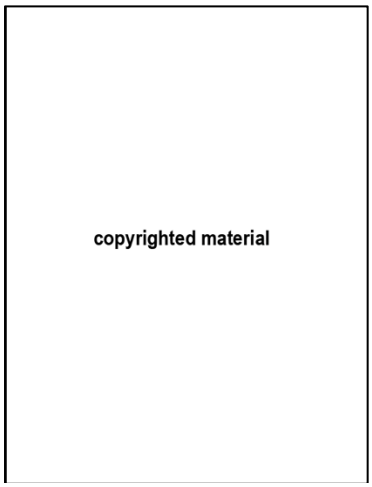


Figure 3.1 A map showing the distribution of places in interest in Edo. (Source from: Maki, 2017)

Many urban researchers depicted the vivid public life of Edo's *meisho*, *sakariba* and everyday living space (Seidensticker, 1983; Waley, 1991; Jinnai, 1995; Sorensen, 2002; Shinohara, 2006; Yoshimi, 2008). For example, the precinct of shrines and temples provided places for vendors to sell goods, food, and children to play games. The open space around the *hashizume* (foot of bridges) was where the fish market and other commercial spaces were located (figure 3.2). *Mizube* (riverside space) was where *hanabi taikai* (firework shows) was displayed in summer with other entertainment activities, such as scenic boat tours and *hanami* (flower viewings) (Jinnai, 1989; 2001). *Michi* (street) and *roji* (alleyways) between the shared public pathway and

the private estate (figure 3.3) were where neighbourhood communications took place (Okamoto, 2006; Jonas, 2007). *Yatai* (street food cart) and *matsuri* (festivals) (figure 3.4) were common to be found on the street with people carrying *mikoshi* (portable shrine) and various groups of marching teams for celebrating performances (Hidaka



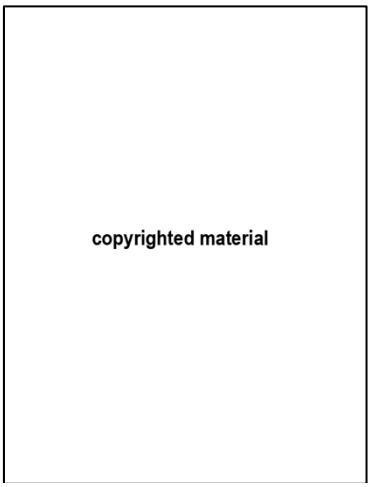


Figure 3.2 (left) The open space as the fish market around *hashizumi* of Nihonbashi in Utagawa Hiroshige's woodblock print. (Source from: Jinnai, 1992)

Figure 3.3 (right) The remaining traces of everyday life in the *roji* of Tsukudajima. Bicycles and pot plants from different families are put in the shared *roji.* (Source from: Imai, 2018)

and Tanaka, 2001). *Harappa* (figure 3.5), an open field without any predetermined functions, was creatively appropriated by children as a temporary *asobiba* (playground) (Aoki, 2004; Hasegawa, I. 2004; Sand, 2013). Those open spaces discussed above were commons as shared urban resources to be used by residents collectively, stressing accessibility instead of land ownership. There were *hiroba-ka* open spaces used and managed by certain villager groups tied by blood and clan as communal common spaces without mentioning land ownership. They were not fenced with physical boundaries but with clear territory perceptions in use, such as *idobata* (side of a well) (Kaijima, 2010), *kaishochi* (the open space in the block) (figure 3.6) (Lee, 2008: 2012), and *satoyama* (undeveloped woodland near the populated rural

area) (figure 3.7), were indispensable daily places where public and communal life happened in the neighbourhood.

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Figure 3.4 (top-left) *Matsuri* with people carrying *mikoshi* on the street. (Source from: photo taken by the author)

Figure 3.5 (bottom-left) Children playing on a vacant city lot owned by someone as *asobiba* in Taito-ku, North-West Tokyo. (Source from: Jonas and Rahmann, 2014)

Figure 3.6 (right) *Kaishochi* (in grey) enclosed by buildings (white blocks) were set up at the residential area of 1-chome and 3-chome in Minamidenma-chō. Newly developed alleys (black) connected the *kaishochi* with the existing street. (Source from: Lee, 2012)

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Figure 3.7 Mixed woodlands in the *satoyama* of a rural village. (Source from: Takeuchi et al., 2003)

From the examples mentioned above in the Edo period, some distinct characters of *hiroba* as the prototype of the Japanese public space can be summarized as follows:

(1) Hybridity: *hiroba* in Japan is usually a multi-functional space with different programs and activities superimposed together. For example, *hiroba* for food and entertainment activities coexist with the religious activities in shrines and temples. *Hirokoji* (a wide street) (figure 3.8) is not only for circulation or urban design considerations as the Western avenues but also for the function of firebreak as *hiyokechi* (firebreak land) planned by the ruling class.

Figure 3.8 *Hirokoji* was used as the function of *Hiyokechi* depicted in Hiroshige Utagawa's woodblock prints. (Source from: National Diet Library, 1857)

(2) Absence of centrality and order: *hiroba* in Japan differs from the public space in most Western cities, which denotes an open and visible centre to be the symbol of the city (Ashihara, 1989; 1998). *Hiroba*'s centrifuge features can be revealed by its 'fine-grain' urban morphology with scattered distributions (Maki, 2017). The unsymmetric plan and angled shape may relate to the people's movements and sightlines in perceiving the spatial environment in nature and architecture (Inoue, 1969).

(3) Time: many activities in Japanese people's public life are synchronous with seasonal changes in nature. The cherry blossom in spring and people's events under the tree are linked with time. When flowers disappear and events end, *hiroba* returns to the unused *kūchi*. People return to their homes and wait for the next gathering in another time cycle, reflecting the ephemeral formation of *hiroba* in Japan (Atelier Bow-Wow, 2010).

(4) Activities: the *kūchi* used in the above examples must be triggered and activated by activities to become a meaningful and publicly used place–*hiroba.* In other words, *kūchi* as a neutral and 'leftover' open space needs to be *hiroba-ka* to generate *hiroba*.

(5) Borderless: the haphazard appropriation and use of space result in a formless and flexible area changing through time. Japanese word *kaiwai* (figure 3.9) is used to stress the activity-initiated space, which is not restrained in a planned frame and specific location as static physical space (Toshi dezain kenkyū-tai, 1968; Zaino, 1978; Sand, 2013), but 'a dynamic process' (Okabe, 2017).

Figure 3.9 (left) Population density in the Shinjuku *kaiwai*. Shijuku *kawai* in the daytime (up-right) and nighttime (bottom-right) is defined by the flow of crowds and traffic. (Source from: Toshi dezain kenkyū-tai, 1968)

(6) Autonomy: all the cases show *hiroba* in Japan is initiated, organized, and managed from a bottom-up approach by people, in contrast with the controlled urban space in the Edo period under a top-down political system.

These former five characters ('hybridity', 'absence of centrality and order', 'time', 'activity', 'borderless') are inherited and still reflected in the making of Tokyo's modern *hiroba* from Meiji till today. The last character, 'autonomy', gets lost and much suppressed in the Meiji and post-war period under the controls of the state's authorities, which are explained in the following sections.

3.2 In Meiji to Showa Period (1868-1939)

If the *hiroba* in Edo underlined the concept of *kyō* (共), which denoted together, share, common, the notion of 'public' in the Meiji period was shifted to *kō* (公), which implied officialdom or government. According to Miura (2019), a clearly defined public and private land ownership was decided in the 1873 Land Tax Reform (Chisokaisei, 地租改正). Under this reform, open space management was transformed from the hand of the self-initiated organizations by citizens to the government authorities. To show the progressive achievements of civilization and enlightenment advocated by the West, the Meiji government began the provision and transformation of urban open spaces based on the imitation of Western models to compensate for the fact of insufficient urban public space in history. Those urban open spaces were publicly owned (by the Meiji government) and managed, allowing public access but controlled with allowed activities and events.

Park:

On the one hand, many foreign settlements were set up under the trade treaties in many Japanese cities opened as commercial ports, such as Yokohama and Nagasaki. Through this process, many requested urban facilities for foreigners' everyday living

were brought into Japan as the imported public space typologies. For example, the horse racetracks, promenades, and parks. As Sakai (2011) demonstrated, a completely new terms '*kōen* (公園)' combining two single Chinese characters as the meaning of state-owned recreation garden was used to translate the concept of Western 'park'. The Japanese designed park based on imitated Western models hybridized the techniques and vocabularies of the Japanese garden and the Western park's layout. On the other hand, many upper-class residences, private courtyards, and gardens were nationalized and transformed into public buildings and facilities, such as today's Tokyo University campus and *Koishikawa Kōrakuen,* which is now an urban park transformed from the Japanese garden in the Edo period. The emperor also gifted part of the territories belonging to the royal families to the new government, such as the Ueno Park and Shinjuku Parks (figure 3.10). The precincts of the sacred space in some temples and shrines were adjusted to be places for public recreations, playing the functional role of city parks, for example, the Asakusa *Sensō-ji* and Shiba *Zōjō-ji*.

Figure 3.10 The view of Shinjuku Park (Shinjuku Gyoen National Garden) in spring. (Source from: photo taken by the author)

Under the Tokyo City Replanning Ordinance in 1888, Hibiya Park (opened in 1903) was regarded as the first European-style park in Japan by using a handover piece of parade ground from Edo to the Army Ministry of Meiji government in Tokyo's city centre

near the Imperial Palace, which is an urban void away from citizen's daily activities (Barthes, 1982). The design of Hibiya Park was incorporated elements from the Western parks (fountain, pavilion, carriageway, lawn, bandstand, sports ground, running track, pond) with a small portion of Japanese landscape garden, making an ambiguous look in a 'gradual process of domestication of the concept of a public park' (Waley, 2005, p.1) (figure 3.11). The idea of 'public' in the Meiji period was confused with the state or government. Therefore, the designed 'public space' as the representation of that understanding was mainly based on the officialdom of state ownership and management by Meiji oligarchs. Many of these large newly established parks became the places that were primarily used for state events, national exhibitions, and Imperial celebrations rather than for ordinary people's ordinary activities.

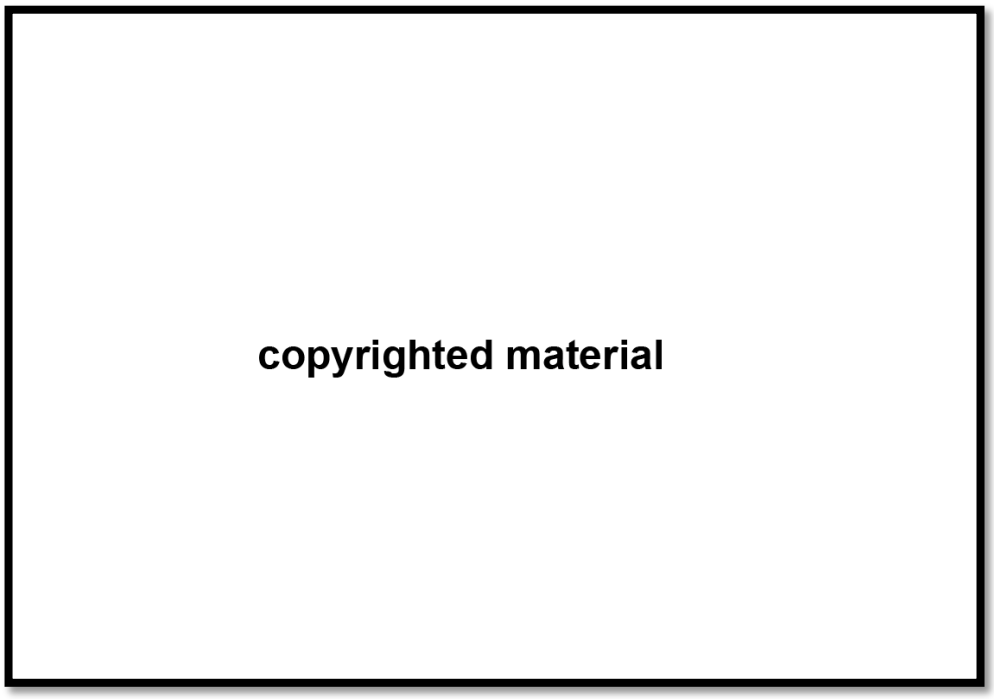


Figure 3.11 Plan of Hibiya Park (1903) with additional recreation facilities in the park system mixed both Western and Japanese elements and styles. (Source from: Waley, 2005)

Avenue:

Besides the public space typology of 'park', the 'avenue' was also brought into Japan. For example, after the big fire of 1872 in Ginza, wooden buildings were replaced by fireproof brick and stone buildings. A reproduced Ginza Brick Town based on the

European townscape by widening the road as ‘avenue’ (figure 3.12) was promoted not only for the city beautiful movement, but also for creating firebreaks in a traditional approach like *hirokoji* in the Edo period. According to Fujimori (1988), a total of 110 miles of roads in Tokyo’s City Improvement Project were widened after the Ginza fire to readjust Tokyo’s undeveloped infrastructure system. The Great Kanto Earthquake in 1923 and the resulted fire disaster accelerated the development of a fire-resistant city by creating new urban open space for fire breaking and disaster evacuation.

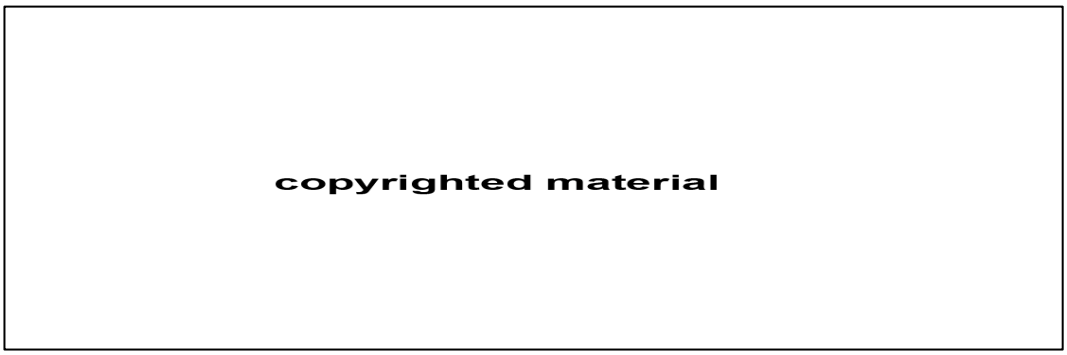


Figure 3.12 Ginza Brick Town with Western-style avenue. (Source from: The City Planning Institute of Japan, 1988)

Plaza or square (the Western-type *hiroba*)

Land readjustment was adopted to broaden the narrow road in dense blocks. Many canals were developed. Bridges-side open space used as the nodal ‘plaza’ (figure 3.13) was reserved through the constructions of many bridges over rivers and canals (Ito, 1988; Jinnai 1995). Iconic buildings and their exterior open spaces were well designed to incorporate the corner ‘plaza’ around the riverside, for example, Daiichi National Bank and Teikoku Sen-i Company. Edo’s *hashizume* as Japanese ‘plaza’ for the first time blended with the Western design principles for a more visible, attractive, and monumental urban public space. The new type of park called *fukkō kōen* (restoration park) was designed including three large-scale parks (*Kinshichō* Park, *Hamachō* Park and *Sumida* Park) and many medium and small pocket parks distributed evenly across the whole city. The main purpose of *fukkō kōen* was to be the shelter for disaster prevention from the city’s reclaimed land (Seidensticker, 1983;

Dimmer, 2008). Imperial Capital Restoration Project after the 1923 earthquake also boosted the use of building-front open spaces incorporated with the design of elementary schools and buildings of other functional types at the intersections of many traffic roads. For example, at the crucial point of *Sukiyabashi* interjunction, the design of Taimei Elementary School was well combined with the triangular site, subdividing a triangular-shape *hiroba* (today's *Sukiyabashi kōen*) (figure 3.14) (Jinnai, 1995).

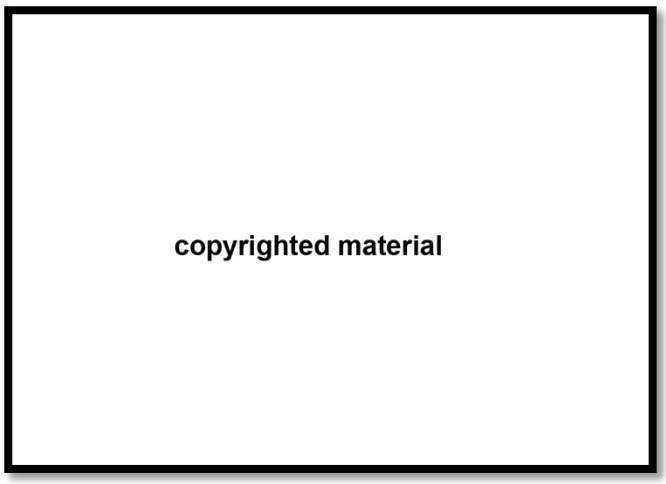


Figure 3.13 Open space as Western plaza transformed from Japanese *hashizumi* at Ryōgoku in the Meiji period (left) and current time (right). (Source from: Toshi dezain kenkyū-tai, 2009)

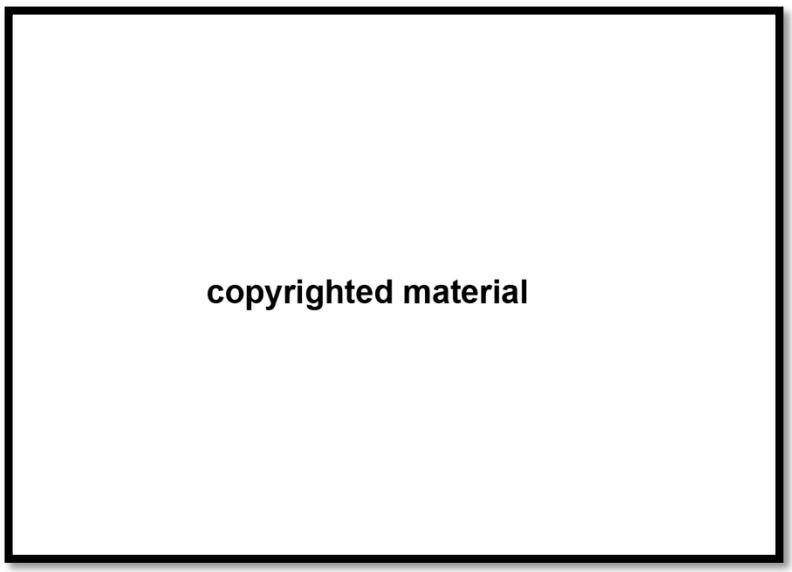


Figure 3.14 Triangular *fukkō kōen* (in red) in-between the semicircular-shape Taimei Elementary School (right-bottom) and *Sukiyabashi.* (Source from: Watanabe, 2012)

Democratic ‘public’ space

The study of the Western advanced science and technology in the Meiji period allowed Japan to gradually possess the physical form (open space models) of the Western public space from transforming the feudal land in the Edo period. In addition, in the continuous exploration of the notions of ‘public’ behind the physical forms in Western urban design, ‘freedom’, ‘human rights’, ‘civil society’, etc., had been gradually understood and asked for. It was clearly reflected by the discrepancy of perceived public space from people’s spatial practises in the use and public space with the national image under the state control. Many government-led national projects of creating the Western-like public space, such as the Palace Front Square and Hibiya Park, became the place for many social riots and political movements that were unexpected to the local government. As Steele (2017, p.143) claimed, ‘simply because of the governmental distrust of large gatherings … makes these Western models questionable and may explain why they remain largely unused today.’

Taisho period saw a proliferation of engagements by people through autonomous organizations and communities, requesting missing political space and a democratic society behind. According to Sorensen (2001), by the middle of the 1930s, Japanese civil society ceased to expand any political and public spaces for and by the people. Due to the bureaucratic governance and management, many embryonic social mobilizations of citizen organizations, campaigns, and movements for civic society with proclaimed public space were frustrated by the central government’s strong will. The authorized local government was readjusted into the central government system with a particular function to monitor the general public and carry out actions that the central government decided. The centralization of the state’s authorities’ planning power guaranteed that the central government could extensively gather all the materials and human resources to chase and defeat other developed Western countries. Therefore, many ambitious urban agendas from the top-down urban planning actions can be put on the schedule. For example, the Tokyo Green Space Plan from 1932 to 1938

(Dimmer, 2008). Advocated by the fanaticism to the state and emperor in association with National Shintoism, Japan's rampant urban growth was at the sacrifice of citizens' interests and the democratic foundation of building a civil society. As a result, under nationalism, totalism, and imperialism (Benedict, 1946), Japan desperately fell into World War II and ended up with ruins like the repeated disasters that destroyed it in history.

3.3 In Post-war Years until the Osaka Exposition (1945-1970)

The occupation of GHQ (General Headquarter) led by the Allied commander MacArthur carried out many reforms in afterwar Japan. The emperor was preserved as only the symbol of the country, transferring the sovereignty to citizens, who regained their civic rights on a democratic basis through the new promulgated Constitution of Japan in 1946. Japan formed a new cabinet and became a new parliamentary democracy nation. The land also underwent reforms and redistributions of ownerships (Parker and Amati, 2009). The land reform measure redistributed the land (and public rights) initially concentrated in the hands of a few people to the hands of the majority. In the course of a series of liberal and democratized reforms, Japan, after World War II, also strengthened the protection of private property rights and individualism advocated by Westerners.

Japan's post-war focus was on urban reconstruction and economic development, so most of its human and financial resources were spent on national reconstructions, especially the developments of collective housing. As a result, the national investment in public spaces and facilities was very limited. At that time, both urban planning and residential design ideas were deeply affected by the functionalism raised by CIAM led by Corbusier. The strict urban zoning based on the functional divisions in planning led to the breakdown of urban space and the collapse of social relations between public and private. After struggling in the explorations between tradition and modernity, the

West and the East in the early days of the Modernism movement in Japanese architecture, many post-war Japanese architects no longer followed their peers in the early Meiji period to directly adopt or fully accept the Western 'advanced' theories but to have a dialectical critique on them instead. They integrated their own understandings of Japan-ness, national conditions, and traditions, developing an alternative Japanese way of building on the city's ruins. The tabula rasa of post-war Japan provided opportunities for Japanese architects and urban designers to plan public open spaces on a city scale that did not exist in Japan before.

Kenzo Tange's Hiroshima Peace Memorial Park was Japan's first large-scale national project after the war. In this project, Tange began to discover how to transplant the classic public space symbols (i.e., cities' central open space, such as agora, forum, piazza, plaza, square etc.) from the Western cities in Japan to unite the scattered individuals and create an urban core. The urban core by Tange was conceived to develop a free and democratic post-war civil society, which could show a uniquely Japanese tradition (or identity) different from but at the same time associated with the Western cultural and architectural notion of the 'public', which was repressed by the symbolic open space in the heart of the city (Hein, 2017). This contradiction and complexity were reflected in the design. A large area of *kūchi* was left as the parkland despite the fact that the 'park' in the burned ruins after the war did not contain any trees or landscape usually found in Western parks. The 'park' was just a large open space used as *hiroba* for gathering prayers and visitors in memorial activities (figure 3.15). Tange's application of *hiroba* in creating the Japanese post-war public space varied in many ways; however, those innovative attempts were still rooted in the formal type of the Western-type *hiroba*. For example, in Imabari City Hall Complex, *hiroba* was created by enveloping three surrounded buildings in connection with external roads (figure 3.16). Kenzo Tange addressed *shimin hiroba* (in the publicly owned public building with publicly accessible open space mainly conceived to be used for taking rest and recreation by the government) as the model for the generation of his

conceived Western public space through his architectural practices in Japan. He commented on his Imabari City Hall and public architecture design in 1959 as follows (Tange, cited from Kenzo Tange Centennial Project Committee, 2013, p.212):

> *When planning public buildings, especially the city hall, we have been trying to actively introduce spaces for citizens in the form of pilotti or open citizen halls. However, in the case of Imabari, we would like to create a place for citizens to gather and relax by incorporating a spacious and comfortable hiroba together with the city hall and public hall in the expanse, including the site and the surrounding roads, so we recommend the layout plan.*

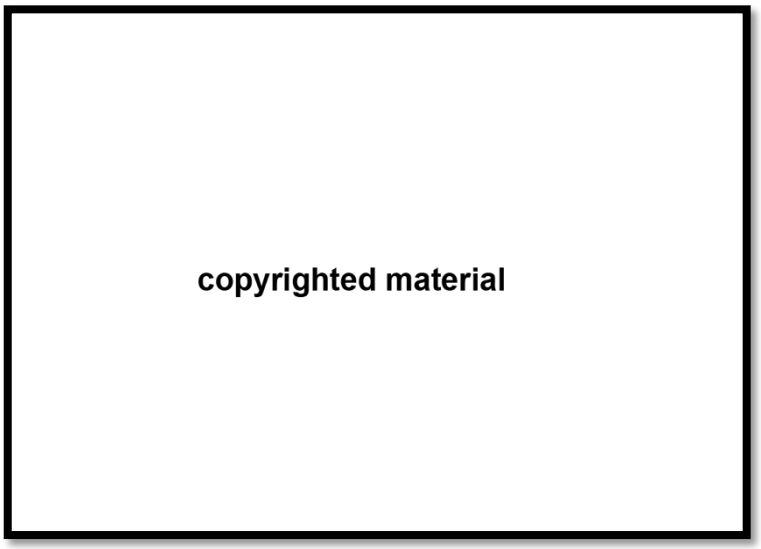
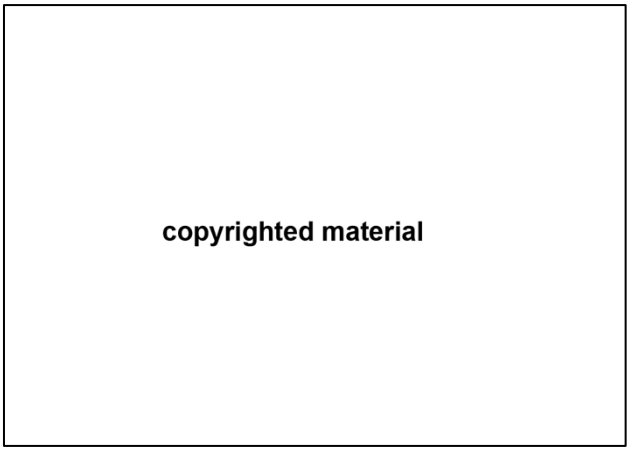


Figure 3.15 Hiroshima Peace Memorial Park with a large piece of barren land for *hiroba* in 1954. (Source from: Kenzo Tange Centennial Project Committee, 2013)



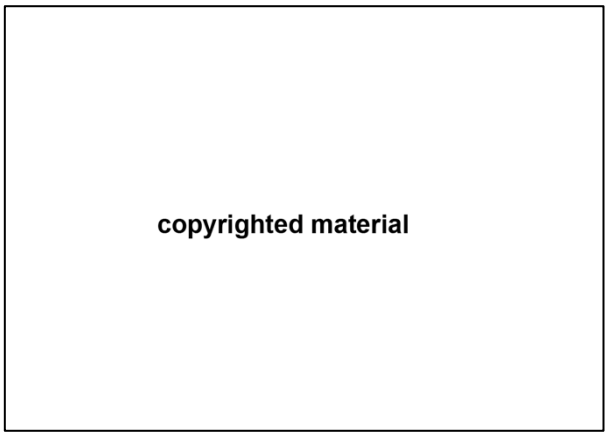
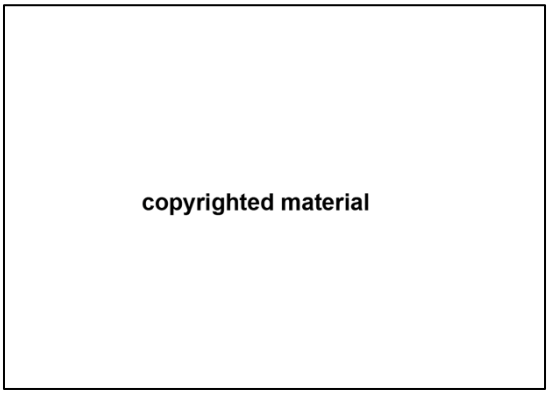
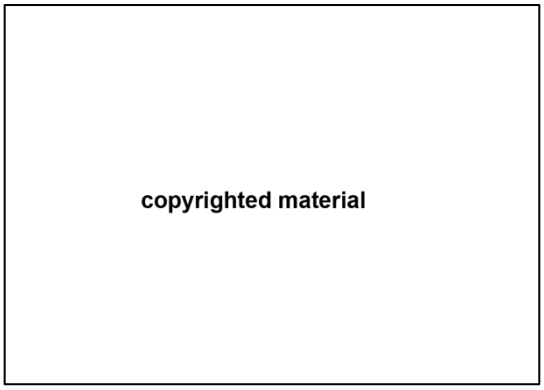


Figure 3.16 *Hiroba* in front of Imabari City Hall Complex (left) and its plan (right). (Source from: photo from Tange Associates, 1958b; plan adapted by the author based on drawing of Sendai and Sakiya, 2015b)

Besides Kenzo Tange, many Japanese architects also began to try to integrate and translate 'public space' and 'civil society' from the Western countries into post-war development through *hiroba* in the architectural and urban design projects. Public space based on Tange's *shimin hiroba* models was mainly revealed in the design of cultural halls, city halls, and public halls. For example, in Maekawa Kunio's Tokyo Bunka Kaikan (figure 3.17) in 1961, outdoor *hiroba* was connected with the threshold space generated by pilotis and *engawa* (veranda) and the indoor hall and lobby space as an integrated whole, forming a continuous space for public activities both visually and physically accessible to the citizens. Togo Murano's Yokohama City Hall in 1959 enveloped a U-shaped central court as a public space to 'combat the bureaucratic atmosphere that is apt to prevail in public buildings' (Bognar, 1996, p.76). Hideaki Ishikawa's application of *hiroba* in his 1956 design of Shinjuku-Koma Theater Plaza (figures 3.18 and 3.19) at Kabukichō through the Tokyo War-damage Restoration Plan was inspired by the traditional Japanese *hankagai* (busy and prosperous street), and *sakariba* gathered by people (Nishinari and Saito, 2004), beginning to jump out of the Western-type *hiroba* model.





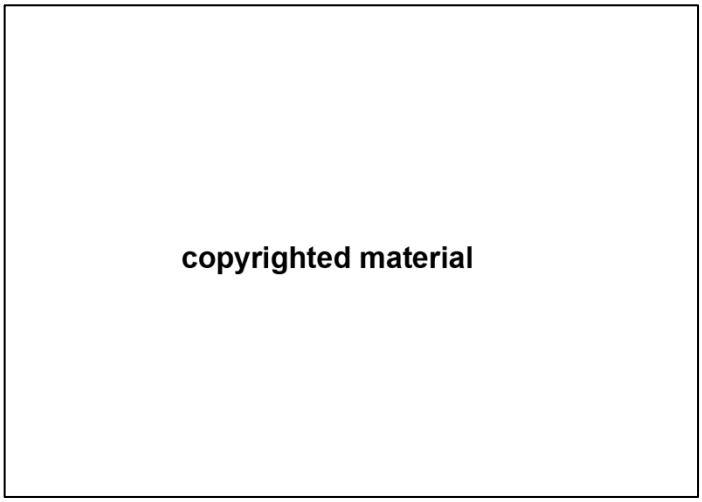


Figure 3.17 (top-left) The north entrance *hiroba* in Tokyo Bunka Kaikan designed by Maekawa Kunio. (Source from: Reynolds, 2001)
Figure 3.18 (top-right) Shinjuku-Koma Theater Plaza built around 1957 surrounded by commercial buildings. (Source from: Nishinari and Saito, 2004)
Figure 3.19 (bottom) Plan of Shinjuku-Koma Theater Plaza. (Source from: adapted by the author based on the figure in Nishinari and Saito, 2004)

No need to mention many later architectural projects realized by members from Metabolists. The symbol of the Western-type *hiroba* and the Japanese concept of *hiroba* (*hiroba-ka* open space) were combined as a synthesis of the architectural language of 'orientalism' and 'occidentalism' (Urban, 2012) for future Japanese cities. For example, Fumihiko Maki's design of public space in the typologies of 'elevated pedestrian' and 'plaza' (*hiroba*) in Hillside Terrace started from 1969 (figure 3.20). Kisho Kurokawa's design of 'atrium' (*hiroba*) was inspired by *engawa* in The Head Office of the Fukuoka bank in 1975 (figure 3.21). Masato Ōtaka's applied elevated 'platform' (*hiroba*) in his Sakaide Artificial Ground project in1966 (figure 3.22). Sachio Otani's added an open entrance 'hall' (*hiroba*) under the megastructure of the above residential unit in his Kawaramachi High-rise Housing in Kawasaki City in 1972 (figure 3.23). The culmination of this idea was Tange's proposal of the Tokyo Plan 1960 (figure 3.24). A linear maritime city floated on Tokyo Bay composed of buildings and

transportation infrastructures. *Hiroba,* as an alternative and symbol of the Western civic plaza, was planned with other public facilities at the ground level between superblocks (Lin, 2010; Cho, 2018). The above-mentioned examples implied an integration of public space transplanting with *hiroba* making through architectural and urban design in Japan.

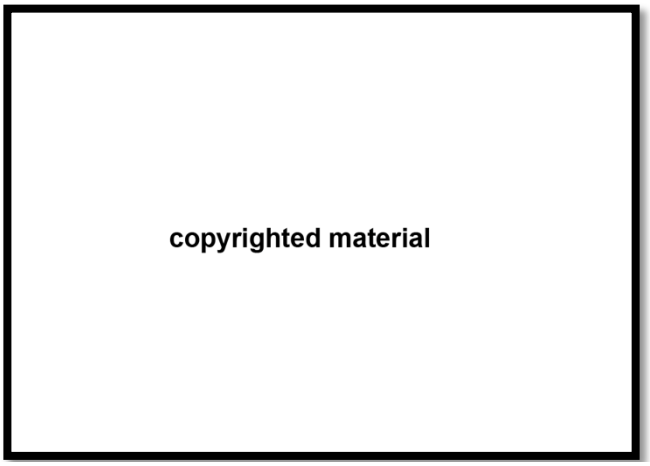


Figure 3.20 Daikanyama Bazaar held in the open space provided by elevated pedestrians and parking lot at Hillside Terrace in the 1970s. (Source from: Hillside Terrace 50th Anniversary Executive Committee, 2019)

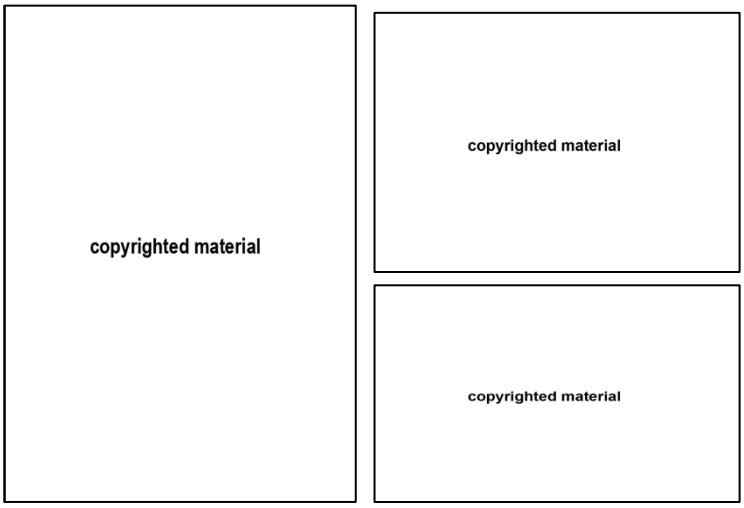


Figure 3.21 (left) The atrium of Fukuoka Bank used as an intermediate *hiroba* between building and street. (Source from: Kurokawa, 1988)

Figure 3.22 (top-right) The elevated platform as new urban public *hiroba* in Sakaide Artificial Ground project. (Source from: Minohara, Matsuguma and Nakajima, 2014)

Figure 3.23 (bottom-right) Open space used as both entrance hall and *hiroba* under the upper-level residential units in Kawaramachi High-rise Housing. (Source from: Phlizz, no date)

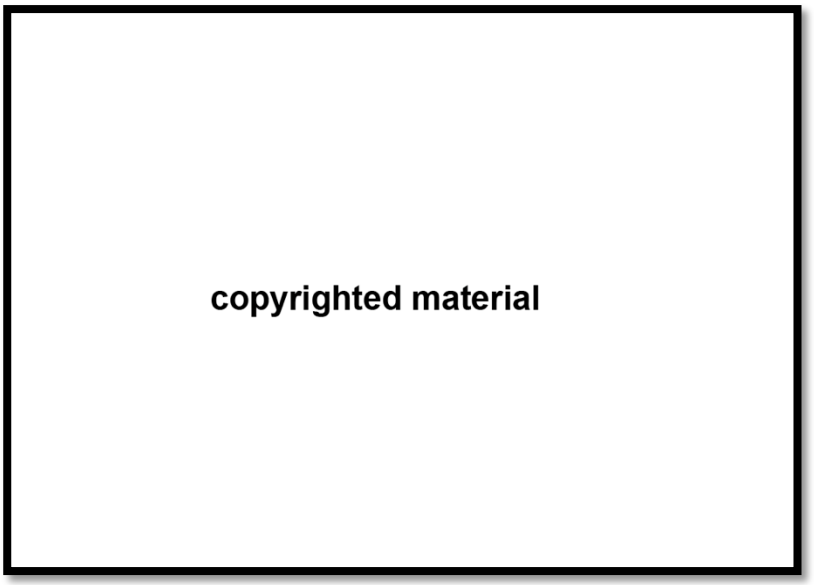
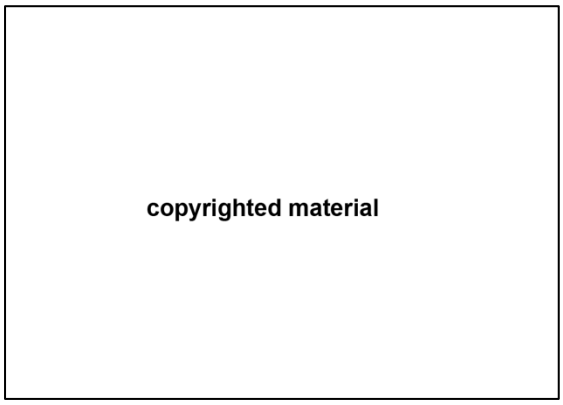


Figure 3.24 Tange's 1960 Tokyo Plan with *hiroba* (in grey) and public facilities between residential blocks on the sea. (Source from: plan adapted by the author based on the figure in Cho, 2018)

The Japanese and Western notions of 'public' asked by civil society were embedded within the physical form and space through *hiroba,* which was the prototype of Japanese public space since the Edo period. Despite the fact that *hiroba* in architecture was influenced by the architecture language under the influence of Western Modernism, it still inherited Japan-ness through traditional and cultural concepts that were rediscovered by Japanese architects in the design. In terms of that, the rediscovering of *hiroba* itself 'embrace elements of traditional townscapes that had been lost as rational urban planning to hold from the mid-1950s to the mid-1970s' (Oshima, 2016, p.623) and aim at 'the creation of distinctive local identities in form and function' (Miao, 2001a, p.31). The 1964 Tokyo Olympic Games and the 1970 Osaka Exposition provided great opportunities for the Japanese architects to turn the already-developed architectural theories based on the traditional and cultural concepts in Japan into practices through city reconstructions advocated by the government. The origin of Japanese *hiroba* as a concept (*hiroba-ka* open space) was gradually resurrected by making open spaces beyond the model of Western-type *hiroba.*

Many new public facilities with public open spaces contained within were created before and after the Olympic games. Comparing new public facilities, the Tokyo Olympics' improvement in infrastructure had an even more significant impact on the destructions and disappearances of the city's traditional public spaces. For example, in order to acquire the land for rapid construction and save development costs, the canals and moats in Tokyo's city centre were either buried by landfills or covered under the Capital Expressway. Therefore, the riverside space, which had inherited from the Edo period for public life, had been severely damaged (figure 3.25). Except for a few *shōtengai* (commercial streets) (figure 3.26), diverse activities in *hiroba* had been replaced and disappeared by the introduction of motor vehicles for functional mobility (Miura, 2019). Pedestrian overpasses increased; however, ironically, to a certain extent, they provided a safer open space away from cars to replace the streets.



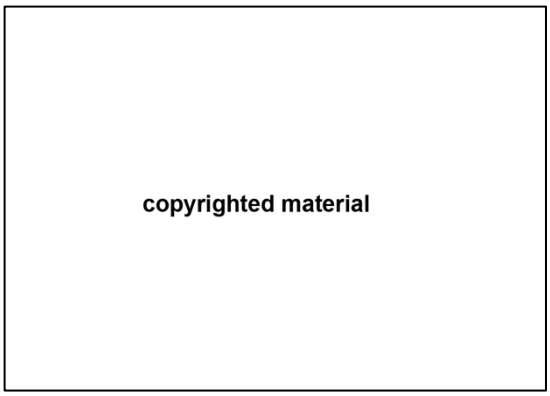


Figure 3.25 (left) Nihonbashi under the Tokyo Expressway built before the 1964 Olympics. (Source from: Jinnai, 2007)

Figure 3.26 (right) Kichijōji Sunroad *shōtengai* with canopy on top. (Source from: Go Tokyo, 2019)

At the same time, due to urban expansion, the popularization of rail commuting between suburbs and downtown Tokyo became regular (Matsumura and Ota, 2008). Shinjuku, Shibuya, and Ikebukuro, as urban sub-centres under the decentralization of central urban functions policies (Kudamatsu, 1988) gave birth to the *hiroba* in front of the train stations (so-called *ekimae hiroba*) (figure 3.27) or in the underground thoroughfares (or *chika hiroba*) for the traffic exchanges and people's circulations.

Similar to the *hiroba* in the Edo period, the *hiroba* in train stations envisaged by the government only had the function of circulation. *Ekimae hiroba* was regarded as the open space for transportation under Japanese planning laws (Radović, 2020). Gatherings or political demonstrations were severely prohibited and also unexpected. The example of Shinjuku Station West Exit underground *hiroba* was in a three-dimensional configuration designed by Sakakura Junzō in 1965. Due to the official declarations of people's gathering for obstructing traffics, its name was changed from '*hiroba*' into '*chikatsūro*' (concourse) after the unpredicted protests and riots against Vietnam War. The radical conflictions between users (passengers and citizens) and the manager (government) in the underground *hiroba* disclosed Japanese bureaucratic authorities' power remained in controlling the public space (or prevent *hiroba* becoming a public space) after the war. The Shinjuku events indicated a 'distinguished public property rights from common property rights' and 'the limitation of Tokyo's autonomy' (Sand, 2013, pp.50-60).

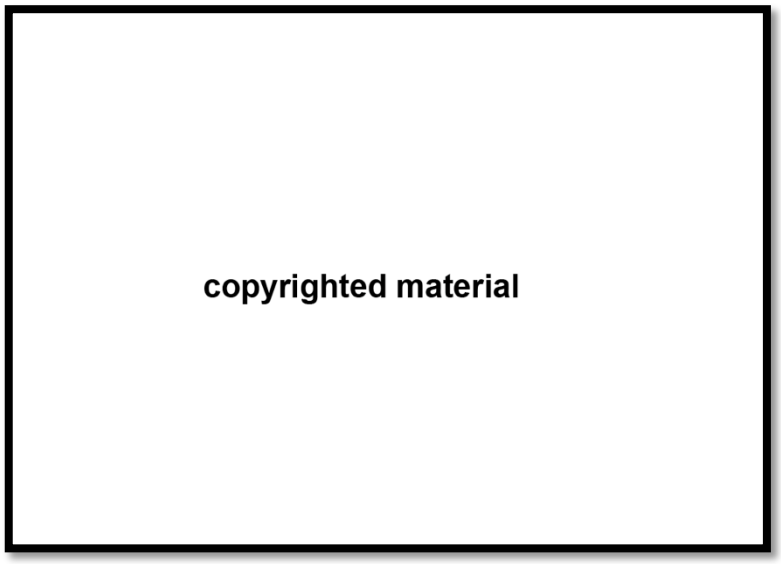


Figure 3.27 Shibuya station-front plaza becomes the landmark of Shibuya city for people's gathering and public activities. (Source from: Shibuya+Fun Project, no date)

The 1970 Osaka Exposition marked the final carnival of large public projects and so-called public spaces contained within led by the Japanese government. The Shinjuku West Exit underground *hiroba* was appropriated in the form of 'festival'-oriented 'public space'. It resonated with the Japanese culture of *kaiwai* and *hi,* rather than a

democratic and civilized public space derived from the Greek agora, the Roman forum, and the Renaissance piazza. A proposal was presented in the main stadium of the Osaka Exposition named *matsuri hiroba* (festival plaza). It aimed to show off the rise of Japan's economic and technological power to the world.

Nishiyama planned this *matsuri hiroba* (figure 3.28) to be the 'urban core' of the exposition system with other national pavilions (Lin, 2010, pp.200-232). Tange's futuristic design of a giant roof elevated to the sky defined a clear 'boundary' for *hiroba* as the core of the system. The flushing crowds from different directions was restrained by the strong sense of spatial 'boundary' defined by architecture for various planned events within the main stadium, diminishing Japanese *kaiwai* (activities space), and many comings and goings of people and their spontaneous activities as *hi*. Two robots designed by Isozaki supported audiences and related performances based on the information collected from the environment. Toyo Ito (cited in Koolhaas et al., 2011, p.47) notes on Isozaki's plan for the Festival Plaza: 'an information plaza was an attempt to alter state protocol form within.

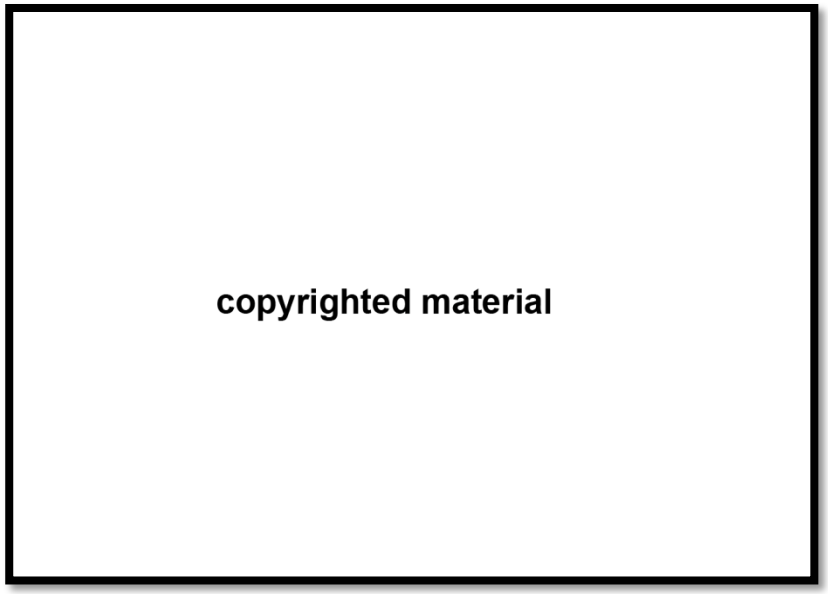


Figure 3.28 The Festival Plaza in Osaka Expo 1970. (Source from: Koolhaas et al., 2011)

The freedom of citizenship instead of nationalism in public space was later reflected in Isozaki's design of the Tsukuba Centre Building (1979-1983). A sunken and off-centred oval *hiroba* (figure 3.29) distorted the image of the classic Western-type *hiroba* in clear geometry and boundary, resurrecting the characters from Edo's *hiroba-ka* open spaces. The radical design embodied the objection of any potential restraints, such as 'symmetry' and 'centrality' under the image of national state's projection of the public space (Isozaki, 2009a). The off-central *hiroba* was conceived as a civic centre 'providing many of the amenities associated with urban life for people' (Isozaki, 1991, p.148) by erasing any hints related to authority and officialdom. As Bharne (2010, p. 42) summarized, 'the evolution of the Japanese plaza affirmed its perceptual shift from an optimistic democratic symbol into a culturally residual simulacrum … it remained alien … never able to become an intellectual reference point in Japanese urbanism.'

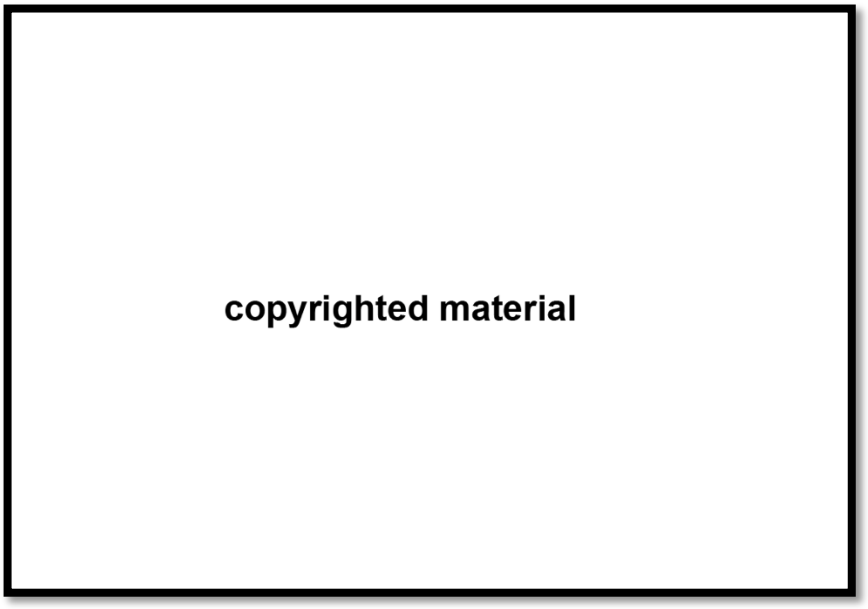
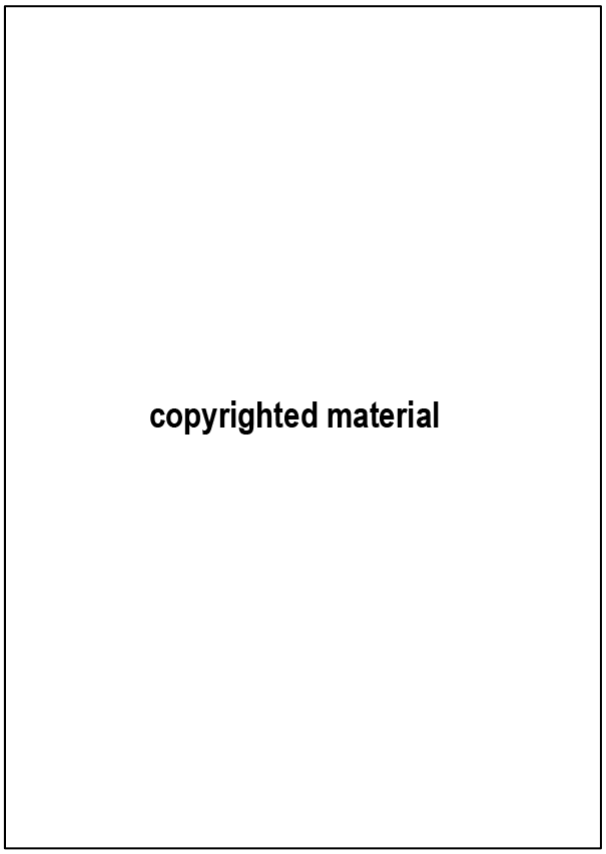


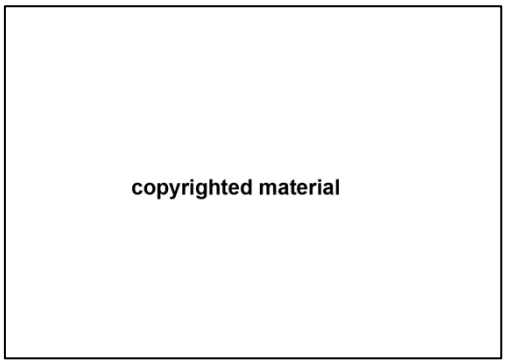
Figure 3.29 The oval sunken plaza in Tsukuba Centre. (Source from: Martinoglio, 2020)

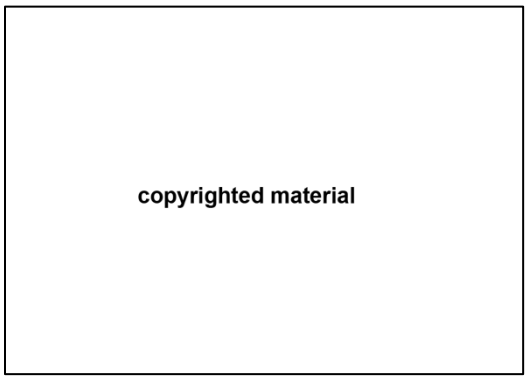
3.4 After Osaka Exposition to Today

Following the end of the Osaka Exposition in the 1970s, the subsequent stagnation of the rapid economic growth caused by the 1973 oil crisis hit Japan. Japan since then did not have the fund to carry out any large-scale and ambitious urban planning again

as in the previous history. To encourage private companies to participate in the construction of public spaces, the government continuously revised regulations in the Urban Planning Law and the Building Standards Law. It promulgated new stimulus policies to increase the Floor Area Ratio (FAR) in private construction projects in exchange for public spaces. Many different forms of Privately-Owned Public Space (POPS) called 'new public space' were generated by making Japanese *hiroba* based on architectural design languages from Western Modernism. They were privately owned and managed spaces open to the public in use. For example, *hiroba-ka* open space was presented in the elevated 'podium' in front of the Kasumigaseki Building in 1968 (figure 3.30) and Keio Plaza Hotel in1971, in the 'plaza' in Shinjuku Mitsui Building in 1974 (figure 3.31), in the large-scale 'atrium' in Shinjuku NS building in 1982 and Shinjuku Sumimoto Building in 1974 (figure 3.32). The 1988 redevelopment area plan issued by the government once again gave the exemptions on the city's building restrictions. It mobilized private funds and public investments for the redevelopment of the larger inner-city brownfields until the 2000s. In this process, new construction projects created new Japanese public spaces through *hiroba*. For example, Ebisu Garden Place in 1995 transformed the original 1887 Sapporo Beer Factory built in the downtown area into a collection of culture and entertainment complex (figure 3.33). According to Dimmer (2008; 2012; 2013), most of POPSs meet only the technical requirements according to City Planning Law in Japan. Few amenities were found in those open spaces (such as no place to sit, rules of prohibited activities, leftover space for passing through, etc.) at the very beginning of the urban development under urban incentive policies from the 1970s to the 1990s. Their quantity and quality were later found to be improved gradually after the 2000s in the survey conducted by The Mori Memorial Foundation (2011).







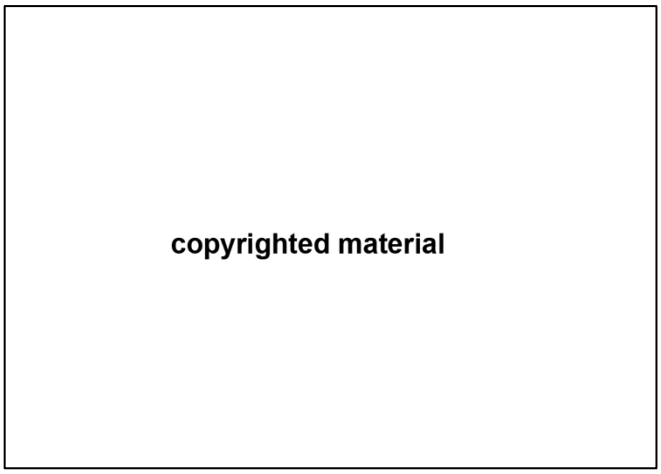


Figure 3.30 (top-left) The elevated 'podium' in front of the Kasumigaseki Building after the renovation. (Source from: Nihon Sekkei, 2009)

Figure 3.31 (top-right) The sunken 'plaza' called 55Hiroba under Shinjuku Mitsui Building. (Source from: Nihon Sekkei, 1974)

Figure 3.32 (bottom-right) The diamond-like glass enveloped 'atrium' called 'Sankaku Hiroba' on the previous ground plaza under Shinjuku Sumitomo Building. (Source from: CTBUH, 2020)

Figure 3.33 (bottom-left) Citizen watching film at the semi-outdoor amphitheatre in Ebisu Garden Place. (Source from: Kume Sekkei, no date)

In the 1990s, Japan's bubble economy burst, and the domestic construction market slumped. POPS, which once relied on the support of commercial capital and economic policy, was replaced by the public space from state-owned construction projects.

Although many of those projects provided the city with indoor and outdoor open spaces, not all of them successfully became *hiroba* filled with people and activities (i.e., to be *hiroba-ka*). As Watanabe (2001, p.143) noted, 'more than a few of those projects were of questionable value … art museums and concert halls that held few exhibits or performances.' A very typical example is the construction of the Tokyo Metropolitan Government Building (TMG) in 1991. Tange set up a crescent-shaped *hiroba* (Western-type *hiroba* as a model repeated in his public buildings built in the postwar period) enclosed in front of the building, modelled on the Piazza del Campo in Siena. However, the perfectly symmetric plaza was enveloped by faceless facades made of sleek granite and glass instead of the vibrant scenes of shops and markets as the piazza's interface in Siena. The oppressing sensation caused by the TMG building's huge scale and the separation of the plaza from the busy street and the passers-by's view made the intended public space infrequently visited and used by the local citizens in Tokyo (figure 3.34). Tange's *hiroba* was not Japanese *hiroba*; it is a broad open space sterile to be *hiroba-ka,* although it was planned to be open to the general public. It was a Western model rather than a Japanese indigenous concept. As Isozaki (2011, p.80) critiques Tange's *hiroba*:

> *It was still an empty space. But by this time the protesting mass (hi), which had filled the west plaza of Shinjuku Station twenty years earlier, was absent … Notwithstanding the fact that Tokyo Metropolitian Government Plaza is the supposed embodiment of postwar institutionalized democracy, however, even the kehai of hi (or, indeed, any sign of anima) is absent. It is, therefore, sheer void. The architect did not sense the fact that postwar democracy had weathered somewhat, and he still followed the model of the Western plaza as simile. Anachronistic and sclerotic, without it has come to embody is the disastrous bubble economy of the 1990s in Japan – naturally enough, empty of all cultural content.*

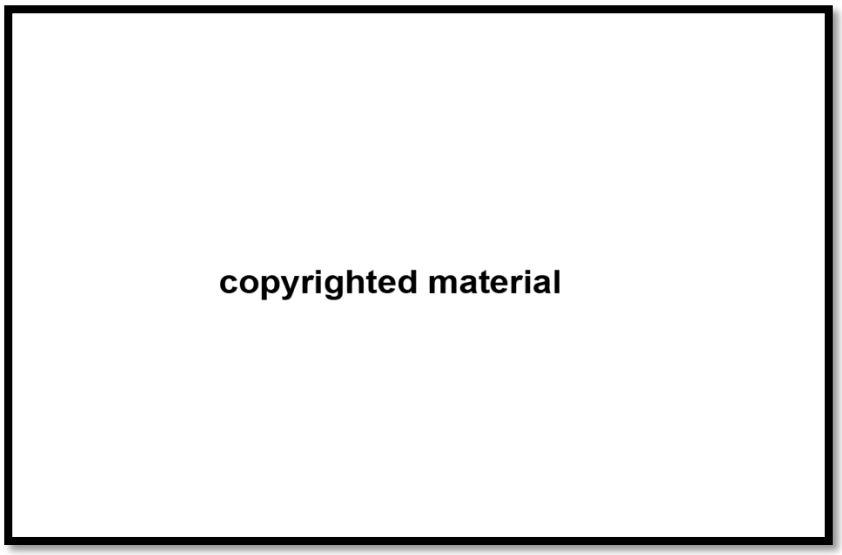


Figure 3.34 The huge and empty civic plaza in front of Tange's Tokyo Metropolitan Government Building. (Source from: Tange Associates, 1991)

After 2000, in response to the challenges of economic globalization, the urban renaissance was on the government's administrative agenda to attract international investments and improve the city's competitive economic environment. The Private Finance Initiative (PFI) system that encouraged private investments for a high-efficient and comprehensive land use and the Public-Private Partnership (PPP) system in which the government and private institutions cooperated for public space creation were well developed (Shinkenchiku-sha, 2015; 2017). The private sector owned more responsibilities and played more significant roles in public space and facilities development and management. For example, the integrating the public-owned and private-owned real estate could be found in Toshima City Office at Ikebukuro (2015). The project combined private apartments and government office buildings and provided *hiroba* in the form of civic hall and rooftop garden (figure 3.35). The most extensive use of the PFI and PPP system appears in the urban design of the Yokohama Mirato Mirai 21 Project, which was led by unprecedented political support from the local government. It was visioned to integrate the publicly owned assets (parks, waterfront, greenways, historical buildings) with the privately-owned POPS by incentive building exemptions and bonus policies for a dense public space network (Dimmer, 2012).

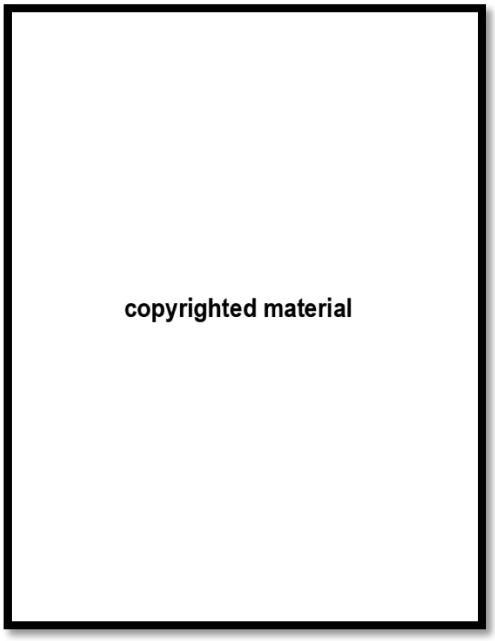


Figure 3.35 Toshima City Office project under the cooperation of both public and private sectors. An elevated rooftop garden is provided. (Source from: figures adapted by the author based on the figures in Kengo Kuma & Associates, 2015)

The leaderships of public space development in Japan gradually shifted from the state's top-down urban planning to the hands of the private enterprises, non-governmental organizations, individuals, and their cooperation with the government through a bottom-up *machizukuri* (town making). In the new relations between private and public sectors, the government was in a position of assistance and supervision. Many laws and regulations also ensured the transfer of power in the planning, construction, and management of urban space from *kan* (official, 官) to *min* (citizens, 民) and *ko* (individuals, 个) (Sorensen, 2010).

A notable example is the regeneration of the street space, which was occupied by automobiles after the war mentioned above due to the rapid economic development in the 1970s. In 2003, an act called *Tōkyō no shareta machinami-zukuri suishin jōrei* (Promotion Ordinance to Deregulation of Road Management for the Active Event) guaranteed the traditional Japanese *yatai* (portable food cart), outdoor coffees, and public events to be brought back on the street with tables and chairs in the middle of

the street again (Deguchi, Miura and Nakano, 2019). *Hokōshatengoku* (pedestrian paradise) was set up in many places of Tokyo for many events initiated by the *machizukuri* organizations (figure 3.36), such as the *matsuri* parades, performances, and urban furniture for public gatherings, etc.

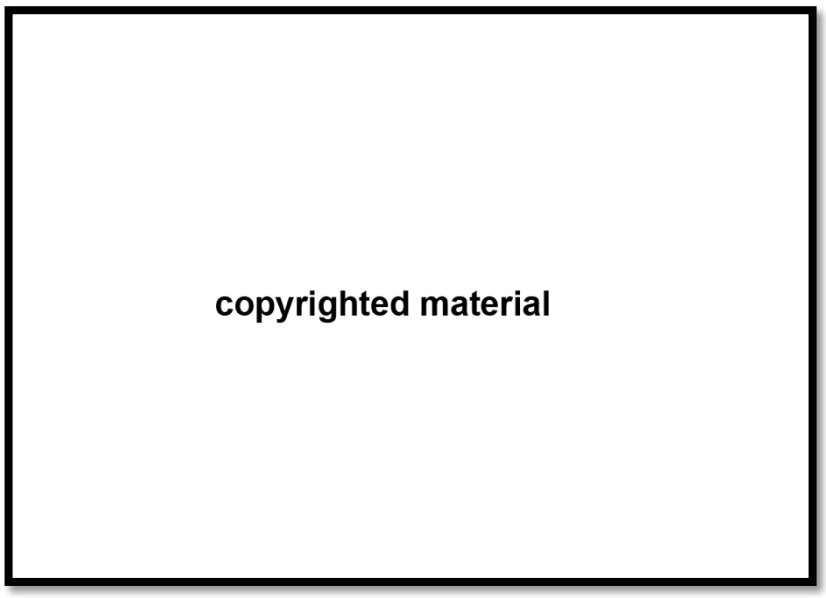


Figure 3.36 Pedestrian Paradise at Ginza Chuo-dori. (Source from: Tachibana, 2014)

In parallel with the locally self-governing *machizukuri*, the architects' group paid attention to social, architectural, and urban public issues. No matter a design mission was entrusted by the public or private side, regardless of the building's functional type, Japanese architects constantly engaged in public affairs through the innovated design of *hiroba* in contemporary architecture to connect individuals with society. For example, *hiroba* was created in civic centre buildings, such as Toyo Ito's Sendai Mediatheque in 2000 (figure 3.37). *Hiroba* was put in government office buildings, such as Kengo Kuma's Nagaoka City Hall in 2012 (figure 3.38). *Hiroba* was enjoyed in commercial facilities, such as Hiroshi Nakamura's Tokyu Plaza Omotesando Harajuku in 2012 and Sou Fujimoto's Uniqlo Park in 2020 (figure 3.39). *Hiroba* was provided in private buildings, such as Kazuyo Sejima's Shibaura House in 2011 (figure 3.40). Particularly after the Great Hanshin-Awaji Earthquake in 1995 and the Great East Japan

Earthquake in 2011 on March 11, the Japanese architects and residences became more aware of the bottom-up ‘architecture’ as *minna no kenchiku* (everybody’s architecture) instead of ‘Architecture’ with a capital ‘A’. Similarly, a lower-case ‘public’ instead of ‘Public’ with capital ‘P’ was also established, understood, and accepted in public space development in the future Japan (Imamura, Koizumi, and Takahashi, 2013; The City Planning institute of Japan, 2017; Architectural Institute of Japan and Japan Society of Civil Engineers, 2021).

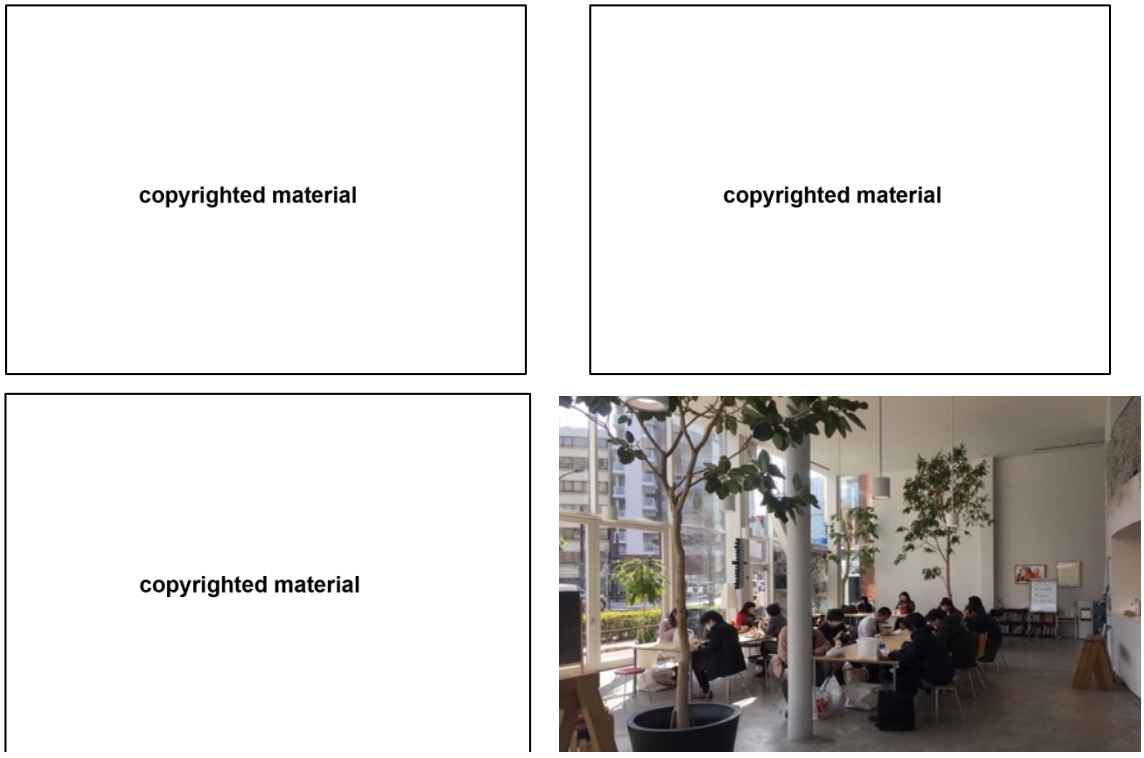


Figure 3.37 (top-left) Public urban space inside the Sendai Mediatheque. (Source from: Toyo Ito & Associates, Architects, 2000)

Figure 3.38 (top-right) Collective activities inside the Nagaoka City Hall Aore. (Source from: Kengo Kuma and Associates, 2012)

Figure 3.39 (bottom-left) Uniqlo Park creates new platform for recreation through architecture. (Source from: Sou Fujimoto Architects, 2020)

Figure 3.40 (bottom-right) The entrance hall of Shibaura House becomes a place of white collars for lunch and communications at noon. (Source from: photo taken by the author)

3.5 Intermediary Conclusions

The typological evolution in Japanese *hiroba-ka* open space development found the deterioration and predicament of the original understanding of *hiroba* as a concept to be replaced by the imitation of the form of open space imported from Western-type *hiroba* (i.e., piazza, plaza, platz, square, etc.) as a model during Meiji period. A resurrection of the term *hiroba* as a concept (Kuma and Jinnai, 2005) in Japan was carried out in many architectural and urban design practices. New typologies of *hiroba-ka* open spaces in contemporary Japanese architecture were found in those practices through various design or typological approaches.

The typology of Japanese *hiroba* in history was much influenced by the political, social, cultural, and economic factors in different periods and resulted in the specific form of open spaces representing the impacts mentioned above. Despite their varied formal expressions in shape or *katachi* across different periods, all derived Japanese 'public' spaces (*'kōkyō kūkan'*) were inherited from *hiroba* as the prototype. The physical settings of *hiroba* were made by appropriating and making different kinds of open space, for example, from the 'left-over' *kūchi* without any design in the Edo period to the adapted *shogun* and *daimyou's* land for imported Western public space typologies in Meiji and Showa period; from the exterior and interior open space within and around the modern architecture in the post-war urban reconstructions to the reclaimed and renewed open space in architecture through urban redevelopment after the Osaka Exposition.

The usage patterns in *hiroba* from the different historical periods varied accordingly. To be specific, from a spatial resource shared for collective use as commons or communal space (without addressing land ownership) in the Edo period to a symbolic space designed for Emperor and the government from Meiji to Showa period; from a publicly accessible space under the strict control for use (passing through) but not for public

gathering in the post-war period, to a publicly opened (accessibility) and engaged but may not be publicly owned (such as POPS) and managed (such as *shimin hiroba* and *ekimae hiroba*) space for collectively using after Osaka exposition.

The notions of the 'public' behind the making the physical form of *hiroba* indicated changes in different periods on understanding and interpreting the word 'public space' imported from the West by Japanese people as *'kōkyō kūkan'*. The 'public' in Edo's *hiroba* implied the concept of *kyō* (共, together, share, and common). The 'public' in Meiji and Showa's Western public space typologies were directed to officialdom and nationalism. The 'public' in the post-war period underscored public ownership and control of the government. After Osaka Exposition, the 'public' shifted to the publicly accessible and sense of community and public participation based on a bottom-up initiative of *machizukuri* idea.

The notion of 'public' from the West significantly impacted the Japanese public space development based on *hiroba*. Japan-ness derived from tradition and culture was inherited in this *hiroba* formation process and presented through its *katachi* or shape. It was further brought to the hybridization of other domestic (Japanese) and foreign (Western) ideas, generating something new in-between for an adapted *hiroba*. The mutual influences re-emphasized the complexity of both differences and associations between the Western public space in general and Japanese *hiroba* in specific.

Chapter 4. Case Study of Hillside Terrace in Tokyo

4.1 Context of the Project

4.1.1 Historical and social background of the site

The Hillside Terrace is in Daikanyama-cho of the southwest of Tokyo's Shibuya ward, adjacent to the Meguro ward on the south (figure 4.1). The total six-phase project is scattered on both the north and south side of the old Yamanote road, close to the Daikanyama station on the northeast (figure 4.2). The project's site is hidden in a peaceful and quiet neighbourhood with many small-scale (two or three floors) boutique stores, coffee shops, bookstores, and galleries lined up along intimate alleyways. The cultural atmosphere also attracts many foreign embassies to be set there. Because the project site was located at the junction of the valley formed by the Kanda River on the north and the Meguro River on the south, complex terrains with crisscross rivers and numerous slopes and terraces were created. The architectural project –Hillside Terrace– was named based on that.

Figure 4.1 The location of Hillside Terrace in Tokyo. (Source from: drawn by the author based on the data from Esri)

Figure 4.2 Hillside Terrace (in red) and its surrounding environment in Daikanyama area. (Source from: drawn by the author based on the data from Esri)

People had a long history of living and working on the former land of the site. During the Edo period, small farming villages with low traditional wooden houses were scattered on the fields, contrasting with the scene of modern prosperity today. The landowner of the project Asakura family operated a rice business on the former site during the Meiji period. The family leader also served as a council member in the village, town, ward, and Tokyo city. As a local official, the Asakura family actively led and participated in many regional 'self-governance' activities, which contributed to the construction of Shibuya district and the development of local public affairs (Hillside Terrace 50th Anniversary Executive Committee, 2019). For example, Asakura family offered their properties to widen roads, repair and maintain streets, excavate waterways, lay railways and other infrastructure, build schools and other facilities, etc. The dedication to the neighbourhood development owned Asakura family reputations and respects by local residents (Maeda, 2003). This spirit of making unremitting efforts for the local community's development and governance has been passed to younger generations: the current landowner and the developer of Hillside Terrace – Kengo Asakura.

4.1.2 Background of the architectural project

The real estate business of the Asakura family started in the Showa period and established a land management company to develop collective housing. In the post-war period, the supply of urban housing was in shortage. Many developers seized the chances and joined in the real estate speculation for a large-scale modern apartment in high density. However, in order to preserve the human-scale residential neighbourhood and social relations bond on the site, in the early stage of the development, the landowner and developer Kengo Asakura and entrusted chief architect Fumihiko Maki put the considerations of 'community', 'publicity' and 'sociality' as the priority in the project.[6] They carried out the new development in a cautious attitude by maintaining the continuity of the site's topography and surrounding environment for the whole six phases from 1969 to1992 (figures 4.3 and 4.4).

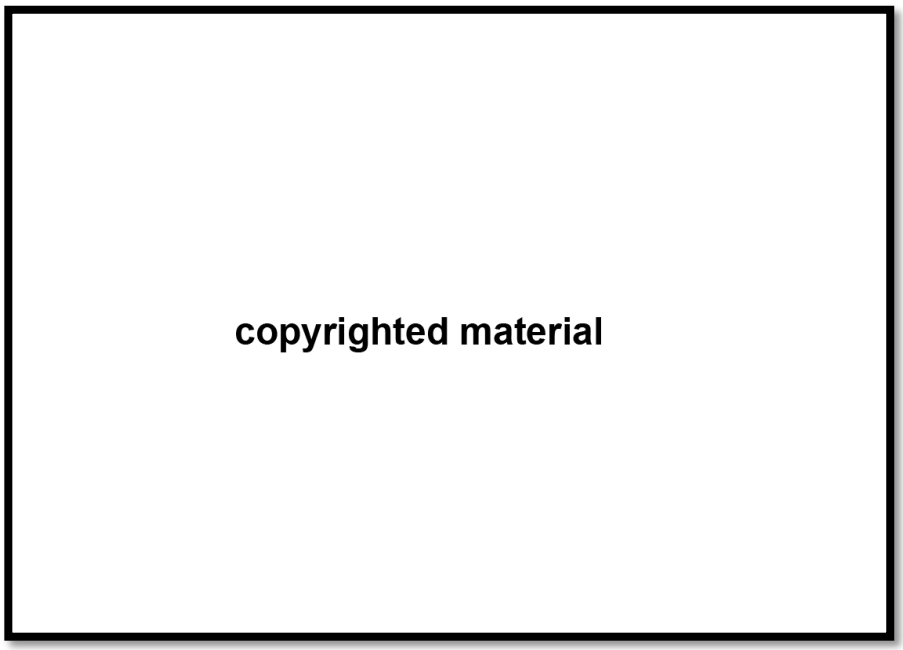


Figure 4.3 The development of Hillside Terrace in total six phases from 1969-1992. (Source from: Japan Story, no date)

[6] For details, please refer to the interview with Kengo Asakura by the author on May 5th, 2019, in Tokyo in Appendix 6.1.

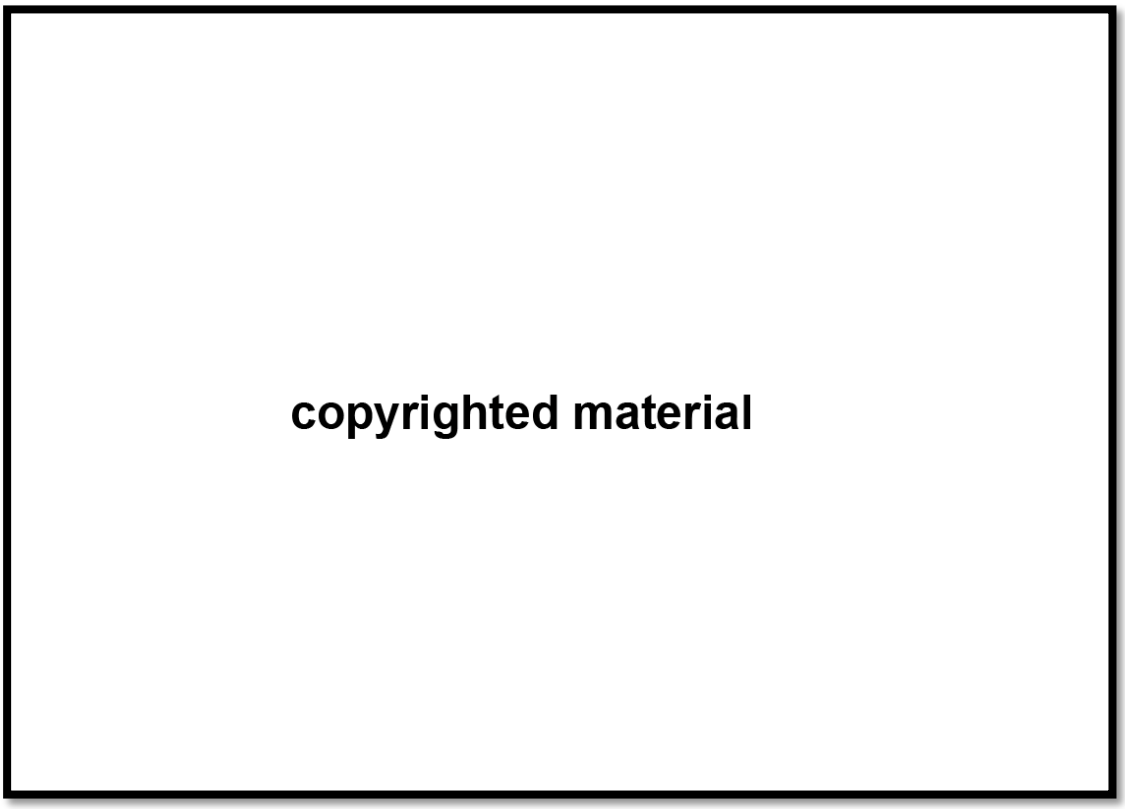


Figure 4.4 The axonometric plan of Hillside Terrace. Open spaces between buildings are reserved for public use. (Source from: drawn by the author based on the image from Maki and Associates, 1994c)

The old Asakura House was preserved on the land adjacent to the current Hillside Terrace (figure 4.5). The Sarugaku mound in AD 6th-7th century from the ancient tomb period (figure 4.6), the building height (figure 4.7), the undulating landscape feature of the site (figure 4.8), significant to the place-making were well preserved and underscored in the architectural design. There are twenty-six trees planted on the site of Hillside Terrace (figure 4.9). Within those twenty-six trees, large twenty trees were either transplanted to new places from the site of Asakura garden on the south side in different design phases or newly planted from little trees (such as trees in the corner plaza of the 1st and 3rd phase). Six trees were well retained at where they were before. The trees were arranged in the different exterior open spaces between buildings in different phases, so the distinct formal characters and styles could better be integrated by shared elements –green trees– to acquire a spatial continuity. Trees also helped to

link the new project to the time and place of the site in history, preserving the *genius loci* before (Schulz, 1980).

Figure 4.5 The old Asakura House seen from the parking lot in the 5th phase of Hillside Terrace. (Source from: photo taken by the author)

Figure 4.6 The Sarugaku mound located in the 3rd phase of Hillside Terrace. (Source from: photo taken by the author)

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Figure 4.7 The upper part of the building volumes (indicated by the arrow) in the 6th phase development was set back from the street to keep 10m eave height same with the previous phases. (Source from: adapted by the author based on the image from Maki, 2006)

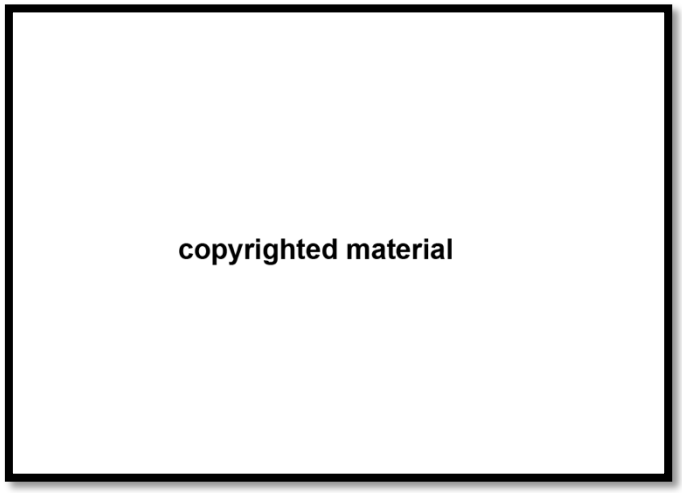

Figure 4.8 The section of Hillside Terrace, which retains undulate terrain and abundant landscape on the site. (Source from: drawn by the author based on the Shinkenchiku 1978 and 1992)

Figure 4.9 The tree layout in Hillside Terrace. (Source from: drawn by the author)

The development of each phase of the project responded to the updated demands of society. The deficiencies found through the observation of users' behaviour in the previous stage were revised in the design of the next phase. In the sixth phase of the project, due to the changes of district use type on the north side of the old Yamanote road as required by the government, the plots FAR was improved compared to the south side of the project before. In order to ensure a uniform eave height with the buildings in the previous phases, the heightened part of the new building was set back from the street (figure 4.7). The respect for the natural and historical environment of the site and continuously creating the open space for publicly used *hiroba* though architectural design also affected the development of surrounding buildings in the Daikanyama area (Maki and Atelier Hillside, 1995).

The original planning of the project was proposed exclusive land use for housing, but later, the program was expanded to include commercial (barbershop, restaurant), cultural (library, exhibition hall, seminar room, gallery, underground concert hall), and leisure facilities not only for the tenants and people in the Hillside Terrace project but also for people in the neighbourhood and the passers-by from outside the Daikanyama area. This pioneering proposal of the publicly accessible open spaces (figure 4.10) reserved for the use of *hiroba* in the private-owned building.

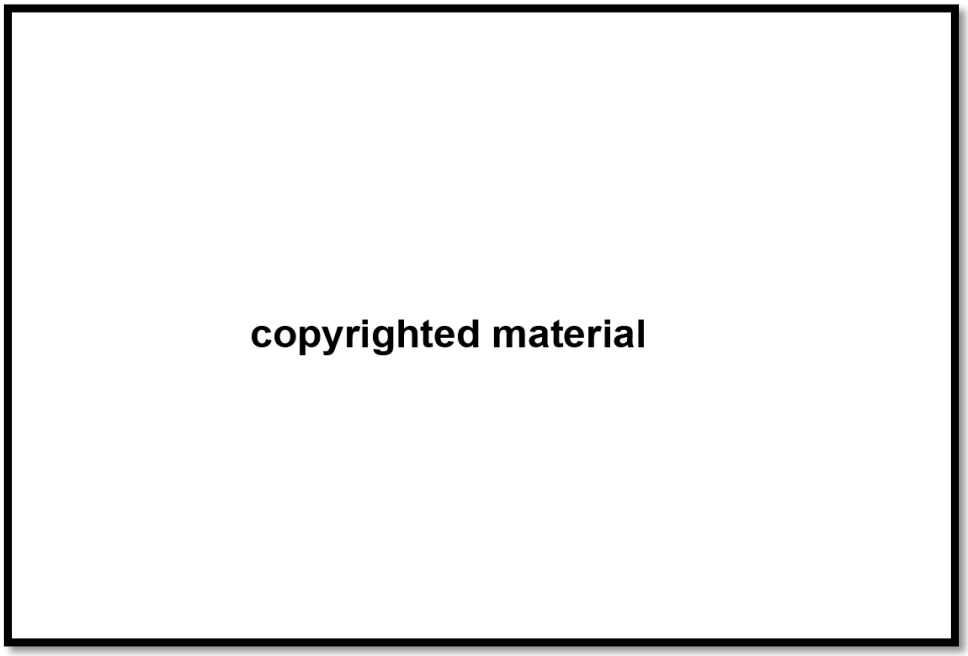

Figure 4.10 The distribution of publicly accessible open space in the Hillside Terrace. (Source from: adapted by the author based on the image from Maki, 2006)

The inherited tenant of cultivating a sense of unity by communities in the design of Hillside Terrace considered the improvement of the entire living environment in every aspect (Maki, 2006), such as the advocations of building a walkable city under the impacts of automobiles, the preservation of the traditional townscape influenced by Modernism, the social problems caused by the disappearance of local communities, etc. The various activities organized in different forms of *hiroba* promoted the daily encounters and communications between people, resulting in the generation of many self-initiated organizations, such as the formation of the Tenant Association and the Daikanyama Beautiful District Production Association. They also cultivated a sense of local community naturally.

4.2 Theory of Oku and Collective Form

Oku, according to the Japanese dictionary, literally means ‘deepness’ or ‘innermost space’. The ‘depth’ of *oku* is reflected from two aspects, spatial ‘depth’ and psychological ‘depth’.

Fumihiko Maki found the distinctive character of Japanese urban space and landscape was defined and highlighted by *oku*, which was the internal logic in structuring the Japanese urban form. He interpreted the traditional and cultural concept of *oku* and applied it into the architectural discipline to form his architectural and urban theory. Maki (2008, p.153) wrote:

> *Having travelled to many cities abroad, I am inclined to believe that multi-layered spaces are among the few phenomena observable only in Japan. The Japanese have always postulated the existence of what is called oku at the core of this high-density space organized into multiple layers like an onion, and the concept of oku has enabled them to elaborate and give depth to even a delimited area. In the formation of urban space, certain stable concepts that have been sifted and committed to memory by the collective unconscious of the community work automatically. Oku, a spatial concept peculiar to Japan, is a good example.*

Maki pointed out that the *oku* can be found in every aspect of Japanese urban space and Japanese people's unique spatial perceptions and practices. The spatial concept of *oku* is linked with human behaviour. In the Japanese village, the shrine as a sacred place to locate *kami* (deity) is hidden in the deepest location of the high mountain covered by forest, forming an axis perpendicular to the lowland villages where ordinary people live (figure 4.11). Maki (1980, p.157) explained, 'the inner shrine is located deep in a mountain because it is believed that important things should remain hidden; a winding mountain trail, therefore, provides the only access.' The spatial depth is reinforced by the spiritual power of *kami*, addressing the profundity of the word *oku* by adding a psychological feeling of inwardness. In Kyoto's *machiya* (merchant townhouse) (figure 4.12), the multiple layered space is threaded by a long circulation across a sequential of rooms from the most public (exterior alleyway) to the semi-public (front-garden) and the most private (bedroom). Through this process, in addition to the

spatial *oku,* the psychological *oku* is also aroused by the tension between changing body movement through behaviour and winding corridors through the architectural form (Maki, 1979; 1980). Maki (1994a, p.5) commented his *oku* that 'the idea of *oku* which come up in the discussions on the character of Japanese architecture is ultimately notions of space. In discussions of space, there is a greater weight given to the total effect on the five senses than to visual impressions alone.'

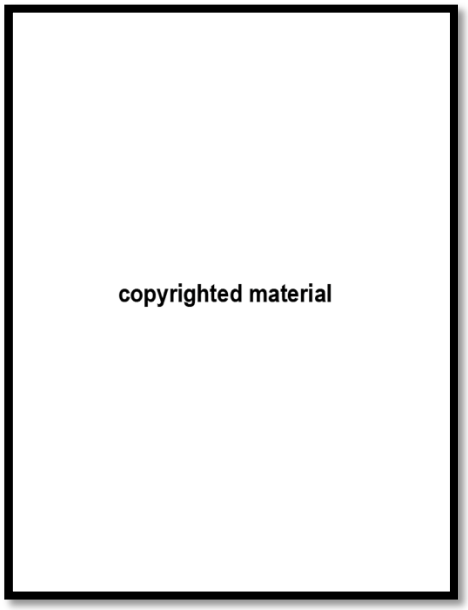

Figure 4.11 A sacred path (the vertical line) formed by the shrine and *okumiya* hidden in the 'inner space' of the mountain in a Japanese village. (Source from: Maki, 2008)

Figure 4.12 Plan of *machiya*. Its winding pathway from the entrance to the inner rooms shows a sense of *oku.* (Source from: Maki, 2008)

Moreover, Maki (2008) underscored the unique Japanese territory formation and occupation based on the concept of *oku* through spatial envelopment centripetally in relation to the natural terrains, in contrast with the spatial demarcation centrifugally through urban design in the West. The different spatial organization and urban planning

approaches result in the opposite image reflected by the Japanese *hiroba* and the Western public space. Japanese *hiroba* underscores 'hidden and invisible', 'decentralized', and 'horizontal' characters. However, in an entirely different approach, public space in Western countries emphasizes 'open and visible', 'centralized', and 'vertical'. Western cities' municipal plazas, churches, and town halls are rendered as gorgeous symbols concentrated in the city centre. They provide a fixed, visible, and readable structure and show verticality and centrality from one original point for urban sprawl through urban planning. On the contrary, due to the natural topography and land subdivisions in history, Japanese *hiroba* in the form of various open spaces around shrines, bridges, waterfront, and between buildings are absent centrality (i.e., with various centres) and small in scale with irregular form, resulting in a 'fine-grained city' (Maki, 2015). Japanese *hiroba* is unevenly distributed without a clear order and hidden in the deep layer of urban space, showing a sense of *oku*.

The generation of spatial *oku* using the vocabulary of Western Modernism in Maki's architecture is realized much depend on the theory of 'collective form'.[7] Maki was

[7] Maki's theory was also influenced by Modern architectural theories under his mentor Josep Lluís Sert on urban design in Harvard GSD and Aldo van Eyck in Team X. van Eyck's belief of architectural design in the contextual environment under structuralism reconnects the relations between the building and city. Sert introduced urban design and initiated the first degree program at GSD in the 1950s. His urban design approaches to provide appropriated open public space for human association and social contact from a scale of a house, neighbourhood to the large city through using the architectural types of 'wall-in patio', 'courtyard' and 'pedestrian passages' much influenced Maki in his study in GSD (Song, 2010; Song,). Sert was also the president of CIAM, engaging the 8th CIAM conference titled 'Heart of the City' to solve the decline of the city centre open space as the emblem of 'public' on both physical and social dimensions in post war urban development. Maki's other mentor Kenzo Tange also participated in the conference and introduced his proposal for Hiroshima Peace Memorial Park (more details can be found in Chapter 3.3).

inspired by his exploring of the world settlements on the relation between individual buildings and their collectively formed city, i.e., the spatial relationships between individual parts and their integrated whole. The ‘collective form’ theory pays attention to how architectural volumes can be manipulated to generate positive exterior open spaces to connect with the city. It also discovers the linkages between a group of buildings. There are three paradigms in Maki’s (1964) *Investigation in Collective Form* – (1) ‘compositional form’, (2) ‘mega form’, and (3) ‘group form’ – to connect architectural space with exterior urban space on a different scale (figure 4.13).

Figure 4.13 Approaches to collective form. From left to right: compositional form, mega form, and group form. (Source from: Maki, 1994b)

The physical setting of *hiroba* in the Hillside Terrace is created by manipulating the architectural spaces, elements, and volumes in architectural composition based on the theory of ‘collective form’. The different forms of *hiroba* in Hillside Terrace become the invisible ‘centre’ to organize building volumes and multi-layered public-private relations between space and people in each phase (figure 4.14). The enclosed *hiroba* informs a sense of *oku*, and it also becomes the ‘linkage’ between buildings in different phases to develop into ‘group -form’.

Figure 4.14 The invisible centres (the different forms of *hiroba*) as linkages in the collective form of Hillside Terrace in total six phases. (Source from: adapted by the author based on the image from Maki, 2006)

4.3 Building Typology and Open Space within Architecture

In the six-phase development of the Hillside Terrace, the physical setting of many different forms of interior and exterior open spaces are created through a series of spatial elements in the architectural design based on Maki's theories of *oku* and 'collective form'. The series of spatial elements are scattered in different places inside and outside the buildings developed in whole six phases (table 4.1, figure 4.15). According to the spatial configuration of these spatial elements of open space in relationship to their relative positions in the architecture, they can be divided into three categories. Colour coding is based on white (public), dark yellow (communal), light yellow (semi-public), and grey (private) in the drawings of *hiroba-ka* open space.

Table 4.1 The distribution of different spatial elements of open space in Hillside Terrace. (Source from: drawn by the author)

Hillside Terrace (Phase & Building No.) / Spatial Element	Phase 1 (1969)		Phase 2 (1973)	Phase 3 (1977)		Phase 4 (1985)		Phase 5 (1987)	Phase 6 (1992)		
	Building #A	Building #B	Building #C	Building #D	Building #E	Annex #A	Annex #B	Hillside Plaza	Building #F	Building #G	Building #H
Corner Plaza (cP)	●		●								
Lobby (L)	●				●				●		
Sunken Plaza (sP)		●	●								
Threshold (Th)			●								
Platform (Pf)	●			●							
Courtyard (C)			●								
Porch (Po)			●	●				●	●	●	●
Hall (H)									●	●	
Arcade (Ar)					●						
Plaza (P)				●	●				●	●	●
Corridor (Co)									●		
Parking (Pa)								●			
Functional Room (fR)								● *	●		
Staircase (S)			●	●						● *	
Setback open space (Sb)	●		●	●					●	●	●
Elevated Pedestrain (eP)		● *									

Note: (•) indicates the spatial element is above /under ground; without (•) indicates the spatial element is on ground level.

(1) Exterior open space. It is represented by the ‘corner plaza’ (cP) in the 1st phase and 3rd phase, two ‘plazas’ (P) separated by Building D in the 3rd phase, and three plazas (P) among Building F, G, and H in the 6th phase; the ‘parking’ (Pa) in the 3rd and 5th phase, and the ‘setback open space’ (Sb) adjacent to the street or in front of the building in all six phases.

(2) Semi-exterior open space. It is represented by the ‘sunken plaza’ (sP) behind Building A and B in the 1st phase, behind Building C in the 2nd phase, and in front of Building F in the 6th phase; the ‘courtyard’ (C) in the 2nd phase, the ‘staircase’ (S) in between the Building A and B in the 1st phase, in front of Building C, D and F; the ‘porch’ (Po) at the building entrances in the 2nd, 3rd, 4th, 6th phases; the ‘elevated pedestrian’ (eP) of Building B in the 1st phase, the ‘arcade’ (Ar) of Building E in the 3rd phase, and the ‘platform’ (Pf) of Building D around an ancient mound from the previous site in the 4th phase.

(3) Interior open space. It is represented by the ‘platform’ (Pf) of Building A in the 1st phase and Building D in the 3rd phase, the ‘lobby’ (L) of Building A adjacent to the street in the 1st phase, Building E in the 3rd phase, and Building F next to the plaza in the 6th phase; the ‘hall’ (H) of Building F and G in the 6th phase close to the entrance porch, the ‘corridor’ (Co) of Building E, the ‘staircase’ (S) of Building G facing the plaza in the 6th phase, the ‘multi-functional rooms’ (fR) in the form of the multi-purpose auditorium in the 5th phase, and the multi-functional forum, indoor café on the north side of Building F in the 6th phase.

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Figure 4.15 The layout of different spatial elements of open space in Hillside Terrace. (Source from: adapted by the author based on the plan from *The Japan Architect*, 1991)

4.3.1 Exterior open space within architecture

The exterior open spaces are distributed on the interface between the building and the exterior urban space along old Yamanote-dori with the highest visual and physical accessibility.

Phase 1:

The corner plaza (cP) in front of Building A (figure 4.16) is located at the intersection of Hachiman-dori and old Yamanote-dori. It is several steps below the pedestrian, demarcating a semi-enclosed area as a buffer zone for gathering people on the street before entering Building A. A tree is planted on the corner plaza, providing a natural atmosphere in response to the greenery of the surrounding environment. The setback open space (Sb) (figure 4.17) in parallel with the narrow sidewalk no more than two meters provides space for people's temporary stay.

Figure 4.16 The corner plaza (cP) and staircase (S) in Building A. (Source from: drawing and photo from the author)

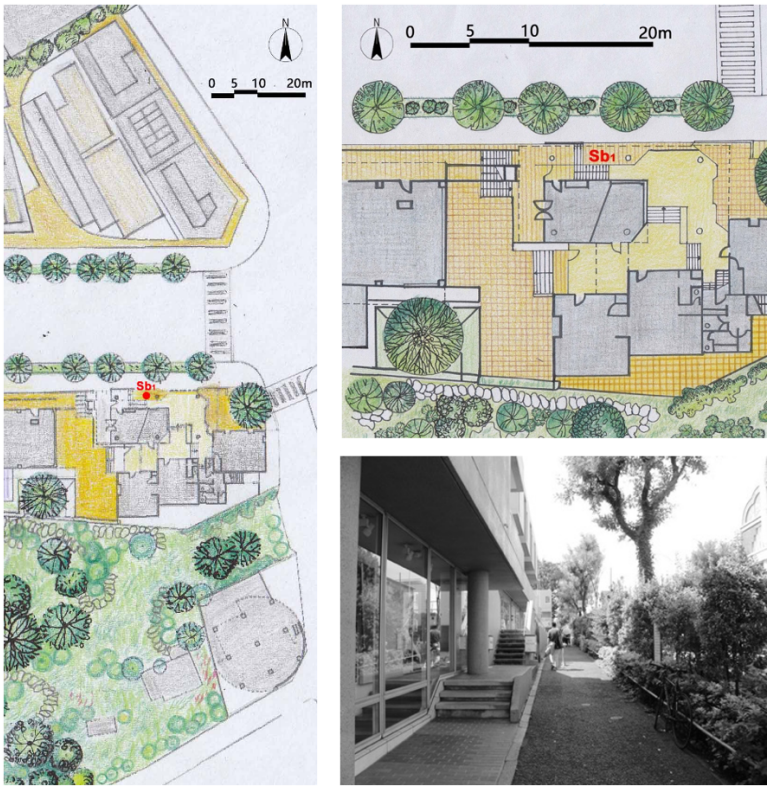


Figure 4.17 The setback open space (Sb) in Building A. (Source from: drawing and photo from the author)

Phase 2:

A similar corner plaza (cP) (figure 4.18) with a planted tree is located in front of Building C. It is connected with the setback open space (Sb) from the sidewalk. A bench is put by the shop tenant within the corner plaza. The setback open space (Sb) adjacent to the sidewalk is preserved in parallel with the exterior contour of Building C (figure 4.19).

Figure 4.18 The corner plaza (cP) in Building C. (Source from: drawing and photo from the author)

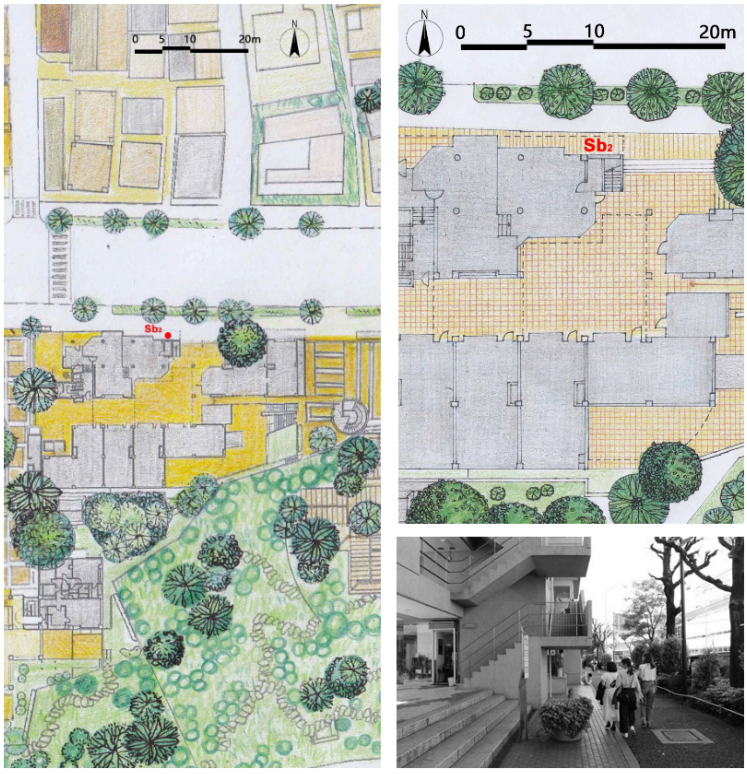


Figure 4.19 The setback open space (Sb) in Building C. (Source from: drawing and photo from the author)

Phase 3:

Building D and E, together with Building C in the 2nd phase, envelope an L-shape plaza (P) (figure 4.20) in the 'group form' with a 7th-century ancient mound Sarugaku-zuka and trees in the centre. A linear plaza (P) (figure 4.21) between Building D and the Royal Danish Embassy is reserved for parking and emergency evacuation. The open space in the plaza of the 3rd phase is a homage to the cultural heritage and *genius loci* embedded in the land of the previous site.

Figure 4.20 The plaza (P) between Building C, D, and E (Source from: drawing and photo from the author)

Figure 4.21 The plaza (P) behind Building D. (Source from: drawing and photo from the author)

Phase 5:

The open space aside from the sidewalk between Building B and C is normally reserved for parking (P) (figure 4.22). By putting the multi-purpose room (fR) underground, the project makes views for the old Asakura house on the back. The 'old' building is skilfully incorporated into the creation of the 'new' streetscape, presenting a harmony and continuity between past and present.

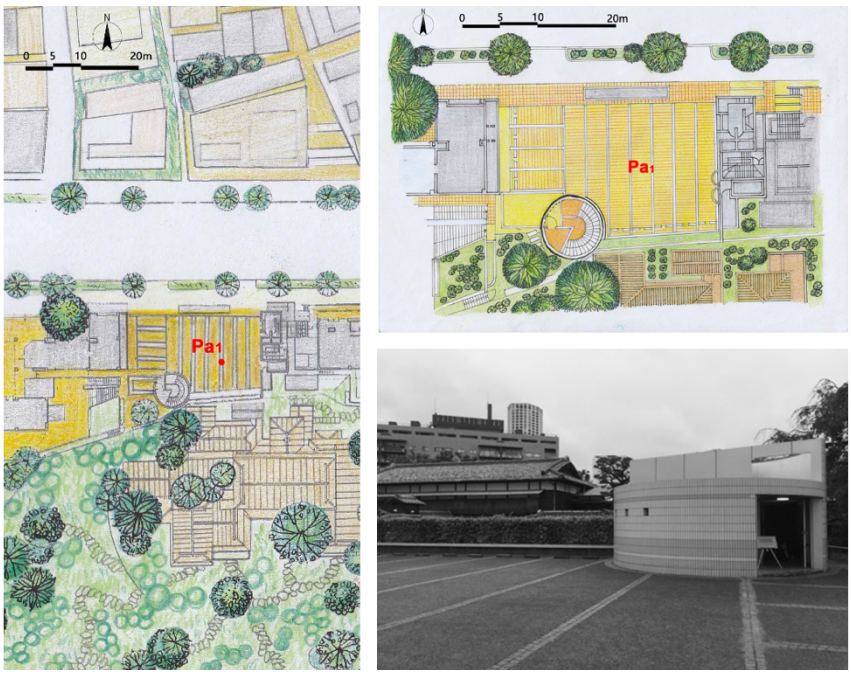


Figure 4.22 The parking (Pa) in the 5th phase. (Source from: drawing and photo from the author)

Phase 6:

By manipulating the contour, extrusion, and direction of the three buildings, Building F, G, and H form three plazas (P): a front plaza facing to the old Yamanote-dori and two small plazas hidden on the back close to the alleyways on the north and west sides in the residential neighbourhood. In the front plaza (figure 4.23), a big tree is planted off the centre. The glass façade used in Building F and G to enclose the central plaza enables a visual connection between indoor and outdoor space. With the provision of benches, tables, and various greens, the small plazas (figure 4.24) form a quiet atmosphere like small pocket urban parks in the neighbourhood. The setback open space (Sb) (figure 4.25) on the edges of the building plot is preserved as an intermediate space between the private buildings and the public alleyways.

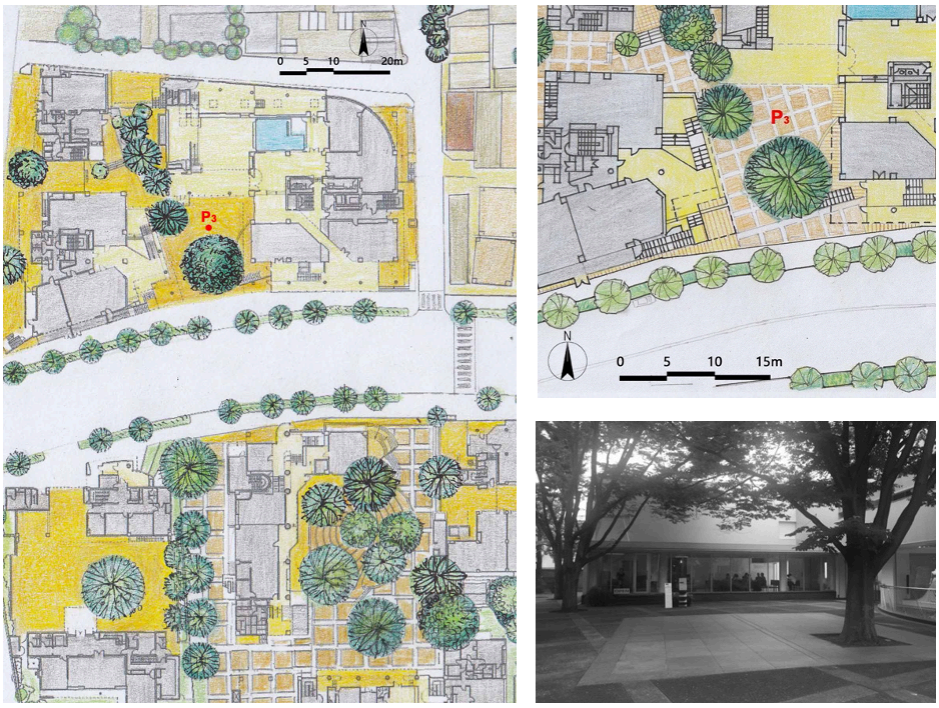


Figure 4.23 The big plaza (P) in front of Building F. (Source from: drawing and photo from the author)

Figure 4.24 The small plaza (P) between Building G and H. (Source from: drawing and photo from the author)

Figure 4.25 The setback open space (Sb) behind Building G. (Source from: drawing and photo from the author)

4.3.2 Semi-exterior open space within architecture

The semi-exterior open spaces are set back from the street side but without losing a close relation to it. It is partially attached to the architectural space while exposed to the exterior urban space.

Phase 1:

The sunken plaza (sP) behind Building A and Building B in the1st phase is an outdoor space with a quiet setting for dining and enjoying the natural greens in the adjacent Asakura family garden (figure 4.26). Because of the tree's shade and the hide of building volume in the front, the sunken plaza becomes a place with a strong sense of *oku*.

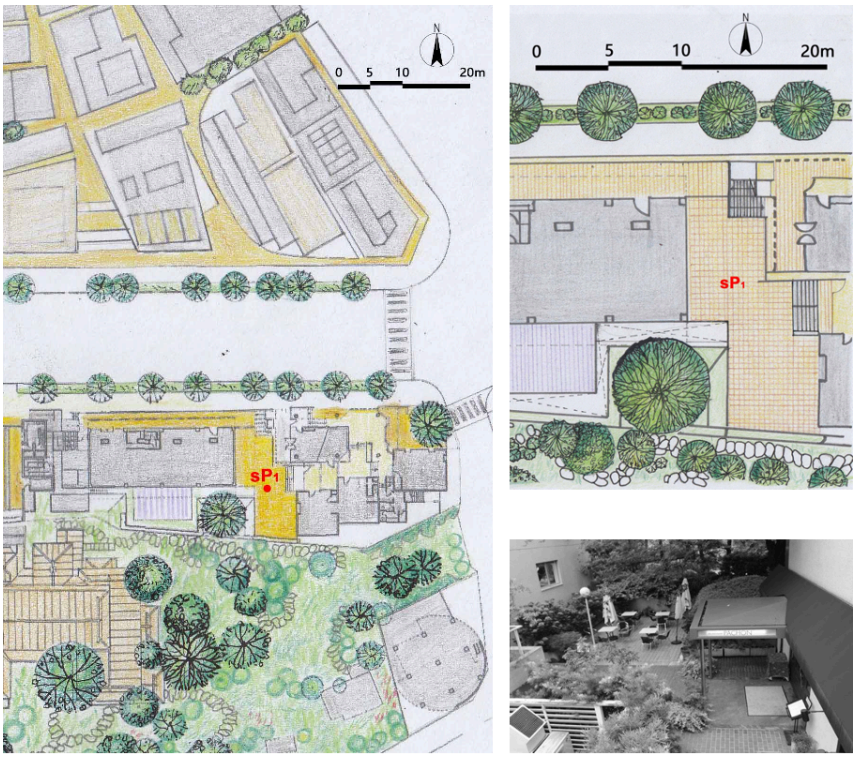


Figure 4.26 The sunken plaza (sP) behind Building B. (Source from: drawing and photo from the author)

A slightly elevated pedestrian (eP) is designed in parallel with the street in front of Building B (figure 4.27). It follows the site's undulating terrains and adds alternative pathways to deliver people to the adjacent site in different phases. The threshold under the cantilevered residential units above head on the elevated pedestrian (eP) creates an area for a stay in a dialogue with the street.

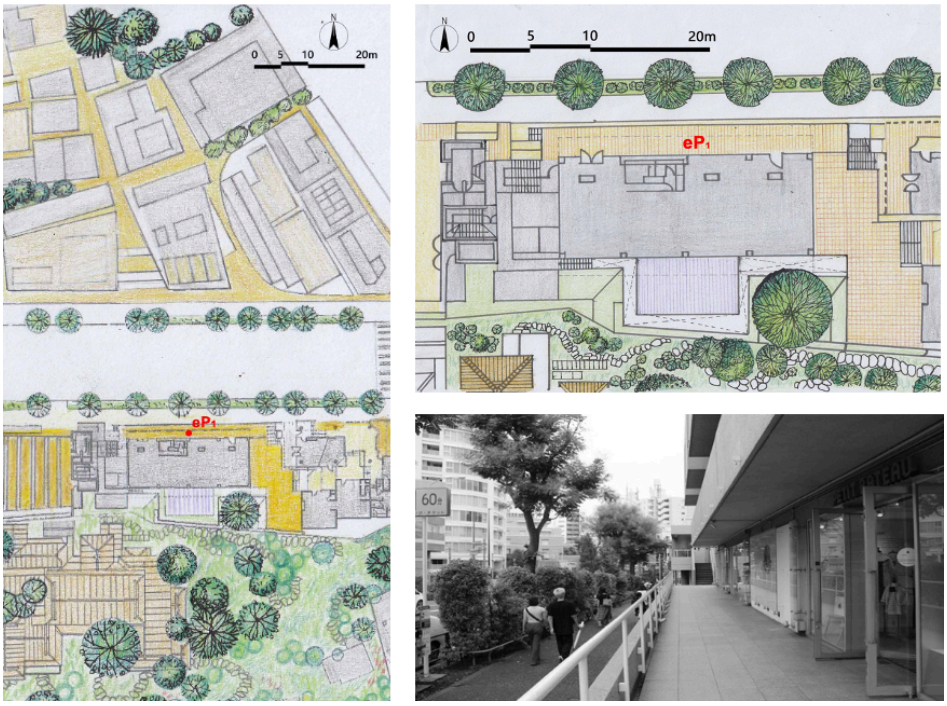


Figure 4.27 The elevated pedestrian (eP) in Building B. (Source from: drawing and photo from the author)

Phase 2:

A semi-interior courtyard (C) (figure 4.28) is enclosed by intentionally arranging three building volumes in a circle pattern in Building C. It is elevated several steps above the street level; the staircase connects and differentiates the courtyard with the sidewalk as an intermediate zone. The three openings as entrances under the 2nd-floor residential building volumes form threshold (Th) between inside and outside the enclosed courtyard (figure 4.29). Doors of surrounding shops are opened towards the central courtyard, and people can cross the shops to arrive at the central courtyard. Two passageways (one linked perpendicular to the sidewalk and the other linked with one of the three courtyard entrances) lead to the sunken plaza (sP) hidden behind Building C (figure 4.30), which provides an outdoor space for a restaurant and multiple activities, such as music concerts. The porch (Po) (figure 4.31) at the entrance of the upper level's residential area in Building C, creating a dented void next to the sidewalk.

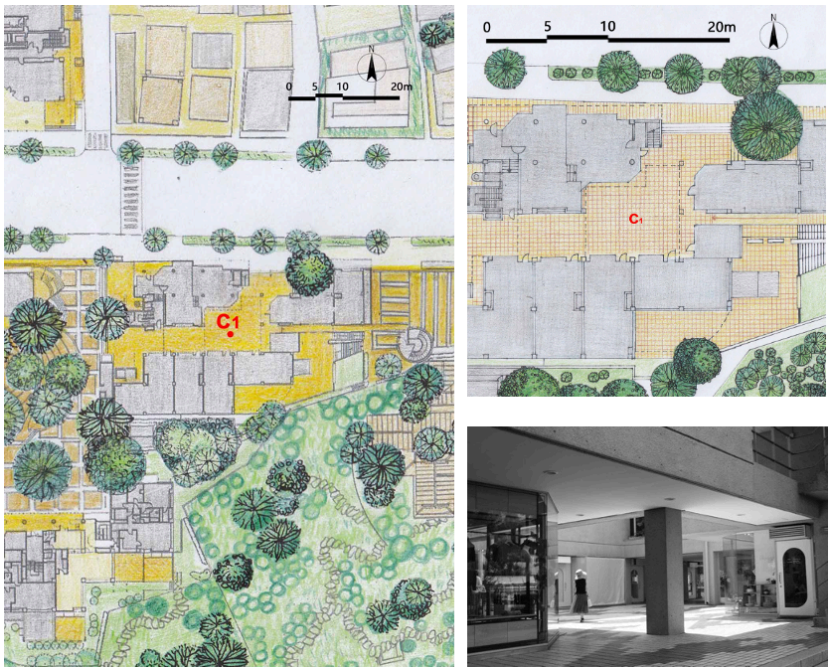


Figure 4.28 The courtyard (C) in Building C. (Source from: drawing and photo from the author)

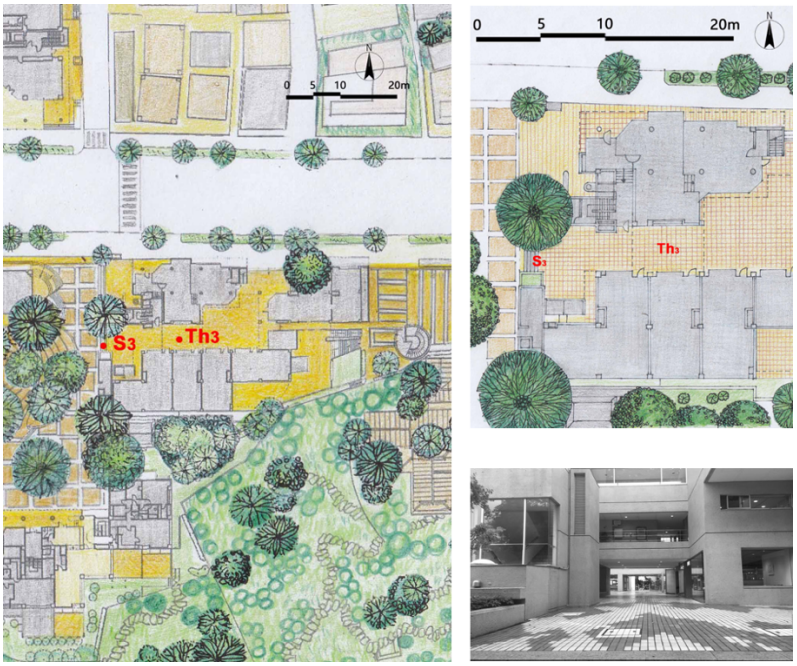


Figure 4.29 The threshold (Th) and staircase (S) in Building C. (Source from: drawing and photo from the author)

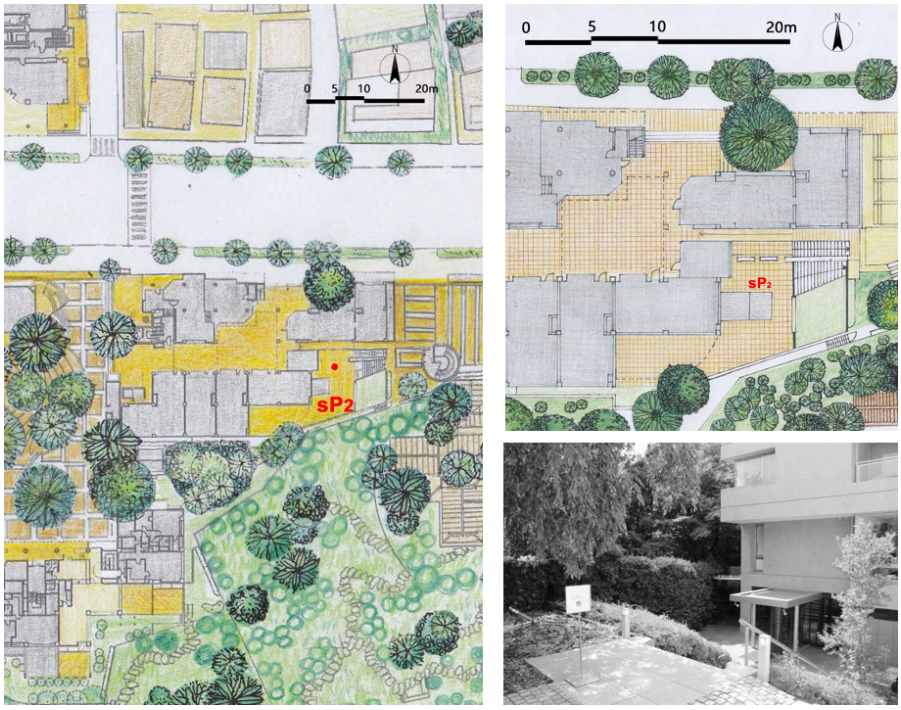


Figure 4.30 The sunken plaza (sP) behind Building C. (Source from: drawing and photo from the author)

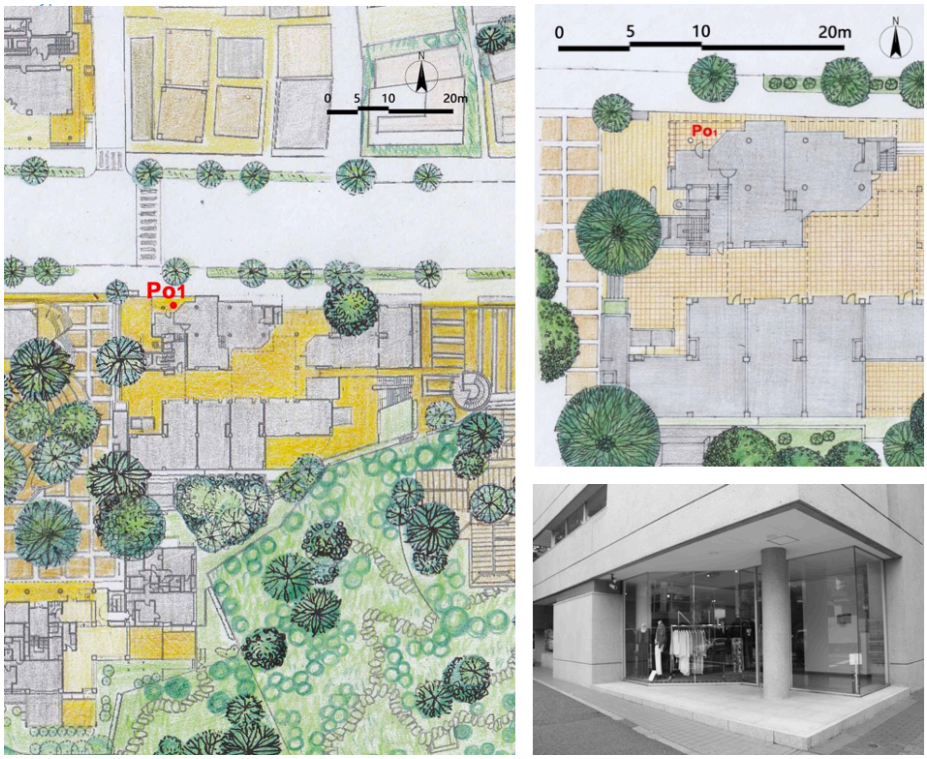


Figure 4.31 The porch (Po) in Building C. (Source from: drawing and photo from the author)

Phase 3:

Regarding the contour of the ancient mound, Building D extends cascade-like staircases (S) for people's temporary stay (figure 4.32). A platform (Pf) (figure 4.33) envelopes the central ancient mound and forms a loop circulation by integrating the Sarugaku-zuka within Building C's architectural composition through the 'group form'. The arcade (Ar) (figure 4.34) facing the plaza in Building E is a waiting space for visitors attending the activities held in the interior lobby. The porch (Po) and setback open space (Sb) (figure 4.35) play the role of alcoves, making rooms for people's short stay.

Figure 4.32 The staircase (S) in Building C. (Source from: drawing and photo from the author)

Figure 4.33 The platform (Pf) and porch (Po)in Building C. (Source from: drawing and photo from the author)

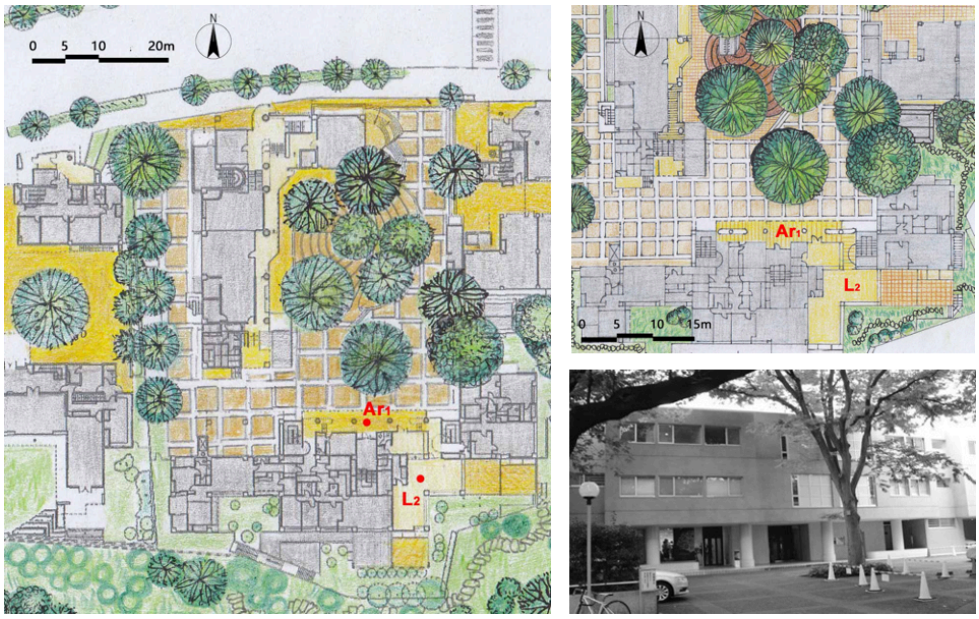


Figure 4.34 The arcade (Ar) and lobby (L) in Building E. (Source from: drawing and photo from the author)

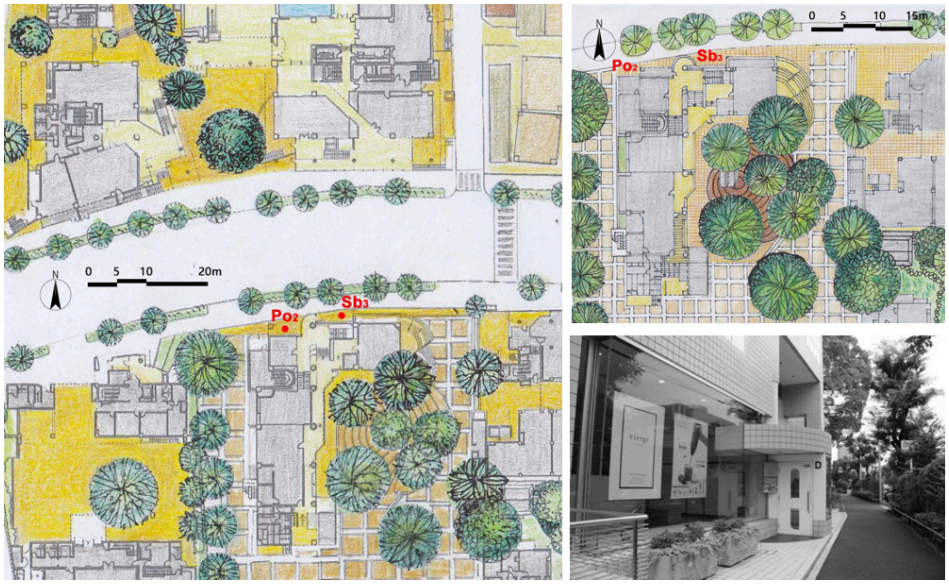


Figure 4.35 The porch (Po) and setback open space (Sb) in Building D. (Source from: drawing and photo from the author)

Phase 6:

In the 6th phase of the Hillside Terrace on the north side of old Yamanote road, the terrain gradually descends from ground level. The platform composed of elevated pedestrian (eP) and porch (Po) in Building F (figure 4.36) is parallel to the alleyway connected to Daikanyama station and is spatially connected with the indoor hall (H).

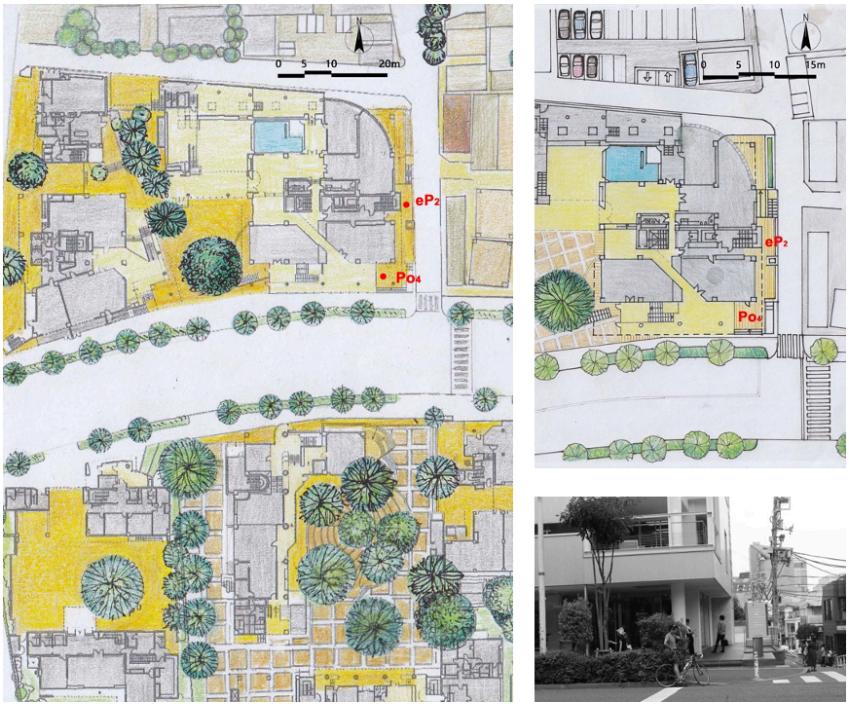


Figure 4.36 The elevated pedestrian (eP) is connected with porch (Po) in front of Building F. (Source from: drawing and photo from the author)

The sunken plaza in Building F is narrow, and it is mainly designed for evacuation and ventilation of air and light for the underground level in Building F. Entrance porches (Po) are placed at the corners of Building F, G, and H (figures 4.37 and 4.38). The symbolic columns are in every porch space, highlighting the opening to attract people to go inside. A corner plaza (cP) is placed in front of Building H (figure 4.39).

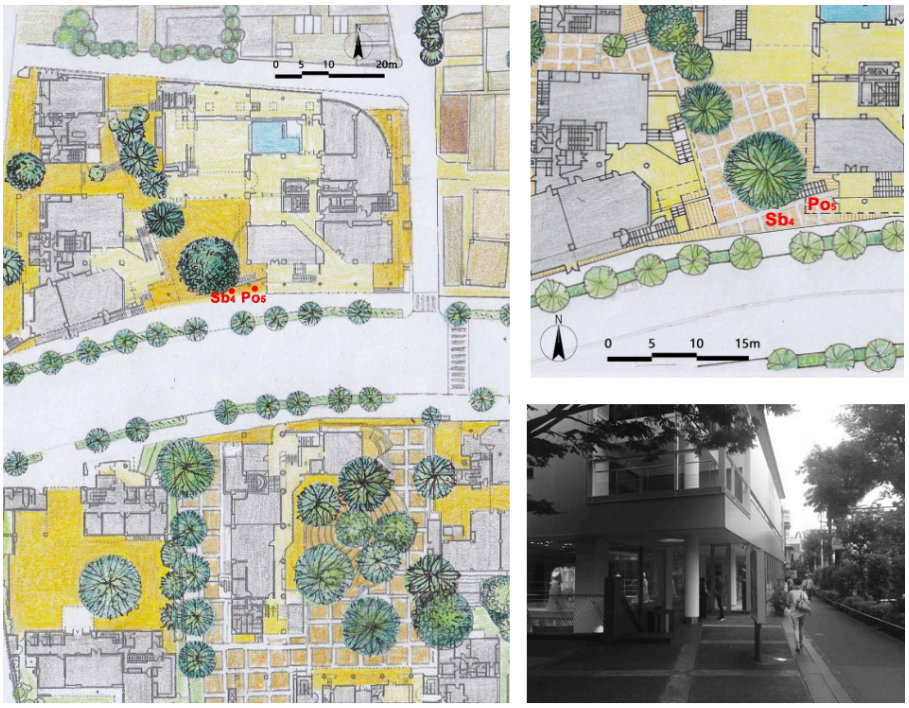


Figure 4.37 The porch (Po) and setback space (Sb) in front of Building F. (Source from: drawing and photo from the author)

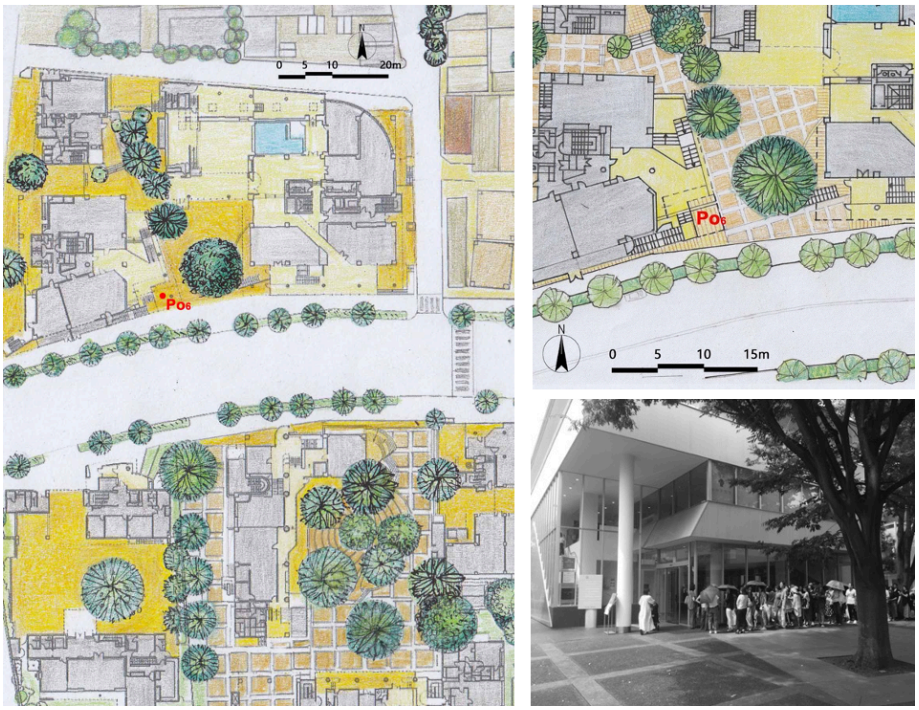


Figure 4.38 The porch (Po) in front of Building G. (Source from: drawing and photo from the author)

Figure 4.39 The corner plaza (cP) in front of Building H. (Source from: drawing and photo from the author)

4.3.3 Interior open space within architecture

The interior open spaces are situated in the deepest layer of the building. It functions as an indoor space serving both circulation and public activities in the building.

Phase 1:

Entering Building A, the semi-underground lobby (L) and platform (Pf) (figure 4.40), which are enclosed by three gallery rooms and a foreign restaurant, lead to a sunken plaza with tables and chairs in between Building A and B behind the busy street. A staircase is put aside to connect the underground level at the sunken plaza and the street level above.

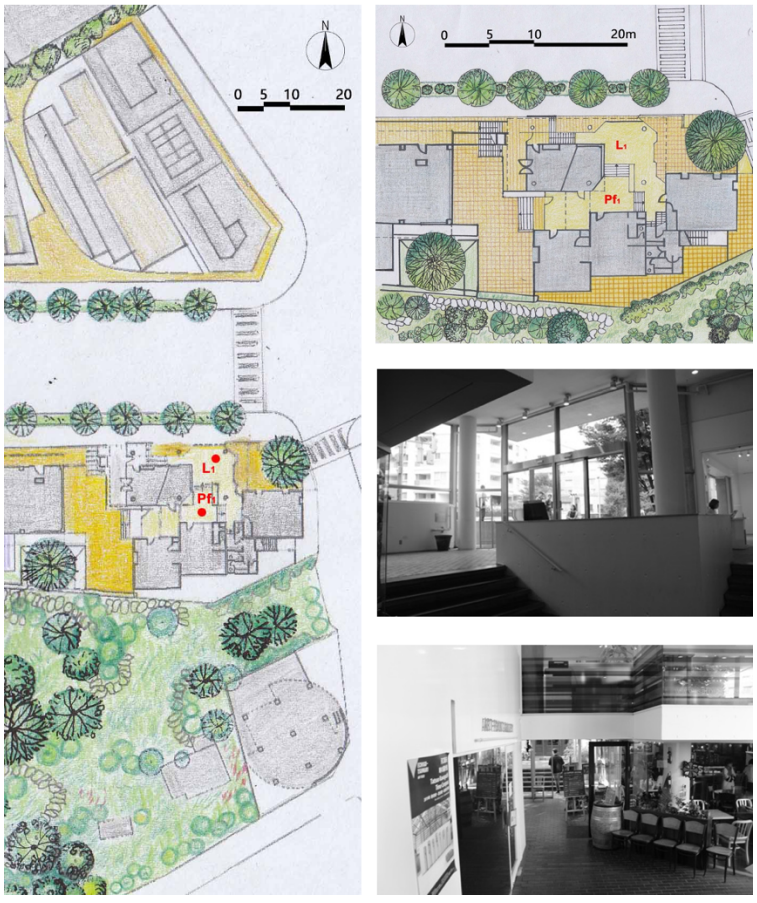


Figure 4.40 The lobby (L) and platform (Pf) in Building A. (Source from: drawing and photo from the author)

Phase 3:

The platform (Pf) (figure 4.41) in Building D follows the contour of the exterior ancient mound. It evokes the human body a feeling of walking on the winding and undulating *roji* in a traditional Japanese neighbourhood. The curving route of the interior platform connects the porch space from the north side of the street with the plaza on the south side away from the street. The lobby space (L) (figure 4.42) in Building E was planned to be a coffee shop at the beginning of the design. However, now it is used as a multi-functional room for exhibitions, seminars, and other activities.

Figure 4.41 The platform (Pf) in Building D. (Source from: drawing and photo from the author)

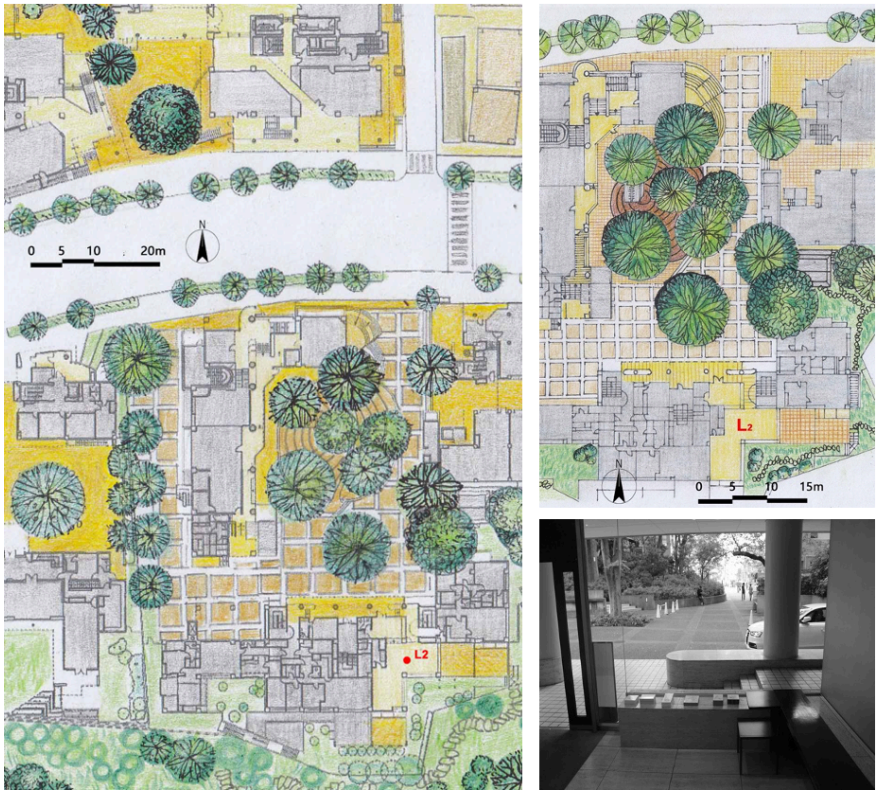


Figure 4.42 The lobby (L) in Building E. (Source from: drawing and photo from the author)

Phase 5:

A multi-functional auditorium (fR) is put under the parking lot (figure 4.43). Although it was usually closed or rented for private events, there were activities free of charge held there irregularly. Future events can be acquired from Hillside Terrace's official website online, and the leaflets and posters on the bulletin board updated monthly in front of the buildings in different phases.

Figure 4.43 The multi-functional auditorium (fR) under parking. (Source from: drawing and photo from the author)

Phase 6:

The entrance hall (H) in Building F is connected with the entrance porch adjacent to the sidewalk (figure 4.44). Seating is provided in the entrance hall for people's short stay. The envelope of the hall by glass material allows interaction between interior activities and street life. A diagonal corridor (Co) (figure 4.45) as an internal short-cut street leads the way from the entrance hall to the lobby(L), hall(H) (figure 4.46), and a multi-functional forum (fR) (figure 4.47) in front of the indoor café facing the central plaza. This internal spatial route provides a loop circulation, connecting people from the alleyway at the east entrance of Building F and the west entrance of the central plaza. In Building G, the entrance porch is connected with the entrance hall (H) (figure 4.48) with glass walls on the three sides. The hall space's transparency allows users to observe activities in exterior plazas and streets from inside easily. The space void of the staircase (S) well is linked with the entrance hall in Building G (figure 4.49). There are tables and chairs on the stair landing for rest and dining.

Figure 4.44 The hall (H) in Building F. (Source from: drawing and photo from the author)

Figure 4.45 The corridor (Co) in Building F. (Source from: drawing and photo from the author)

Figure 4.46 The lobby (L) and hall (H) in Building F. (Source from: drawing and photo from the author)

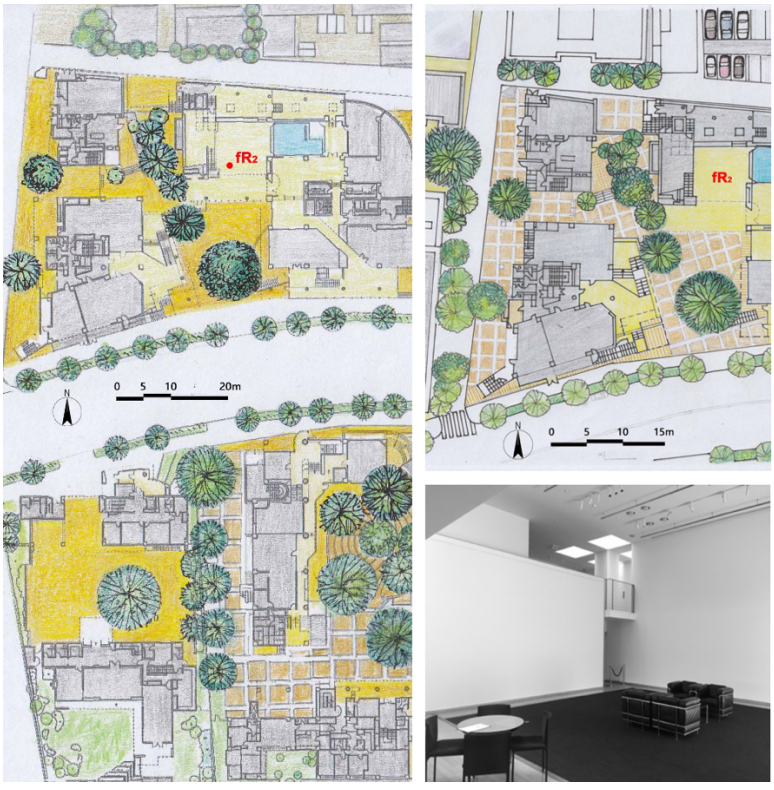


Figure 4.47 The multi-functional forum (fR) in Building F. (Source from: drawing and photo from the author)

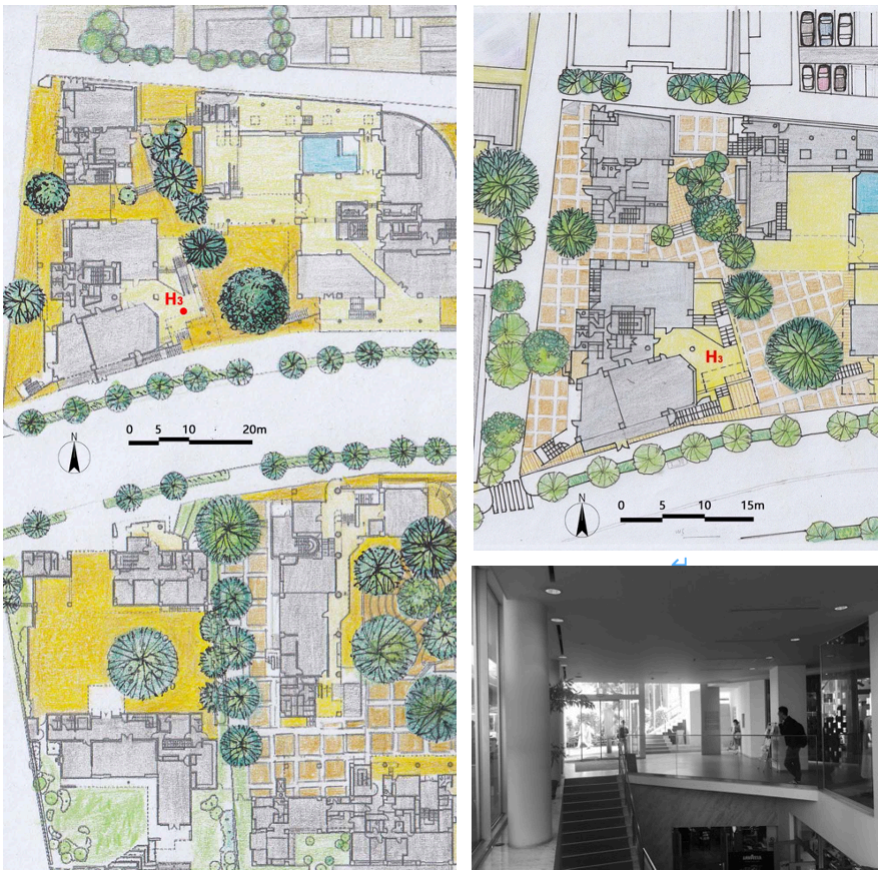


Figure 4.48 The hall (H) in Building G. (Source from: drawing and photo from the author)

Figure 4.49 The staircase (S) in Building G. (Source from: drawing and photo from the author)

4.4 Human Behaviour and the *Hiroba-ka* Open Space within Architecture

Plaza and multi-functional rooms:

Plaza in the Hillside Terrace is either arranged at important traffic nodes or distributed in front of buildings adjacent to the street in each phase, resulting in good visual and physical accessibility. For example, the plaza enveloped between Building C, D, E in the 3rd phase faces people coming from Daikanyama Station through the alleys on the north side (figure 4.50). People were often attracted by the greens that stood out from far away. When crossing the old Yamanote-dori, the small wooden torii and the shrine above the Sarugaku-zuka mound are dimly visible in the green, appealing to people to step in further. Some people climbed the mound for worship; some strolled on the route on the back of the mound through Building D to arrive at the open space in front of Building E (figure 4.51).

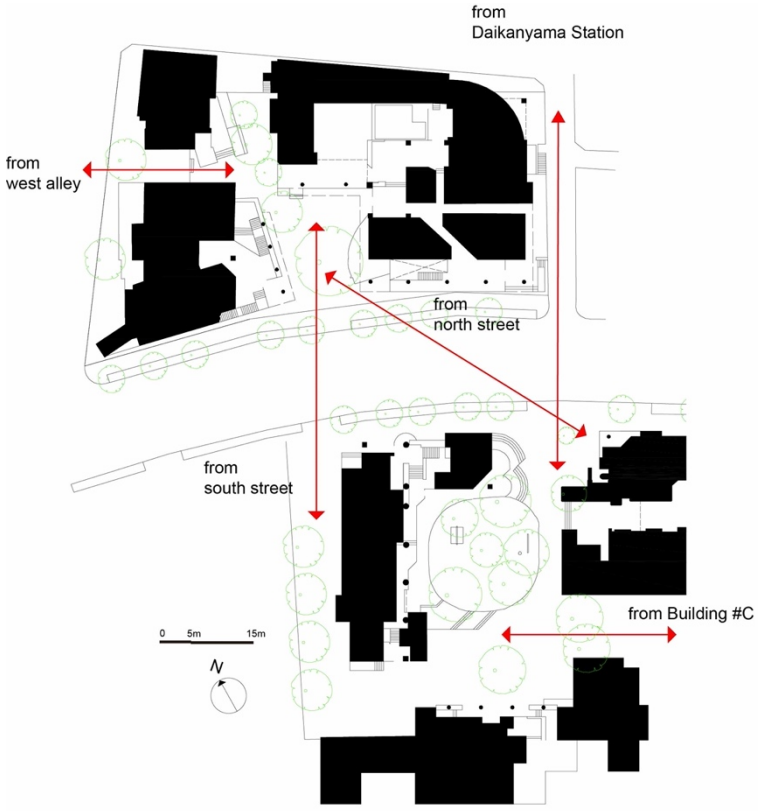


Figure 4.50 Sightline connections of *hiroba* in different phases. (Source from: drawn by the author)

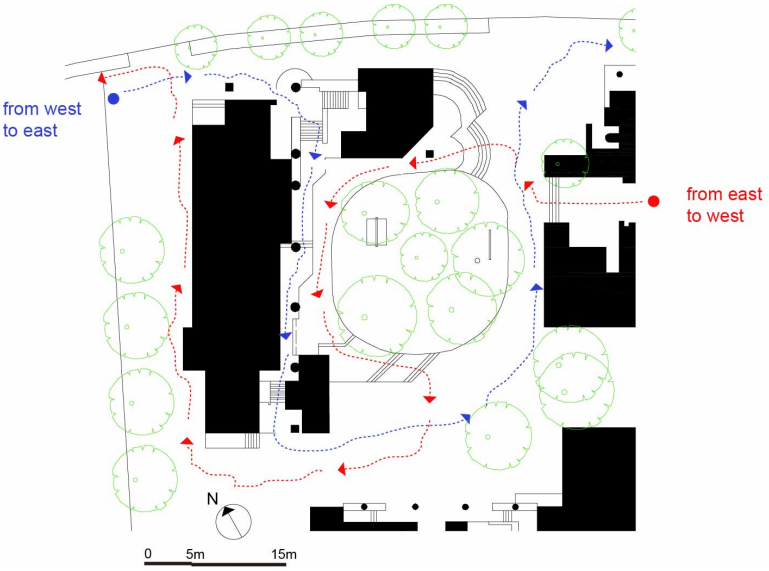


Figure 4.51 People visit Sarugaku mound in plaza between Building C, D, E in a circulated route. (Source from: drawn by the author)

From the plaza in the 3rd phase of the project, people can return by the coming way to the street or detour west to the empty open space reserved for parking between Building E and the Royal Danish Embassy, which directly facing the plaza enclosed between Building F, G, H on the opposite side of the road. People from the south side of the road can easily observe the activities in the plaza on the north side (figure 4.52). The plazas in the 6th phase are the places where most events were held. The canopy of large trees planted in the exterior plaza provides a semi-covered space in addition to the floor and four lateral interfaces provided by surrounding building facades. Trees create a microenvironment physically through protection from traffic noise, accident rains, and exposure to strong sunlight in summer and cold wind in autumn. A sense of enclosure provided by trees mentally also contributes to the rise of attachment from people to the land. Regularly, the café, multi-functional forum (usually an open space as the extension of café when needed), and the gallery in Building F were operated individually as three independent spaces. The central plaza was not often to be used daily except on days for organized events. When the exhibition was held, the interior space of the indoor café, multi-functional forum, and the gallery on the back was integrated with the exterior space of the central plaza in use, creating multiple layers of indoor-outdoor connections and a sense of *oku* inherited from Japanese spatial

culture in tradition (figure 4.53). The transparency of the building façade in glass and intentional arrangements of outdoor trees and internal partition walls for void space created by architects (figure 4.54) allowed the sightlines of passers-by on the street or in the plaza to reach the deep of indoor space (figure 4.55).

Figure 4.52 The plaza on the northside seen from the plaza on the southside. (Source from: photo taken by the author)

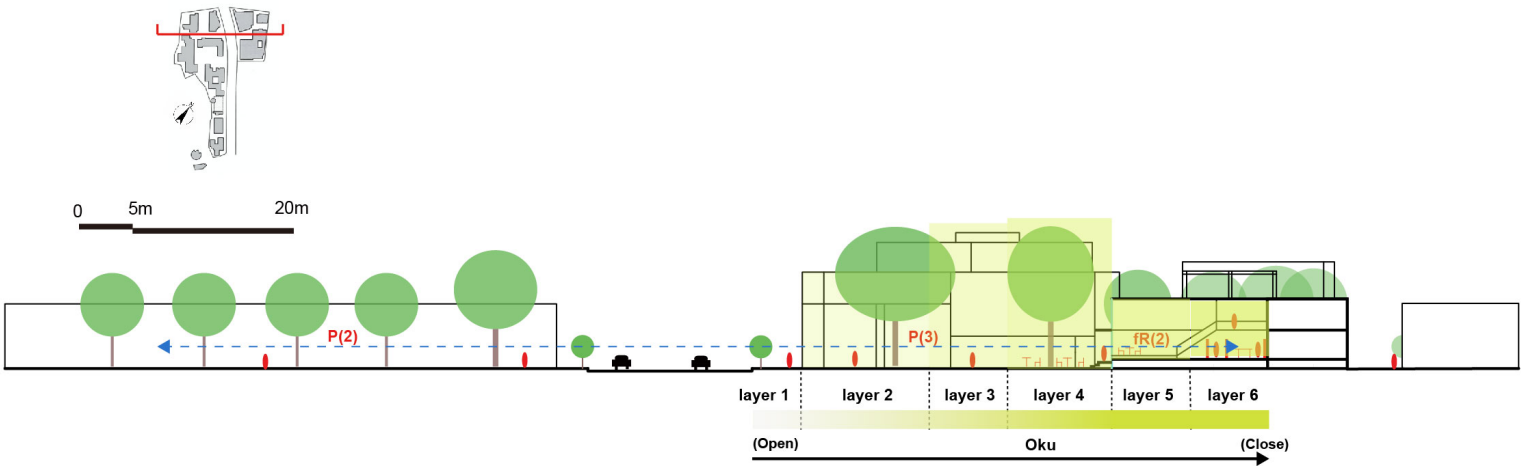


Figure 4.53 The indoor-outdoor transparency and *oku* in the section of Hillside Terrace. (Source from: drawn by the author)

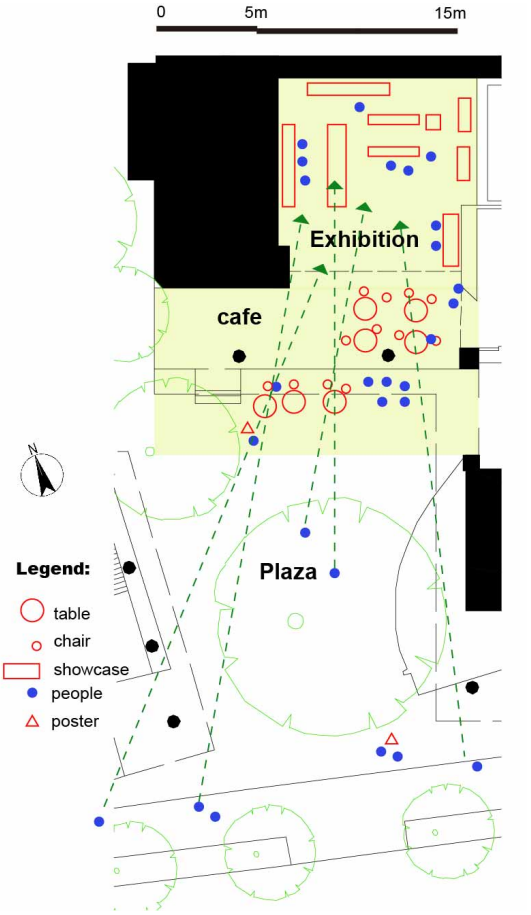


Figure 4.54 (left) Diagram of sightline connections in the plaza of the 6th phase. (Source from: drawn by the author)

Figure 4.55 (right) Sightline connects the interior exhibition space and the exterior plaza. Through the glass, people outside can have a quick glimpse of the works exhibited inside. (Source from: photo taken by the author)

The site design in the 6th phase provides multiple ways from the surrounding streets and alleyways to arrive at the central plaza. Entrances or openings are put on the four sides of the site, formulating a looped circulation to cross the site. The porosity of Building F also enables people from the east alleyway to pass through the building from the eastern entrance to arrive at the central plaza. In addition to the circulations, the sightline of people standing on the street or in the entrance hall of Building F can directly reach the plaza and activities that happen in central plaza (figures 4.56 and 4.57).

Figure 4.56 An artist's painting exhibition was held in Building F on a summer day. A large number of people gathered along the edge of the plaza, waiting to enter. (Source from: photo taken by the author)

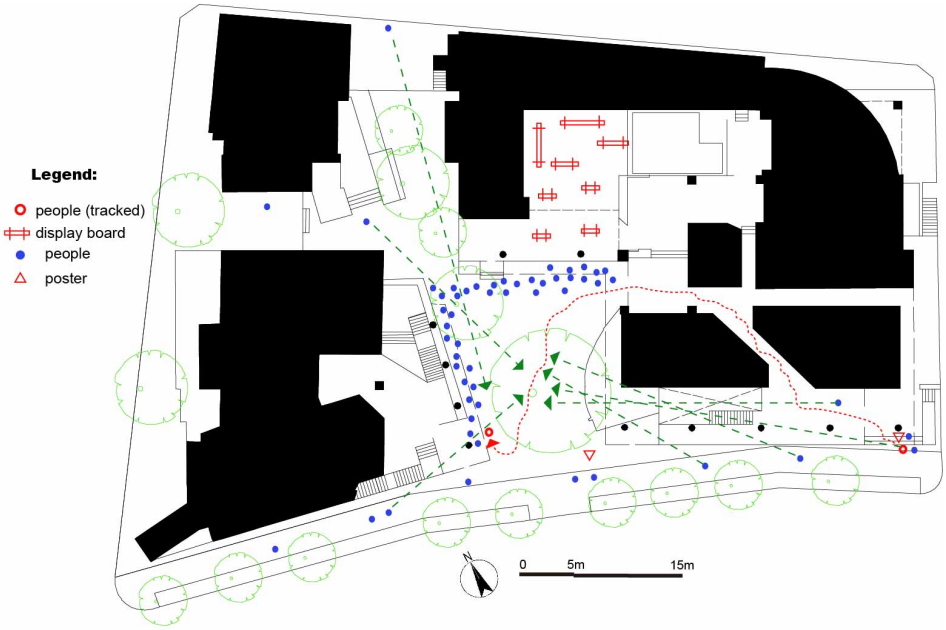


Figure 4.57 Sightline (green dash line) and circulation (blue dash line) connections between people in the plaza and on the street in the 6th phase. (Source from: drawn by the author)

In contrast to the central plaza, which normally remained as an open thoroughfare for people to cross from the main street to the inner alleys, the two small plazas hidden behind and close to alleyways are more frequently used in different times within one day. The two small plazas are spatially connected and separated from the big central

plaza. The appropriately small scale, well-planned greens, and movable tables and chairs make the space feel like a small and quiet neighbourhood park. Trees not only decorate and add visual aesthetics to the space, but the sunlight across the tree leaves also changes the environment with moving shade through time, adding variations in the physical setting and users' perceptions. In the early morning, residents in the neighbourhood occasionally walked their dogs in the small plaza. There were people working temporarily on the bench or chatting with other colleagues side by side. Many office workers and housewives with their babies in the pram chose to have lunch there. In the evening, some students liked to come here to study on their way back home at noon (figure 4.58).

Figure 4.58 Daily activities in the small plaza between Building F, G, H. (Source from: photo taken by the author)

When the monthly market or annual *matsuri* were held, the spatial layout of the plazas in the 6th phase was changed. On the food market day shown in the picture, tents, food carts, and display stands were set up by shop tenants from both Hillside Terrace and

outside the project. The central area of the big plaza was arranged with a long table and chairs to provide users a place to eat, chat, and rest (figure 4.59). The lively atmosphere attracted not only residents around the neighbourhood but also visitors passing by. The quiet and cosy small plazas on the event days also became the hustle and bustle place connected with the central plaza in the front. Under the influence of the pleasant atmosphere, people became more relaxed to appropriate the space spontaneously and generated diverse activities more freely (figure 4.60).

Figure 4.59 Monthly market at the big central plaza between Building F and G. (Source from: photo taken by the author)

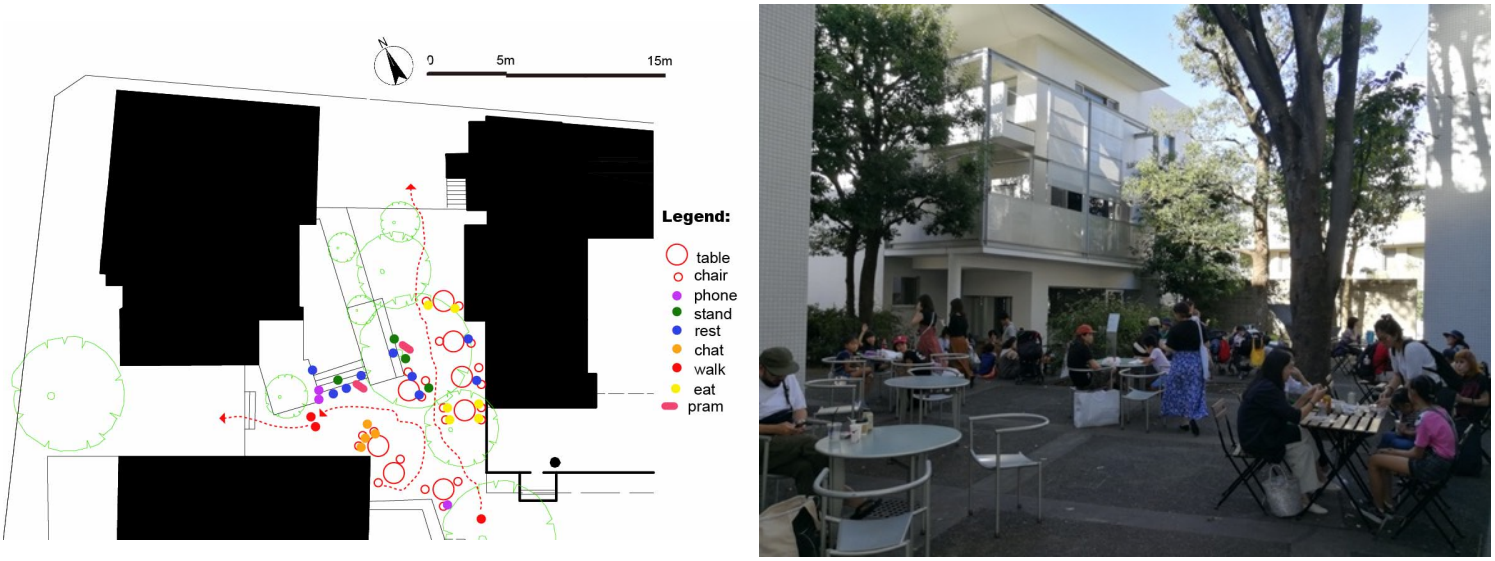


Figure 4.60 The layout of the small plaza in *matsuri* (left) Red dash line indicates people's movement. Chairs and tables were added, and many people sat on the ground (right). (Source from: drawing and photo from the author)

In the annual Sarugaku *matsuri*, the big central plaza was arranged as a performance space. The performers were surrounded by audiences, and Building F provided an excellent stage as the backdrop behind. The indoor café and multi-functional forum were adapted into an indoor food court. The transparent glass allowed people inside the building to enjoy food and watch the performances outside simultaneously (figure 4.61). The open space used for fire escapes and parking between Building D and the Royal Danish Embassy was set up with tables, chairs, and food and beverage stalls on the day of Sarugaku *matsuri* (figure 4.62). The open space of the parking lot in the 5th phase was turned into an outdoor market, displaying different kinds of goods (figures 4.63 and 4.64). The open space in the multi-functional auditorium under the parking lot, used for seminars and lectures, was changed to venues for performances and eating. These left-over open spaces that many people did not use daily became *hiroba* when filled with activities on organized events days. In addition to their original function, they promoted and generated optional and social activities for other uses.

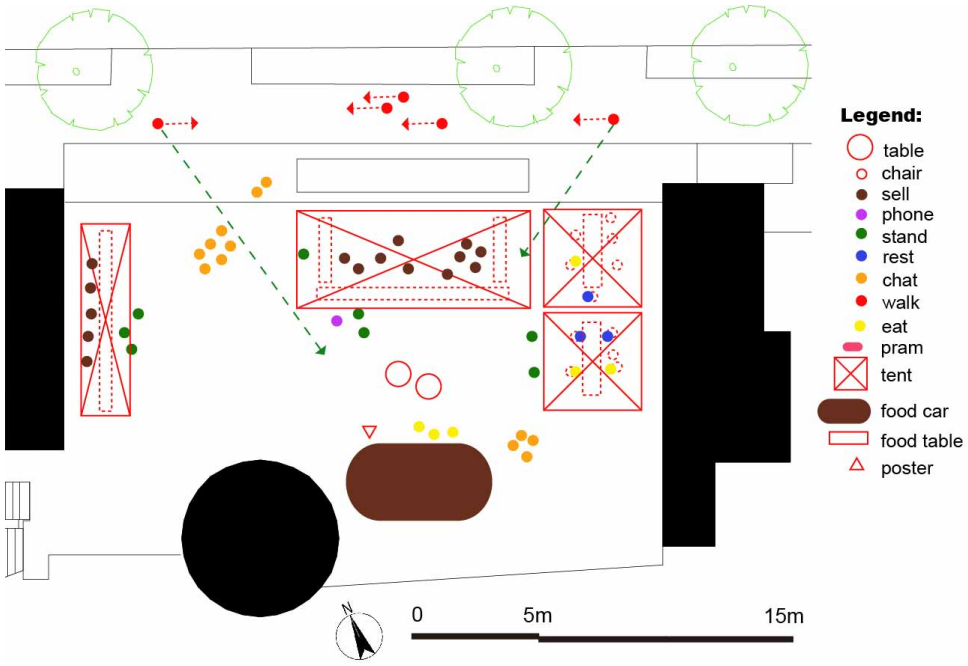


Figure 4.61 The layout of the parking space for market in *matsuri.* Green dash line indicates people's sightline. Red dash line indicates people's movement. (Source from: drawn by the author)

Figure 4.62 (up-left) Performance at the central plaza in *matsuri.* (Source from: photo taken by the author)

Figure 4.63 (up-right) Leftover open space behind Building D was appropriated for eating in *matsuri.* (Source from: photo taken by the author)

Figure 4.64 (bottom-left) The parking space in the 5th phase was used for market in *matsuri.* (Source from: photo taken by the author)

Corner plaza and setback open space

The sidewalk parallel to the old Yamanote-dori in front of the Hillside Terrace is very narrow, only allows two people to pass side by side. The buildings built from the 1st to 5th phases on the south side retreat from the sidewalk to form the linear setback open space.

The setback open space provides a buffer zone and intermediate space between the building and sidewalk for potential activities despite the fact that the setback open space remained empty most of the time. People sometimes stopped on the private land in the buffer zone, waiting for people, standing, sending text messages, etc. (figure 4.65) Some linear setback open space is adjacent to semi-exterior *hiroba*, such

as the corner plaza in Building A (figure 4.66), which was usually a place for pedestrians waiting for traffic lights to cross the road. At a particular moment, the corner plaza became a temporary outdoor venue for watching art exhibitions in the indoor gallery. The corner plaza's close connection with the sidewalk allows passers-by to interact with the indoor artworks without stepping inside the building. A bench in front of the corner plaza of Building C is provided by the nearby store owner. There were sometimes passers-by who stopped there to sit and take a rest (figure 4.67). Trees were intentionally planned in the corner plaza of Buildings A and C. On the one hand, they provided shade for a cooling atmosphere in summer and created a sense of territory by enclosure. On the other hand, the tree added a layer to the space under the concept of *oku*, making spatial tensions of differences and connections between the corner plaza and the abutting street.

Figure 4.65 (up-left) People playing phone and taking a rest in the linear setback open space. (Source from: photo taken by the author)

Figure 4.66 (up-right) The corner plaza of Building A is connected with adjacent street and setback open space. (Source from: photo taken by the author)

Figure 4.67 (bottom-left) People taking a rest at the corner plaza of Building C. (Source from: photo taken by the author)

The setback open spaces mentioned above were used to meet various demands different from everyday use on the events days. For example, when the corner plaza in Building A held *matsuri*, vendors would sit on a blanket for music performance. Between the sidewalk and the buildings in 1st phase, there were temporary tents set for selling food in the open space retreated from the street. People sat on the staircase landing for eating (figure 4.68).

Figure 4.68 Setback open space was used for selling and eating in *matsuri.* (Source from: photo taken by the author)

Elevated pedestrian, platform, and staircase

The elevated pedestrian in front of Building B was designed to solve height differences on terrain. Based on the observation, children showed great interest in climbing, jumping, and running on the elevated pedestrian. The open space provided by the elevated pedestrian, staircase, and platform were used by children as the playground. On *matsuri* day, a long bench was equipped on the pedestrian deck and became a temporary place for people to rest or enjoy food (figure 4.69). The extruded architectural volumes of residential units on the 2nd floor provided a shelter below for people on rainy days. Trees on the side of the street added visual barriers to form a quiet street environment away from the traffic but also interacted with an elevated pedestrian in an ambiguous outdoor and semi-outdoor division and connection.

Figure 4.69 A bench was put on the elevated pedestrian in *matsuri*. (Source from: photo taken by the author)

The platform and staircases in front of Building D were not identified to have any activities except students sometimes sat on the steps to read books on the way back home after school. The open space in front of Building D was adjusted into a booth for selling old books during the events days. Portable seats were arranged on the stairs and platform (figure 4.70). The platform inside Building D was used as a waiting area for the restaurant most of the time. Few people passed through it from the south side of the plaza in front of Building E.

Figure 4.70 People's activities on the staircase and platform in front of Building D in *matsuri.* (Source from: photo taken by the author)

The stair landing of Building G creates a mezzanine floor between the entrance hall at ground level and a shop at the underground level. Tables, chairs, and pot plants are arranged on the platforms in the stairwell, the side of which is enveloped by the glass to draw light inside. School students were found to use the space for study on the weekend (figure 4.71). Parents with their children were seen to chat and take rest there daily.

Figure 4.71 A girl was studying in the stairwell of Building G. (Source from: photo taken by the author)

Courtyard

The courtyard in Building C in the 2nd phase continues connecting architecture with the city by making the intermediate space *hiroba* in the 1st phase. Due to the corner plaza of Building A designed in the 60s was small, in an age of population increase and priorities of the street were given to the automobile in 70s, a bigger courtyard enveloped by the shops was proposed to maintain the lost open space for accommodating potential human activities. The courtyard space plays a role more like a kind of widened street based on the concept of 'street architecture' (Maki and Atelier Hillside, 1995, p.17). It extends the inner architectural space to be visually, and physically connected with the exterior street and allows people to pass through. Due to no requirement in law for barrier-free design when the courtyard was built, the steps at the entrances today were not convenient for use with a pram or a wheelchair. Today, most of the events were moved to the 6th phase of the Hillside Terrace on the north site. Normally, the courtyard was kept as an open space for passing through without arranged settings like before except days for events. By arranging the courtyard with different settings, people were inclined to stay. Especially on events days, the courtyard was turned into a *hiroba* for different activities (figure 4.72).

Figure 4.72 Activities in the courtyard of Building C. Tables were added to change the physic setting during *matsuri*. (Source from: photo taken by the author)

The side-entering featuring in the courtyard space made it easier for people's sightline on the street to reach the *hiroba* and the activities hidden within. It also drew people inside the courtyard smoothly in parallel with people's walking direction on the street (figure 4.73). The unique way of entering the building from the side instead of turning the body around was applied in all designed entrances in Hillside Terrace based on considering people's body movement and visual connection to *hiroba* in *oku*.

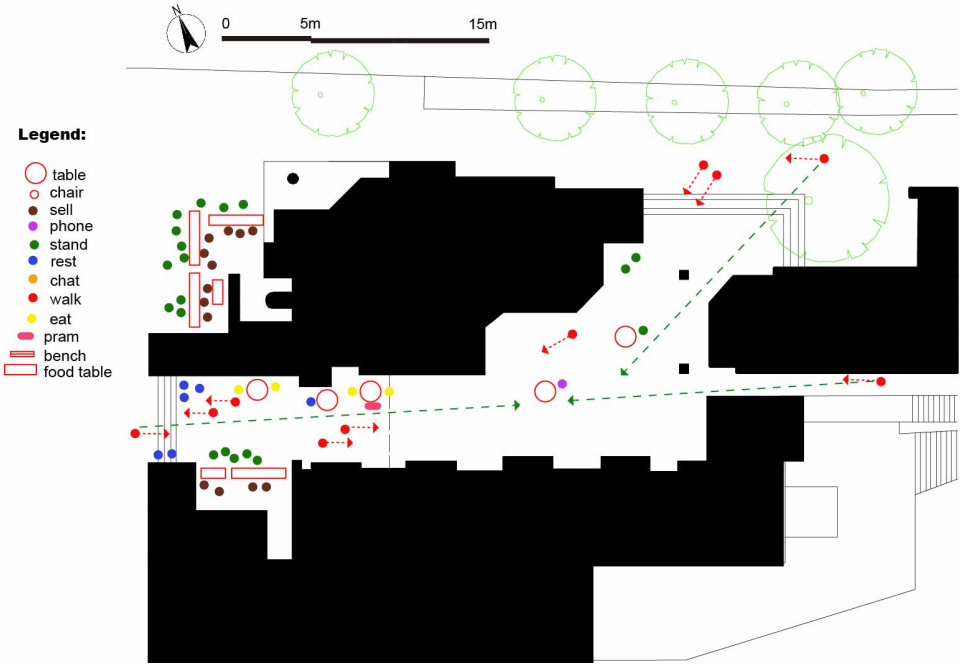


Figure 4.73 The layout of activities in the courtyard of Building C during matsuri. Green dash lines indicate people's sightline from street and open space in adjacent buildings. (Source from: drawn by the author)

Porch and arcade

The porch space is set at the entrances of buildings in all six phases. It forms an alcove retreated from the street side, similar to the function of setback open space in creating an intermediate space between building inside and outside street. Porch spaces in Hillside Terrace are marked by the symbolic column. People were often found to lean on the column for waiting, giving calls, or temporary stay on a hot summer day or raining days. A wooden bench is put in the porch of Building H bordering the small

plaza in the 6th phase. Passers-by sometimes were seen to play phones or take a rest on the bench (figure 4.74). Arcade space in front of Building E was a preparation space to display event posts. It was connected to the reception space for events held in the interior lobby. Similar to the porch space, there are symbolic columns in the arcade space to mark the entrance. The two columns on the outmost sides have low wall piers beside them, which can be used as a bench for people to rest during the event in the lobby.

Figure 4.74 People playing phone in the porch of Building H. (Source from: photo taken by the author)

Sunken Plaza

There are three sunken plazas in Hillside Terrace. All of them are hidden deeply away from people on the street, showing a strong sense of *oku.* People walking on the street need to step on the elevated pedestrian to find the sunken plaza below the street level. The sunken plaza (sP1) in Building A mainly serves the French restaurant next to it. Seats and tables were normally reserved for the restaurant and not provided to ordinary visitors. On weekends, when the restaurant was closed, the open space with the tranquil atmosphere in the sunken plaza was not used often.

The sunken plaza (sP2) of Building C is more difficult to be found. People need to pass through the parking lot and walk down an exterior staircase to access the sunken plaza. When activities were organized in the sunken plaza (such as the outdoor concert), a

notification board would be put on the street in front of the parking space. Updated event information held in different *hiroba* in architecture can be acquired from event leaflets in the lobby of Building A or information on Hillside Terrace's official website. The sunken plaza of Building F next to the shops was never seen any activities inside. It was used only as an evacuation space and a void space for getting light for the underground shop.

Figure 4.75 People passing through the lobby and platform of Building A for art gallery daily. (Source from: photo taken by the author)

Lobby, hall, and corridor

The entrance lobby of Building A normally remained as the reception space for surrounding gallery rooms, and it occasionally was used for display arts, such as large sculptures. Most of the time, it was a thoroughfare leading to the sunken plaza through descending platform and to street level through an indoor staircase for people to pass through (figure 4.75). When holding events, the lobby was turned into a stage for music performance and a gathering place to chat and rest (figures 4.76 and 4.77).

Figure 4.76 A music performance in the lobby and platform of Building A in *matsuri.* (Source from: photo taken by the author)

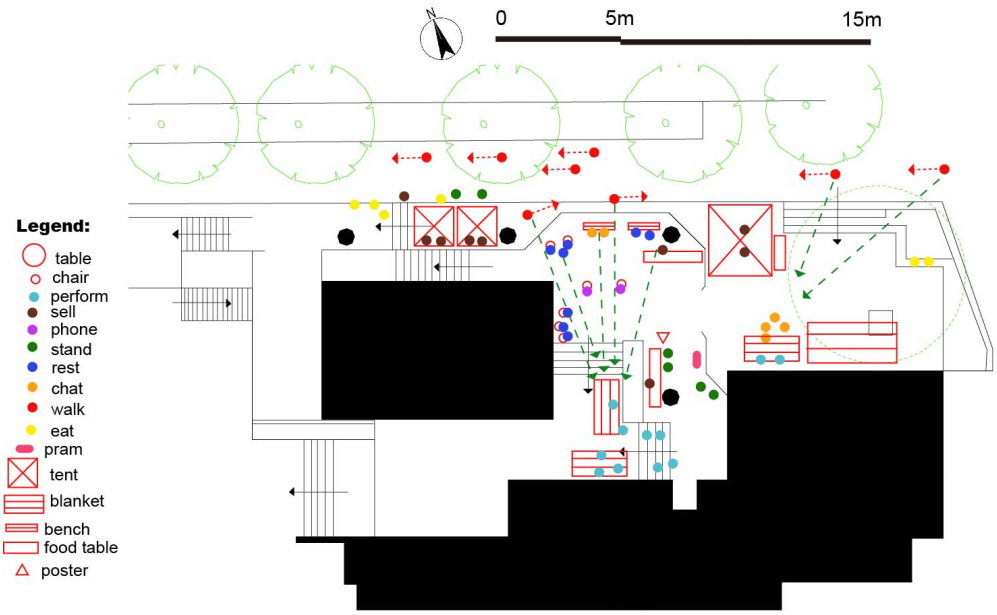


Figure 4.77 The layout of people's activities in Building A in *matsuri.* Green dash line indicates people's sightline. Red dash line indicates people's movement. (Source from: drawn by the author)

The lobby of Building E is a multifunctional space that can be used for various activities. It can be turned into a place for a photography exhibition or book-reading seminar (figure 4.78). The visual connection and succession of the plaza, arcade, reception room, and lobby allowed users who strolled around Hillside Terrace can easily identify the activities held inside the lobby. The transparency of the entrance hall strengthened

the connection between indoor open space and outdoor street space as an integrated space. A continuous circulation from street to interior open space and corridor can be easily identified visually and drawn on users' mental maps for navigation (figure 4.57). It sometimes saw people sitting on the chair in the entrance hall to observe street view or chat with friends for a short stay (figure 4.79). On the events days, such as the exhibition held in the gallery, the corridor and lobby were turned into a *hiroba* for people gathering and discussing the artworks. Semi-outdoor patio space with water and artworks is put in the middle of Building F. The light introduced from the patio makes the indoor corridor and lobby appear bright. The entrance hall in Building G usually was left as an open space; it was seldom to see any activities inside.

Figure 4.78 Photo exhibition held in the lobby of Building E. (Source from: photo taken by the author)

Figure 4.79 People chatting and taking a rest in the entrance hall of Building F. (Source from: photo taken by the author)

4.5 Conclusion of Hillside Terrace Case Study

The Hillside Terrace presents a good example of *hiroba-ka* open spaces created in a building complex with cultural, commercial, and housing functions provided by the private sector. The *hiroba* created in different phases plays the linkage role in connecting individual buildings and their collective form city physically through open spaces. It also provides a platform for communication between individuals and binding them into a community socially through human behaviour and activities. The different forms of *hiroba-ka* open space in Hillside Terrace are privately owned. However, they can be publicly accessible and appropriated for collective use by not only tenants and customers but also people in the Daikanyama neighbourhood and passers-by without any purpose.

The Asakura family's unconditional dedications to the public affairs in Daikanyama area and the architect Fumihiko Maki's homage to the *genius loci* of the previous land and lively activities in historic townscape are forming *ka* to give rise to the realization

of *hiroba*. The cultural and spatial concept of *oku* and the design technique and theory of 'collective form' are borrowed by Maki to form *kata* of *hiroba* further.

A series of spatial elements using the architectural language under Western Modernism are intentionally applied to generate open space as the physical setting of the conceived *hiroba* (Appendix 8.1). Based on the spatial characters of open spaces from the perspectives of accessibility (circulation, sightline, level), enclosure (opening, scale, canopy), and identity (boundary, permeability, and attachment), nine types of open spaces (the materiality of *hiroba*) within architecture are extracted (table 4.2). Several cases of open spaces cannot be grouped in any type, showing the distinct rather than common spatial characteristics shared in architectural composition. Trees, as one of the attachment elements, together with furniture (chairs, benches, tables, tents), signboard, and construction (tori gate and small wooden shrine in the 3rd phase), play a significant role in building the physical setting of *hiroba* individually and systematically in a collective form. The tree makes the open space more distinct to be identified and navigated spatially (i.e., easily to be *hiroba-ka*). The canopy of trees planted in the open spaces at Hillside Terrace influence the open spaces' spatial enclosure and people's spatial perceptions. Tree as a shared element and linkage visually connect open spaces in different project phases varies in form and scale. It helps to integrate the project with the surrounding environment and recall the site's genius loci in history.

In terms of the deepness (or *oku* theory) of those open spaces' positions in architecture, the spatial configuration of them is planned to be distributed in the three layers of the Hillside Terrace, resulting in multiple centres through the exterior, semi-exterior, and interior layers of open spaces for the whole 6-phases project. The spatial configuration of the three layers of open spaces is influenced by the circulation and sightline of human behaviour (figure 4.80). Based on the observation of Hillside Terrace, *hiroba-ka* open spaces are usually put on the spot where it is conspicuous to the users, or

near the way in their wandering from different directions in the architecture and the site, such as the plaza and entrance hall next to the main street. In Hillside Terrace, the different *hirobas* developed in different phases are arranged to form a looped circulation from inside to outside, allowing the building to be as porous as possible for easy access by users. The design of the open spaces in the case also puts people's body actions and perceptions in the considerations of the opening of *hiroba*, such as the way of entering open spaces in the courtyard and porch design. The *katachi* of *hiroba* follows the nature of the terrain, the contour of preserved trees and the ancient mound, resulting in asymmetry and informal shapes, such as the plaza in the 3rd and 6th phases.

Table 4.2 The open space typologies applied in making *hiroba* within contemporary Japanese architecture in Hillside Terrace. (Source from: drawn by the author)

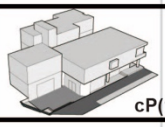
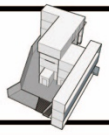
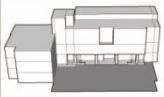
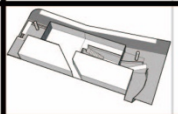
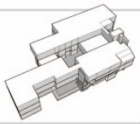
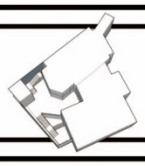
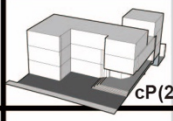
Name		Plan					Section			Group	Total	Type
Hillside Terrace		Boundary	Opening	Circulation	Sightline	Attachment	Level	Canopy	Scale	Permeability		
HT	cP(1) and S(1)	4	2	4(3D+1I)	D	G+S	S	U	A	Y	6	 Type 1 cP(1)&S(1)
HT	eP(1)	4	2	2D	D	/	U	S	A	Y		
HT	Po(2)	4	2	1D	D	/	G	C	A	Y		
HT	Po(4)	4	3	3(2D+1I)	D	S+C	G	C	A	Y		
HT	eP(2)	4	2	2(1I+1S)	D	/	U	U	A	Y		
HT	Po(6)	4	3	4(3D+1I)	D	C	G	C	A	Y		
HT	L(1) and Pf(1)	N	0	3(2D+1S)	S	C	S	C	A	Y	5	 Type 2 sP(2)
HT	sP(1)	N	0	2I	I	F+S+L+T	S	U	A	N		
HT	fR(1)	N	0	/	I	F	S	C	A	N		
HT	sP(2)	N	0	1S	I	G	S	U	W	Y		
HT	L(2)	N	0	2I	I	F	U	C	A	N		
HT	Sb(1)	3	1	3(1D+2I)	D	C	G	C	A	Y	5	 Type 3 Ar(1)
HT	Pf(3)	N	1	4I	S	G+S+F	U	C	A	N		
HT	Po(3)	5	1	1S	S	C	G+U	C	A	Y		
HT	Ar(1)	4	1	1S	S	C	G	C	A	Y		
HT	S(5)	5	1	1I	S	F	S	C	A	N		
HT	Sb(4)	2	2	2(1I+1S)	D	/	G	C	A	Y	6	 Type 4 H(1)
HT	Po(1)	N	2	3D	D	C	G	C	A	Y		
HT	Po(7)	4	2	1I	I	/	G	C	A	Y		
HT	Po(5)	4	2	3(2D+1I)	D	C	G	C	A	Y		
HT	H(1)	6	2	3(2S+1I)	D	F+C	G	C	A	Y		
HT	L(3)	4	2	3(2I+1S)	I	/	G	C	A	Y		
HT	C	N	3	5(3D+2I)	D	C	U	S	A	Y	3	 Type 5 C
HT	S(2) and Th(1)	N	3	4(3D+1I)	D	C	U	S	A	Y		
HT	Po(8)	3	3	1I	I	C	U	S	A	N		
HT	P(1)	3	3	5(3I+1S+1D)	S	G+C	G	S	A	Y	5	Type 6 P(1)
HT	P(2)	4	2	3(1I+1S+1D)	S	G+C	G	S	A	Y		
HT	P(3)	3	3	6(4I+1D+1S)	D	G+S	G	S	A	Y		
HT	P(4)	N	3	3(2D+1S)	D	G+F	G	S	A	Y		
HT	P(5)	2	2	3(2D+1S)	D	G	G	S	A	Y		
HT	Co(1)	5	3	3I	S	/	G	C	A	Y	3	Type 7 Sb(5)
HT	Sb(5)	2	3	2D	D	G+C	G	S	A	Y		
HT	Sb(6)	3	3	3D	D	G	G	U	A	Y		
HT	H(3)	N	0	2(1I+1D)	S	C	G	C	A	N	3	 Type 8 H(3)
HT	H(2)	N	4	4I	I	/	G	C	A	Y		
HT	fR(2)	N	1	3(2I+1S)	S	F	G	C	A	Y		
HT	cP(2) and Sb(2)	3	1	1D	D	F+G	G	U	A	Y	4	 Type 9 cP(2)&Sb(2)
HT	Pa(1)	4	2	3(2D+1S)	D	/	G	U	A	Y		
HT	Sb(3)	2	2	3(2D+1I)	D	S+C	G	U	A	Y		
HT	Sb(7)	3	1	3(2D+1I)	D	/	G	U	A	Y		
HT	cP(3)	5	2	1S	I	S	S	U	A	Y	4	
HT	Pf(2) and S(4)	4	2	6(3D+1S+2I)	S	G+C	U	S	A	Y		
HT	Th(2)	2	2	2(1S+1I)	I	/	U	C	A	Y		
HT	Th(3) and S(3)	N	2	2I	S	/	U	S	A	Y		

Figure 4.80 The visual scope and circulation in the *hiroba-ka* open spaces (space in white with red dot) of Hillside Terrace. (Source from: drawn by the author)

Although typology (*ka* and *kata*) helps provide the physical setting for *hiroba*, the generation of *hiroba* needs to be activated by human behaviour to turn the sheer open space into a meaningful public place (table 4.3). Otherwise, taking the example of the sunken plaza of Building F in the 6th phase and the interior platform of Building D in the 3rd phase, no activities happened in those spaces, making them only empty or space for circulation rather than a collectively used place in original Japanese *hiroba* concept. Attachment elements, besides the tree discussed above, are essential to forming people's activities. Open space created by spatial elements needs attachment elements as signs to instruct people how to use the space and assist the users' spatial use. The combination of spatial elements and attachment elements (i.e., compositional elements) construct the final physical setting of *hiroba*.

Table 4.3 The relationship between spatial element and human behaviour in the *hiroba* of Hillside Terrace. (Source from: drawn by the author)

No.	Spatial Element / Behaviour	Corner Plaza(cP)	Lobby(L)	Sunken Plaza(sP)	Threshold (Th)	Platform(Pf)	Courtyard (C)	Porch(Po)	Hall(H)	Arcade(Ar)	Plaza(P)	Corridor(Co)	Parking(Pa)	Functional Room (fR)	Staircase(S)	Setback open space(Sb)	Elevated Pedestrain (eP)
1	passing through(foot)	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
2	passing through(bicycle)										●		●			●	
3	sitting	●	●	●		●	●	●	●	●	●		●	●	●	●	●
4	sitting and watching	●	●	●		●	●		●	●	●		●	●	●	●	●
5	sitting and eating/drinking	●	●	●		●	●				●		●	●	●	●	●
6	sitting and chatting	●	●	●		●	●	●	●	●	●		●	●	●	●	●
7	sitting with pram		●			●	●				●		●		●		●
8	standing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
9	standing and watching	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
10	standing and eating/drinking	●	●		●	●	●				●		●	●	●	●	
11	standing and chatting	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
12	standing with pram		●		●	●	●				●		●	●		●	●
13	strolling		●	●	●	●	●				●		●	●		●	●
14	strolling with pram						●				●		●			●	
15	strolling with dog						●				●					●	●
16	running and playing			●			●				●		●				●
17	playing phone	●	●		●	●	●	●	●	●	●	●	●	●		●	●
18	listening music		●	●		●					●			●			
19	watching(senery/artwork,etc.)	●	●	●		●					●			●			
20	studying		●								●						
21	reading		●								●						
22	jumping	●		●							●				●		●
23	crawling										●				●		
24	waiting	●	●		●	●	●	●	●	●	●			●		●	●
25	selling	●	●			●	●				●		●	●		●	
26	working (personal business)										●						
27	phone call	●	●	●			●	●	●	●	●					●	
28	taking photos	●	●								●			●			
29	be in a daze								●		●			●			
30	smoking			●													
31	event	●	●	●		●	●				●		●	●		●	●
32	being intimate										●						
33	doing worship										●			●			
34	exhibition		●											●			

The integration of both is conducive to fostering human behaviour in the open space. It is worth being aware that the *hiroba* owns temporality. In other words, the different interior and exterior open spaces are not always appropriated by people in activities. The disappearance of *hi* (people and its activities) would turn the *hiroba* into a neutral, open space. For example, the open space adjacent to Royal Danish Embassy in the 3rd phase and the open space between Building B and C in the 5th phase was usually used as a parking lot. On matsuri days, events were held to activate the open space into *hiroba*.

There are no pre-determined functions assigned for the *hiroba* in Hillside Terrace. No strict rules written on the signboard are found in the case. Compared with POPS, the open spaces provided in Hillside Terrace can be adjusted by users' preferences in a relatively inclusive and free manner. People's behaviour is self-disciplined in using the *hiroba*. Interviews found that users with diverse types of usage patterns gave a high appraisal of the *hiroba*-ka open spaces in the case. They did not feel constrained in use and showed their desire of using. The desired characters or amenities, such as 'openness', 'natural atmosphere', 'anonymity', 'small and intimate', 'diversity of users', 'provided seating and events', and 'free in use' in the *hiroba* of Hillside Terrace were requested and cherished, stressing users' major aspect of concerns on the quality of *hiroba* rather than political dimension much underscored in western public space.[8] In addition to the spontaneous activities, the management team, including landowner Kengo Asakura, architect Fumihiko Maki, and tenants, also initiated and organized different events It helps to increase the usage and *hiroba-ka* of the open space designed as *hiroba,* especially the *hiroba* hidden deeply inside the buildings of Hillside Terrace, for example, the sunken plaza behind Building C in the 3rd phase.

[8] See interviews with the users in Appendix 5.1.

Chapter 5. Case Study of Sumida Culture Factory in Tokyo

5.1 Context of the Project

5.1.1 Historical and social background

Sumida Cultural Factory is located on an irregular quadrilateral site at 2-chome Higashi-mushima, Sumida District, in the northeast part of Tokyo (figure 5.1). It is located close to the Hikifune station on the south side (figure 5.2). The site in *Shitamachi*, a gathering place for many lower-class merchants and handicrafts in the Edo period, is far away from central Tokyo. Therefore, the site's surrounding area remains to be filled with low-level wooden houses of local residents and a large number of factories and handicraft workshops (figure 5.3). After the Meiji Restoration, the area gradually declined and became synonymous with poverty. The site's surrounding area in Sumida lost its vitality compared with Asakusa on the other side of the Sumida River and the Ginza and Nihonbashi in the city centre.

Figure 5.1 The location of Sumida Culture Factory in Tokyo. (Source from: drawn by the author based on the data from Esri)

Figure 5.2 Sumida Culture Factory (in red) and its surrounding environment in *Shitamachi* area. (Source from: drawn by the author based on the data from Esri)

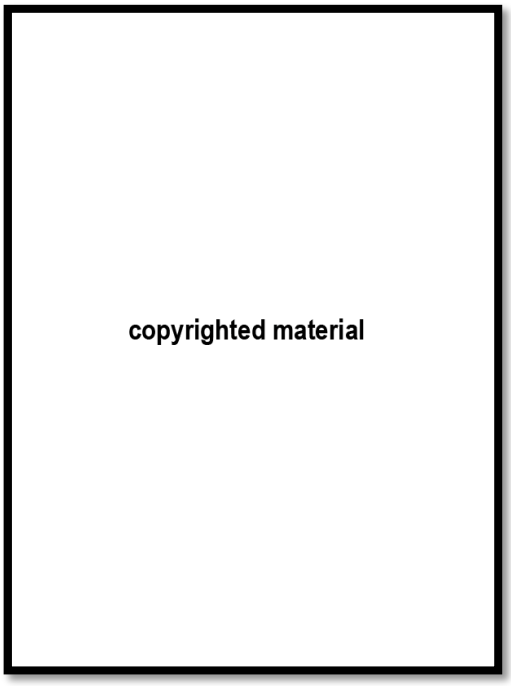


Figure 5.3 Sumida Culture Factory is surround by many lower residential houses and workshops in *Shitamachi* area. Tobu metro line passes the building on its west side. (Source from: Itsuko Hasegawa Atelier, 1995)

Many large parks in Sumida-ku today were once converted from *kūchi* used as disaster evacuation spots and firebreaks after The Great Japan Earthquake of 1923 (Seidensticker, 1990; Jinnai, 1995), for example the public gardens (Kyū-Yasuda Garden) transformed from old private real estate of *daimyo* and *samurai* and Yokoamicho Park transformed from state-owned land. They were mostly distributed on the south-east side of Sumida River, for example, *kūchi* around Ryogoku Bridge, on the banks of Sumida River, and near excavated inland ditches. The vast internal areas

of highly dense residential areas on the north-east side of Sumida-ku where Sumida Culture Factory is located, hardly find sufficient and vacant open land (figure 5.4). Large open spaces are private land for parking and factory loading. Trees are small and planted along the limited area of pedestrians. The potted plants put out of private houses at the interface of private lands and public alleys strengthen the ambiguous spatial interface in public-private relations and the small-scale feeling of the site environment in the neighbourhood. The narrow and tortuous *roji* (alleyways) and small open spaces in *machigado* (street corners) used as scattered micro pocket parks through land readjustments are typical places for collective activities in residents' public life today.

5.1.2 Background of the architectural project

In October 1990, Itsuko Hasegawa was selected as the winner of the proposed 'Life-long Education Centre' (today's Sumida Culture Factory) as a newly created 'Public Place' in a dense residential neighbourhood in an international invitational competition by Sumida Ward, just before the final collapse of the Japanese bubble economy in 1991 (Saito and Taguchi, 1993, p.65). The construction of the building was completed in 1994. According to participated architect Yuki Yamasaki (1993, pp.68-69):

> *Sumida Culture Factory as a place capable of taking a new approach to lifetime leaning and capable of supporting a wide range of activities … the project is aimed at more than simply the growth of the individuals who come to the Culture and Education Centre. Rather, this project has been created with the objective of encouraging a variety of views through the activities of individuals to give birth to new ideas and increase the scope of the center as a whole … This would make it possible to bring together people who had no reason or opportunity to meet before, and it would promote a whole new series of interpersonal exchanges. By bringing together a wide variety of people we would also succeed in bringing together a*

wide variety of interests, and in turn would make it possible to motivate an entirely new range of activities and promote them in entirely new directions.

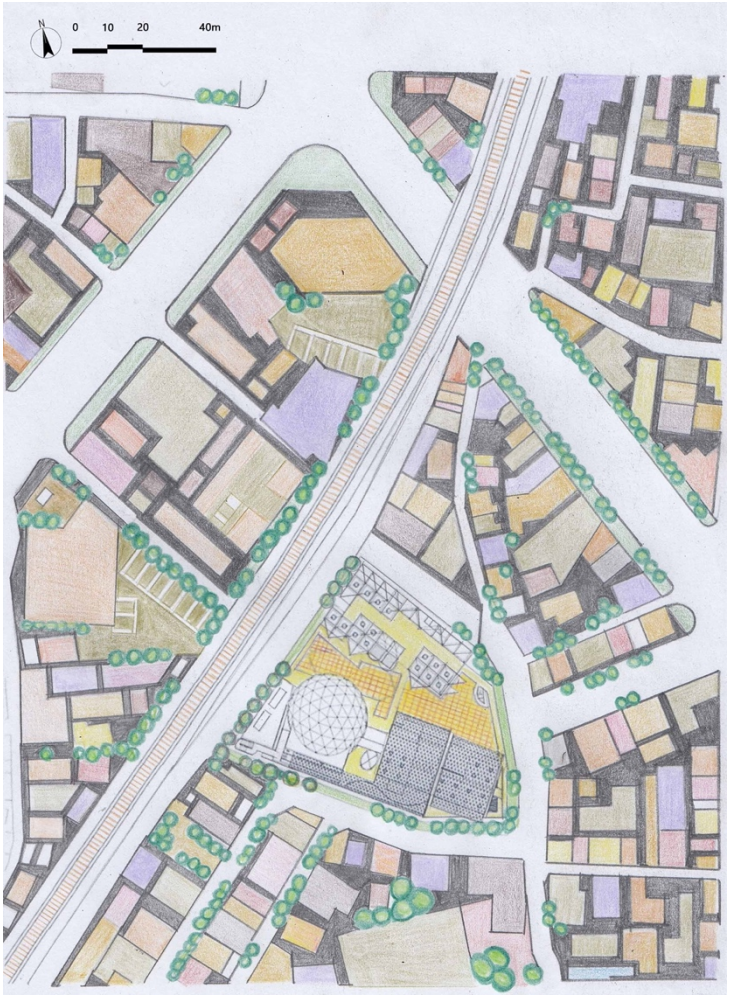


Figure 5.4 The site plan of Sumida Culture Factory is in a dense neighbourhood of many small houses and workshops. The designer intentionally creates an open space (plaza) in the centre of the building to be opened in different directions and connected with surrounding alleys. (Source from: drawn by the author)

The project's mission statement required a new comprehensive facility integrating the three functions of performing art, media, and lifelong learning in one building built on the original site of Mukōjima branch office of Sumida-ku City Hall (figure 5.5). The architect promoted interpersonal exchanges and communications to support a wide range of activities as a multi-purpose learning centre across the boundaries of different functions and programs. The proposed project was intended to incorporate not only

users who came to the centre but also the general public in a broad sense. To make the project *harappa* where people of different ages and groups can freely use the space (Itsuko Hasegawa Atelier, 1995),[9] the designer proposed the preferred name 'Sumida Cultural Factory' instead of the official name 'Sumida Lifelong Learning Centre' by Sumida Ward. A factory-like public building for making something 'new' beyond the pre-determined functions was proposed. A public place rooted in the Japanese spatial concept of *harappa* and the notion of *kōkyō* based on people was the essence of the Hasegawa's image on 'public architecture'.[10] Christine Hawley (1995, p.36) commented on the name of Sumida Culture Factory:

> *A marvellous piece of linguistic tautology in that it implies irreconcilable opposites, the notion of 'culture' the beliefs, traditions heritage and aspirations of generations being housed and produced in a building that has mechanistic, product-oriented contradictions in a wonderful paradox … very Japanese … brings together people at a social level … with their interests and yet offers the possibility of far more. The European 'model' simply does not exist, the range of activities and amenities.*

---

[9] Peter Cook (1995, p.95) commented Itsuko Hasegawa's Sumida Culture Factory as 'constant hint of the specialness … a seeker of atmosphere (instead of) seeking form'. His comments, to a certain degree, describe the 'freedom' in the *harappa*, which is not defined by the materiality of space but people with performative behaviour. See more in the next section in Chapter 5.3 on the concept and theory of *harappa* by Hasegawa.

[10] Itsuko Hasegawa described *harappa* as a place for people to coexist, co-living and collaboration freely. See the interview in Appendix 7.2 by the author with her on March 18th, 2020, in Tokyo.

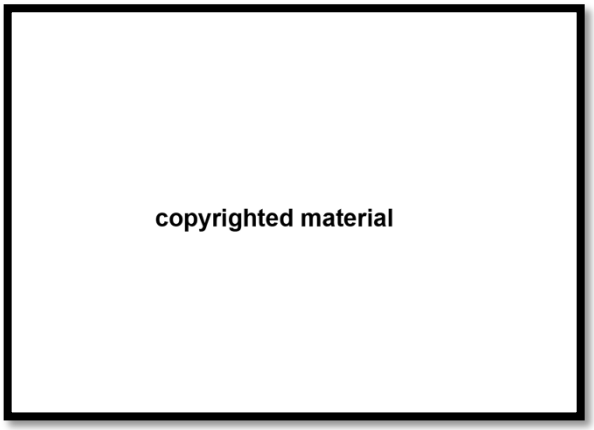


Figure 5.5 Itsuko Hasegawa's conceptual sketch of the initial design proposal (left) by dividing three programs (red-lifelong learning, purple-art, blue-media) within one 'box' by government (right) into three volumes connected by bridges. (Source from: Hasegawa, 2012)

As a government-initiated public building that integrated the old Higashi-mukōjima municipal government branch and three new functions within, Hasegawa hoped her design could define a new image of public architecture in Japan by emphasizing the 'public' participation.[11] Instead of a top-down bureaucratic process by the authority and appointed architects in the design of public buildings,[12] a bottom-up participatory design including the opinions from common users was adopted by Hasegawa. Based on that, the architect initiated a series of meetings and workshops to involve ideas and opinions from government officials, specialists, and residents into the intense

[11] The idea of constituting 'public' through users' participation can be traced back and embodied in the architectural design competition of Shonandai Cultural Centre in Fujisawa, the first public building project of her career that Hasegawa participated in after the mid-1980s (Daniell and Hasegawa, 2018). The concept of public participation in a public building was continued in the Sumida Cultural Factory as the second public building project under a competition hold by the government after Shonandai (Hasegawa, 1995).

[12] The use of architecture as a 'public' symbol represented by the state and government can be reflected in Kenzo Tange's new Tokyo Metropolitan Government in Shinjuku. It seldom to see people's activities in the citizen plaza in front of the building. See more in Chapter 3.4.

communications and discussions on the project's design, programs, future planning, and management (Saito and Taguchi, 1993). Hasegawa said in the interview with the author:

> *I experienced a lot in the participatory planning workshop, listening advice from the users through the discussion with them and reflecting their concerns in the design. This is what a common space or my understanding of Japanese public space design should be … From my previous experience, I have organized more than a hundred participatory workshops with the locals … In my own opinion, the meaning of 'public' in Japan should be replaced by the word 'common'. It will be more appropriate to describe the 'public' idea in Japan. The word common represents a sense of coherence within a group of people that they live together, help each other. The origin of 'public' in Japan is 'common'. 'Public' is in the Western world.*

5.2 Theory of *Harappa* and the Public Design Process

Hasegawa often emphasized that her design was not a building but a place with 'flexibility' and 'possibility' where people can freely meet and communicate, a 'proto-architectural space', and 'a place of performance' (Hasegawa, 1995; Shiomi, 2019). This socially engaged public place is well reflected in the architectural design theories of the concept '*harappa*' (原っぱ, open field) (Hasegawa, 2004; 2020).

Harappa is not architectural design concepts created by the designer herself but is rooted in and derived from Japanese tradition and culture.[13] *Harappa* can be seen in

[13] See the interview (the 1st question) with Itsuko Hasegawa by the author on March 18th, 2020, in Tokyo in Appendix 7.2.

open space provided by shrines that everyone can freely use in the past. As an open space, *harappa* was often appropriated by people for collective use, similar to *kūchi*, *akichi* since the Edo period. According to Senda (1998), since the mid-1920s, children began to play on the *harappa* in the form of vacant lots or abandoned fields (figure 5.6). The disappearing of *harappa* in the modern city made the term *harappa* (and its represented space) also imply psychological emotions or feelings of nostalgia. Okuno (1972) stated that *harappa* became an unseparated part of Japanese daily living space and landscape, and it existed in people's deep consciousness as a collective memory. The concept of *harappa* is related to the creation of *hiroba* through architectural design. It reflects the original characteristics of the local urban landscape that existed in Japanese history (figure 5.7), emphasizing a flexible open space where people can gather and use freely (Hasegawa, 2004).

Figure 5.6 Children play at an open land near Sumida Culture Factory as *harappa*. Due to the management of no ball games and sports in Sumida Culture Factory, children and their families move to the near open land for entertainment. (Source from: photo taken by the author)

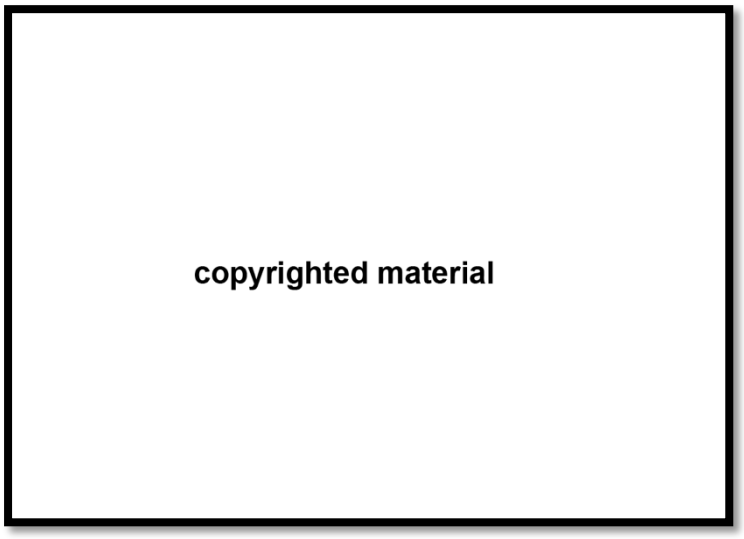


Figure 5.7 *Hamayuki* (strolling along the sea beach). Takehiko Higa commented the constantly interactions between space, time and people in *hamayuki* is the prototype of Itsuko Hasegawa's architectural concept of *harappa.* (Source from: Hasegawa, 2004)

Harappa possesses the characteristics of void space, emphasizing the characters of 'flexibility', 'compatibility' and 'sharing'. They are not determined by specific functions prepared in advance under functionalism but can creatively respond to various requirements and changes according to time and specific situations (figure 5.8). Jun Aoki (2004, 2008) comments that *harappa* is the space where the person can freely decide what to do instead of having all the things to be agreed in advance. *Harappa* does not force but inspires and develops activities by people. *Harappa* is not only a spatial concept but also related closely to the people's behavioural 'freedom' on actions and perceptions. As Hasegawa (2000, p.16) claimed:

> *I often use the Japanese term harrapa (meaning a casual, free, and relaxed open space filled with light and greenery) to describe my architecture. Harrapa space can serve as a theatre, a concert hall, or a market. I believe that public architecture should fundamentally strive to be this kind of environment. In Japan, the origins of public space were harappa –the waterfront and open fields. Dramatic art and festivals were born in these places.*

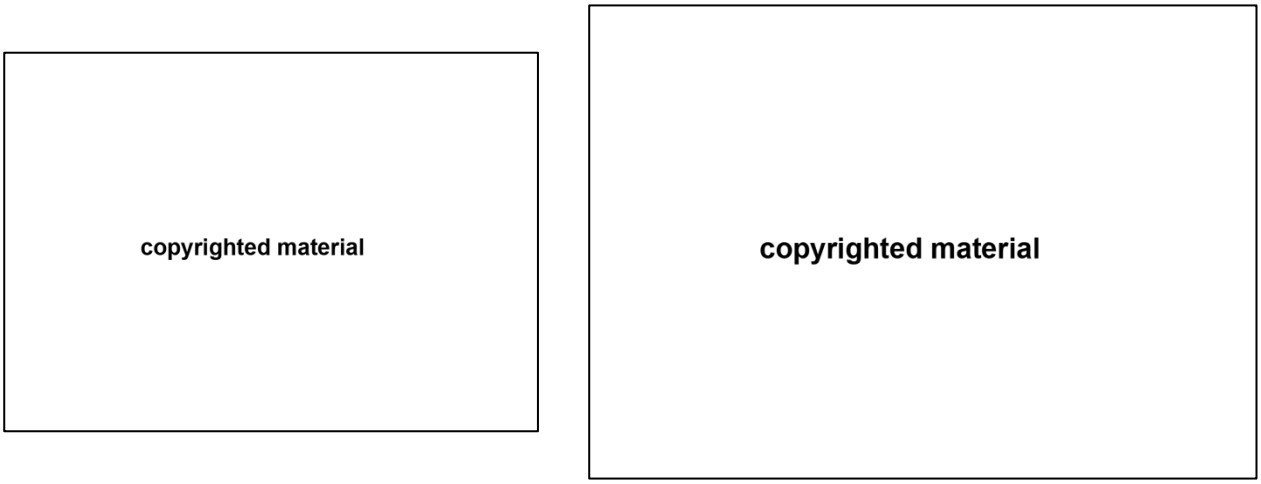


Figure 5.8 Sketch of the distribution of *harappa* on the ground floor (left picture, four 'communication free spaces' marked in red, and one plaza marked in orange) and second floor (right picture, five terraces and two bridges marked in black) of Sumida Culture Factory by Itsuko Hasegawa. (Source from: Hasegawa, 2012)

Harappa contained in traditional urban spaces was translated into making *hiroba* through the application of typologies of the 'plaza', outdoor 'staircase', rooftop 'garden', 'bridge', and 'slopes' under the influence of Modern architectural languages from the West in the design of Shonandai Cultural Center by Itsuko Hasegawa (2012, 2015) before the concept was applied to the design of Sumida Culture Factory. In addition to the cultural programs specified by the project charter, *harappa* in the projects mentioned above provided places in collective use for various activities and communications initiated by children, young people, and older adults.

The 'free' status and atmosphere of the spatial practice by people in *harappa* and is inseparable from the participation and engagement of users advocated by Hasegawa. 'Society' and 'events' (Koji, 1993) and 'people' and 'activity' (Kojima, 1995) are brought into the constitution of *harappa* in communications through numerous workshops, lectures, and seminars. The bottom-up design methodology or design process involves the needs of future users, reflects requests from clients and other professionals, and gets the ideas from architects to be understood as well (figure 5.9). It cultivates a sense of community by bringing discussed programs and opinions from different actors for

architects' further development from primitive form reasoning into concrete shape in public architecture design (Hasegawa and Konno, 1995). The publicly engaged design process contrasts with the government's hierarchical, conservative, and uniform bureaucracy and the designer's own egoism, arbitrary, and artistic value in a top-down approach (Hasegawa 1993; Daniell and Hasegawa, 2018). Hasegawa (1993, p.63) argued her 'public' design process for public architecture as following:

> *I felt that this kind of communication could be used as a tool to drastically alter the way of building social architecture. Both architects and individual citizens can discover the mechanism of assembling various materials to realize a shared vision while relating to each other under the mutual experience of contemporary discord. Strategically speaking, we must create a process to return public buildings to users' hands, involving them in decision making and making them recognize their active involvement in the building process.*

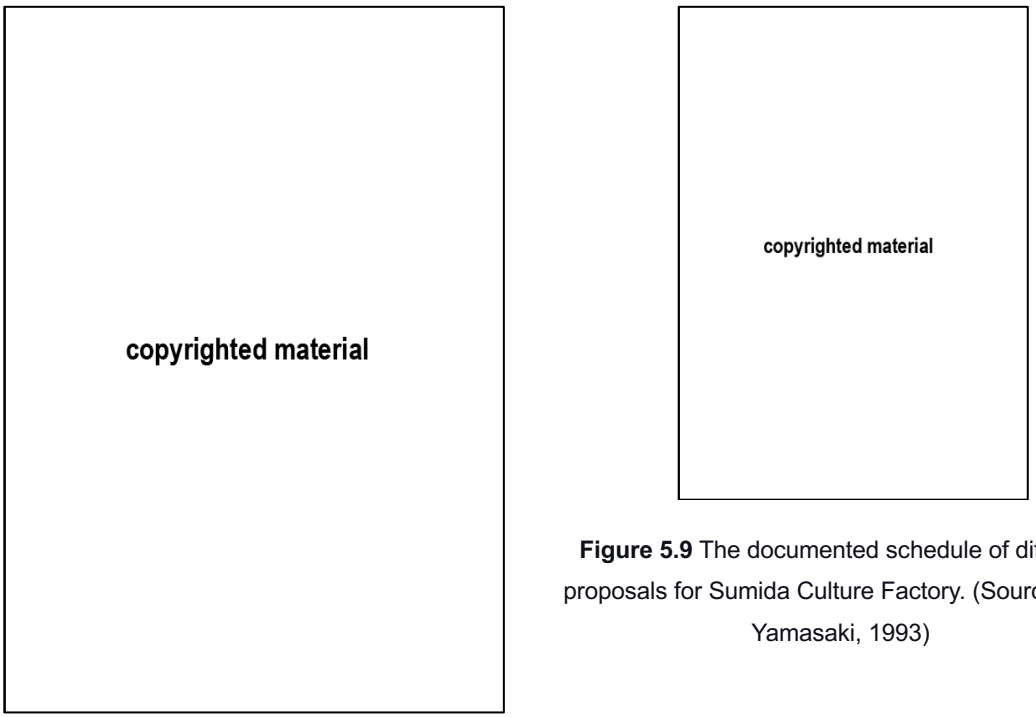


Figure 5.9 The documented schedule of different proposals for Sumida Culture Factory. (Source from: Yamasaki, 1993)

5.3 Building Typology and Open Space within Architecture

In order to involve users' participation and stimulate their interpersonal communications and interactions in the project, Itsuko Hasegawa created different forms of open space by applying a series of spatial elements in the architectural design under her theory of *harappa* (figure 5.10 and 5.11, table 5.1). According to the spatial configuration of these spatial elements of open space in relationship to their relative positions in the architecture, they can be divided into three categories. Colour coding is based on white (public), dark yellow (communal), light yellow (semi-public), and grey (private) in the drawings of *hiroba-ka* open space.

(1) Exterior open space. It is represented by the central 'plaza' (P) and the 'sunken plaza' (sP) between three architectural volumes on the ground floor.

(2) Semi-exterior open space. It is represented by the outdoor 'staircase' (S) next to the learning centre on the ground floor, the 'platform' (Pf) on the 2nd floor of the learning centre, the 'skybridges' (sB) connecting three building volumes, the 'terrace' (Te) on the 4th floor, and the 'rooftop garden' (rG) on the top of the building.

(3) Interior open space. It is represented by the entrance 'hall' (H) in the media centre on the ground floor, the multi-functional 'room' (fR) on the 2nd floor in the performing centre, the 'lobby' (L) on the above floors in the learning centre, the 'foyer' (Fy) of the performing centre on the 2nd floor, the communication 'lounge' (Lg) of the media centre on the 3rd floor, and the 'foyer' (Fy) and media 'corner' (Cn) on the 4th floor.

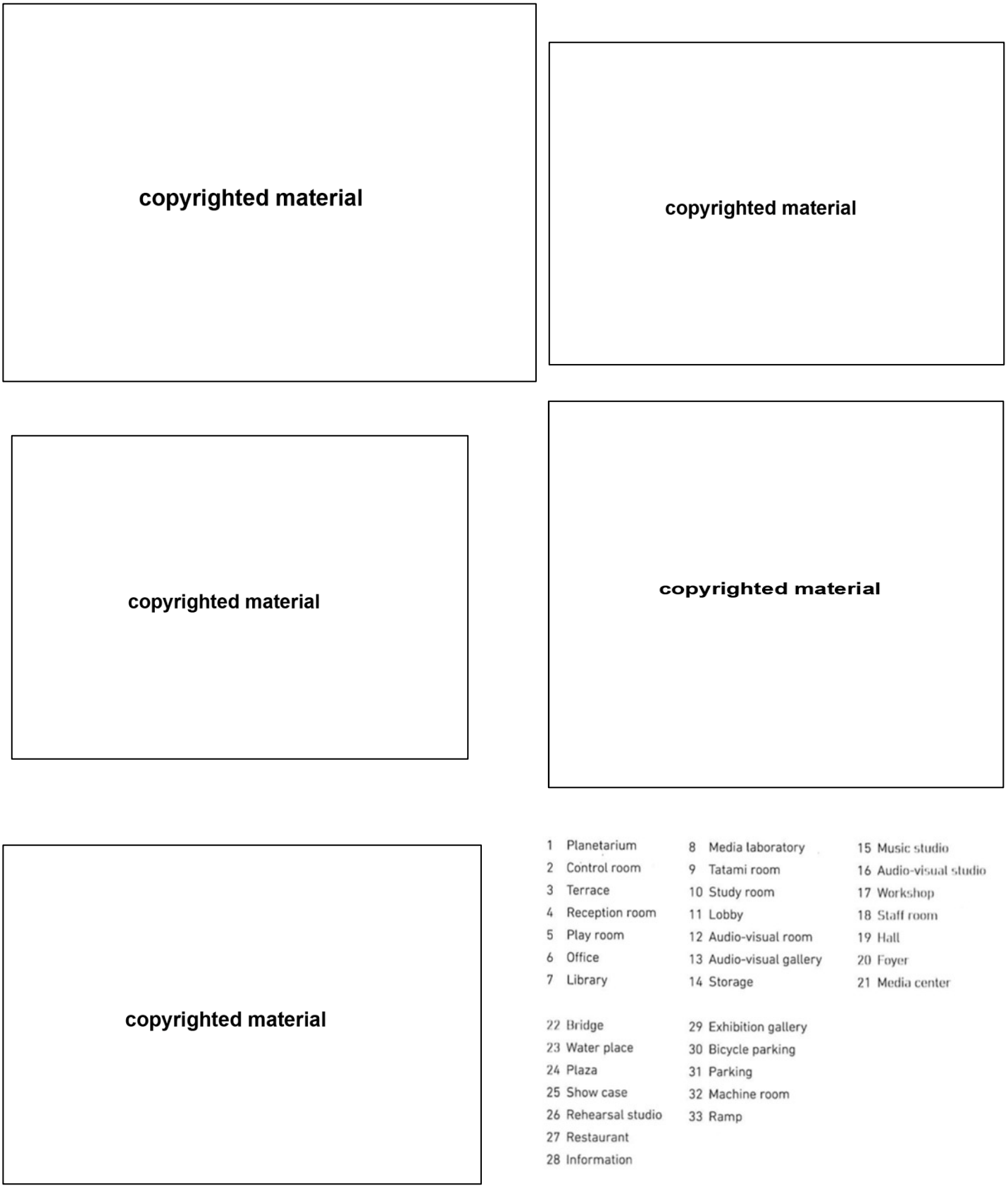


Figure 5.10 The layout of different spatial elements of open space in Sumida Culture Factory. (Source from: adapted by the author based on the floor plans from Hasegawa, 2015)

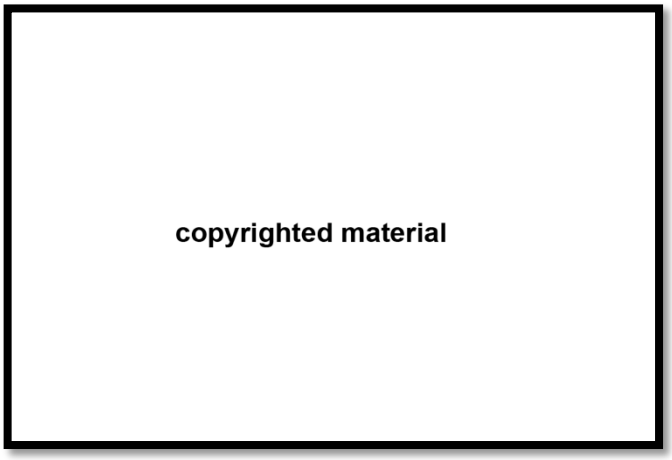


Figure 5.11 The section of Sumida Culture Factory and the layout of *hiroba-ka* open spaces. (Source from: drawn by the author based on Shinkenchiku, 1995)

Table 5.1 The distribution of different spatial elements of open space in Sumida Culture Factory. (Source from: drawn by the author)

Sumida Culture Factory / Spatial Elements	South Volume (media centre)	West Volume (performing centre)	North Volume (learning centre)	In-Between
Sunken Plaza(sP)				●
Plaza (P)				●
Platform (Pf)		● *	● *	
Staircase (S)			●	
Hall (H)	●			
Foyer(Fy)		● *		
Lobby (L)			● * *	
Lounge(Lg)	● *			
Corner(Cn)	● *			
Skybridge(sB)				● *
Functional Room (fR)		● *		
Terrace (Te)	● *		● *	
Rooftop Garden (rG)	● *			

Note: (*) indicates the spatial element is above /under ground level; (**) indicates the spatial element is both above/under ground and on ground level; without (*) indicates the spatial element is on ground level.

5.3.1 Exterior open space within architecture

The three primary functions asked by the government of Sumida-ku to be placed in one building vertically were planned in a new layout by three scattered building volumes. The discrete arrangements in architectural composition reduced the proposed building's scale to be fitted into the surrounding environment of the low-rise

houses in *Shitamachi*. The media centre on the south, the performance centre on the west, and the learning centre on the north as three separated volumes are connected into a whole through eight bridges on different floors, enclosing an outdoor plaza (P) in the centre with the wooden pavement (figure 5.12). It allowed wind, rain, and sunlight to go through the building freely, evoking the image of the natural environment of *harappa* in the collective memory. The central plaza is opened and connected with the surrounding alleyways through three openings in three directions, creating a porous architecture to be crossed with circulations of multiple choices by people. A sunken plaza (sP) with water fixtures is set up next to the Mukōjima branch office of Sumida-ku City Hall in the learning centre (figure 5.13), creating a human-scale streetscape imitating the traditional scenery near waterfront open space along the Sumida River. The building space on the first floor surrounding the central plaza is enclosed by large glass curtain walls. It breaks the solid and closed image of traditional public architecture in Japan, addressing lightness and openness. The material transparency allows the sightlines of passers-by walking on the alleyways along the project can go through the partition walls and observe the activities inside the hall and central plaza on the ground level, attracting people to join in the potential communications. The reflections of users' activities on the glass create layers of the deepness of the building, expanding the horizontal dimension of the space and develop the inter-connections between different individual spaces visually.

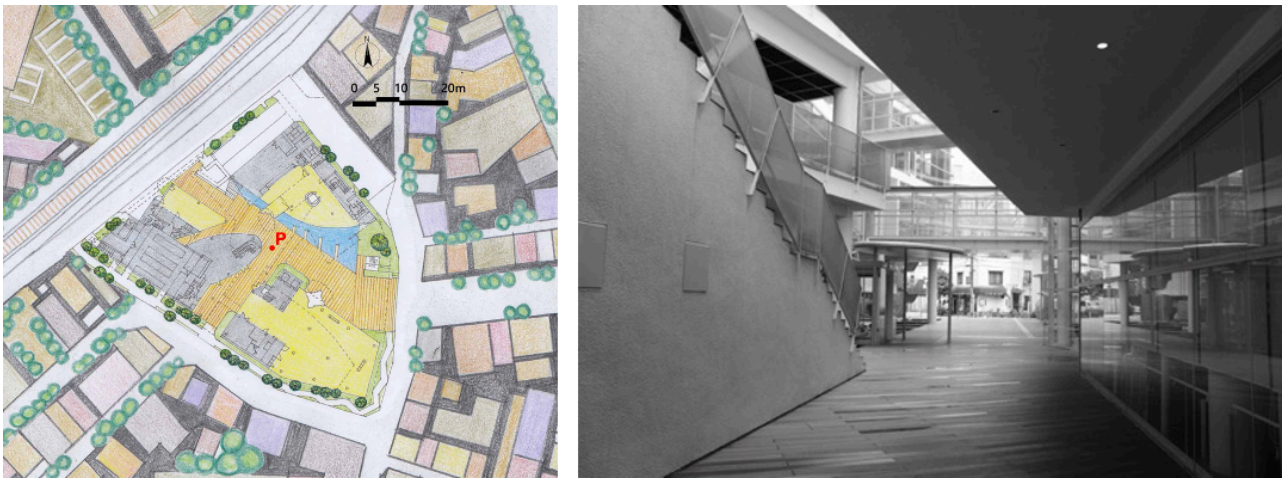


Figure 5.12 The central plaza (P). (Source from: drawing and photo from the author)

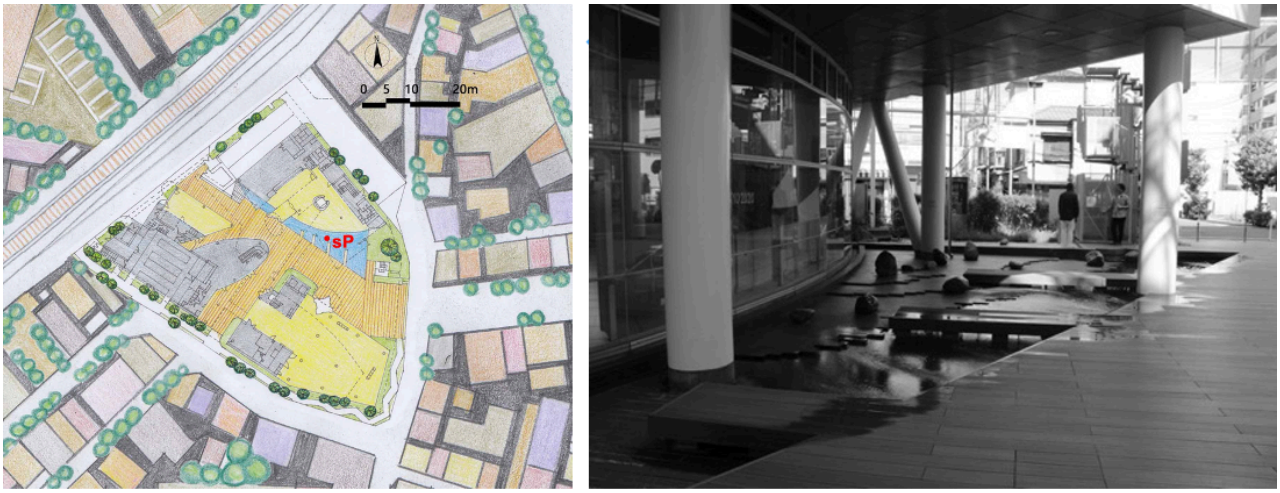


Figure 5.13 The sunken plaza (sP) in the north building. (Source from: drawing and photo from the author)

5.3.2 Semi-exterior open space within architecture

On the north side of the plaza, there is a staircase (S) ascending to the platform on the 2nd floor in the learning centre (figure 5.14). The platform (Pf) connects the second-floor foyer of the multi-purpose hall in the performing centre and creative workshops in the learning centre (figure 5.15). The terraces (Te) outside many functional rooms are arranged vertically on the fourth floor towards the courtyard internally or views of the neighbourhood behind the perforated aluminium panel externally (figure 5.16). The rooftop garden (rG) is planned on the top floor (figure 5.17). The skybridges (sB) enclose the central plaza and the periphery of three building volumes and link the three building volumes (figure 5.18). These semi-outdoor open spaces based on the *hiroba* are not endowed with specific functions as functional rooms with a fixed interior layout based on the programs (such as seminar room, tearoom, auditorium, etc.), but as the intermediate spaces for organizing the relationships between different programs and structuring the spatial connections between three building volumes. Some serve as circulation and evacuation spaces, such as bridges and platforms. The open space of semi-exterior *hiroba* provides potentials for various uses depending on users' preferences. They are spatially fluid and easy to be changed for different settings, in

contrast with the functional rooms with a fixed function and use in architecture. The building is wrapped with perforated aluminium panels on the outer layer, integrating the three scattered building volumes into a whole and creating buffer zones with the surrounding residential buildings to ensure a sense of privacy. Through the changes and movements of light, the shadow of people's behaviour in the building's interior space is projected on the façade, establishing a linkage of people from outside to sense the activities inside the building and creating interactions between inside and outside space.

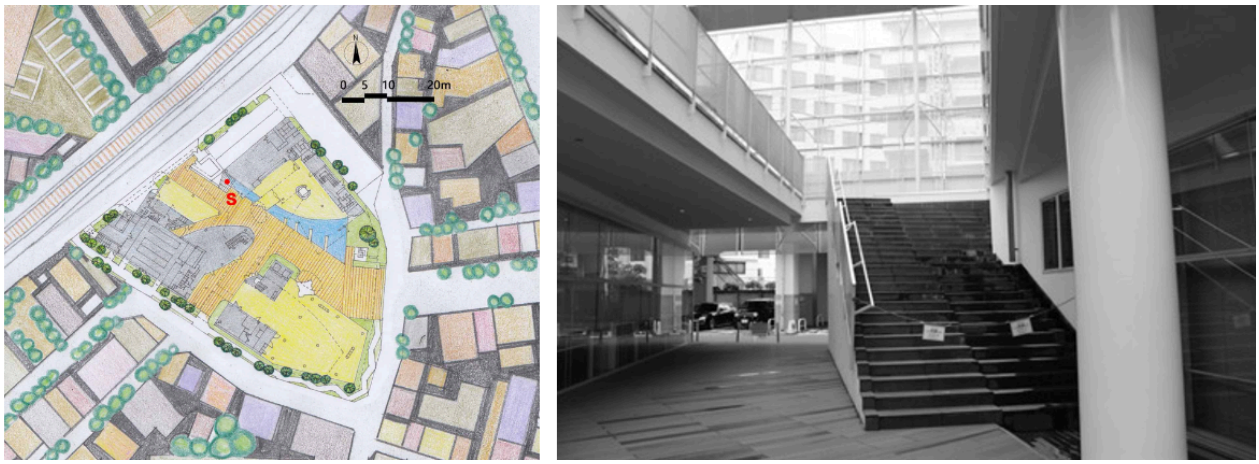


Figure 5.14 The staircase (S) between the north and west building. (Source from: drawing and photo from the author)

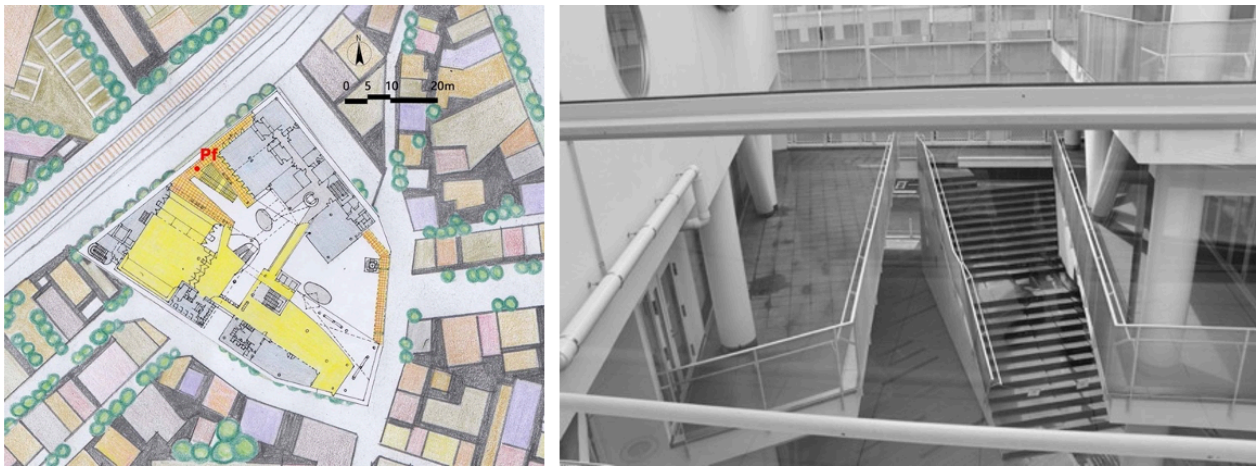


Figure 5.15 The platform (Pf) between the north and west building. (Source from: drawing and photo from the author)

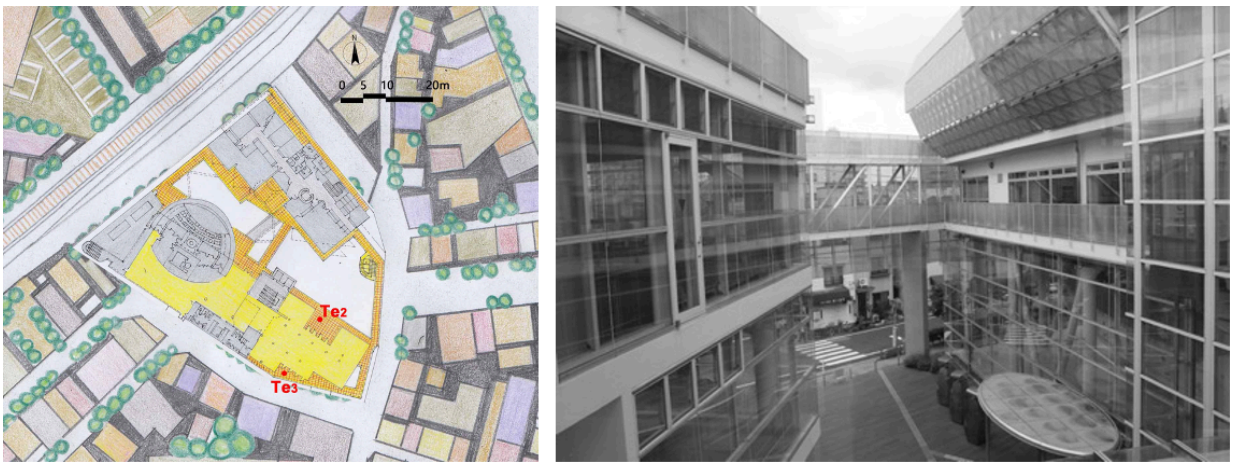


Figure 5.16 The terrace (Te) in the south building. (Source from: drawing and photo from the author)

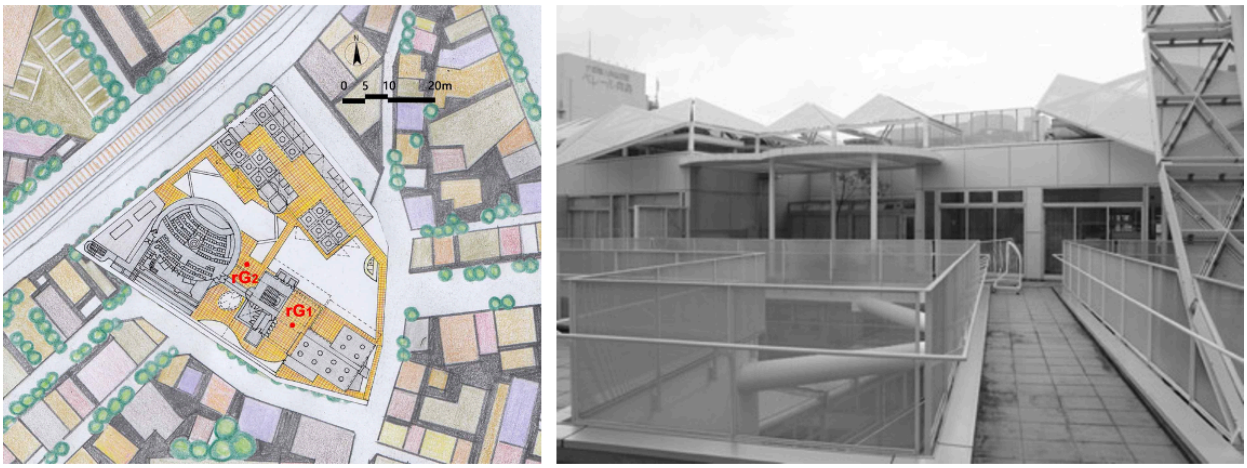


Figure 5.17 The rooftop garden (rG) in the south building. (Source from: drawing and photo from the author)

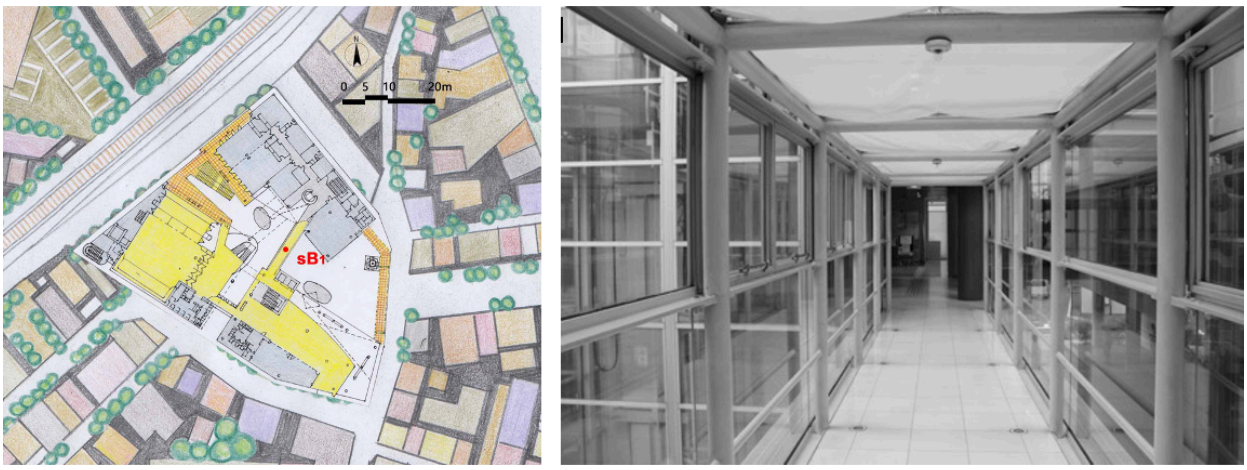


Figure 5.18 The skybridge (sB) between the north and south building. (Source from: drawing and photo from the author)

5.3.3 Interior open space within architecture

The entrance hall (H) is connected with the two main entrances of the performative and media centre on the ground level next to the central plaza (figure 5.19). It is an interior open space with no furniture. A 360-degree vision scope is provided in the hall to connect the interior and exterior space. The hall space envelopes the information corner on the second floor, where the reception desk and computers for internet services are provided, forming a double-height void shared by two individual spaces. The lobby (L) on the north side of the learning centre is an open space without specific functions (figure 5.20). It is put aside at the edge of the building towards the central plaza and played as a converged node connecting the sky bridge, seminar rooms, and other functional rooms. The civic interacting lounge (Lg) on the third floor, designed initially as the audio-visual hall, is re-arranged for individual and group studies by putting different tables and chairs (figure 5.21). Foyer (Fy) (figure 5.22) on the 2nd floor of the performing centre is an intermediate open space put at the intersection between the multi-functional room (fR) (figure 5.23), the bridge linked to the media centre, and the cafeteria on the ground level. It is intended to be used as a preparation space for a multi-purpose hall. The same functions apply to the foyer (Fy) space in front of the planetarium on the 4th floor (figure 5.24). The media corner (Cn) used for digital workshops based on the internet and computer is now left as an open space with no specific functions (figure 5.25). All those different forms of interior open space mentioned above are free to get access. They are different from functional rooms for learning in the building, which need to be reserved or charged with a small number of fees for use. The function of functional rooms is limited to learning only, for example, courses for pottery making, music performance, dance, calligraphy, painting, yoga, etc. Users can find course information at the reception desk or on the internet. People who share similar interests and hobbies can apply and establish new hobby groups. The charged fee is very cheap. The average room per person for usage fee is about 200 Japanese yen (around 1.3 pounds) for facility maintenance.

Figure 5.19 The entrance hall (H) in the south building. (Source from: drawing and photo from the author)

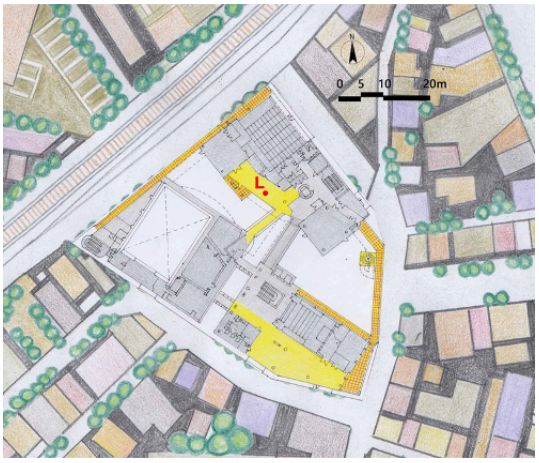


Figure 5.20 The lobby (L) in the north building. (Source from: drawing and photo from the author)

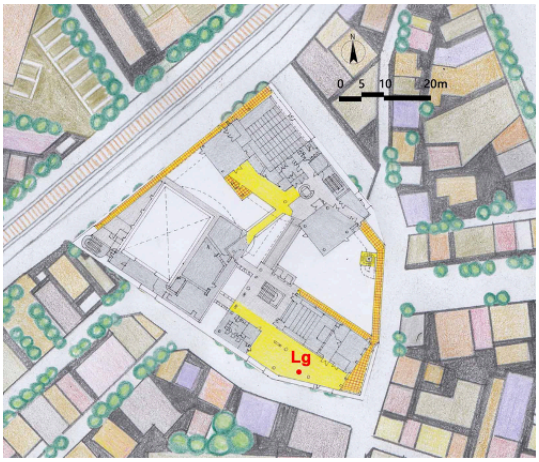


Figure 5.21 The civic lounge (Lg) in the south building. (Source from: drawing and photo from the author)

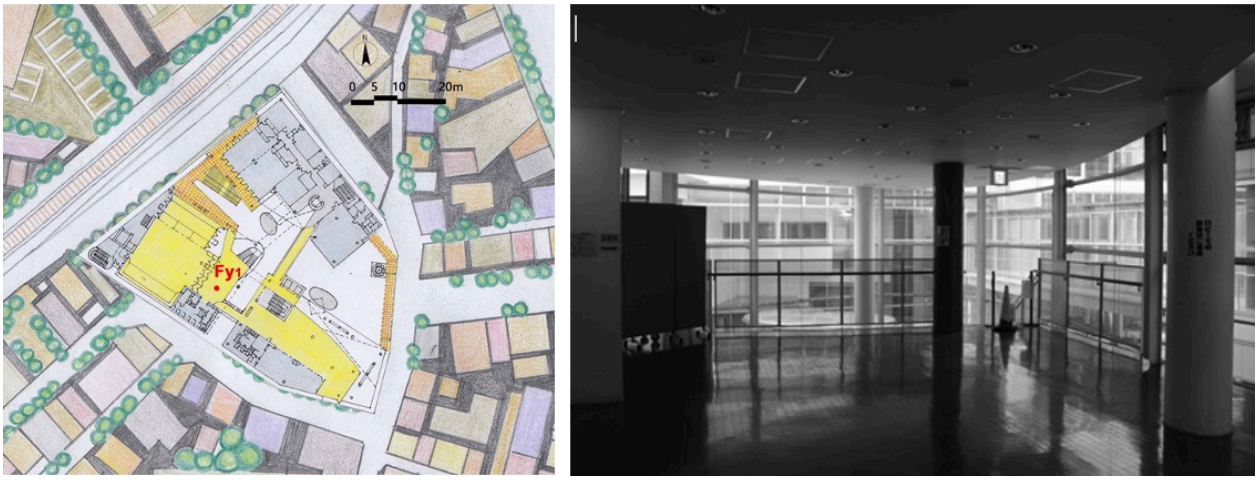


Figure 5.22 The foyer (Fy) in the south building. (Source from: drawing and photo from the author)

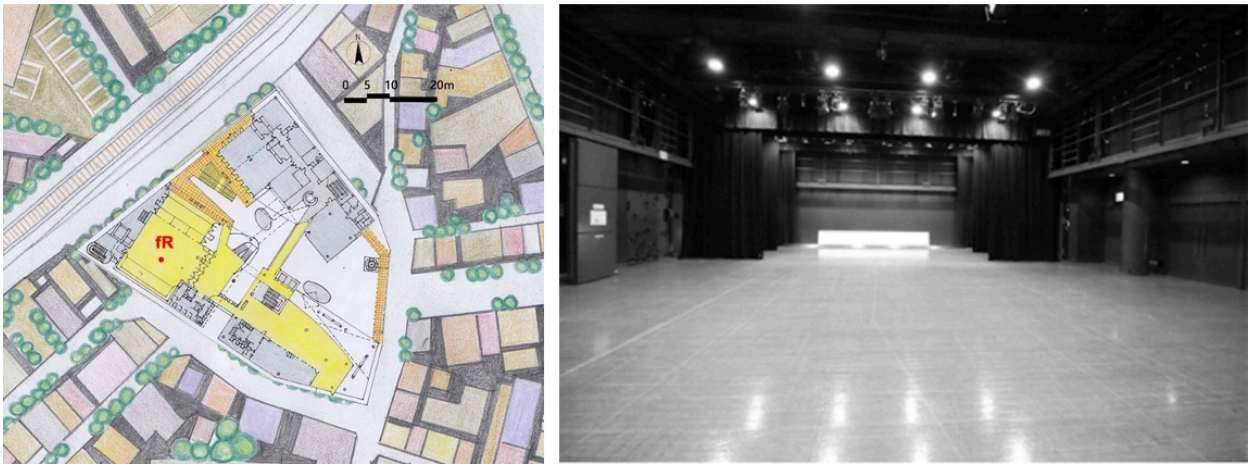


Figure 5.23 The multi-functional room (fR) in the west building. (Source from: drawing and photo from the author)

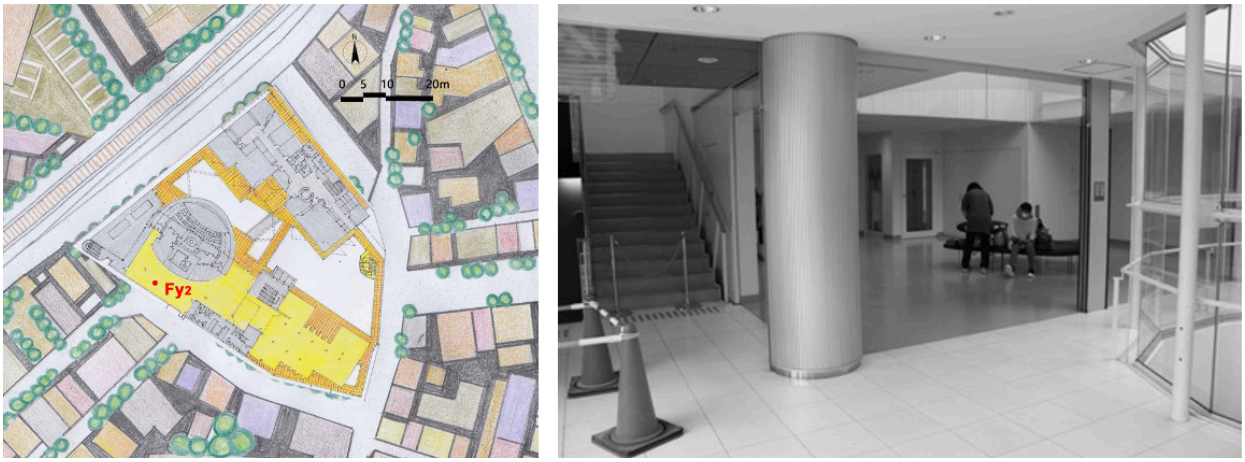


Figure 5.24 The foyer (Fy) in the west building. (Source from: drawing and photo from the author)

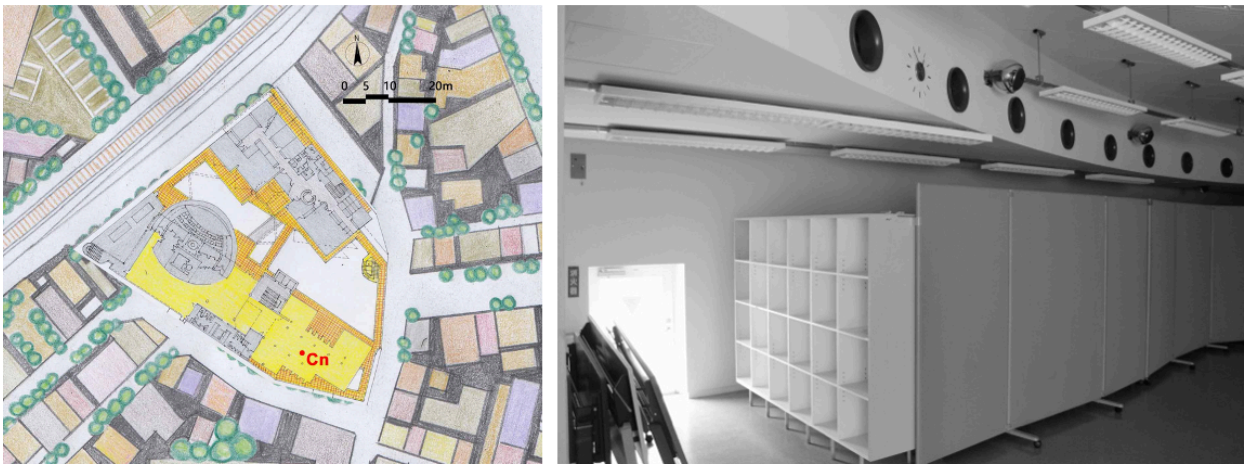


Figure 5.25 The media corner (Cn) in the south building. (Source from: drawing and photo from the author)

5.4 Human Behaviour and the *Hiroba-ka* Open Space within Architecture

Plaza and sunken plaza:

The central plaza is enclosed by arranging three building masses around, forming a relatively amorphous shape to be used. It is easy to be identified due to the envelope of the building masses on the ground floor being glass and many openings designed for entering in different directions. Trees are planted in a loose interval with bushes at an appropriate height below eye level. Transparency in sightline and circulation allows good accessibility of the plaza for people walking on the surrounding alleyway (figure 5.26 and 5.27). Because there were no benches, chairs, trees, or flowerbeds in the plaza, it was seldom to find people to have stay activities. Therefore, activities most of the time were limited to passing through. Occasionally, only children who lived nearby were seen to chase each other in the plaza and sat directly on the wooden floor. The sunken plaza is a demarcated small area on the side of the central plaza. It is away from the main circulation for passers-by crossing the building, thus becoming a ‘safe’ place for children to play like a playground (figure 5.28). Children jumped between rocks in the dry paddling pool in the sunken plaza. Some temporarily sat on the ground for chatting and taking a rest after play. Some brought their toys to the sunken plaza to play with friends. The only landscape feature – fountain in the plaza decayed (a

dried pool with no spray water function) and was in disrepair for a long time, contrasting with the scenery – a place to attract ‘small children, teenagers, thirty somethings with a more elderly contingent all engaged and absorbed’ (Hawley, 1995, p.36) – when the building finished being built at the beginning.

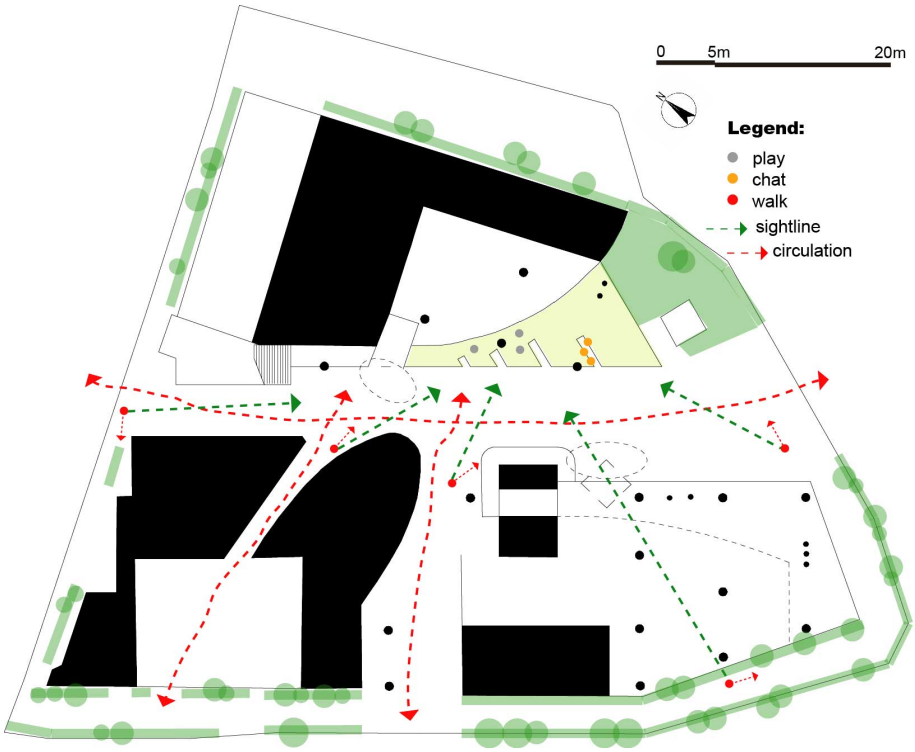


Figure 5.26 The porous of the building on the ground level allows circulation and sightlines to reach the central plaza from different directions. The sunken plaza is away from the main circulation to be a ‘safe’ place for children to play. (Source from: drawn by the author)

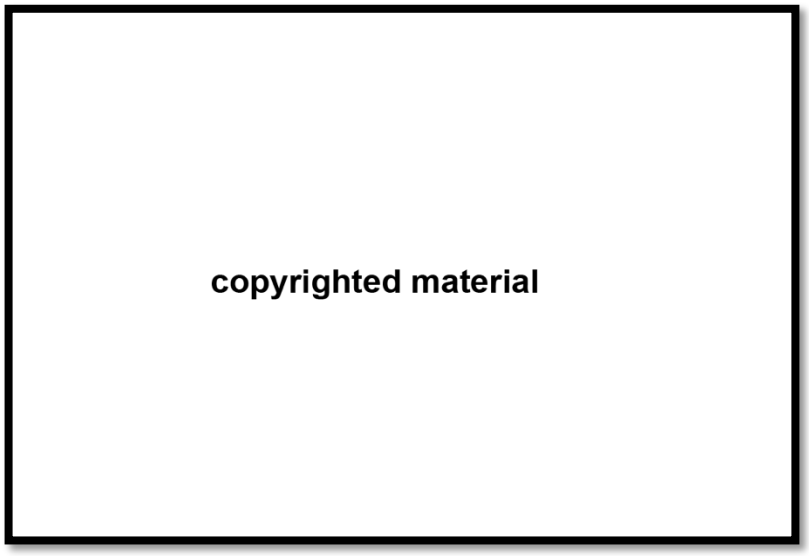


Figure 5.27 The transparency of the building on the ground level allows sightline (yellow) from sidewalk to reach to the central plaza. (Source from: drawn by the author based on Shinkenchiku, 1995)

Figure 5.28 Children play at the plaza and sunken plaza. (Source from: photo taken by the author)

From the manager's perspective,[14] the current plaza space is only allowed as a passageway, rather than other municipal buildings or POPS by introducing *yatai* (Japanese portable food cart) to become a temporary commercial space or other event spaces. There are no intentions to change the current situation and expand the use of the plaza. Therefore, during the Sumida Culture Factory's regular opening time, except for the children, only passers-by and nearby smokers in the neighbourhood were seen in the plaza. According to one of the interviewees, there used to have game stalls and exterior movie shows in the exterior space. In the initial architectural planning, the proposed interpersonal communications in the plaza as *harappa* for both people inside the centre and outsiders become infeasible. The issue is more apparently reflected in many proposed semi-exterior open spaces that could be used as *hirobas.*

[14] See details of the interview (the 2nd question) with an anonymous manager of Sumida Culture Factory by the author on August 29th, 2019, in Tokyo in Appendix 6.2.

On the day of *matsuri*, the exterior plaza gathered more people than regular days. Many children and their families and members of hobby groups (such as *benkyō-kai* (勉強会, study group) and *dōkō-kai* (同好会, association of like-minded people)) came to the centre for exhibition shows and performances, which were mainly held in the interior *hiroba* (entrance hall and multi-functional room) instead of exterior *hiroba* (the central plaza). Because there are no seating places in the plaza, some people sat on the wooden floor (figure 5.29), and performers sat on the stairs (figure 5.30).

Figure 5.29 People sat on the wooden floor at the plaza. (Source from: photo taken by the author)

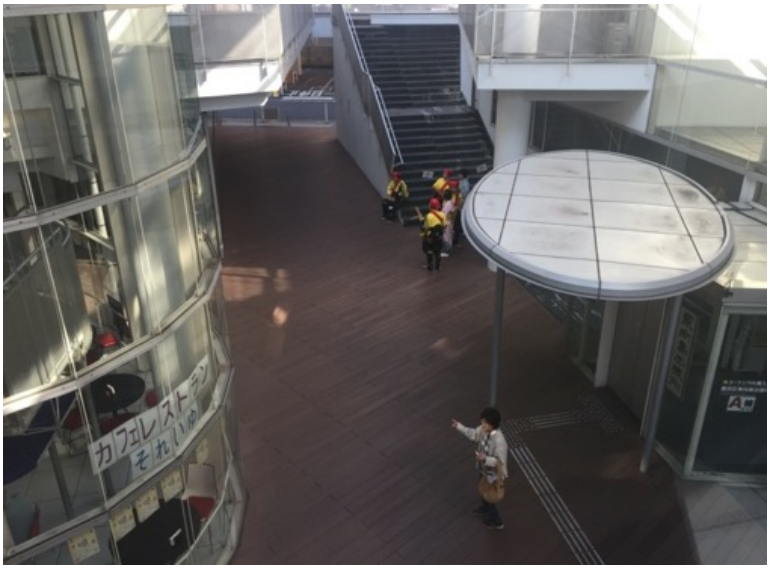


Figure 5.30 People sat on the staircase at the plaza. (Source from: photo taken by the author)

Staircase, platform, terrace, rooftop garden and skybridge

The staircase that leads to the 2nd-floor platform between the learning centre and performance centre and the staircase to the rooftop garden and terrace is locked in Sumida Culture Factory (figure 5.31). The skybridge where visitors can overlook the surrounding scenery of *Shitamachi* is also forbidden to use. Only skybridges over the central plaza were used for users' circulations between different programs in three building volumes. Maybe due to the limited width and space in skybridges or no views of *Shitamachi* outside found from standing in the skybridges, no staying activities were identified there. The door to the exterior terrace in the building is also closed. Due to facilities aging, limited public funds, convenience for management, conservatism for changes, and responsibility for safety, those conceived semi-exterior *hirobas* based on the concept of *harappa* in the actual use strictly follow a corresponding relationship between 'function' and 'space'.[15] Many interviewed residents complained about the closure of those locked open spaces for public access and use in a public building.[16]

[15] See also the interview with Itsuko Hasegawa about her critiques on the closure of the proposed *harappa* in the project with the author on March 18th, 2020, in Tokyo in Appendix 7.2 (the 4th question).

[16] See interviews (the 2nd question) with users by the author on August 29th, November 7thand 10th, 2019, in Appendix 5.2.

Figure 5.31 Proposed open spaces for interpersonal communications are restrained from use. (Source from: photo taken by the author)

The pre-arranged functions restrict people's spontaneous behaviour, so space cannot be used freely and flexibly according to the demand of users. The locked areas eliminate *harappa* concept proposed for the communications between people within different programs and visitors inside and outside the project. People came to the centre for a particular purpose, for example, learning in different hobby groups, coming to the Mukōjima branch office of Sumida-ku City Hall, or eating in the café on the first floor, or borrowing the bathroom in the building. Otherwise, without purpose, people would not go to the centre.[17] The interpersonal communication between people belonging to different groups or coming to the buildings for different intentions hardly happens in daily use.

[17] See interviews (the 1st question) with users by the author on August 29th, November 7thand 10th, 2019, in Appendix 5.2.

Communication lounge and media corner

The communication lounge on the third floor is the interior *harappa* provided for nearby residents a place for communicating. Indoor tables and chairs can be freely adjusted to different layouts to accommodate the number of users and different demands for space flexibly (figure 5.32). There are individual study booths for a relatively private and quiet space for learning and taking rest. No strict rules or functions are applied in advance for using the space. It was a preparation space for different hobby groups to wait and rest before courses (figure 5.33). After the courses, different hobby groups gathered here for discussion and scheduled the future planning in learning activities. Many elderly and young students living nearby were often found to study in the communication lounge (figure 5.34). Workshops were occasionally initiated and held by local residences in Sumida-ku. White-collar workers at noon chose to eat lunch here and took a short lunch break. The communication lounge provided an interior open space for the neighbourhood and city. It was not always filled with various activities and events (most of the time, it actually kept empty and unused), but people can find a place for a short stay or for meeting with other people when needed.

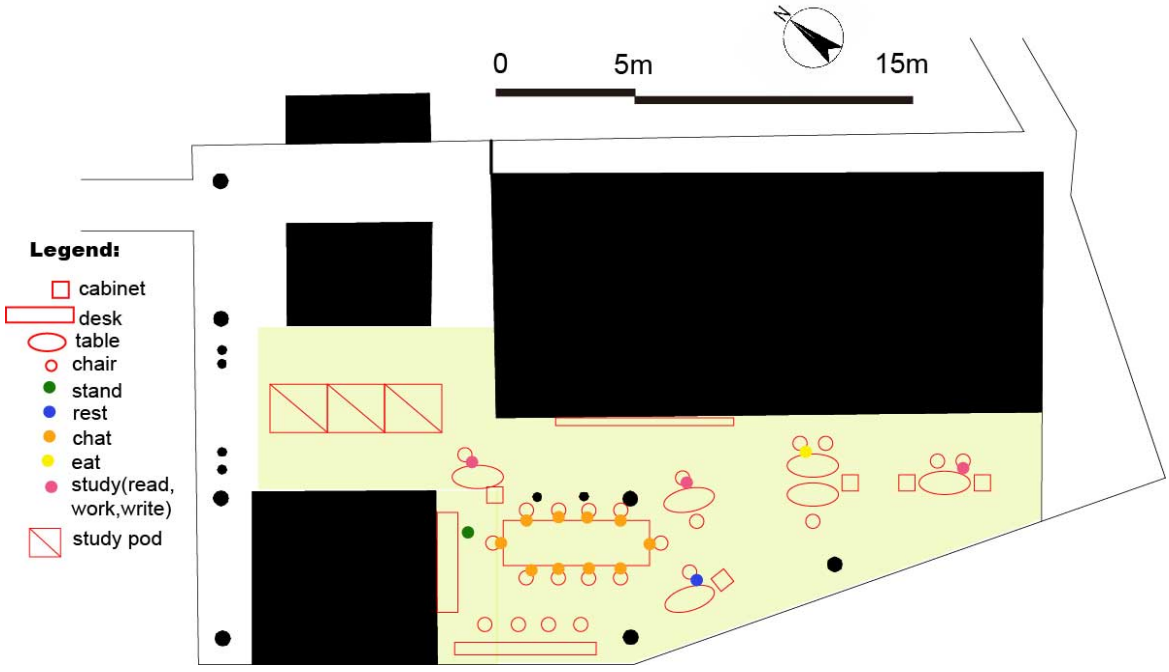


Figure 5.32 Layout of the communication lounge and activities in use. (Source from: drawn by the author)

Figure 5.33 (left) Group discussion in the communication lounge. (Source from: photo taken by the author)

Figure 5.34 (right) Individual activities (study, sleep, etc.) in the communication lounge. (Source from: photo taken by the author)

Media corner on the 4th floor was also *harappa* proposed for accommodating many different activities and groups of people based on the help of advanced media technology at the initial plan. However, the further management of the open space turned the open space into individual rooms and applied for specific functions. Compared to the central plaza on the ground floor with a high degree of visual and physical accessibility, the communication lounge and media corner above ground are not easily identified spatially by the people in the alleyways. For those reasons, attractions and potential activities for passers-by who are unfamiliar with Sumida Culture Factory and come to the building for the first time are limited.

Hall, lobby, and foyer

The entrance hall on the ground floor next to the plaza was previously reserved for leasing from private groups for exhibition only. After the right of management

transferred from the government to the private business operator,[18] the hall's uses were expanded to incorporate more activities, such as yoga, bodybuilding exercise, gymnastics, lectures, and other events by different settings. The multi-purpose hall on the 2nd floor of the performance centre is an interior open space equipped with electric movable chairs. It can be turned into a stage for performances or lectures, presentations, and other uses. According to the specific events in the entrance hall and multi-purpose hall, some were free, and some were charged fees. The lobby and foyer were used mainly for circulation for people passing through from different functional rooms. Based on the observation, they were not frequently appropriated by uses for any activity and were regularly left empty open space.

Every November, Sumida Culture Factory invited residents in surrounding neighbourhoods to participate in the annual *Yūtoriya matsuri* event. People who moved to other places but used to live in the neighbourhood before and those from other regions invited by friends in the neighbourhood also actively engaged. Internal members who participated in different hobby classes in the centre can take the opportunity to exhibit their works and achievements for learning communications. External hobby groups that were not registered in the Sumida Culture Factory and NPOs also attended the *matsuri* to display their activities for recruiting new members.

The annual *matsuri* becomes a platform for interpersonal communication among residents in the neighbourhood and is free for all residents to attend without any charge. Activities in the annual *matsuri* were mainly divided into two parts. The first part is the exhibition of calligraphy, painting, pottery, origami, and paper-cutting works in the

[18] Sumida Ward used to manage and operate the Sumida Culture Factory directly. However, from April 1, 2019, the management was changed and transferred to the private business operator. See more background information on the privatization of state-owned land, enterprises, and facility management in Chapter 3.4.

entrance hall (figures 5.35 and 5.36). Members of hobby groups displayed and introduced their works to the visitors as volunteers. The second part is the stage performances, such as dance, singing, drum performance, traditional instrument performance, folk dialect, etc. held in the multi-purpose room (figure 5.37). On the *matsuri* days, the central plaza, lobby space of the learning centre in the north (on weekdays, it is used by the city hall as the lobby space for visitors) were temporarily used as rehearsal spaces before stage performances (figure 5.38).

Figure 5.35 Free exhibitions in the entrance hall. (Source from: photo taken by the author)

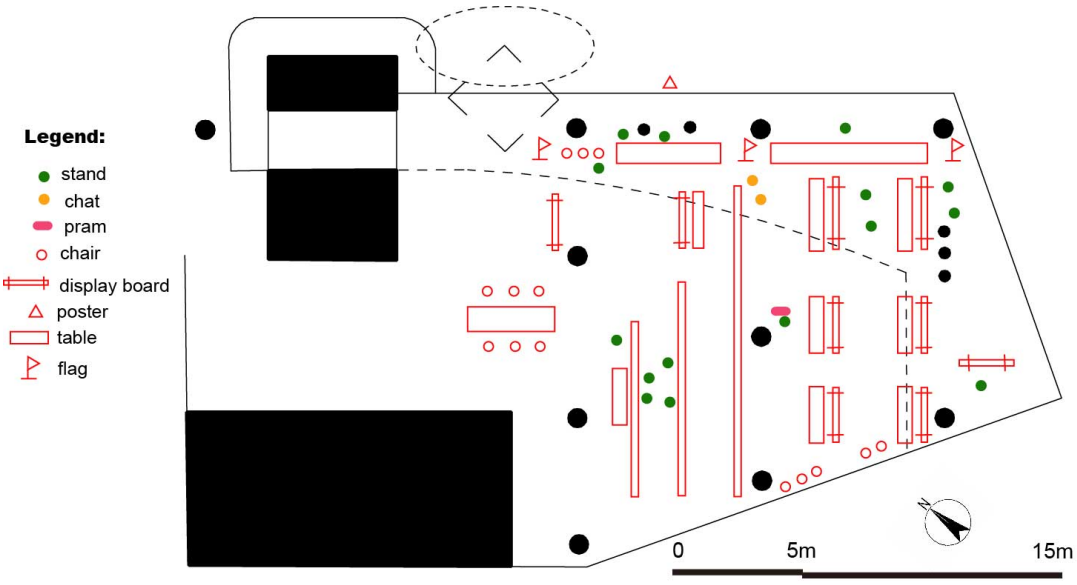


Figure 5.36 The layout of an exhibition in the entrance hall. (Source from: drawn by the author)

Figure 5.37 Performances at the multi-purpose room. (Source from: photo taken by the author)

Figure 5.38 The lobby on the third floor was appropriated for a temporary rehearsal in *matsuri.* (Source from: photo taken by the author)

5.5 Conclusion of Sumida Culture Factory Case Study

The Sumida Culture Factory presents a good example of *hiroba* created in a public cultural facility by the government. It shows attempts by the architect to build a new image of Japanese public architecture and redefines the notion of 'public'. On the one hand, the 'public' as *kō* (公, authority) represented by the government is no longer used as the public symbol. For public-owned projects, the design rights are obtained through open competitions instead of a top-down approach. On the other hand, by including citizens' involvement in the discussions of the project in the whole design stages, as well as stimulating their interactions in use through *hiroba*, 'public' in pubic architecture is emphasized by the process of interpersonal communications and participation as *kyō (*共, common). The Sumida case also reveals many issues found in use after the project was built for so many years later today, including the lack of funds for maintaining the facilities from public sectors, the changing orientations in running and managing the building by closing certain areas for use, and controlling the use of spaces for specific functions. The public-owned open spaces provided in the Sumida case show many commonalities with POPS as only open to public use than publicly engaged space by users freely.

In the design of the Sumida Culture Factory, the architect adopted the spatial and cultural concept of *harappa*, which used to be the urban open space for daily activities and entertainment in Japan. In other words, *harappa* is hypothetic forces in *ka* for the form reasoning of *hiroba.* Those different forms of *hiroba* are further given the shape of *kata* through a series of compositional elements (spatial elements and attachment elements) in architectural composition. The spatial elements applied in the project are represented by various forms of open spaces (Appendix 8.2). Based on the spatial characters of open spaces from the perspectives of accessibility (circulation, sightline, level), enclosure (opening, scale, canopy), and identity (boundary, permeability, and attachment), five types of open spaces (the materiality of *hiroba*) within architecture

are extracted (table 5.2). Several cases of open spaces cannot be grouped in any type, showing the distinct rather than common spatial characteristics shared in architectural composition. They are distributed in a spatial configuration of three layers from the outside to the inside of the Sumida Culture Factory in a three-dimensional way (figure 5.39). The open spaces on the ground level are more accessible to be *hiroba-ka* than open spaces above ground. The layout of the open spaces is usually at the crucial nodes on the intersections of users' circulations and sightlines in the architecture or on the site, for example, the central plaza linked to the surrounding alleyways and the lobby organising functional rooms and connecting to the bridges. Some open spaces are put in a position where eyesight can easily reach the activities there, such as the entrance hall on the ground level and the skybridges over the central plaza. Some open spaces are hidden deep or above the ground level, implying a sense of *oku,* such as the rooftop garden (although it was closed by the management team), where many interviewees expressed hard to find and access and therefore seldom use it.

The aims of setting up the different forms of *hiroba-ka* open spaces are to activate the communications and interactions of users within different programs and to involve people from outside with no connection with the programs provided by the centre.

Table 5.2 The open space typologies applied in making *hiroba* within contemporary Japanese architecture in Sumida Culture Factory. (Source from: drawn by the author)

Name		Plan					Section			Group	Total	Type
Sumida	Culture Factory	Boundary	Opening	Circulation	Sightline	Attachment	Level	Canopy	Scale	Permeability		
SCF	sP	4	2	6(3S+3I)	D	W+St	G	S	A	Y	3	Type 1 P
SCF	P	N	4	4(3D+1I)	D	C+G	G	S	W	Y		
SCF	S	4	1	6(3S+3I)	S	/	G	S	W	Y		
SCF	H	N	0	4(3S+1I)	D	F+S+C	G	C	A	N	3	Type 2 H
SCF	fR	4	0	2I	I	F	U	C	A	N		
SCF	Fy(1)	N	0	3I	I	C	U	C	A	N		
SCF	sB(1)(3)(5)	2	2	2I	D	/	U	C	A	Y	5	Type 3 Lg
SCF	L	N	2	2I	S	/	U	C	A	Y		
SCF	Lg	5	2	2I	I	F+C	U	C	A	N		
SCF	Te(1)	N	2	2I	I	/	U	U	A	Y		
SCF	rG(1)	N	2	2I	I	/	U	C	A	N		
SCF	Cn	N	1	3I	I	F	U	C	A	N	6	Type 4 Fy(2)
SCF	Te(2)	N	1	2I	I	/	U	C	A	Y		
SCF	Te(3)	N	1	2I	I	/	U	C	A	Y		
SCF	rG(2)	N	1	1I	I	/	U	C	A	N		
SCF	Fy(2)	4	1	2I	I	/	U	C	A	N		
SCF	sB(2)(4)(6)	2	3	3(2I+1S)	D	/	U	C	A	Y	3	Type 5 Sb(2)
SCF	Pf	N	1	1I	S	C	U	U	W	Y	1	

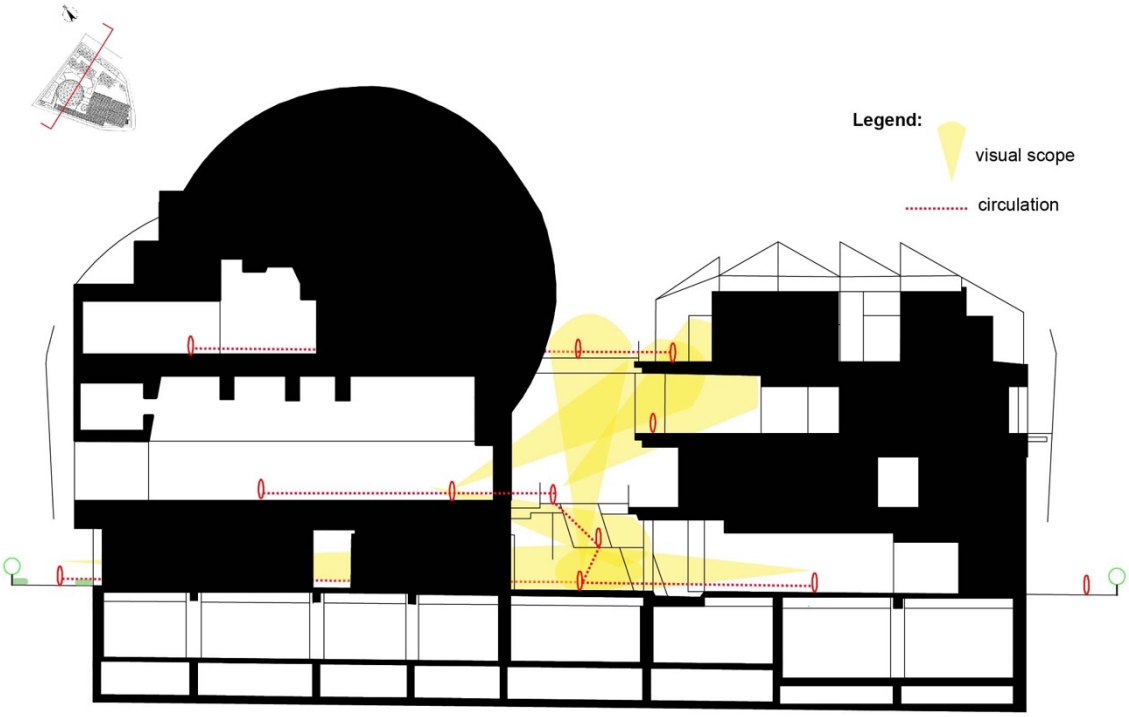


Figure 5.39 The visual scope and circulation in the *hiroba-ka* open spaces (space in white with red model figure) of Sumida Culture Factory. (Source from: drawn by the author)

However, due to safety considerations, shortage of maintenance fees, and other various reasons, many different forms of open spaces, such as staircases, platforms, terraces, and rooftop gardens, were locked and not allowed to be accessed and appropriated for use freely. Moreover, attachment elements, such as trees, greens, and furniture, are not provided to integrate with spatial elements to assist the *hiroba-ka* of open spaces in the case. The interviews found that the occurrence of spontaneous activities by the visitors outside the programs of Sumida Culture Factory is lower than the necessary activities of users taking part in different hobby groups.[19] In the current management stage, communication with users is not continued as proposed at the very beginning of the design based on the concept of *harappa* for use freely. The voices from users to open those locked spaces to fully use the public facilities and ask for more greens and seating places in the conceived *hiroba* in the interview (rather than the discussion of *hiroba* on the political dimension valued in western public space in general) were underscored.[20] The situation results in the locked spaces with no activities inside as leftover open spaces rather than *hirobas* (table 5.3). Open spaces in the lobbies and foyers are not appropriated by people for activities and remain empty most of the time only for the circulation function. Only on event days, they are turned into *hiroba* triggered by performers as a temporary rehearsal place or activated by audiences as a meeting place. The provision of designed open spaces does not guarantee those spaces to be used as *hiroba*. In other words, open space (formal typology) is the necessary but not sufficient condition in making *hiroba* within Tokyo's contemporary architecture.

[19] See interviews with the users (the 1st question) in Appendix 5.2.

[20] See interviews with the users (the 2nd question) in Appendix 5.2.

Table 5.3 The relationship between spatial element and human behaviour in the *hiroba* of Sumida Cultural Factory. (Source from: drawn by the author)

No.	Spatial Element / Behaviour	Sunken Plaza(sP)	Plaza (P)	Platform (Pf)	Staircase (S)	Hall (H)	Foyer(Fy)	Lobby (L)	Lounge(Lg)	Corner(Cn)	Skybridge(sB)	Functional Room (fR)	Terrace (Te)	Rooftop Garden (rG)
1	passing through(foot)		●					●			●			
2	sitting	●			●			●	●					
3	sitting and eating/drinking								●					
4	sitting and chatting	●						●	●					
5	standing	●	●				●	●	●		●			
6	standing and watching		●					●	●		●			
7	standing and chatting		●				●	●	●		●			
8	running and playing		●											
9	playing games	●	●											
10	playing toys	●												
11	playing phone		●						●					
12	playing laptop								●					
13	listening music								●					
14	watching(senery/artwork,etc.)					●			●					
15	studying								●					
16	reading								●					
17	jumping	●												
18	crawling		●											
19	waiting	●	●				●	●	●					
20	working (personal business)								●					
21	sleeping/lying down								●					
22	course					●						●		
23	phone call		●				●	●						
24	smoking		●											
25	event					●						●		
26	exhibition					●			●			●		
27	rehearse							●				●		

Some organized events proposed in the *hiroba* on normal days are charged for non-profit reasons, such as building maintenance, expense on course materials and invited lecturers. The collective use of *hiroba* in Sumida Culture Factory is given certain applied conditions for users' access, and most users understood the policy found in the interviews conducted by the author.[21]

In addition, the management team in Sumida Culture Factory tries to give pre-determined functions to define the uses of different spaces. Therefore, organized events at specific times with people who share the same interests happened more frequently in the *hiroba* of Sumida Culture Factory than spontaneous activities initiated by different users. For example, the central plaza is normally used (and only allowed) as the thoroughfare for circulations. In the central plaza, no seating places are provided. The water fixtures in the sunken plaza are out of order. *Yatai* is not allowed for events in the plaza. The freedom of *harappa* is not fully realized as what the architect Itsuko Hasegawa expected.

[21] See interviews with the users (the 4th and 5th questions) in Appendix 5.2.

Chapter 6. Case Study of Shinonome Canal Court in Tokyo

6.1 Context of the Project

6.1.1 Historical and social background of the site

The Shinonome Canal Court, located in Shinonome 1-chome, Koto-ku, Tokyo, is an urban renewal project carried out by the Japanese UR Agency at the beginning of the 21st century (figure 6.1). The site is located on an artificial land reclaimed from the sea in Tokyo Bay since 1930 in the Showa period, on the west side of Tatsumi station, about 5km away from the city centre (figure 6.2). In the post-war period after 1945, many large-scale factories were gradually set up there. As the former site of Mitsubishi Steel's factory (figure 6.3), most of the areas around the factory were distributed with factories, warehouses, and transportation-related facilities. Roads, other infrastructure, and living facilities were incomplete. UR Agency, in March 1995, proposed an urban redevelopment planning with the aim of turning the brownfield land with industrial functions into a new residential area.

Figure 6.1 The location of Shinonome Canal Court in Tokyo. (Source from: drawn by the author based on the data from Esri)

Figure 6.2 Shinonome Canal Court (in red) and its surrounding environment in Koto-ku. (Source from: drawn by the author based on the data from Esri)

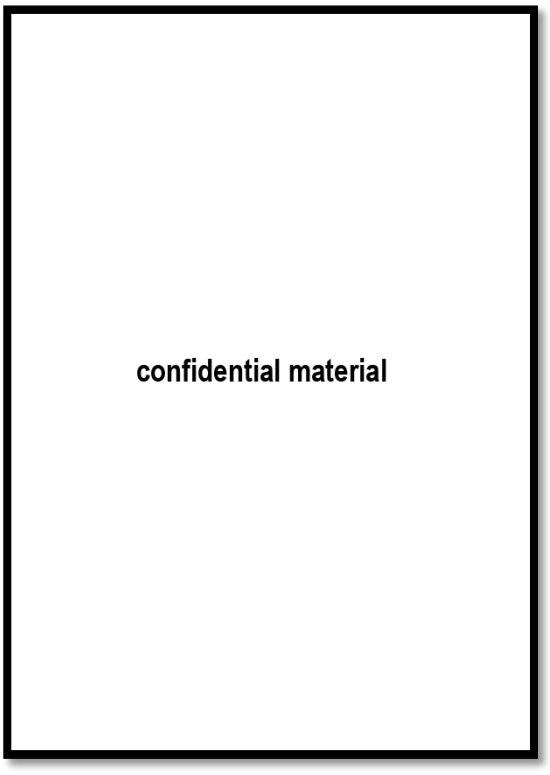
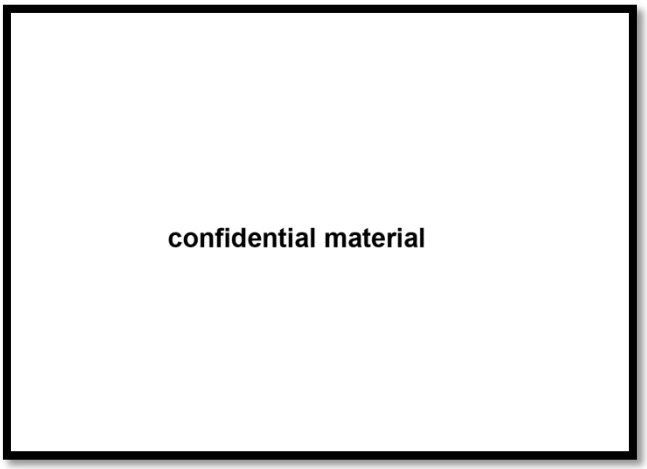


Figure 6.3 The former site of the project on the land of Mitsubishi Steel's factory. (Source from: adapted by the author based on the image from UR Agency, 2017)

The urban planning for the Shinonome area was made in a period of an economic downturn after the collapse of the bubble economy in the 1990s. The land prices continued to fall, and more convenient living in the city centre became affordable. By

exchanging and buying land from the private sectors in 1995, the Tokyo Metropolitan Government (TMG) cooperated with UR Agency and planned to further develop the bay area into a large-scale new ‘city’ with commercial facilities, schools, and life-supporting services with a newly built infrastructure. The whole site was divided into three major zones. Shinonome Canal Court as collective housing (for 1712 households) supplied by the UR Agency was located in the central zone surrounded by Tatsumi zone (high-rise residential towers developed by private companies with an additional waterfront park) on the east, and Harumi zone (commercial and public facilities) on the west (figure 6.4). TMG and UR Agency hoped to make the Shinonome area a new sub-centre, decentralizing the aggregated city functions while attracting more people to live and work in ‘new’ waterfront city (UR Agency, 2017). The final planned site under urban redevelopment is huge. The total site area is around 16ha, about 300m from east to west, and 500m from north to south. The west side of the site is Harumi-dori, and the east side of the site is surrounded by the Tatsumi canal and



dams.

Figure 6.4 Zoning in planned site under urban redevelopment. Harumi zone (purple) is on the west, Tatsumi zone (red) is on the east, and the central zone (yellow) where Shinonome Canal Court located is in the middle. (Source from: UR Agency, 2017)

6.1.2 Background of the architectural project

In responding to the challenge of population flow from city centre and suburban areas to the newly built Shinonome area and the expenses on acquiring land and

infrastructure investment, UR Agency advocated a high-density living to accommodate the FAR around 4.0, which reached the top limit of FAR under the TMG's approval of changing zonings from industrial land use to the residential land use (UR Agency, 2017).

The typical design model applied in the UR's collective housing design history was based on the model of 'free-standing residential tower + open space underneath' influenced much by the urban planning theory under Western Modernism exemplified by Le Corbusier's the Radiant City, in which the open space between towers and under pilotis was usually left and remain unused. The criticized model for living led only to a residential area detached from the city. The social bond built based on the spatial concept of *shikii,* which was common in the traditional Japanese living in *machiya* (Japanese townhouse), was replaced and disappeared. Besides, the residential units of 51C and the subsequent nLDK proposed for the nuclear family supplied by UR's *danchi* (social housing in Japan) only satisfied basic demands in living for protecting families' internal privacy. As a result, the spatial model of 'one house = one family' in housing design separated individuals in families from the community in the residential area. It also led to the disappearance of social relations bounding people in the city and caused further social issues, such as the death of loneliness in the group of the elderly, the unattended children of the wage class family, and the safety issues due to the disappearing of community.

In order to change the previous image of UR *danchi* design as an 'outdated' and 'isolated' residential area, the chief architect and planner Riken Yamamoto with architects from other five architectural firms and landscape architect Hiroki Hasegawa formed the Shinonme Design Meeting Group, borrowed the traditional Japanese concept of *shikii* by creating various forms of *hiroba-ka* open spaces with greens within through architectural typologies influenced by Western Modernism for building a bottom-up and autonomic 'local community area' managed by the residences

(Yamamoto, 2003). The design of Shinonome Canal Court aimed to define a new lifestyle for collective housing in the 21st century in response to new demographic changes in population asking for diversified housing units other than the nuclear family: singles, couples without children, multi-generations families, etc.

Instead of the previous 'residential tower + open space' model (high-rise apartments around the site of Shinonome Canal Court project shown in figure 6.5), which was prevalent in Modernism urban planning with a usually large-scale sterile open space to be leftover, a new 'street-type town' model to bring the vivid image of people's daily activities (Shinonome Canal Court in the central part of figure 6.5) was proposed after several rounds of discussions in workshops and design meetings engaged by both specialists and citizens before the design (Shinohara et al., 2002).

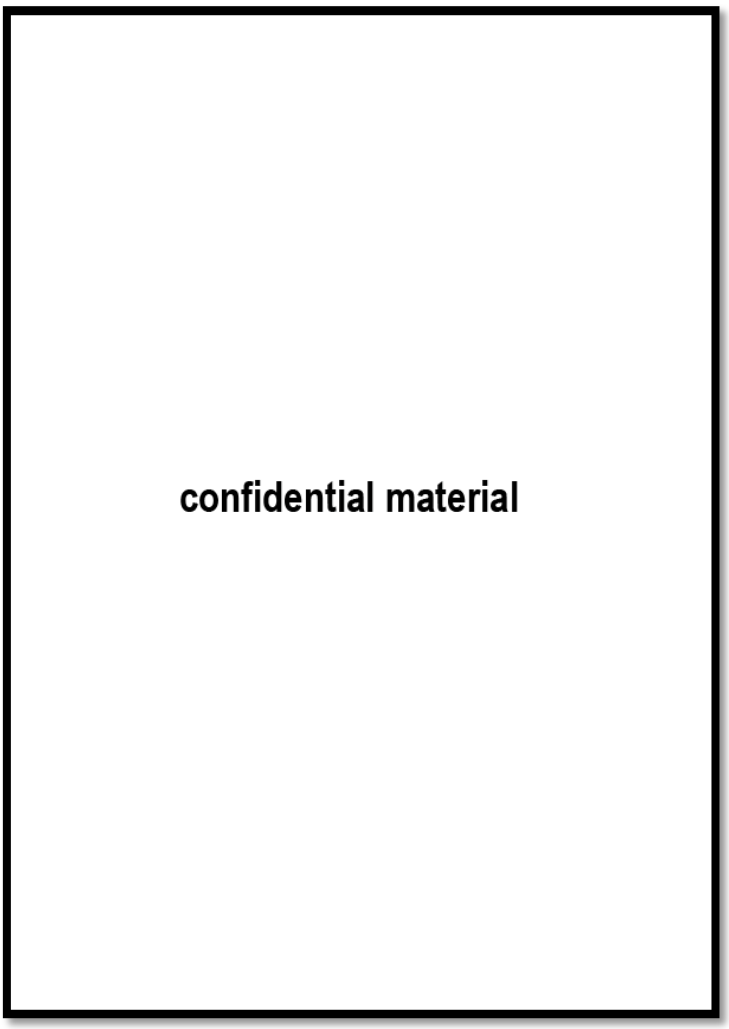


Figure 6.5 The six blocks of Shinonome Canal Court in the central zone and the surrounding buildings in Harumi and Tatsumi zones. (Source from: UR Agency, 2017)

Shops and life-supporting facilities (figure 6.6) were put under a one-and-a-half height platform with different forms of *hiroba-ka* open spaces on top of or beneath it, forming a human-scaled s-avenue compared to the surrounding high-rise apartments (figure 6.7). Those shops, facilities and *hiroba-ka* open spaces arranged on both sides of the s-avenue were not only (but mainly intended by the developer) designed for the residents within the Shinonome Canal Court project but also to be opened for use to visitors and passers-by in a larger area in Koto-ku, recalling the Japanese traditional *machiya* and *shōtengai* (shopping district) serving for a large community area. Six blocks with apartment buildings were in a scatted layout and organised by the central s-avenue as the main structure, forming a semi-enclosed environment away from the noisy traffic road outside. Exterior *hirobas* (two vista *hirobas* and one forest *hiroba*) were planned intentionally to be connected with *hirobas* of waterfront park on the east and high-rise apartments across the street on the west, forming three visual axes (figure 6.5). Trees and greens were planted in the exterior *hirobas* with different patterns. Two vista *hirobas* with well-layout tree lines guaranteed a vista to the waterfront park; two forest *hirobas* with free-layout trees provide visual barriers to views toward the traffic road on the west. According to the landscape architect Hiroki Hasegawa (2005), no fixed function was proposed to be put in the landscape design of the open spaces in the project. A flexible open space supplied with inclusive programs customised to residents' demand for a temporary use beyond the main function of living in the project was encouraged. The exterior *hirobas* and the s-avenue on the ground level were planned to be connected with elevated courtyards in different blocks to form a three-dimensional street sequence in circulation. The design of collective housing of Shinonome Canal Court was highly evaluated in the research on the spatial quality of high-density collective living in Asia (The University of Tokyo cSUR-SSD Research Group, 2007; Cho, Trivic and Nasution, 2016).

Figure 6.6. Shops and life-supporting facilities (such as pharmacy, childcare center, restaurant, etc.) are on the both sides of the s-avenue under the second-level platform. The name of 's-avenue' was named by chief architect Riken Yamamoto. It is not a western-style avenue with trees planted on both sides, but actually designed based on the model of *shōtengai* (Japanese shopping district) without trees to allow sunlight and sightline go inside the shops.

Figure 6.7 Section of Block 1 and 2 in Shinonome Canal Court. Residential towers are set back to the side (red lines) and form the human-scale s-avenue (AV, in red) enclosed by the one-floor shops (in green) in the centre. Parking is put on the ground and underground leve (in yellow), making the s-avenue and elevated platform (in blue) pedestrian-only space. (Source from: drawn by the author based on the image from Yamamoto and Ito, 2003)

6.2 Theory of *Shikii* and Local Community Area

Shikii (閾) in Japanese means threshold The *shikii* is more used to denote a spatial gap (instead of a physical line) between two different spaces or areas, and it also contains the psychological boundary to detect the differences in sensations. Therefore, the *shikii* implies both spatial and psychological meanings related to space and people.

In a typical plan of Japanese *machiya* (figure 6.8), it combines the living space at the rear and commercial space ahead of the living area, close to the entrance and the street. The commercial space for business in the front part becomes the threshold between the public street and private rooms.[22] It was used as an intermediate place for communication between people inside the family and outsiders. The threshold and street together constituted the neighbourhood space where residents interact with each other daily. Within the commercial space of *machiya*, there are several different layers of public-private relations based on the activities of the rooms arranged along the circulation route.[23]

Figure 6.8 Plan of a traditional *machiya*. *Oku zashiki*, *naka no ma* and *daidogoro* are *shikii* between *ura* and *mise* space. (Source from: adapted by

[22] See the interview (2nd question) with Riken Yamamoto by the author on February 8th, 2020, in Yokohama on the commercial space in *machiya* as the *shikii* in Appendix 7.3.

[23] In the interview (1st question) with Riken Yamamoto on the concept of *shikii*, he argued a relative public-private relationship instead of a public-private division in an absolute relationship. In other words, the relation between public and private is in a changing situation. See Appendix 7.3.

Architect Riken Yamamoto found the *shikii* or threshold in-between the public and private (figure 6.9) is not only unique in Japan, but also can be found in many world settlements in history. He was influenced by the philosopher Hannah Arendt's (2019, p.63) description of the 'boundaries' and 'no man's land' in the public realm created in ancient Greek polis (city-state) in her book *Human Condition.*

> *Not the interior of this realm, which remains hidden and of no public significance, but its exterior appearance is important for the city as well, and it appears in the realm of the city through the boundaries between one household and the other. The law originally was identified with this boundary line, which in ancient times was still actually a space, a kind of no man's land between the private and the public, sheltering and protecting both realms while, at the same time, separating them from each other.*

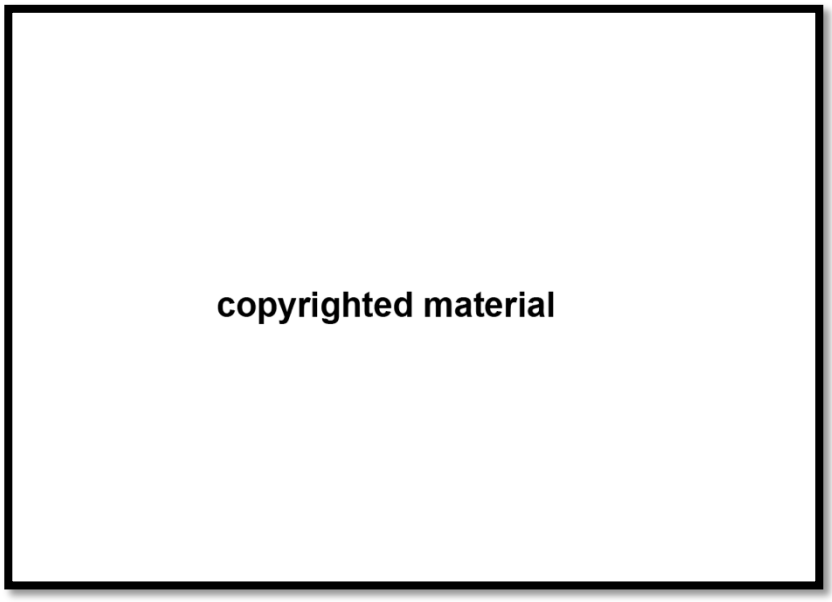


Figure 6.9 *Shikii* concept diagram drawn by Riken Yamamoto. (Source from: Yamamoto, 2015)

A city (polis) of ancient Greece was an agglomeration of houses (oikoi); there was a very close relationship between the two. A house is not an independent entity but exists

in relation to the public realm of the polis (a word gives the English politics). In the public realm of the polis (such as the Greek agora), citizens were free of speech to engage in the politics of governing and organizing polis equally and not subordinate to a state or nation. The houses of the ancient Greeks consisted of andronitis (men's place), which represented the external political space and gynaikonitis (women's place), which represented the internal economic and private space (figure 6.10). In this way, andronitis as the public realm, becomes a place connected to the street and agora. Women are excluded from andronitis. They are deprived of the freedom to participate in the public realm. The 'no man's land' (andron, the centre of andronitis, a public realm functionally equal to agora for citizen's engagements in the discussion of politics in private houses) in the ancient Greek houses is the *shikii* described by Yamamoto. Although *shikii* was contained in the private space (as spatial materiality of the private realm) associated with the private realm (for privately family affairs, such as living and reproduction) inside the private house, it was connected to the external public space (street and agora as the spatial materiality of the public realm) and used for the public realm (political engagement) (Yamamoto, 2015).

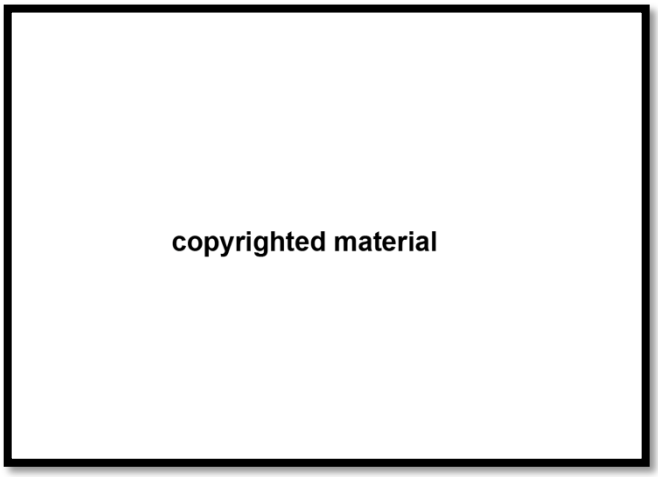


Figure 6.10 The public and private relationship between houses and the city in ancient Greece. The shaded area (andronitis and street to agora) denotes the city's public space (as the spatial representation of the public realm). (Source from: Yamamoto, 2015)

Compared with the relationship between the house and the city in ancient Greece, Yamamoto argued the current collective housing in Japan based on the 'one house =

one family' spatial model imported from Western Modernism lacked traditional 'threshold' space to connect people in different families. Communities disappeared, and individuals were isolated from society (Yamamoto, 2012). He proposed the 'local community area' in housing design by building the lost communities in Japanese history, such as the *chōnaikai* (neighbourhood association) and *jichikai* (self-government association) in traditional Japanese residential areas and rebuilt the connection between individuals in the family and society. The 'local community area' (Yamamoto, 2010) under the control and management of the self-organized residences (to gain a certain degree of independence and autonomy), in contrast with Japanese top-down bureaucratic governance,[24] serves as the 'intermediate' realm (or *shikii*) between the clear division of individual (regarded as private) and nation (regarded as public) today. It addresses *kyō* (共, common) in between *ko* (個, individual) and *kō* (公, public). 'Local community area' is a 'community within a community', aiming for 'de-institutionalization' (Yamamoto, 2012, pp.46-47):

> *The 'de-institutionalization' is very important for me. Recently, I called this 'local community area'. You should make a local government every time together, not controlled by the government, and not controlled by the company. Their dwellers should make their own something. Their own government … A bottom-up relation rather than top-down. That is the relation of public.*[25]

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[24] See the interview (the 4th question) with Riken Yamamoto by the author on February 8th, 2020, in Yokohama on his observation and critiques on Japanese public space today in Appendix 7.3.

[25] Transcription from the interview (the 5th question) in Appendix 7.3 with Yamamoto by the author on February 8th, 2020, in Yokohama.

6.3 Building Typology and Open Space within Architecture

The multi-level *shikii* is reflected in the relative relationship between the project and the surrounding environment at different scales, showing a nested public-private relationship that separates and connects two different zones simultaneously.[26] The central zone, composed of six blocks of Shinonome Canal Court, is the *shikii* between the urban redevelopment area and the broader surrounding areas in Shinonome 1-chome in Koto-ku (figure 6.11). The s-shaped avenue with life support facilities and six plazas bordering the outer ring road are the *shikii* between the Shinonome Canal Court and the urban renewal area. The second-floor wooden platform and the elevated courtyards enclosed within each independent block are the *shikii* between the internal residences' common space and the external visitors' urban space (figure 6.12). The different apartment units' foyer-room is the *shikii* between the private rooms inside the units and shared spaces, such as terraces and corridors.

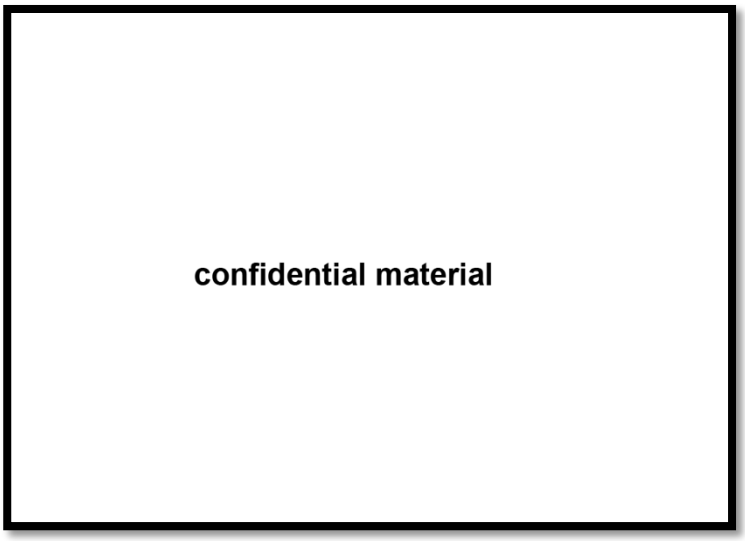


Figure 6.11 Multi levels of *shikii* are shown on the different scales. (Source from: adapted by the author based on the image from UR Agency, 2017)

[26] See the relative relations between public and private in the design of Shinonome Canal Court from the interview (the 1st question) in Appendix 7.3 with Riken Yamamoto by the author on February 8th, 2020, in Yokohama.

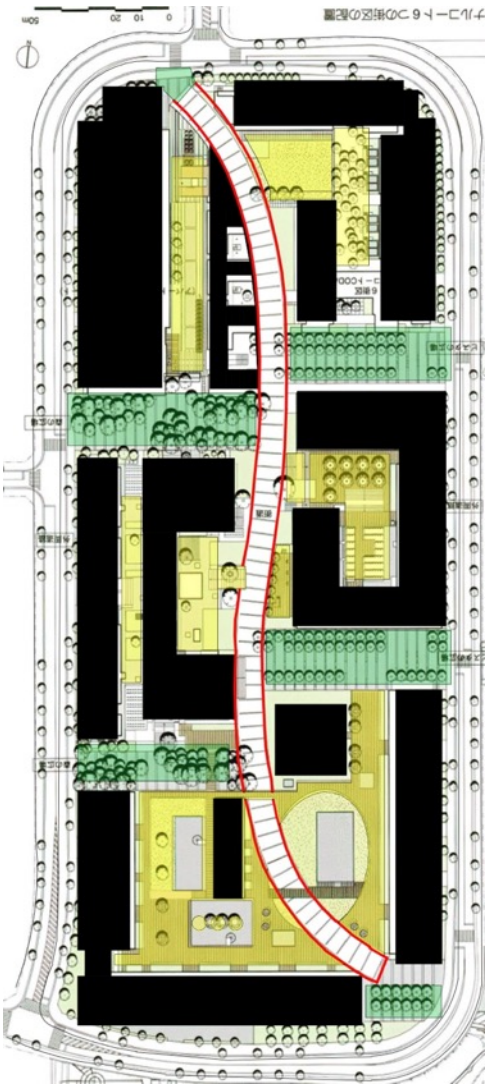


Figure 6.12 Different zones in Shinonome Canal Court. Six plazas (in green) and elevated platforms and courtyards (in yellow) are organized by the central s-avenue (in red). (Source from: adapted by the author based on the image from Shinkenchiku-sha, 2005)

The realization of the concept of *shikii* is inseparable from *hiroba* created at different levels in Shinonome Canal Court. A series of spatial elements in the architectural design are applied in making many different forms of *hiroba* (table 6.1). They are scattered in different places inside and outside the buildings developed in the six individual blocks (figure 6.13). According to the spatial configuration of these spatial elements of *hiroba* in relationship to their relative positions in the architecture, they can be divided into three categories. Colour coding is based on white (public), dark yellow

(communal), light yellow (semi-public), and grey (private) in the drawings of *hiroba-ka* open space.

(1) Exterior *hiroba-ka* open space. It is represented by the exterior 'plaza' (P) at the six site entrances and the 's-avenue' (Av) in the central of the total six blocks in the project.

(2) Semi-exterior *hiroba-ka* open space. It is represented by the 'sunken plaza' (sP) under the wooden platform in the 1st, 2nd, and 5th blocks, the 'platform' (Pf) and the elevated 'courtyard' (C) enclosed in each block, the wooden 'podium' (Pd) adjacent to the s-avenue in front of Block 4, porches (Po) at the entrance space of shops and apartment buildings, the sloping 'terrace' (Te) in front of Block 6, the 'staircases' (S) connected with platforms and elevated courtyards at 2nd floor in whole six blocks, and two 'bridges' (B) linking platform separated by the s-avenue between Block 1 and Block 2.

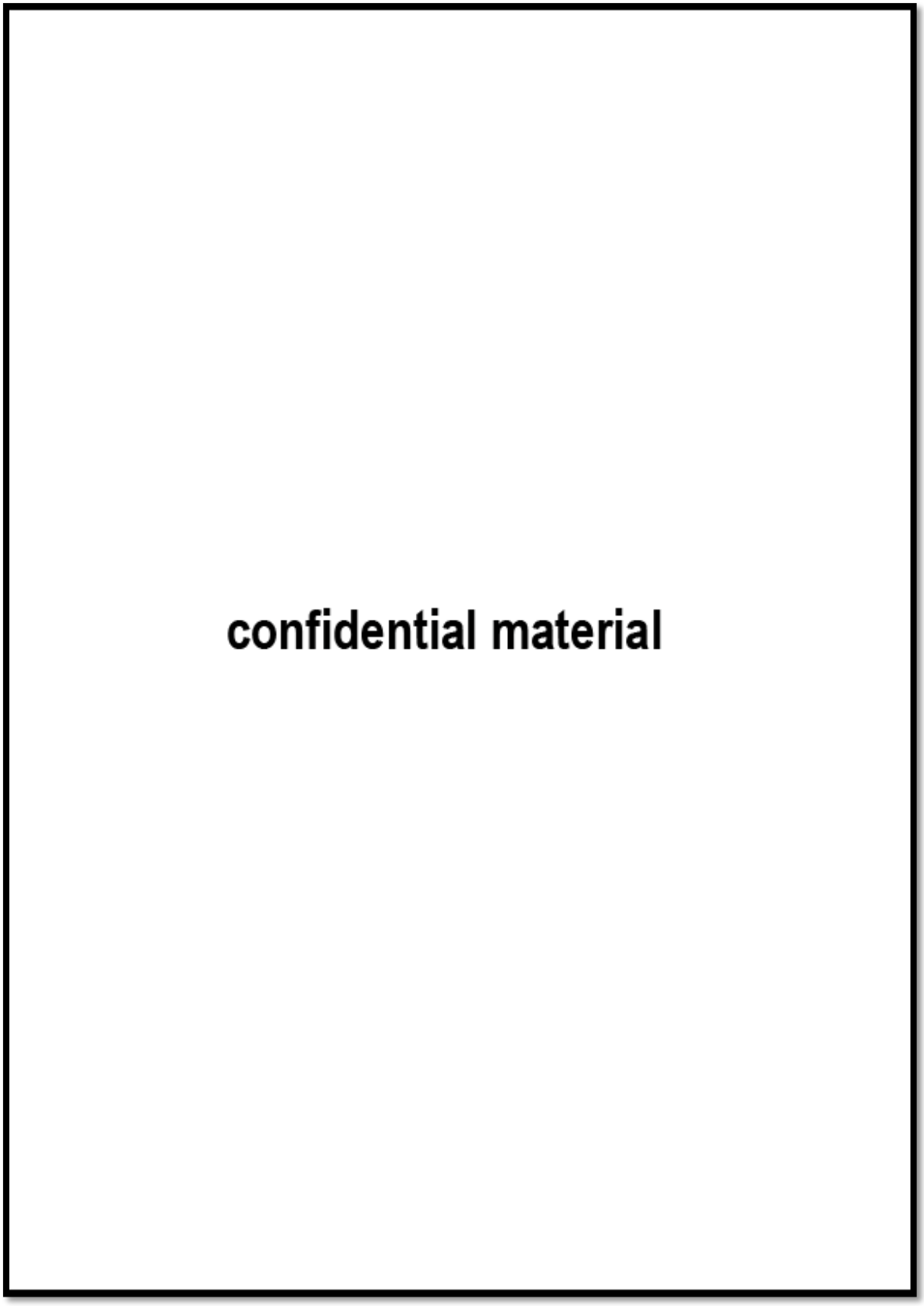
(4) Interior *hiroba-ka* open space. It is represented by the 'multi-fictional rooms' (fR) for seminars, lectures, and activities in the 1st, 2nd, 3rd, 4th, and 6th blocks and different forms of 'common terrace' (Te) and 'foyer room' (Fy) within apartment buildings in each block.

Table 6.1 The distribution of different spatial elements of *hiroba* in Shinonome Canal Court. (Source from: drawn by the author)

Spatial Elements	Riken Yamamoto	Toyo Ito	Kengo Kuma	Yama architects and partners	ADH/WORKSTATION	Makoto Motokura, Keisuke Yamamoto, Keiji Hori
Sunken Plaza (sP)	●	●			●	●
Platform (Pf)	● *	● *				
Courtyard (C)			● *	● *	● *	● *
Porch (Po)	●	●	●	●	●	●
Plaza (P)	●	●	●	●	●	●
Functional Room (fR)	● *	●	● *	● *		● *
Staircase (S)	●	●	●	● * *	●	●
Terrace (Te)	●	●	●	●	●	●
Podium (Pd)				●		
Foyer room (Fy)	●	●				
S-Avenue (Av)	●	●	●	●	●	●
Bridge (B)	● *	● *				

Note: (*) indicates the spatial element is above /under ground level; (**) indicates the spatial element is both above/under ground and on ground level; without (*) indicates the spatial element is on ground level.

Figure 6.13 The layout of different spatial elements of *hiroba* in Shinonome Canal Court. (Source from: adapted by the author based on the plan from UR Agency, 2008)



6.3.1 Exterior open space within architecture

S-avenue and plaza are exterior *hiroba* in architecture. Shinonome Canal Court aims to change the ‘close’ image in the previous *danchi* and advocated the ‘open block’ concept in collective housing and residential area. As shown in figure 6.12, there are thirteen entrances around the edge of the central zone composed of six blocks. Among them, six main entrances (entrance number 1, 4, 7, 8, 10, 13) are marked by exterior plazas (P) with different themes (figure 6.14, 6.15, 6.16, 6.17). For example, the two vista plazas on the east are connected to the Tatsumi Waterfront Park. The two forest plazas on the west are connected with the main road Harumi Street. The north and south plazas are connected to Tatsumi Station and Toyosu Station, respectively. An s-avenue (Av) that runs through the north and south connects the six individual blocks with the external ring road, structuring the pedestrian network in Shinonome Canal Court (figure 6.18). Life-support facilities in one-floor height are arranged on both sides of the s-avenue under the elevated platforms or courtyards. The apartment buildings in each block are set back from the s-avenue, forming a human-scale streetscape similar to the traditional *machiya* and *shōtengai.*

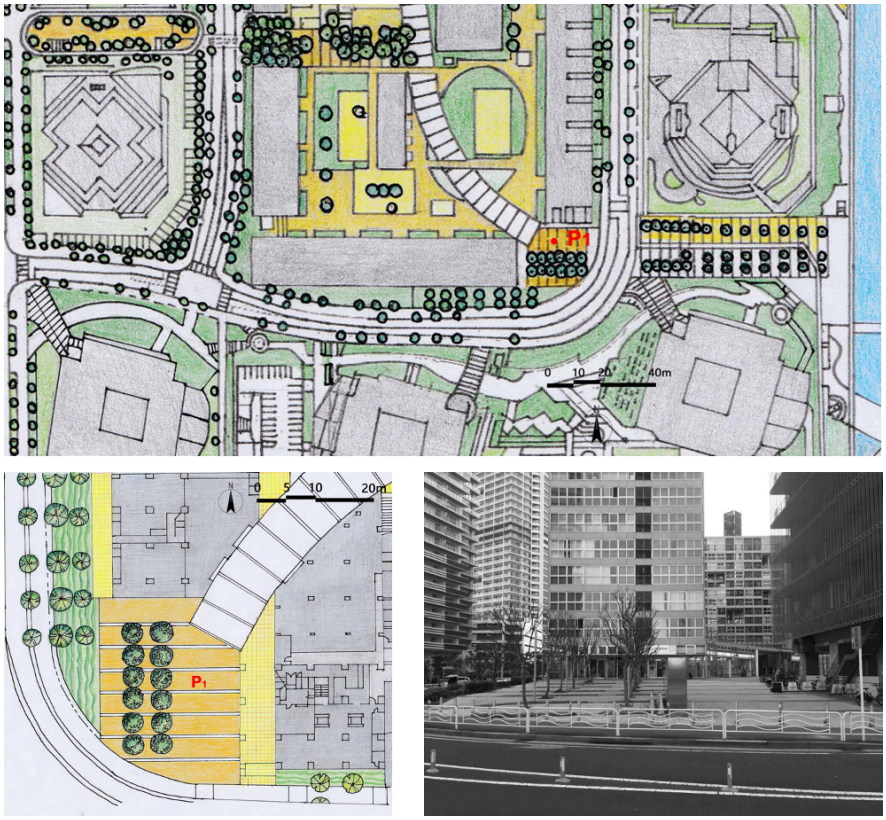


Figure 6.14 The plaza (P) in the 1st block. (Source from: drawing and photo from the author)

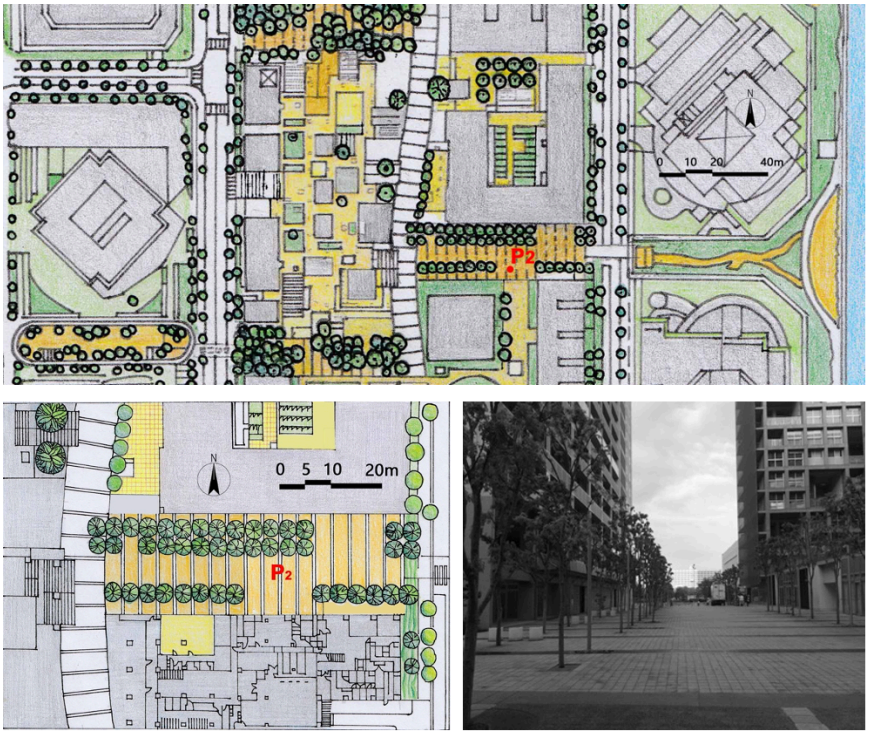


Figure 6.15 The plaza (P) between the 2nd and 4th block. (Source from: drawing and photo from the author)

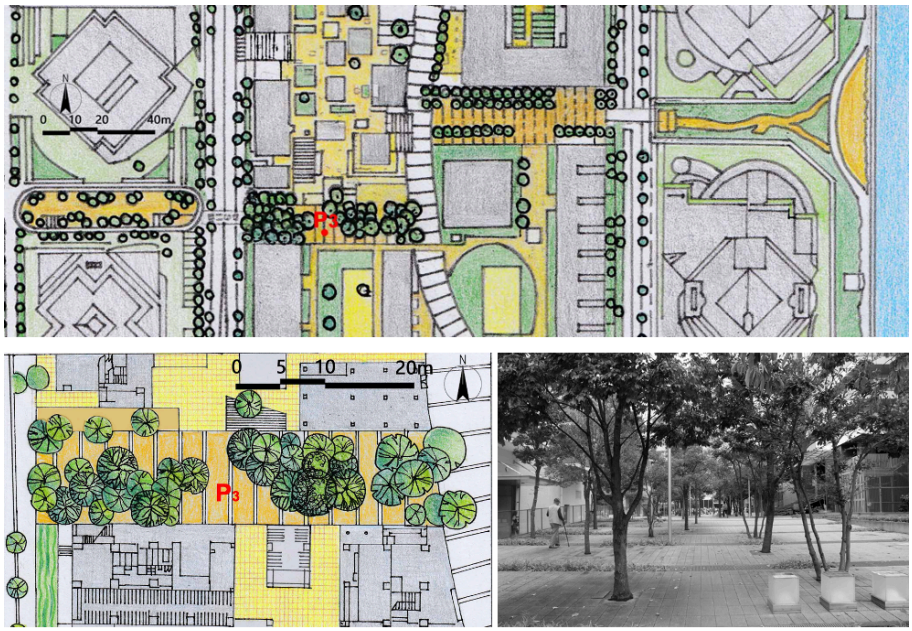


Figure 6.16 The plaza (P) between the 2nd and 3rd block. (Source from: drawing and photo from the author)

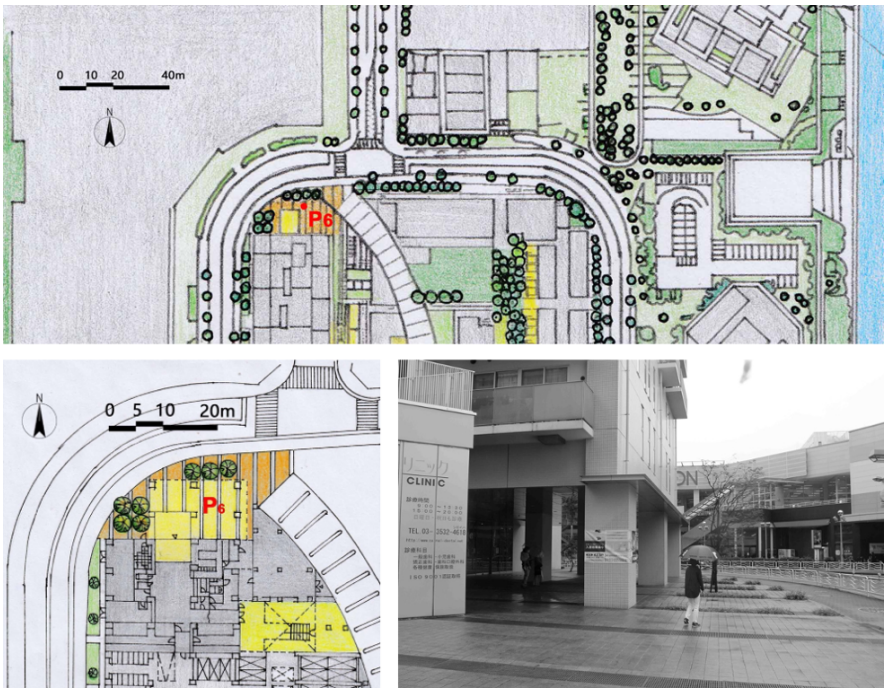


Figure 6.17 The plaza (P) in the 5th block. (Source from: drawing and photo from the author)

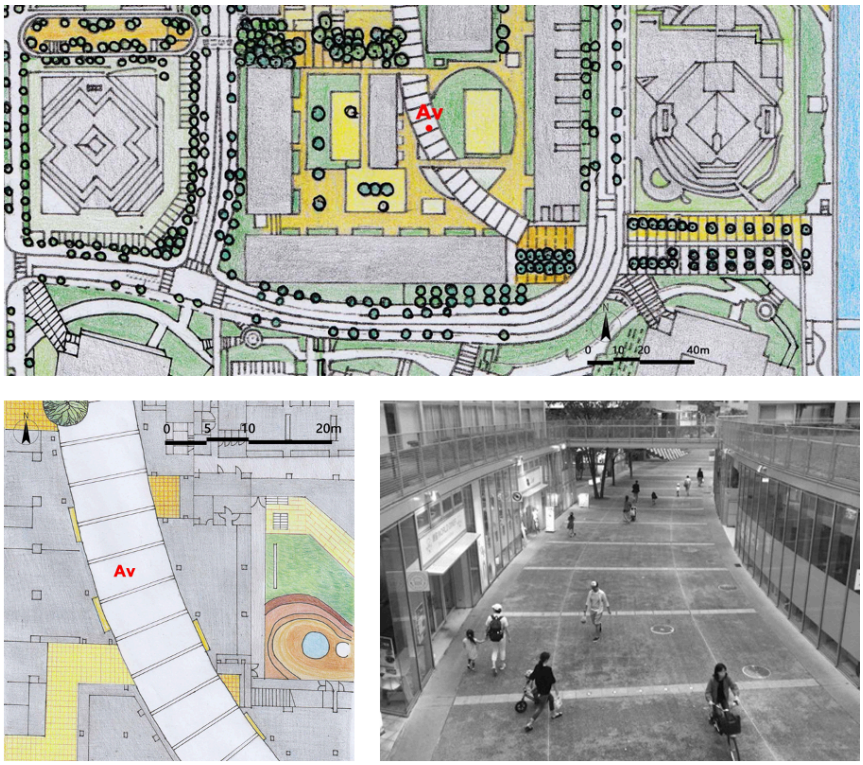


Figure 6.18 The s-avenue (Av) between the 1st and 2nd block. (Source from: drawing and photo from the author)

6.3.2 Semi-exterior open space within architecture

The collective housing design in each block of the Shinonome Canal Court intentionally envelopes or inserts different forms of elevated platforms (Pf) (figure 6.19), sunken plazas (sP) (figure 6.20), and courtyards (C) (figure 6.21, 6.22, 6.23, 6.24) based on the prototype of *hiroba* – an undefined open space used collectively by people, for example, the elevated platform on the 2nd floor connecting the 1st block and the 2nd block through two bridges (Br). The sunken-plazas are under the platform and are linked with central s-avenue. The elevated courtyard has different design themes and styles in the individual block. For example, a well-planned landscape is put in the 3rd and 5th block; tables and chairs are planned for temporary work and rest in the 4th block; flower beds and a grass slope terrace (Te) are planned in the 6th block (figure 6.23). Through the passageways, staircases (S) (figure 6.25), functional rooms (fR), sunken-plazas, elevated platforms, and courtyards are all linked to the s-avenue on

the ground level to structure the circulation network in Shinonome Canal Court. A wooden podium (Pd) (figure 6.26) is positioned at a crucial node in front of Block 4 adjacent to the s-avenue and exterior plaza on the east side. It becomes a stage for many activities combined with the exterior staircase of Block 3 on the opposite side of s-avenue. The backside of the podium is coved with a cantilevered glass roof for a sheltered area. Chairs and tables are put under the glass roof. Porches (Po) (figure 6.27) at the entrances of shops on both sides of the s-avenue and apartment buildings create concaved open spaces like alcoves for potential human activities.

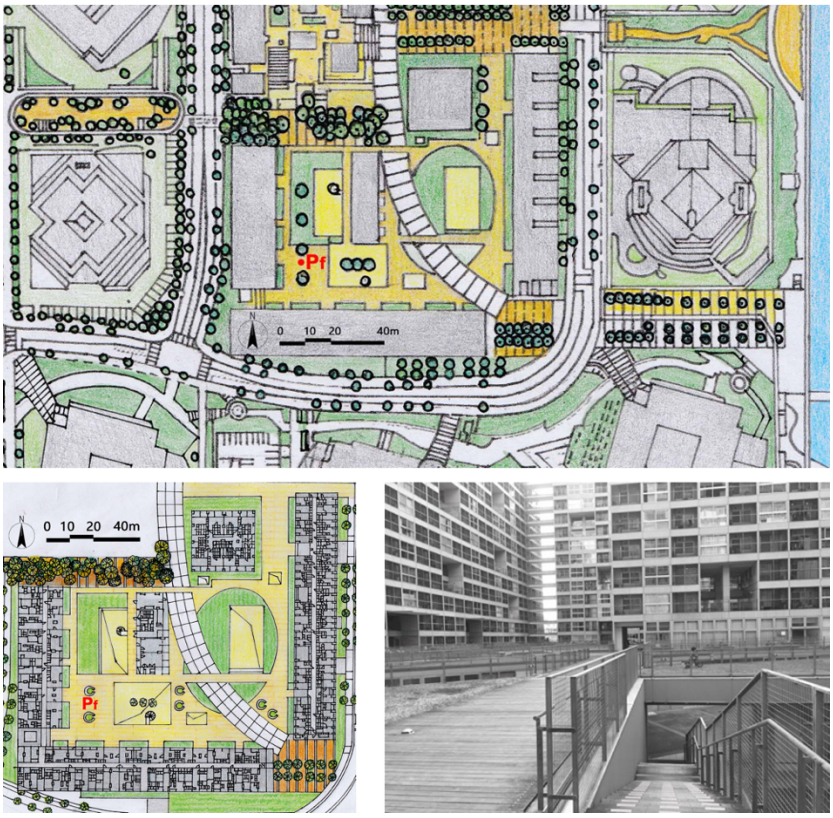


Figure 6.19 The platform (Pf) in the 1st and 2nd block. (Source from: drawing and photo from the author)

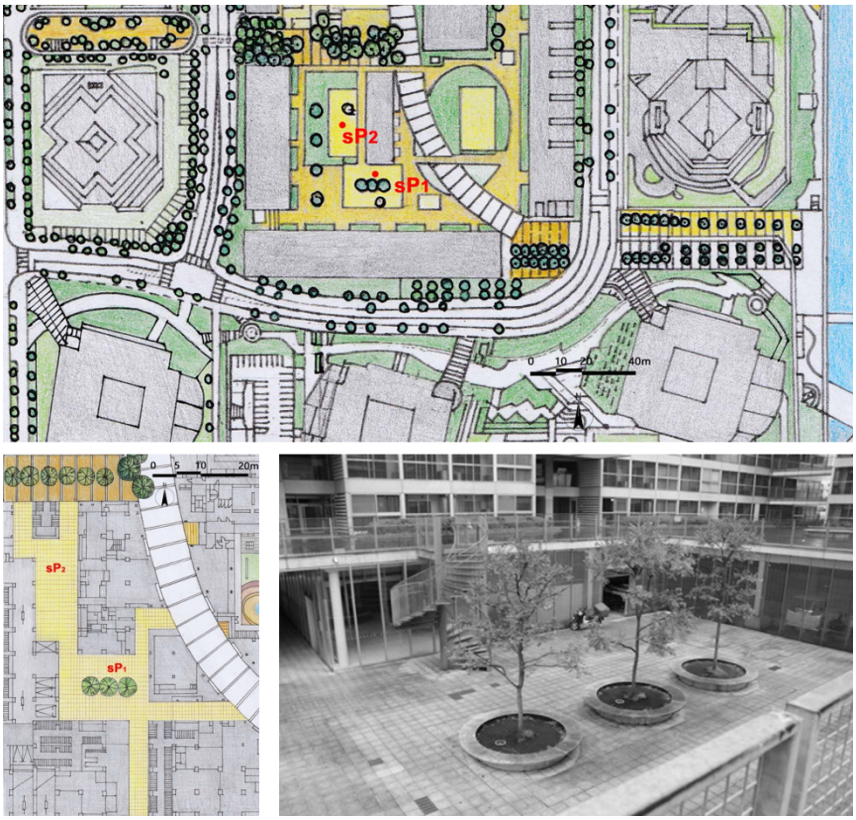


Figure 6.20 The sunken plaza (sP) in the 1st block. (Source from: drawing and photo from the author)

Figure 6.21 The courtyard (C) in the 3rd block. (Source from: drawing and photo from the author)

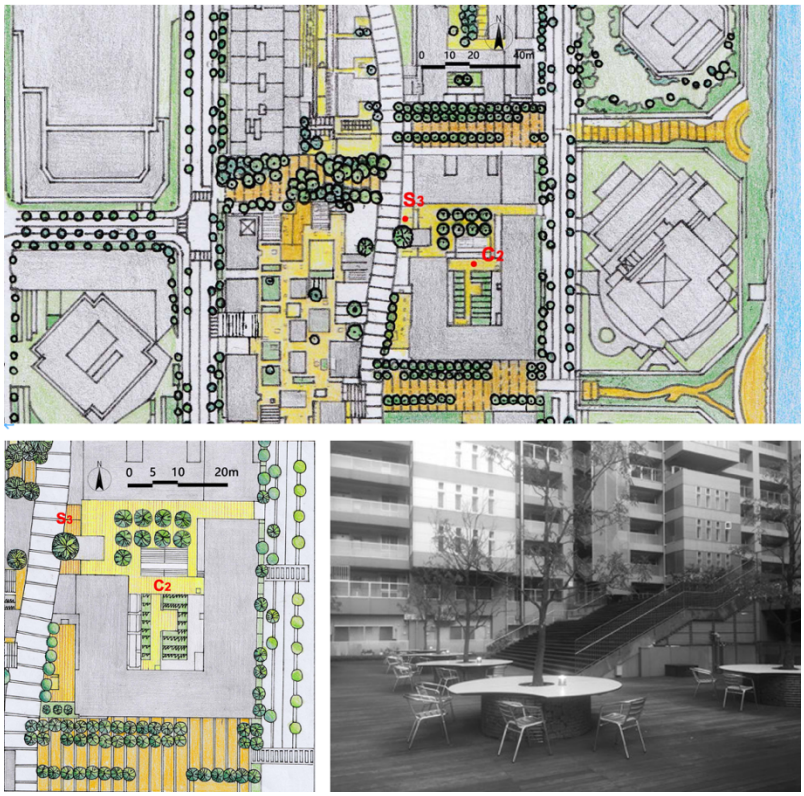


Figure 6.22 The courtyard (C) in the 4th block. (Source from: drawing and photo from the author)

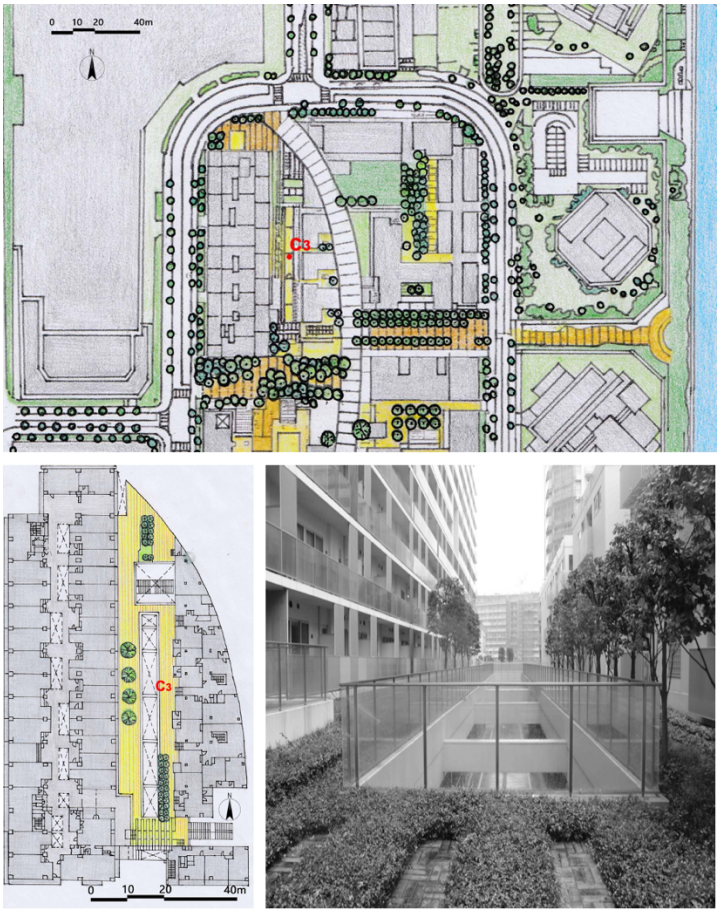


Figure 6.23 The courtyard (C) in the 5th block. (Source from: drawing and photo from the author)

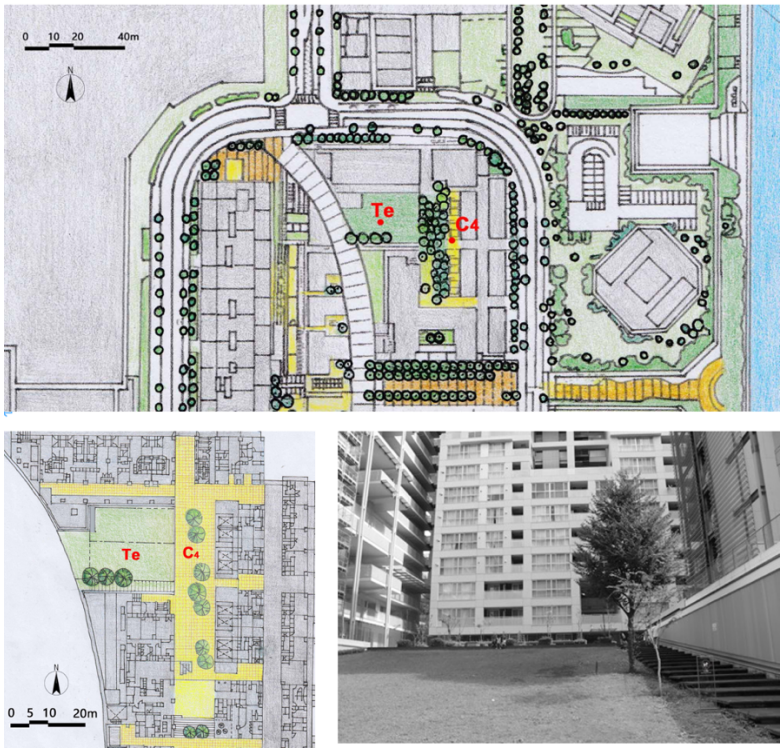


Figure 6.24 The sloping terrace (Te) and courtyard (C) in the 6th block. (Source from: drawing and photo from the author)

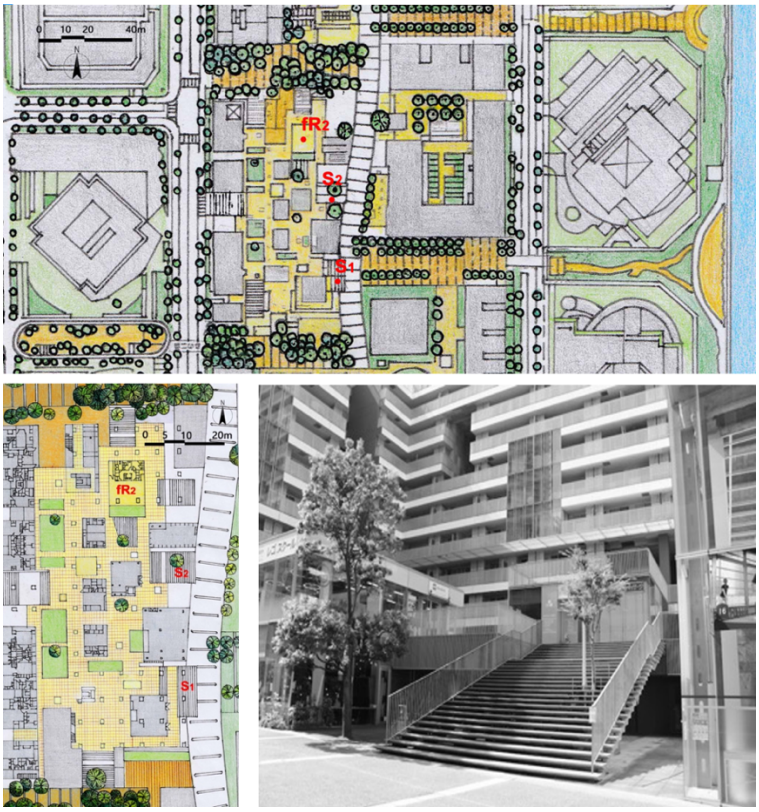


Figure 6.25 The staircase (S) and functional room (fR) in the 3rd block. (Source from: drawing and photo from the author)

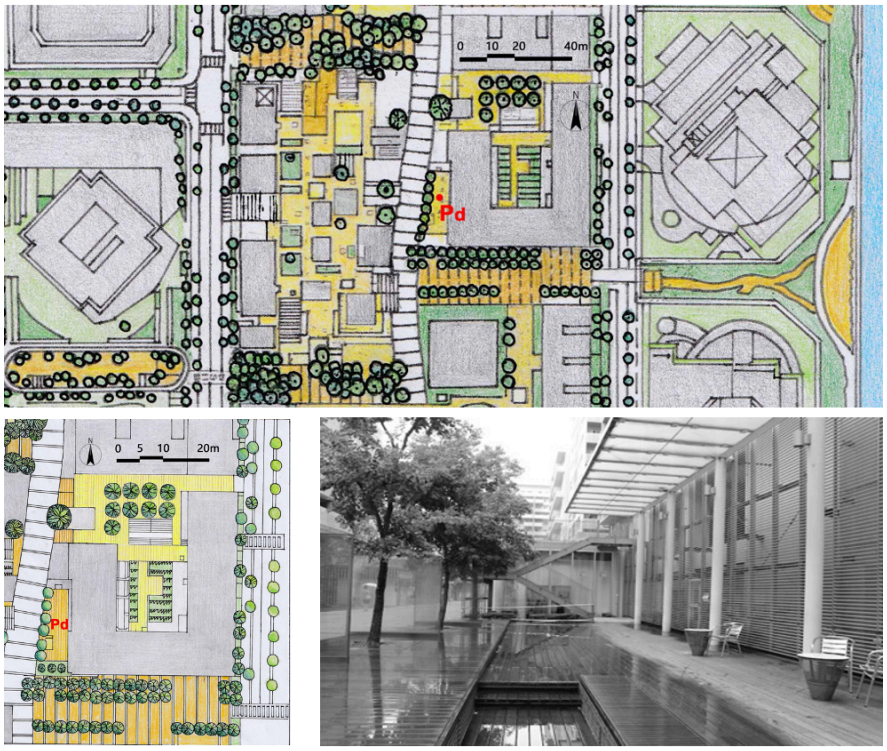


Figure 6.26 The podium (Pd) in the 4th block. (Source from: drawing and photo from the author)

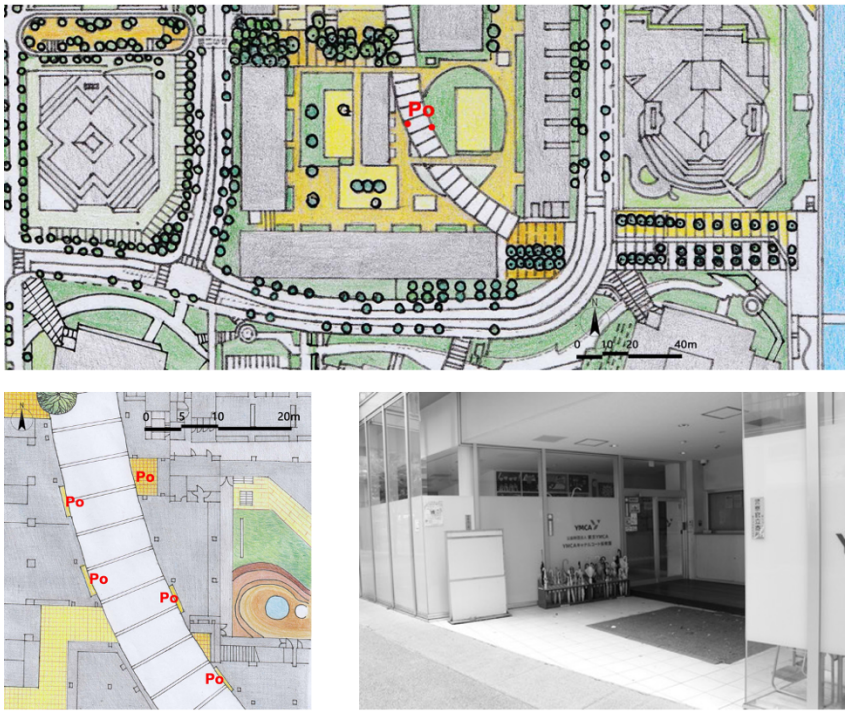


Figure 6.27 The porch (Po) besides the s-avenue in the1st block. (Source from: drawing and photo from the author)

6.3.3 Interior open space within architecture

Multi-functional rooms (fR) are located either on the ground level under the wooden platform facing the s-avenue (for example, in Block 2) or to be put on the 2nd floor with direct access to the external platform (for example, in Block 1, 3, 4 and 5). They were designed as community centres for various activities initiated by the residences. The common terrace (Te) and foyer room (Fy) were conceived to be the interior *hiroba* in architecture (figures 6.28 and 6.29). There are various housing types inside the residential building, including the SOHO. The project attempts to use 'work' as a potential linkage between internal residents and outsiders. Sanitary space and kitchen are moved to the window side away from the entrance space. Each independent residential unit has a foyer room with transparent glass allowing sightlines to go through. The entrance space can be freely changed in size by moving flexible partitions to become an office room, hobby room, nursery room, meeting room, etc. It is the *shikii* in the private room but connecting with different forms of shared space outside, such as the common terrace. Each common terrace is surrounded by a total of eight households on the upper and lower floors. It was proposed to be opened and enable multiple activities to strengthen connections between residents from different families. The common terraces based on the concept of 'void' in each block are designed with variants. They are intended to be transformed according to users' preferences. Meanwhile, they are designed to allow light, air, and views to be introduced inside to maintain contact with the external environment.

The common terraces within the individual buildings (figures 6), which were conceived to be the interior *hiroba* in architecture and were initially proposed to be open for people not only residents in Shinonome, due to the safety reasons, are only accessible for residents within the individual buildings. The rooftop terrace, according to the UR project document (UR Agency, 2017), is not accessible by residents and is designed

only for preventing the heat island effect, building thermal insulation, and urban aesthetics purposes.

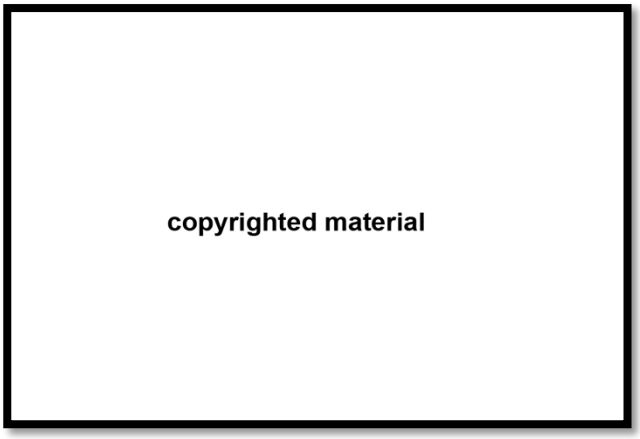


Figure 6.28 Foyer rooms in the design of the living unit. (Source from: Shinkenchiku-sha, 2003)

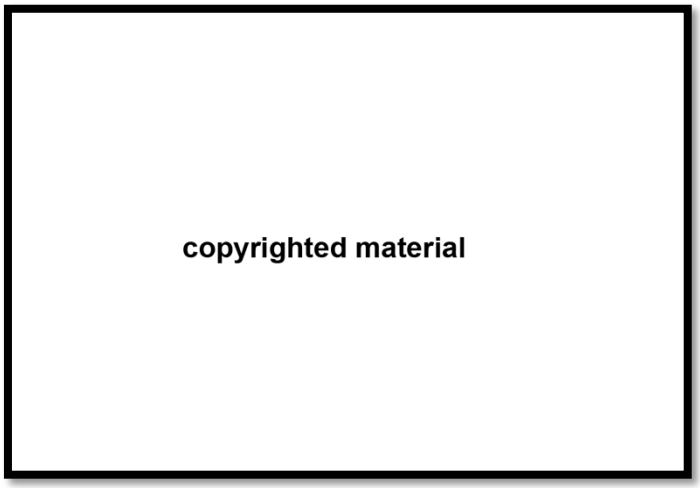


Figure 6.29 Various 'voids proposed as common terrace in building. (Source from: UR Agency, 2008)

6.4 Human Behaviour and the *Hiroba-ka* Open Space within Architecture

S-avenue and porch:

Due to the Shinonome Canal Court's prominent position in the central zone of the whole redevelopment area, the s-avenue is connected to important traffic nodes of the ring road outside. It was usually used as a shortcut for pedestrians and cyclists to cross the superblock of the central zone. The width of the s-avenue (around 10 meters), which is wider than the normal street, creates conditions for potential activities and events other than the function of circulation. Automobiles are banned within the six blocks, allowing s-avenue a safe place for pedestrians. Although benches and chairs

were not provided on the s-avenue for possible staying activities (such as sitting), it was common to find moving activities of children riding bicycles, playing on scooters, or running on the s-avenue with their friends and parents. The s-avenue sometimes became a temporary outdoor classroom for kindergarten kids to exercise within and outside the residential areas (figure 6.30).

Figure 6.30 Children play on bicycles on the s-avenue. S-avenue is also an outdoor classroom temporarily used by kindergartens in the surrounding neighbourhood. (Source from: photo taken by the author)

Trees were found sparse in the s-avenue at the intersection points between vista and forest *hirobas* and s-avenue. The reason for that may be that planting trees would block the sunlight from the pedestrian side and visual accessibility (to see commodities, people, and activities inside) and interactions between indoor functional space (shops and commercial space) and outdoor open space (pedestrian street). The living and commercial facilities on both sides make the s-avenue the image and function of traditional Japanese *shōtengai,* which develops a lively atmosphere in the residential area to attract people. The s-avenue provides a public gathering space for accommodating various activities initiated by the residences spontaneously in different

times of daily life. Rather than saying people coming to s-avenue for communication and joining activities, people just crossed here on their way home. Neighbours came across when buying groceries daily, greeting and starting conversations at the side of the s-avenue or in the porch in front of the stores. Parents got acquainted with each other by picking up kids after school. Sometimes elderly people read newspapers on the light fixtures used as seats. In the evening, floor lamps were on. Young couples with their babies in pram took a walk after dinner. Children played at the plaza and podium adjacent to the s-avenue. Activities found in the s-avenue were temporary. Most of the time, it remained its main function of open space for circulation and transportation. Until the open space (s-avenue) was activated by activities initiated by people, then it was *hiroba-ka* open space and became Japanese *hiroba* beyond the open space type avenue, which resonated with *hiroba* with the temporality character found in the Edo period.

In addition to the spontaneous activities, there were organized events initiated by the residences and their self-organized communities in Shinonome Canal Court. The management team would help to develop and support these events, for example, the ‘playing the water’ project held by parents who felt it difficult to send their children to play water in the sports centre. Several inflatable swimming pools were temporarily set up at the open space next to the s-avenue (figure 6.31). Some workshops took their classrooms to the exterior s-avenue instead of the interior multi-functional rooms. The information on various activities was shared in advance through posters in front of the store or on the Social Network System (SNS), such as Facebook and Line.

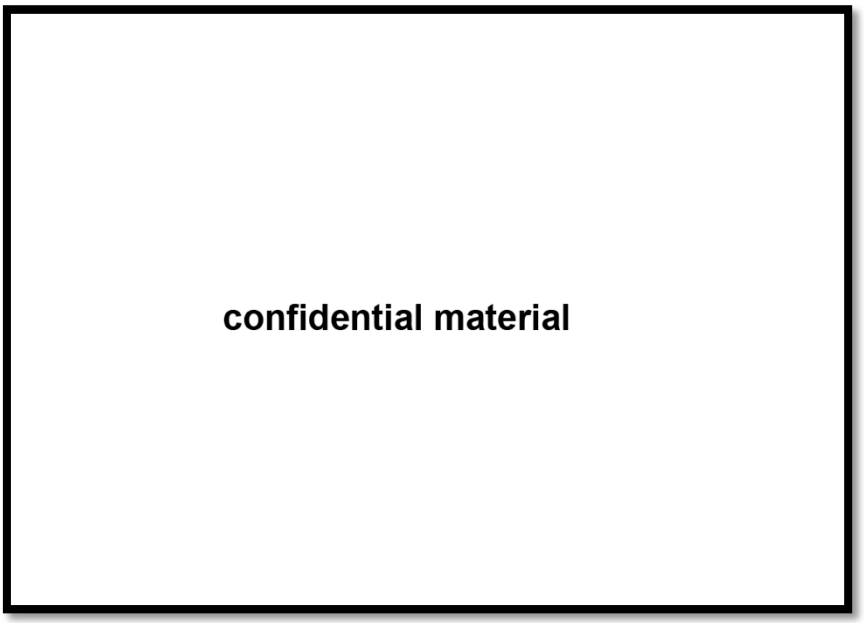


Figure 6.31 Self-organized water-play activities by young mothers in Shinonome Canal Court. (Source from: UR Agency, 2017)

The local flea market to sell and exchange second-hand goods was held twice in spring and autumn every year since 2005. On the day of the event, residents from both inside and outside the residential area showed up, including those who used to live in Shinonome and lived in the nearby tower mansions in the neighbourhood, small kids' friends, and their families, etc. People laid plastic sheets for a picnic and set up tents on the s-avenue. The second-hand toys, clothing, books, and other items for sale were displayed on the ground. Folding chairs for camping, the clothes racks, and cabinets were placed, enclosing boundaries to divide individual stalls along the s-avenue (figure 6.32). Many food shops were invited to set up Japanese *yatai* (stalls and booths) to sell snacks. According to the survey of UR (UR Agency, 2017), residents from more than 120 districts came to participate in the event. Shops on both sides of the s-avenue also cooperated with the flea market event and provided various free experience activities, for example, courses in science laboratories, Lego bricks competition, learning workshops, and plant cultivation seminars. The flea market event provided opportunities for children and their parents to play together and make new friends.

Children were also cultivated environmental awareness through recycling materials during the event.

Figure 6.32 A flea market held on the s-avenue. (Source from: photo taken by the author)

A large-scale event called Shinonome *matsuri* was held every summer. The festival provided a stage for children who studied at the dance school on the s-avenue to present their daily practice (figure 6.33). Outdoor vendors and entertainment activities were set out on the s-avenue to attract people passing by. Game corners for children and music performances by bands were organized by the festival committee. Besides Shinonome flea market in spring and autumn and *matsuri* in summer, special events for Halloween and Christmas in winter were held every year. The s-avenue on the events days in four seasons was turned into a very hustle and bustle place.

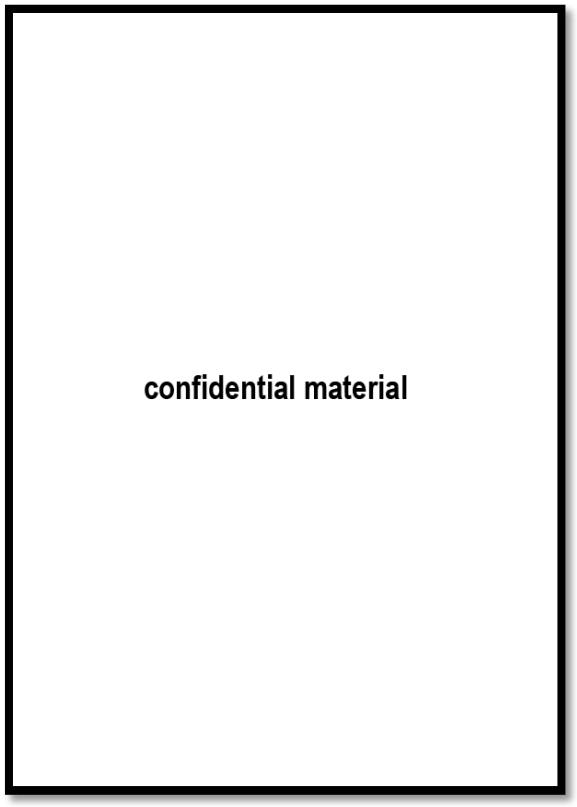


Figure 6.33 Performances in *matsuri* held on the s-avenue. (Source from: UR Agency, 2008)

Podium:

Children living nearby on their way home after school liked to play on the wooden podium next to the s-avenue. Parents who picked up their children usually parked their bicycles aside the wooden podium. They either stood on the s-avenue or sat on the edge of the podium, watching their children's play while sharing the child-raising experience and discussing their children's school life together (figure 6.34). The stage was not designed as a play facility for children. Its main purpose was used for events, such as *matsuri* or events. Based on the observation in the research and interview with local residences,[27] the open space provided by the wooden podium became the

[27] See interviews (the 2nd question) with users by the author on October 20th, December 14th, and December 21st, 2019, in Tokyo in Appendix 5.3.

playground for children to have fun in daily use. Children jumped on and off the wooden podium or jumped between the intervals of wooden decks. They chased each other on the podium in a ‘circular’ or ‘zigzag’ route in a loop pattern across the divided spaces by glass panels and planted trees on the podium. The podium demarcates a safe area that children’s activities are within the visual scope of parents. Unlike the s-avenue’s rough concrete floor, the wooden floor is safer and allows parents to leave their babies on the platform for crawling practice. The height difference between podium and ground is controlled within a safe height range about 3-4 steps above the ground.

Figure 6.34 Children chasing each other on the podium’s wooden platform. Parents watching and waiting on the s-avenue. (Source from: photo taken by the author)

At Christmas events, illuminations were lit up on s-avenue. Christmas trees and decorations were set up on the wooden deck. There were games for children and their parents to attend to win the gifts prepared by the management team in the event. Activities and performances prepared by children and parents were held lively on the wooden podium (figure 6.35), which as the main stage connected with s-avenue and the large staircase in front of the buildings of the 3rd block into an integrated whole for shows (figures 6.36 and 6.37). The steel staircase connected to the platform of the 4th

block for evacuation next to the podium also became a good spot to watch the performance on the stage.

Figure 6.35 Christmas events held on the podium. Children living in Shinonome Canal Court and from outside the residential area were accompanied by their parents to join the event. (Source from: photo taken by the author)

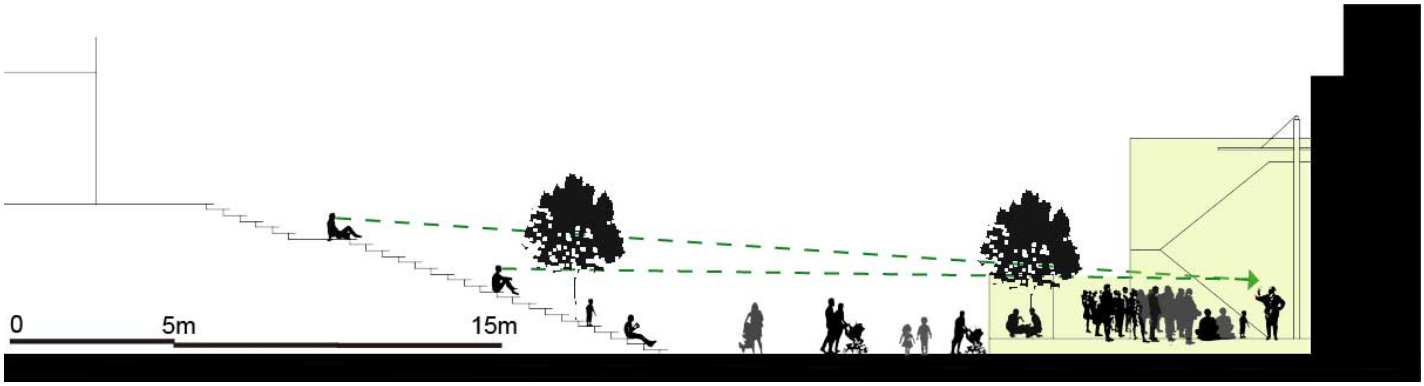


Figure 6.36 The section of Christmas events held on the podium. People's sightlines (green dash line) on the staircase of the building in the 3rd block can reach to the podium (Source from: drawn by the author)

Figure 6.37 The plan of Christmas events held on the podium. The podium, s-avenue, and staircase were integrated in one space by people's activities. (Source from: drawn by the author)

Plaza:

The plaza between the 2nd block and the 4th block, in the daytime, served as a temporary parking lot for freight loading. No chairs or benches were provided on the plaza. People passed through the open space and left the plaza empty for most of the daytime. In the evening, children started to get out to gather in the vista *hiroba*. A large open space (around 22m wide and 68m long) on the plaza was divided into venues for different sports (such as baseball, football, scooters, and riding bikes) by different activities (figure 6.38). Although ball game was not allowed in the residential area officially, children's self-disciplined behaviour did not cause any inconveniences to

others, and no complaints were received from the management team. The tensions between the children and management side made the plaza a negotiated playground temporarily. The plazas were adjusted to become venues for different events occasionally. For example, it was used as the outdoor classroom to organize lectures on fire protection, disaster prevention, and public safety knowledge for residences in the community (UR Agency, 2008). Compared to the plazas (vista *hiroba*) with well-lined trees on the east side, plazas (forest *hiroba*) with trees in free layout hardly provided a regular and enough area of open space for potential activities (only as a thoroughfare to passing through) to be *hiroba-ka*. Most of the time, two forest *hirobas* remained as open spaces.

Figure 6.38 Children play on the plaza between the 2nd and the 4th block. Open space is divided by children's activities into different zones. (Source from: photo taken by the author)

Sunken plaza

Two sunken plazas were designed in the 1st block: one with three round flowerbeds in it and the other left as empty open space. Trees planted in the middle of the sunken plaza made the space not so sterile to be treated as not designed leftover space. In addition to being looked at as the landscape or used as the seating for passers-by, the sunken plaza was occasionally regarded as a sports ground (figure 6.39). Parents were often found to accompany their children to practice bicycles in the sunken plaza by riding around the intervals between flowerbeds in a limited range of areas (figure 6.40). Small kids occasionally used the edge of the flowerbeds as tables to play with toys brought from home. The sunken plaza enclosed by the four walls became an excellent place to practice tennis and baseball (figure 6.41). It provided the physical conditions for a suitable size of the practice court. Besides, it was hidden in the block away from the s-avenue; it, therefore, became an ideal corner to play balls safely without disturbing others. Because sports activities in the sunken plaza did not cause any trouble to other residents, the management team usually did not prohibit playing ball like the rules detailed on the signboard. To a certain extent, these open spaces were freely appropriated by users for activities as they preferred.

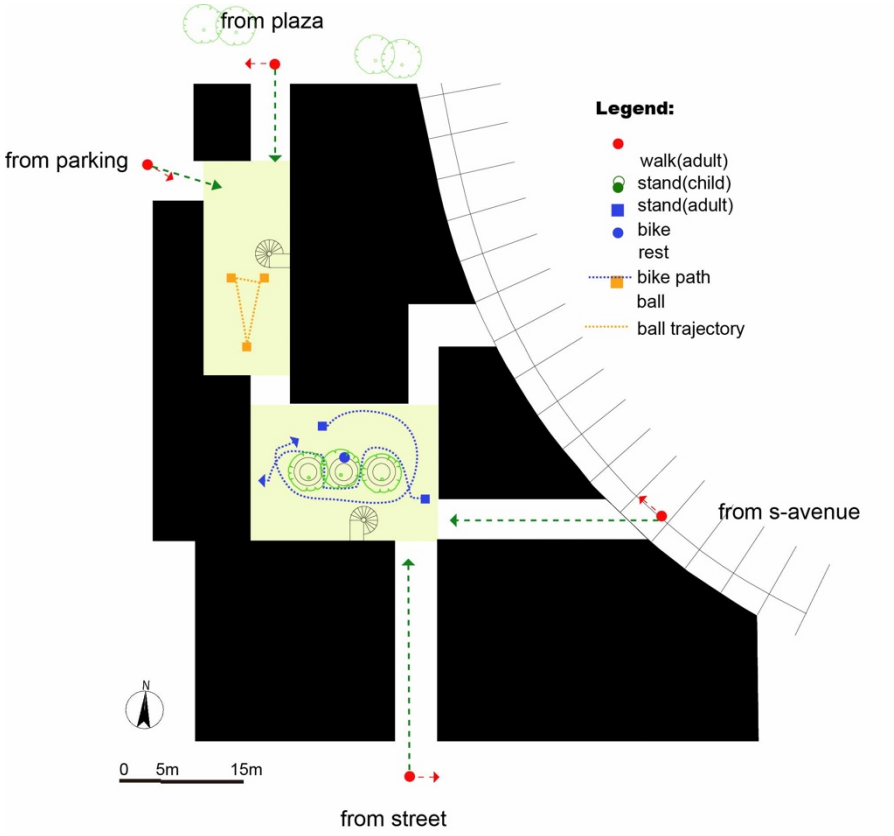


Figure 6.39 The layout of activities (bicycle riding and baseball playing) in the sunken plaza of the 1st block. People's sightlines and circulations from different directions can easily reach the sunken plaza. Green dash line indicates people's sightline. Red dash line indicates people's movement. (Source from: drawn by the author)

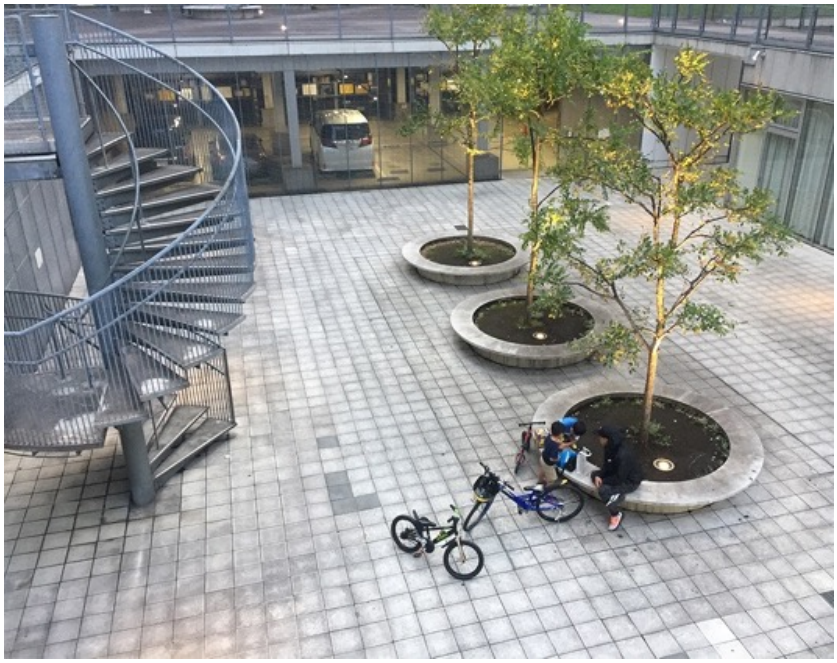


Figure 6.40 Bicycle riding in the sunken plaza of the 1st block. (Source from: photo taken by the author)

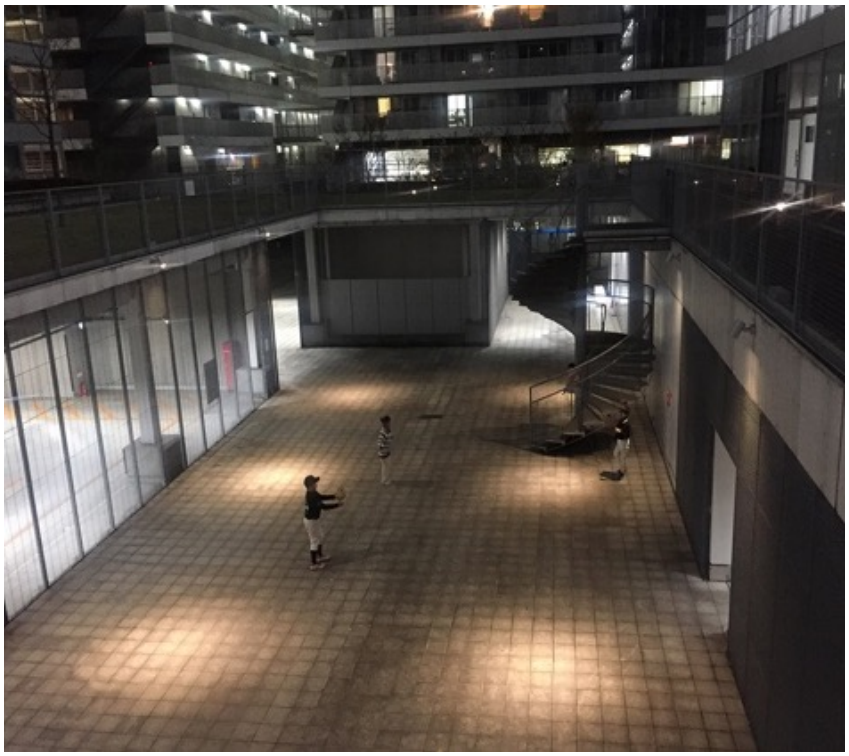


Figure 6.41 Baseball playing in the sunken plaza of the 1st block. (Source from: photo taken by the author)

The sunken plaza that sets back from the s-avenue forms an open alcove space that can be appropriated and turned into place according to users' imagination and behaviour beyond its original functions. For example, the open space in the sunken plaza between the 3rd and the 5th block was appropriated by grandma and her grandson as a place for rope skipping (figure 6.42). In the sunken plaza, which was designed for bicycles parking in the 5th block, children borrowed the square tiles on the ground for the 'square jumping' game (figure 6.43). The central stairs and building pillars were also used similarly as game props for bicycles and scooters chasing.

Figure 6.42 Rope skipping in the sunken plaza of the 5th block. (Source from: photo taken by the author)

Figure 6.43 'Square jumping' game in the sunken plaza of the 5th block. (Source from: photo taken by the author)

Platform

The 2nd-floor wooden platform shared by the 1st and the 2nd blocks was mostly used by residents in the residential area. Most of the time during the day, it was left empty open space. At particular moments, people appeared and defined the open space with different functions. For example, the young mother carried the baby for a walk. In the

evening, children rode monocycles on the platform and played badminton with their grandparents (figure 6.44). There were designed seats and flowerbeds on the wooden platform. Occasionally, children shared snacks, wrote homework, and discussed questions with friends there. The outsiders who came to visit friends or discuss works in SOHO used the platform for a temporal stop, wait, or chat.

Figure 6.44 Children play badminton and ride monocycles on the platform of the 1st block. (Source from: photo taken by the author)

Elevated courtyard and sloping terrace:

The elevated courtyards in different blocks were designed with different themes, forming open spaces with different atmospheres. The courtyard with the planted landscape in the 3rd block on the elevated platform was found to be used by children to play hide and seek games sometimes. Most of the time, through observation, the open space of the courtyard between two apartment blocks lacked enough skylight and therefore was left with no identified activities. The courtyard with tables and chairs in the 4th block became a place for passers-by for lunch at noon (figure 6.45) or temporary office space for working. Trees were planted in cooperation with table design, helping to decorate the visual environment and provide shading to change the

elevated courtyard's microclimate. The courtyard in the 5th block was raised to a higher level, making it difficult to have a visual connection on the street level. For that reason, it formed a quiet and private atmosphere. It was a place for residents of the 5th block to take walks and rest most of the time. The courtyard of the 6th block was connected to the lawn-paved sloping terrace. Together with the adjacent staircase next to the sloping terrace, it was used frequently as a playground for children and parents to play (figures 6.46 and 6.47).

Figure 6.45 Family's lunch and exercise in the elevated courtyard of the 4th block. (Source from: photo taken by the author)

These elevated courtyards form a strong visual connection with the s-avenue and the surrounding buildings enclosed it. The courtyard is in the visual centre of the individual residential block, so people living in the buildings can easily observe the activities in the elevated courtyards and enable it a safe place for users, especially children.

Figure 6.46 Family' playing at the sloping terrace of the 6th block. (Source from: photo taken by the author)

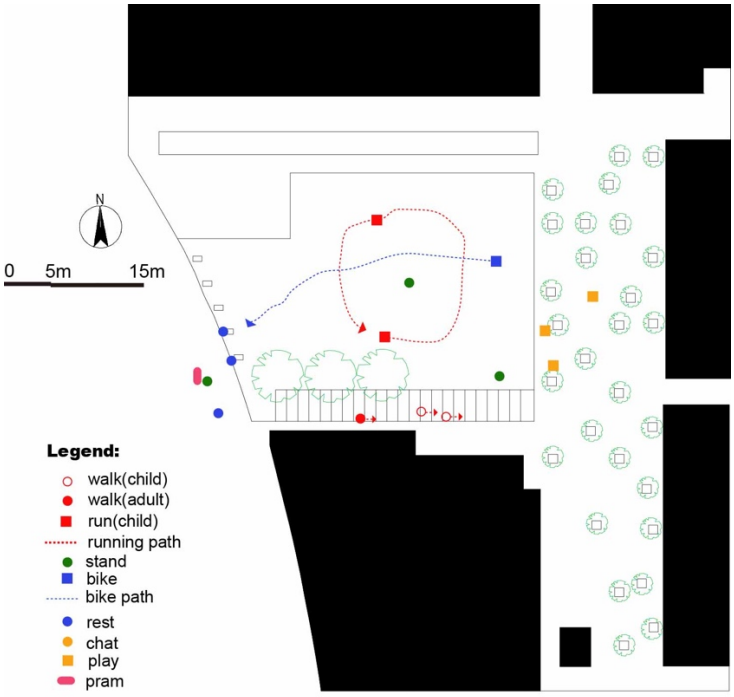


Figure 6.47 The layout of activities at the sloping terrace and the elevated courtyard in the 6th block. (Source from: drawn by the author)

Multi-functional room, common terrace, and foyer room

Residents can apply to use the multi-functional rooms to initiate small events in the management office on the s-avenue. Programs such as English corner, Mon's café,

residents-led workshops (cuisine, yoga, taekwondo) (figure 6.48), and handcraft markets were held before in the multi-functional rooms. Residences assisted the events as volunteers using their fields of specialized knowledge or invited outside specialists to join the proposed events. UR provided subsidy policies for renting the multi-functional rooms to support residents and activities to continue to operate independently. These organized activities greatly enriched the public life of residents and cultivated a sense of the local community.

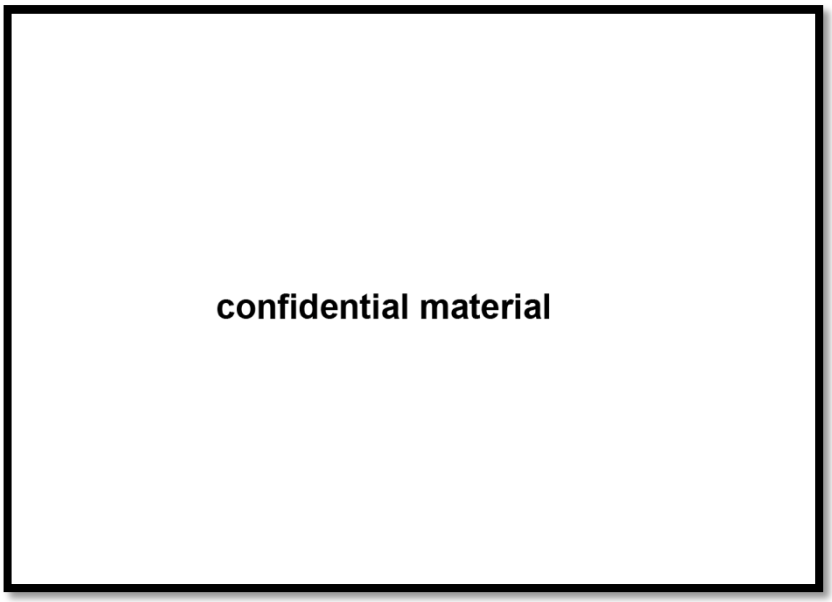


Figure 6.48 Workshops held in the multi-functional rooms in Shinonome Canal Court. (Source from: UR Agency, 2017)

Due to the safety considerations, individual apartment in each block is equipped with access control. The internal void space, such as the common terrace, is mainly used for residents who live in the building. Although pictures in magazines showed the diversity of uses in common spaces for working, gatherings, and other social places, based on the observation, the common terrace was not appropriated frequently by residences in use. One of the interviewees in the research expressed that people may do not know how to use the common terrace because there were no signs to let people

know the terrace was designed for everyday use.[28] People were seen to talk and great with each other in the corridor of apartment.[29]

6.5 Conclusion of Shinonome Canal Court Case Study

The Shinonome Canal Court presents a good example of *hiroba-ka* open spaces created in a collective housing project initiated by the government through urban redevelopment. Various forms of open spaces in the case, which are not to be defined as any specific functions and open to specific groups of people in use, generate different layers of *shikii* in the project; they separate and connect people from different families, different blocks, different residential areas in broader Koto-ku. The conventional common space shared by residents living in the apartments is opened to a broader scope of people for not only individuals' spontaneous activities but also organized events to bind different individuals. A sense of community as the representation of the 'public' in *hiroba* is cultivated by residents' initiatives in organizing and participating in those collective events.

The TMG and UR Agency's desire to change the closed image of collective housing isolated from society and promote a new city living style by building local community is the primitive hypothesis in *ka* to produce *hiroba*. Architect Riken Yamamoto's architectural theories *shikii* derived from the traditional Japanese living between house and city further gives the form of *kata* in *hiroba* through a series of spatial elements

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[28] See the interview (the 2nd question) with a residence (S7) who lived in Shinonome Canal Court in Appendix 5.3.

[29] See the interview (the 2nd question) with a residence (S10) who lived in Shinonome Canal Court in Appendix 5.3

applied in architectural composition. Those spatial elements are represented in the various forms of open spaces (Appendix 8.3). Based on the spatial characters of open spaces from the perspectives of accessibility (circulation, sightline, level), enclosure (opening, scale, canopy), and identity (boundary, permeability, and attachment), six types of open spaces (the materiality of *hiroba*) within architecture are extracted (table 6.2). Several cases of open spaces cannot be grouped in any type, showing the distinct rather than common spatial characteristics shared in architectural composition. Exterior, semi-exterior and interior open spaces from the three layers of the project are organized along the central s-avenue (figure 6.49). The layout of those open spaces is usually at the crucial nodes on users' circulations and sightlines in daily life or at the conspicuous spots where users' sightlines can be directed to while moving on the site, for example, the exterior plazas at the site's entrances, elevated platform, and courtyards near the entrances of buildings in different blocks. For the interior open space, which is not physically and visually convenient to find, information about upcoming events through posters or social media online from virtual communities helps to promote its use.

The *hiroba* in Shinonome Canal Court is socially constructed by users' appropriation of many open spaces designed for other functions (table 6.3). Attachment elements were borrowed by users to assist the making of the physical setting of *hiroba* together with spatial elements designed by architects. For example, the s-avenue used for circulation across the superblock of the central zone was transformed as a place for summer *matsuri* and flea market in spring and autumn by adding *yatais*, tents, plastic

Table 6.2 The open space typologies applied in making *hiroba* within contemporary Japanese architecture in Shinonome Canal court. (Source from: drawn by the author)

Name		Plan					Section			Group	Total	Type
Shinonome Canal Court		Boundary	Opening	Circulation	Sightline	Attachment	Level	Canopy	Scale	Permeability		
SCC	P(1)	4	2	3(1S+2D)	D	G+S	G	S	O	Y	6	Type 1 P(1)
SCC	P(2),P(5)	2	2	2(1D+1S)	D	G+L	G	S	O	Y		
SCC	P(3)	2	5	5(1D+1S+3I)	D	G+L	G	S	A	Y		
SCC	P(4)	4	2	3(1D+1S+1I)	D	G+L	G	S	W	Y		
SCC	sP(4)	4	2	2(1S+1I)	D	/	G	S	A	Y		
SCC	P(6)	3	1	3(2D+1S)	D	G+C	G	S	A	Y		
SCC	Po	3	1	1D	D	/	G	C	A	Y	3	Type 2 Pd
SCC	Pd	4	1	1S	D	F+G	G	S	A	Y		
SCC	sP(5)	5	1	1S	S	/	G	U	W	Y		
SCC	sP(1)	N	4	7(4S+1D+2I)	D	G+C	G	U	A	Y	4	Type 3 sP(1)&(2)
SCC	sP(2)	N	3	7(4S+1D+2I)	D	C	G	U	A	Y		
SCC	C(1)	N	6	6(1D+5S)	D	G	U	S	A	N		
SCC	fR(1)	4	0	3(1I+2S)	D	/	G	C	A	N	3	Type 4 fR(1)
SCC	fR(2)	4	0	2I	I	F	U	C	A	N		
SCC	fR(3)	4	0	1I	I	/	U	C	A	N		
SCC	B(1) and B(2)	2	2	2I	D	/	U	U	A	Y	3	Type 5 S(1)
SCC	S(1)	4	2	2(1S+1I)	D	/	U	S	A	Y		
SCC	S(2)	4	2	2(1S+1I)	D	/	U	U	O	Y		
SCC	C(2) and S(3)	N	2	2S	D	G+F+L	U	U	O	Y	4	Type 6 C(2)&S(3)
SCC	C(3)	4	2	2I	S	G	U	U	O	N		
SCC	Te	5	2	1S	D	G	U	U	O	Y		
SCC	C(4)	4	5	1I	D	G	U	U	O	Y		
SCC	Pf	N	0	3I	S	F+G	U	U	O	Y		
SCC	Av	2	N	N	D	/	G	U	A	Y	1	
SCC	sP(3)	N	0	1S	D	G	S	U	A	Y	1	

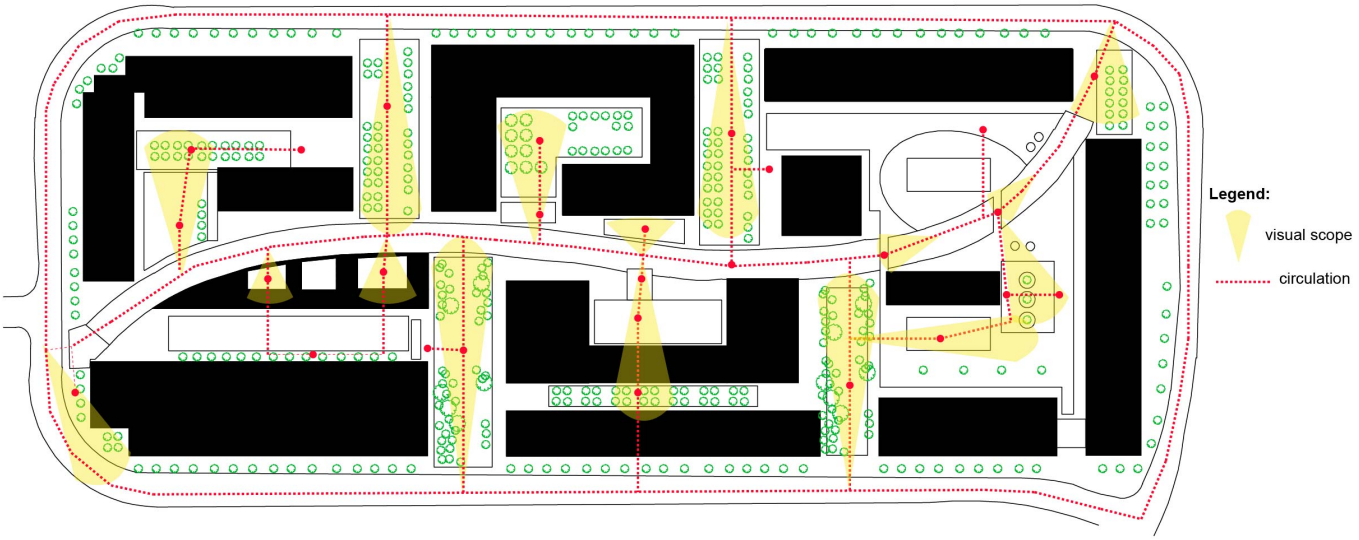

Figure 6.49 The visual scope and circulation in the *hiroba-ka* open spaces (space in white with red dot) of Shinonome Canal Court. (Source from: drawn by the author)

Table 6.3 The relationship between spatial element and human behaviour in the *hiroba* of Shinonome Canal Court. (Source from: drawn by the author)

No.	Spatial Element / Behaviour	Sunken Plaza(sP)	Platform(Pf)	Courtyard(C)	Porch(Po)	Plaza(P)	Functional Room (fR)	Staircase(S)	Terrace(Te)	Podium(Pd)	S-Avenue(Av)	Bridge(Br)
1	passing through(foot)	●	●	●	●	●		●	●	●	●	●
2	passing through(bicycle)	●				●					●	
3	sitting	●	●	●			●	●	●	●	●	
4	sitting and watching	●	●	●			●	●	●	●	●	
5	sitting and eating/drinking		●	●				●		●	●	
6	sitting and chatting	●	●	●			●	●	●	●	●	
7	sitting with pram	●	●				●	●	●	●	●	
8	standing	●	●	●	●	●	●	●	●	●	●	●
9	standing and watching	●	●	●	●	●	●	●	●	●	●	●
10	standing and eating/drinking							●			●	
11	standing and chatting	●	●	●	●	●	●	●	●	●	●	
12	standing with pram	●	●		●	●	●	●	●	●	●	
13	strolling		●	●		●			●	●	●	●
14	strolling with pram		●			●					●	●
15	running and playing	●	●	●		●		●	●	●	●	●
16	playing toys	●		●			●	●		●		
17	playing balls	●	●			●			●			
18	playing bicycle	●	●			●			●		●	●
19	playing phone		●	●				●		●	●	
20	studying		●	●			●					
21	reading		●	●			●					
22	skating	●	●	●		●					●	●
23	jumping		●	●				●	●	●		
24	crawling		●	●						●		
25	waiting	●	●	●	●	●				●	●	
26	selling										●	
27	working (personal business)			●								
28	exercising		●	●		●	●				●	●
29	workshop						●				●	
30	phone call				●			●		●	●	
31	taking photos		●								●	
32	be in a daze		●	●				●		●		
33	event					●	●			●	●	
34	exhibition					●	●					
35	rehearsing						●					

sheets, items for sale, etc. to define the use of space. Sunken plazas in the 1st and 4th blocks for introducing natural light and air for parking were used by people as a safe place for playing on bikes, rope skipping, and scooters. The sloping terrace designed as a landscape was turned into a playground by the children. The spontaneous activities and organized events through people's interpersonal communications and interactions with the environment turn those open spaces into *hiroba*. Newly applied uses customized to the users' preferences add temporary functions to undefined open spaces. The rules and regulations in using the *hiroba* are negotiated by users' self-disciplined behaviour in relation to other users, for example, the ball games at the exterior plaza between the 2nd and 4th block and the sunken plaza of the 1st block.

According to the interviews with users,[30] the *hiroba-ka* open spaces in the case were highly valued and desired to use. Children and their accompanied parents and grandparents were the protagonists in using the *hiroba* of Shinonome Canal Court. Different forms of *hiroba* in the residential area provided platforms for the parents in different families to get acquainted with each other. The diversity of *hiroba* to include users in different age groups was emphasized. The quality of *hiroba* to increase communication between people for community development was desired. No request and concern about *hiroba* on the political dimension, which is usually addressed in western public space in general, were mentioned by users in the interview. Regarding the rules in the management, the interviewees unanimously held positive attitudes towards establishing minimum restrictions to guarantee and protect the interests of other users. Especially, the rules related to the 'safety' of the children were underscored.

[30] See interviews with the users in Appendix 5.3.

Chapter 7. Case Study of Tokyu Plaza Omotesando Harajuku in Tokyo

7.1 Context of the Project

7.1.1 Historical and social background of the site

Tokyu Plaza Omotesando Harajuku is located at the northeast corner of the intersection of Omotesando and Meiji-dori in Shibuya-ku, Tokyo (figure 7.1), near the Meiji Jingu and Harajuku station on the west (figure 7.2). Omotesando today is Tokyo's famous gathering place for fashion and popular elements, adjacent to Harajuku, which is the birthplace of street culture (figure 7.3). Omotesando was once a sendō (a sacred road approaching a shrine) of the Meiji Shrine built in 1920 to commemorate Emperor Meiji, which used to be a private courtyard in the Edo period. At that time, the street was planted with zelkova trees on both sides in a dense wooden residential area. After the surrender of the Japanese War, the American military dormitories were stationed in Yoyogi Park (called Washington Heights at the time) next to Meiji Shrine in the 1950s, bringing Western pop culture to the Omotesando area. The Omotesando was turned into a Western-style avenue in one-kilometre length with an expanded width of 35 meters based on the Champs Elysées in Paris as the model, in contrast with the

Figure 7.1 The location of Tokyu Plaza Omotesando Harajuku in Tokyo. (Source from: drawn by the author based on the data from Esri)

traditional human-scale roji in Japan, such as Takeshita-dori and Ura-Harajuku-dori closely behind the Omotesando (figure 7.4).

Figure 7.2 Tokyu Plaza Omotesando Harajuku (in red) and its surrounding environment in Koto-ku. (Source from: drawn by the author based on the data from Esri)

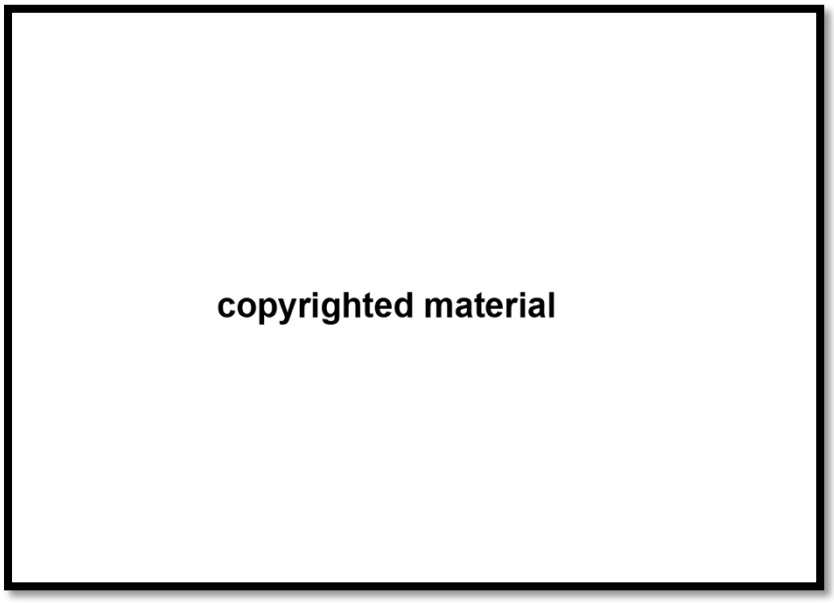

Figure 7.3 Today's Japanese avenue Omotesando with sidewalks and six-lane traffic road. (Source from: Harajuku Omotesando 100th Anniversary, 2019)

Figure 7.4 Tokyo Plaza Omotesando Harajuku at the intersection of Omotesando and Meiji-dori. The end of the Omotesando is Meiji Jingu, with abundant trees. (Source from: drawn by the author)

Before the completion of Tokyu Plaza, the Meiji Jingu intersection where the project was located today was the Central Apartment built in 1958 for the families of the US military and Westerners (figure 7.5). The upper levels of the building were apartments and offices, and the lower levels were shops. At that time, many people in the fashion industry gathered there, setting up various studios related to pop culture and design, such as photography, magazines, advertisements, paintings. The first floor of the apartment had a café for citizens' gatherings. The open space in the underground parking space was transformed into the hustle and bustle place called 'Harajuku Plaza' for citizens' gatherings and a market to display boutiques by musicians (Asai, 2002; Takahashi, 2012; Nakamura, N. 2019).

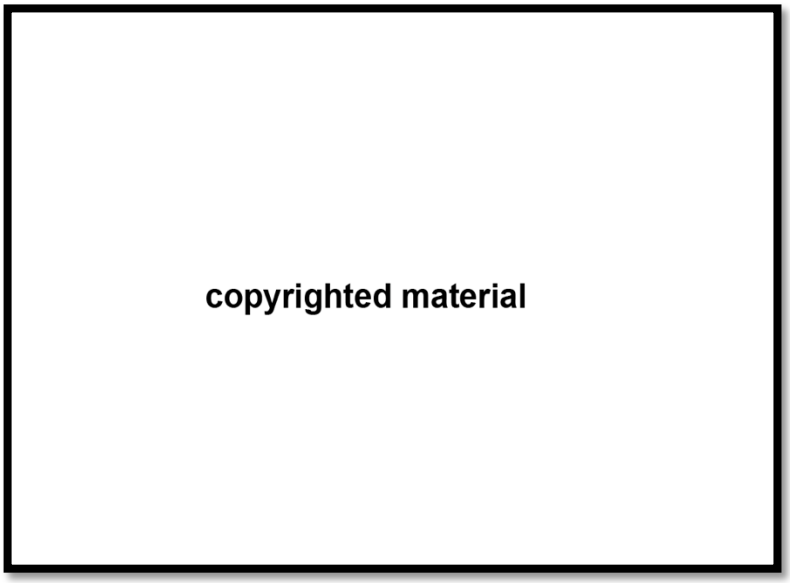

Figure 7.5 Central Apartment in the 1980s at Jingumae Intersection. (Source from: Harumari Tokyo, no date)

After the collapse of the bubble economy in the 1990s, Japan's land price was suppressed and became reasonable due to the depressed market. Under the influence of economic globalization, a large amount of international capital moved to Japan across national borders. Since the 2000s, many international fashion brands have placed their flagship stores on both sides of Omotesando today. These fashion brands invited many world-renowned architects to turn the building itself into a billboard that serves as a symbol of the band's advertising. In order to become icons, these buildings detached from the townscape had to be attractive and fully filled the lot for the profit of every inch of land except the only rule to setback from the road (Kitayama, 2010). According to Hiroshi Nakamura,[31] there were many open spaces for people to stay and rest along the Omotesando before, such as the stairs in front of the Dojunkai residential quarters. Today, they all vanished. Besides, according to the Road Law in Japan, roads

[31] See the interview (1st question) in Appendix 7.4 by the author with Hiroshi Nakamura, who is the chief architect in designing Tokyu Plaza Omotesando Harajuku, on February 5th, 2020, in Tokyo.

(those linear open spaces including streets and avenues) are the open space for circulation rather than staying and gathering public space in the Western sense. As Hiroshi Naito (cited in Corkill, 2010) explained the reasons for no sitting place in Japanese streets: ‘efforts to incorporate increased public space, including the establishment of public squares, was met with resistance from bureaucrats who feared that such places would become gathering places for political dissenters, particularly communists.’ Seating places and facilities (chairs and benches) were seldom found on the Japanese street (Corkill, 2010). The case of Omotesando avenue, with a heavy pedestrian load, also found no place to put chairs and benches on the sidewalk. The popular motor vehicles, much introduced after the 1964 Tokyo Olympic Games, have turned the city streets previously dominated by pedestrians into a noisy traffic road mainly for the car. This phenomenon is also applied to the Omotesando today – a six-lane avenue with three skybridges to get people from one side to the other. In order to prevent traffic jams, close to Omotesando, the pedestrian heaven that started in 1974 and the open-air disco by high-school students (踊る竹の子) on the street that was popular in the 1980s eventually disappeared in 1998. Now people can only see the scenes in the Harajuku Gate Plaza in front of Yoyogi Park (Onden Omotesandō-chō-kai, 1994).

7.1.2 Background on the architectural project

> *Different from other mall brand concepts like Lumine, in Tokyu Plaza, we wish to provide an image as a toshi no hiroba (都市の広場, urban plaza). Other than a typical mall serving customers with shops, we intend to provide some add-ons to a mall that could attract more customers in our Tokyu Plaza. Other than the shops, we stress the character of urbanity of our facilities and space in Tokyu Plaza comparing to other developers. As you see, such as the rooftop hiroba. I think*

creating a charismatic space in Tokyu Plaza is one of the special points of this mall brand.[32]

There are many factors that result in the developer Tokyu Corporation creating the rooftop *hiroba* in its commercial facility. In addition to the commercial considerations (such as to create new shopping experiences under the impact of online shopping, to attract shoppers and extend their staying time, to increase the value of the property and to promote the brand), the fact that recent downsizing of government organizations and cost controls in public facilities investment and management, as well as the stimulus policies on FAR in urban renaissance movement after 2002 for PFI and PPP projects create opportunities and propel private sector to develop POPS for the society. Moreover, the interview with the manager of the Urban Development Division in Tokyu Corporation and the chief designer Hiroshi Nakamura found no abundant open space on Omotesando for citizens to sit and stay.[33] The two adjacent green spaces, Meiji Jingu and Yoyogi Park, are at the far end of the Omotesando and need to cross a broad road with heavy traffic. The Meiji Jingu closes before 6 pm yearly with no opportunity for potential activities at night. Yoyogi Park is a 24-hour open park. However, safety is much more concerned at night at the park without well-lighting facilities and security. In terms of the above-listed issues found in Omotesando's open spaces, both the developer and architect of the Tokyu Plaza project wanted to bring people's historical memory of the site back by providing a rooftop *hiroba* where people

[32] From transcription of interviews with managers (Appendix 6.4) in Tokyu Corporation' s Urban Development Division by the author in Tokyo on February 13th, 2020.

[33] Interview also found users' (the 1st question, T15) complained about the issues . See Appendix 5.4. The developer also noticed the issues. See Appendix 6.4 (the 2nd question).

can sit and stay, love to come, and walk every day, and to establish attachments and obsessions to cultivate the project into community-like place.[34]

According to Nakamura,[35] in order to form a unified streetscape in Omotesando, the building height restriction was controlled under 30 meters. The rooftop space was originally left for storing mechanical equipment; therefore, the rooftop plaza was not the POPS built on the premise of trading in bonus FAR. Not only by turning the open space into a rooftop *hiroba*, Nakamura but also proposed his design by planting various trees and flowers in *hiroba* as a 'city park' to blend with the greens of Meiji Jingu and zelkova trees on the Omotesando (figure 7.6). At the same time, by evoking the 'resonance of actions' and 'sharing rhythm' in common behaviour shared by people, he wanted to trigger empathy and to address commonalities between different individuals gathered in the same space. His design of rooftop *hiroba*, focusing on users' *furumai* through the microscopic design methodology, tried to express and redefine a new kind of 'public' space in Japan.

[34] See interviews with the architect and manager of the project in Appendix 6.4 and 7.4.

[35] See the interview (1st question) in Appendix 7.4 by the author with Hiroshi Nakamura on February 5th, 2020, in Tokyo.

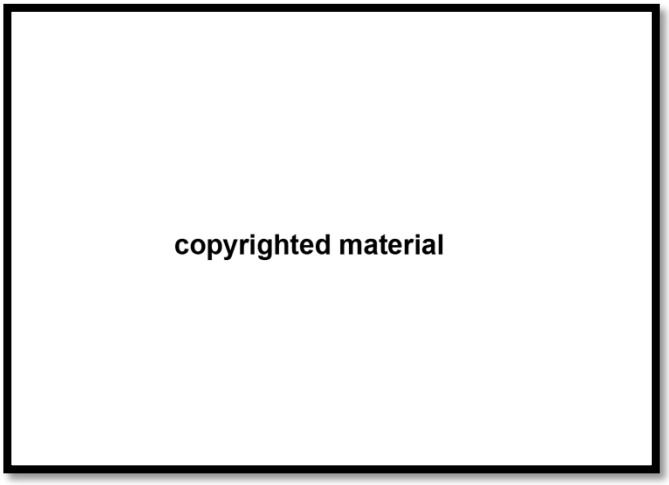

Figure 7.6 Tokyu Plaza provides a green *hiroba* on the roof top at the intersection of Jingumae. (Source from: Timeout, 2021)

7.2 Theory of Furumai and Microscopic Design Methodology

> *The Japanese term 'furumai'（振る舞い）, which means behaviour, consists of two Chinese characters: the first one means to imitate an action while the second one means to reiterate. Human beings have woven the web of empathy by repeatedly imitating and reiterating actions within the context of society and culture. 'Furumai' is a cultural system that can foster empathy even without verbal intervention* (Nakamura, H. 2019, pp.4).

Hiroshi Nakamura (2008; 2010) believes that human beings, as users and the ultimate service object of design, need to be paid great attention to their actions (movement, sightlines) and perceptions (light, colour, texture by five senses) in space. He regards people's behaviour as a dialogue between body and space, and the relation between the two is decisive to the form realization in architectural design. Besides the actions and perceptions in human behaviour, Hiroshi Nakamura (2019, p.4) also references to human psychology as a mental image influenced by the environmental atmosphere by stating, 'while people act based on emotions, emotions and cognitions are engendered through certain behaviours.'

He criticized architectural modernism looked at the human body from the perspective of biology and ergonomics in a macro way. The function was used to summarize human behaviour in the designed space. On the one hand, the design of the space based on a generalized ‘standard people’ (such as Le Corbusier’s Modulor Man) or ‘empty body’ (Atelier Bow-Wow, 2014) ignore the diversity of individuals and their variations of behaviour spontaneously initiated by interacting with the surrounding environment. Therefore, the space under modernism pre-determined people’s use of space. On the other hand, the commonality of behaviour shared by human beings from the aspects of culture, body, and habit as ‘typology of behaviour’ also disappeared (Atelier Bow-Wow, 2006; 2009; 2010). People in space lost their connection to the place, time, and environment.

In responding to the above issues, Nakamura proposed his ‘microscopic designing methodology’ in architectural design against the previously advocated ‘universal space’ in Modernism. He demonstrated that ‘microscopic designing methodology’ is to create affluent relationships around people by finding clues from movements of various elements’ (Nakamura, 2010, p.10). His investigation of the minute motion of human behaviour is not just confined between people on body dimension, but also people and material, people and nature, and people and society.

> *I think my design includes both macro and micro ways of design, and I intend to balance the two. The distinctive part of this thinking is considering the human body and behaviour. For me, human behaviour is the most important. Particularly, in the overflowing information society, many things and matters like form and shape are difficult to use words to explain. So why don’t we consider the fundamental of humans? The feeling and sympathetic experience. No matter you are from what kind of culture or country, those fundamental sharing feelings are the same among people. For me, I return to the most basic and primitive sensory experience. This*

kind of commonality is to connect different people to achieve the so-called publicity. For me, it should be the same in every architectural design.[36]

Nakamura argued that the physical setting of a provided open space did not guarantee public space but only a public symbol. People are the prerequisite for the establishment of public space. Besides, people gathering in one place but doing their own things alone did not make public space out. Different individuals need to be connected, and architecture needs 'to foster better relations between people, local communities, and nature'. 'Public' is not the collection of individuals as a 'whole' by emphasizing 'equality' and 'uniformity' from an egalitarian perspective. A sense of unity by connecting different people in one place with the 'resonance of actions', 'empathy of perception', and 'sharing rhythm' of behaviour in society for Nakamura is significant for public space design (figure 7.7).[37] For him, behavioural repetition and imitation embedded in *furumai* constitute 'public' as commonalities between people.

Figure 7.7 People of all ages enjoy *hanami* (flower viewing) under trees in spring at Shinjuku Park. Different people share similar behaviour, and the rhythm of human behaviour of *hanami* is synchronized with nature yearly. (Source from: photo taken by the author

[36] From transcription of the interview (Appendix 7.4) with Nakamura on February 5th, 2020, in Tokyo.

[37] See the interview (2nd question) (Appendix 7.4) with Nakamura on February 5th, 2020, in Tokyo.

(When making) 'sense of body resonance', where resonation of multiple bodies is caused. Human beings have established sympathy through the accumulation of resonance, not only in cooperative an agricultural work of festivals, but in daily behaviours such as bowing, greeting, laughing, and nodding … I want to produce this type of bottom-up public space with architecture. I want to make it accessible to anyone, create a new resonating style of natural behaviour, and share our senses. Now that we have lost universal norms or absolute values in contemporary society, I think this is the only way which architecture can foster the integrity of society (Nakamura, 2010, p.13).

7.3 Building Typology and Open Space within Architecture

In Tokyu Plaza Omotesando Harajuku, the resonance of the user's *furumai* is realized in the different forms of *hiroba* through a series of spatial elements in architectural design (table 7.1). They are organized in different places of the buildings developed in a vertical way (figure 7.8). According to the spatial configuration of these spatial elements of *hiroba* in relationship to their relative positions in the architecture, they can be divided into three categories. Colour coding is based on white (public), dark yellow (communal), light yellow (semi-public), and grey (private) in the drawings of *hiroba-ka* open space.

Table 7.1 The distribution of different spatial elements of open space in Tokyu Plaza Omotesando Harajuku. (Source from: drawn by the author)

Tokyu Plaza (Levels) / Spatial Elements	Ground Level	Middle Level	Rooftop Level
Corner Plaza (cP)	●		
Rooftop Plaza (rP)			● *
Atrium (At)		● *	
Corridor (Co)		● *	
Staircase (S)	●		
Entrance Hall (H)	●		

Note: (*) indicates the spatial element is above /under ground; (**) indicates the spatial element is both above/under ground and on ground level; without (*) indicates the spatial element is on ground level.

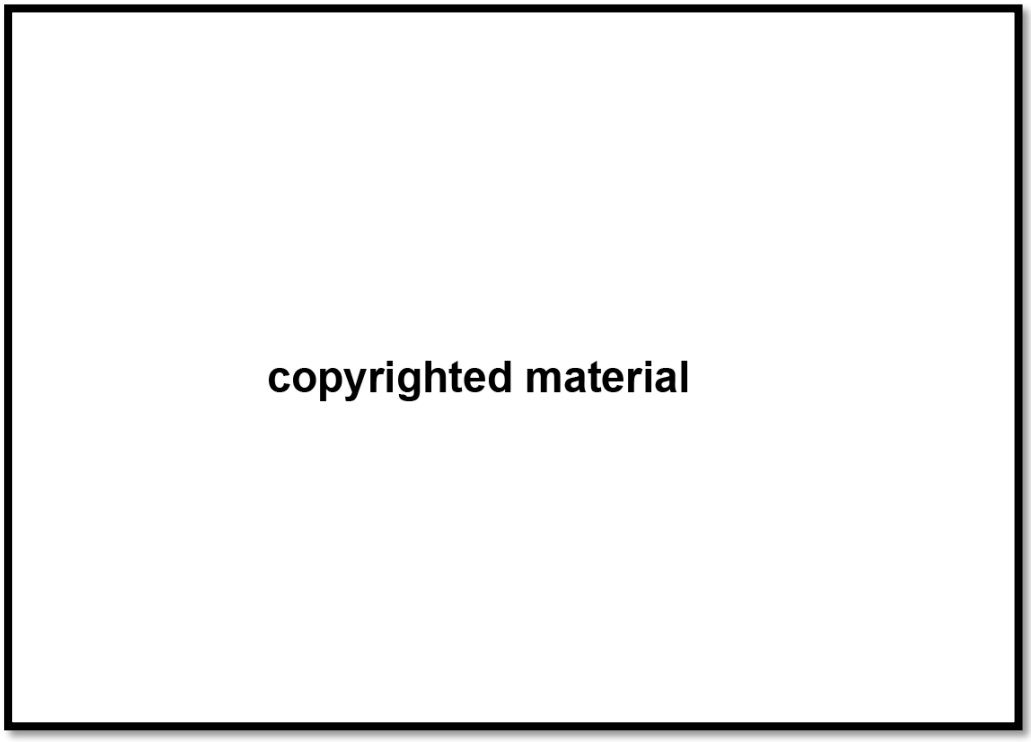

Figure 7.8 The layout of different spatial elements of open space in Tokyu Plaza Omotesando Harajuku. (Source from: adapted by the author on the sectional plan from the official website of Hiroshi Nakamura & NAP, 2002)

(1) Exterior open space. It is represented by the ‘corner plaza’ (cP) that retreats backward from the street at the corner of the building where Meiji Street and Omotesando meet.

(2) Semi-exterior open space. It is represented by the ‘entrance hall’ (H) with the ‘staircase’ (S) connected to the outdoor corner plaza and the ‘rooftop plaza’ (rP) connected to the outdoor environment on the top of the building.

(3) Interior open space. It is represented by the central ‘atrium’ (At) that runs through the four floors of the building, and the ‘corridor’ (Co) space envelops around the central atrium.

7.3.1 Exterior open space within architecture

The flagship stores of various international brands opened on the Omotesando maximize the use of the building plot by extending the building edge against the boundary of the adjacent street. The corner entrance of Tokyu Plaza Omotesando Harajuku is set back from the plot boundary and makes room for the sidewalk at the intersection of main traffic roads. The glass volume at the lower floor of the building is indented to form a two-story entrance hall, and the upper floor of the building is suspended by a volume with brown metal panels, forming a concave corner plaza (cP) (figure 7.9).

Figure 7.9 The corner plaza (cP) in the project. (Source from: drawing and photo from the author)

7.3.2 Semi-exterior open space within architecture

The entrance hall (H) (figure 7.10) is directly connected to the exterior corner plaza. The staircase (S) (figure 7.11) and escalators in the entrance hall are connected to the platform on the second floor and the atrium of the shopping mall on the third floor. A kaleidoscope-like mirror wraps the internal surface of the entrance hall.

Figure 7.10 The entrance hall (H) in the project. (Source from: drawing and photo from the author)

Figure 7.11 The staircase (S) in the project. (Source from: drawing and photo from the author)

The rooftop plaza (P) can be easily accessed via escalators or barrier-free elevators located on the sidewalk from the west side of the building. On the rooftop plaza, a circular table and chairs in various styles are arranged around the skylight of the atrium, with planted trees and plants in the centre. Bowl-like wooden steps are designed according to the polygon contour of the building, turning the roof plaza into a semi-outdoor amphitheatre (figure 7.12). Various greens and benches scattered on the roof plaza create an atmosphere of a small park. The rooftop plaza is equipped with a coffee

shop and a fast-food restaurant, making itself also a good dining place. The observation deck on the rooftop plaza allows users to overlook the city and enjoy the greens and breeze.

Figure 7.12 The rooftop plaza (P) in the project. (Source from: drawing and photo from the author)

7.3.3 Interior open space within architecture

In the four-story atrium (At) (figure 7.13), the light casts a mottled tree shadow inside the building from the skylight, implying the rooftop plaza above. Surrounding the four-story atrium are corridors (Co) (figure 7.14) connected to the open shops next to it. When standing on the edge of corridors, sightlines can cross the atrium and arrive at space on different floors and observe people's activities organized around the central atrium.

Figure 7.13 The atrium (At) in the project. (Source from: drawing and photo from the author)

Figure 7.14 The corridor (Co) in the project. (Source from: drawing and photo from the author)

7.4 Human Behaviour and the *Hiroba-ka* Open Space within Architecture

Corner plaza, entrance hall, and staircase

The area of the corner plaza is not large[38]. The boundary of the building plot and the street is clearly identified by the differences in the material and colour of the pavement,

[38] This kind of small open space is often regarded as a left-over space or an unremarkable open space at the intersection. However, in the Edo period, it was used as an important urban public space, such as the open

demarcating the area of the corner plaza on the private property. However, the corner plaza of the building and the street are connected into an integrated whole in use (figure 7.15). The corner plaza becomes an extension of the street, and the street becomes an enlarged plaza. There is an endless stream of people passing through the intersection every day using the corner plaza (figure 7.16). The corner space facilitates the stay and the flow of pedestrians. It was common to see pedestrians gather on the corner plaza, waiting for their friends or standing while playing phone for a short stay away from the circulation of groups of people on the hustle and bustle sidewalks.

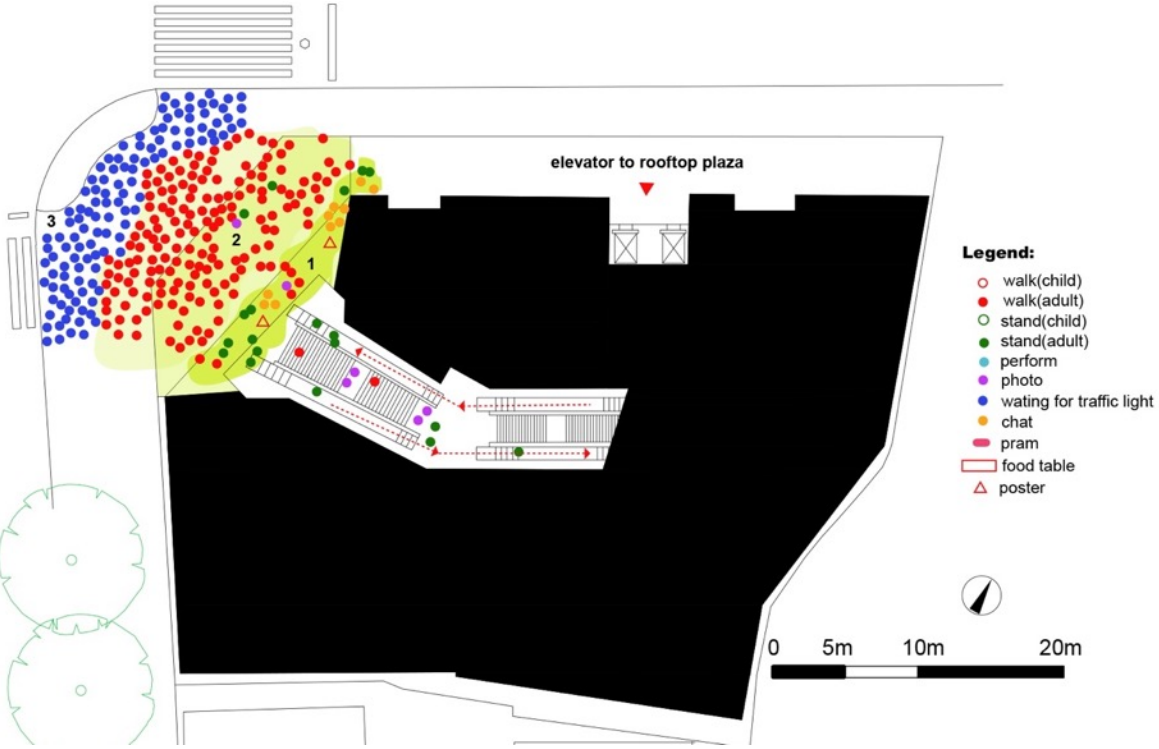

Figure 7.15 People's distribution in the corner plaza in front of the project. The corner plaza and street are integrated as one space regardless of the property ownership. Three zones are divided by people's activities (1. staying, 2. walking, 3. Wating). (Source from: drawn by the author)

space at the corner of the bridge and the intersection of important roads. During the Meiji era, the intersections of important traffic arteries and squares in front of building corners were addressed as important nodes in urban design to play the role of the western plaza (Jinnai, 1992; 1995; Makoto, 2000).

Figure 7.16 Coming and going in the corner plaza in front of the project. (Source from: photo taken by the author)

Due to the attraction of a kaleidoscope-like mirror in the entrance hall (figure 7.17), many visitors were attracted to stay in the corner plaza. The corner plaza as the critical node provides an excellent spot to capture the whole image of the project and identify the greens on the rooftop plaza. The changing patterns of the movement of customers on the escalator inside the building and the crowd walking on the street are reflected on the mirror at different angles simultaneously. The exterior environment is therefore connected with the building's interior space through people's behaviour. The entrance hall attracted people to come inside and take photos on the central staircases or to selfie on the 2nd-floor platform. The staircase provided a higher-level platform for visitors to observe the surrounding environment on Omotesando.

Figure 7.17 Kaleidoscopic-like entrance hall draws flows of people up to the atrium of the building. (Source from: photo taken by the author)

Atrium and corridor

The four-stories atrium contains escalators to deliver people from the entrance hall to the upper floors. Shops and corridors are arranged around the atrium's central void, allowing sightlines to reach every corner of the shared space. Around the corridor, it was often seen people hold their mobile phones, leaning on the railings surrounding the atrium in groups or individuals for taking a short rest, or staying, or waiting. The corridor is an interior street space in the project connected with the outdoor street on Omotesando. It organizes people's circulation in a three-dimensional way with escalators. It provides an indoor open space where people can slow down the walking pace and stay for a while (figure 7.18). The corridor space is not restrained to the specific function for circulation only but sometimes can be transformed into a special exhibition lounge. For example, in the Omohara Photo Exhibition, the exhibition photos were displayed on the corridor's transparent glass railing panels (figure 7.19). The corridor became a place to display while not affecting the business in the surrounding

shops. Exhibition activities were held irregularly, and all of them were free of charge. They attracted a large number of visitors and also increased potential consumers. The open space in front of the elevator hall was sometimes used as the reception area for the exhibition incorporated with the corridor (figure 7.20). By putting sofas and chairs, it is turned into a place for resting.

Figure 7.18 The corridor around the atrium provides space for people to stay. (Source from: photo taken by the author)

Figure 7.19 The corridor space for exhibitions and events. (Source from: Tokyo Event Timeline, 2016)

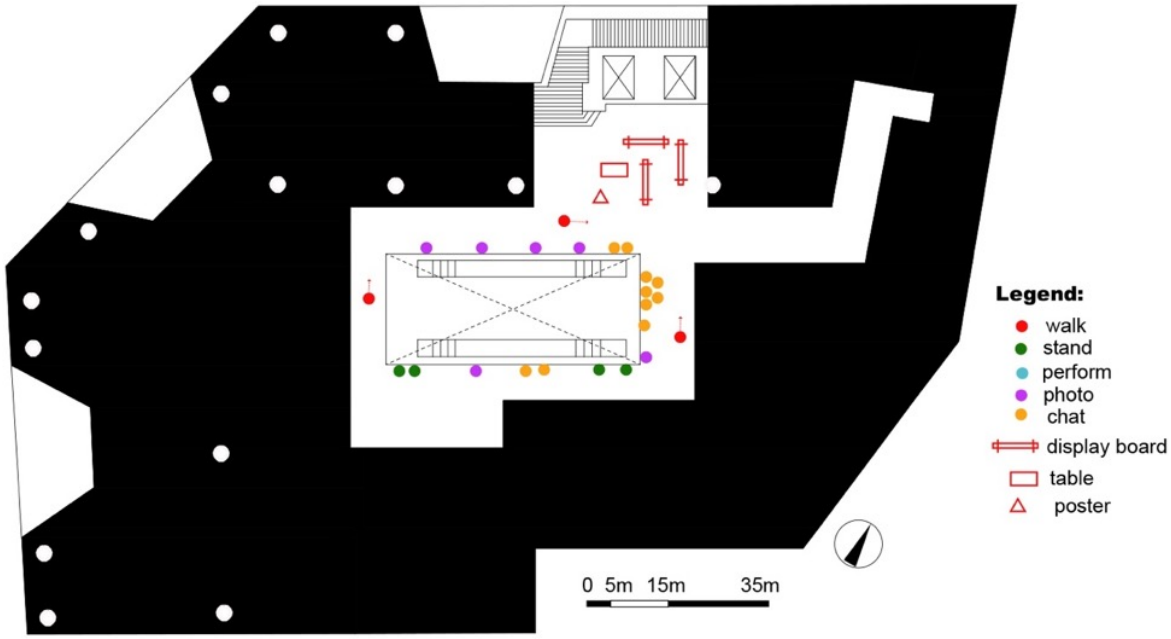

Figure 7.20 The layout of activities in the corridor space. (Source from: drawn by the author)

Rooftop plaza

The rooftop plaza is named Omohara forest, which means 'the entirely forest'. Omohara no Mori's (おもはらの森) opening hour is from 8:30 am to 9:00 pm. The rooftop plaza is operated as a separate facility from the commercial facilities in the building, which is opened from 11:00 am to 9:00 pm. Different types of trees, plants, flowers, and greens are planted on the plaza, making the place a kind of city park atmosphere (figure 7.21). The rooftop plaza provides various types of seats, for example, bowl-shaped wooden steps, bar stools arranged around the circular wooden desk, and benches scattered in the corners under the tall trees. At different times within one day, the open space provided by the rooftop plaza was appropriated and used by different numbers and groups of people for different activities as *hiroba*.

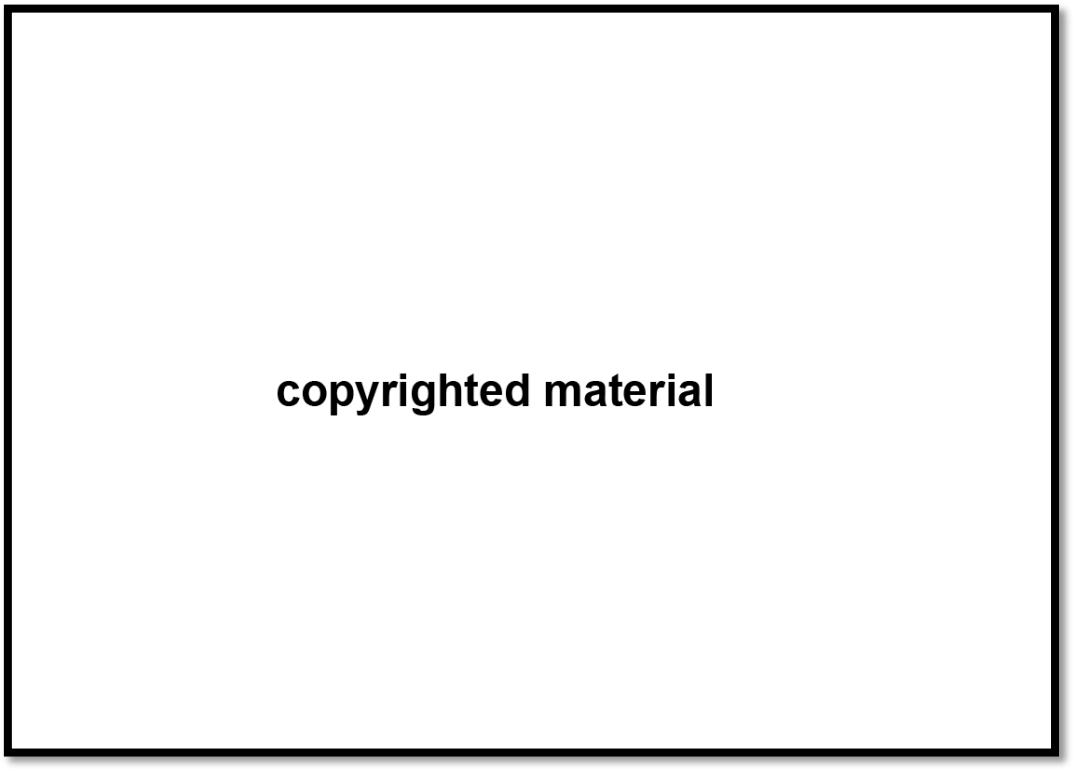

Figure 7.21 Aerial view of the rooftop plaza with tables, seats, and greens. (Source from: Timeout, 2021)

In the early morning, the rooftop plaza usually looked like a leftover open space with only a few people sat along doing their own affairs. Their positions of staying were in a scattered pattern (figure 7.22). There were a few numbers of people coming to have their breakfast. Users can bring food prepared by themselves without purchasing anything in the surrounding café and restaurant to acquire admission using the rooftop plaza. Some users enjoyed readings in the quiet atmosphere surrounded by greens in the corner (figure 7.23). Some sat on the bench to watch the city's view in the distance or to play with the phone alone. Some sat on the outdoor steps, chatting, and waiting for the opening of shops on Omotesando.

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Figure 7.22 Mapping of users' positions and activities in the morning. (Source from: drawn by the author based on the plan from the official website of Nakamura & NAP, 2012)

Figure 7.23 A woman was reading on the bench at the corner of the rooftop plaza. (Source from: photo taken by the author)

When the shopping malls were all opened at noon, the number of people on the rooftop plaza gradually increased (figure 7.24). The atmosphere of the plaza was becoming lively. There were tourists who took selfies with the plaza. They walked around the plaza, observed the colourful plants, and stood on the viewing deck to overlook the flow of people crossing the Meiji Jingu intersection. Some young housewives or couples with their baby strollers took a rest at the front of the steps. Some parents played ‘hide and seek’ with their children on the steps (figures 7.25 and 7.26). Cultivation boxes with plants were placed on the square to develop urban agriculture. Water storage tanks were prepared for the natural ecology of birds. Parents and their children can learn the names and new knowledge of the various plants planted on the plaza. There were various Corporate Social Responsibility (CSR) activities organized in the Tokyu Plaza Omotesando Harajuku, for example, making musical instruments by using environmental-friendly wood to raise funds for natural protections. Workshops for making nests for birds on the rooftop plaza, etc. The steps allowed children to observe the plants at different heights and from a different perspective closely.

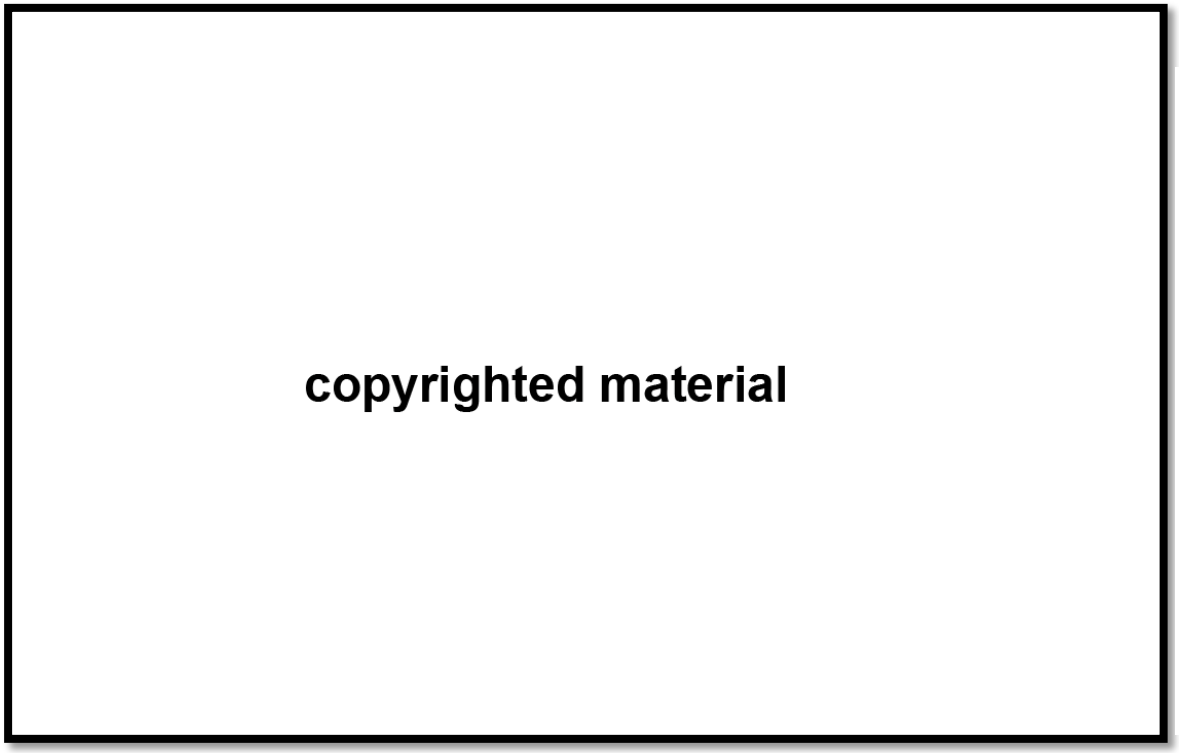

Figure 7.24 Mapping of users’ positions and activities at noon. (Source from: drawn by the author based on the plan from the official website of Nakamura & NAP, 2012)

Figure 7.25 A little girl was playing hide and seek with his father using the bushes and trees on the rooftop plaza. (Source from: photo taken by the author)

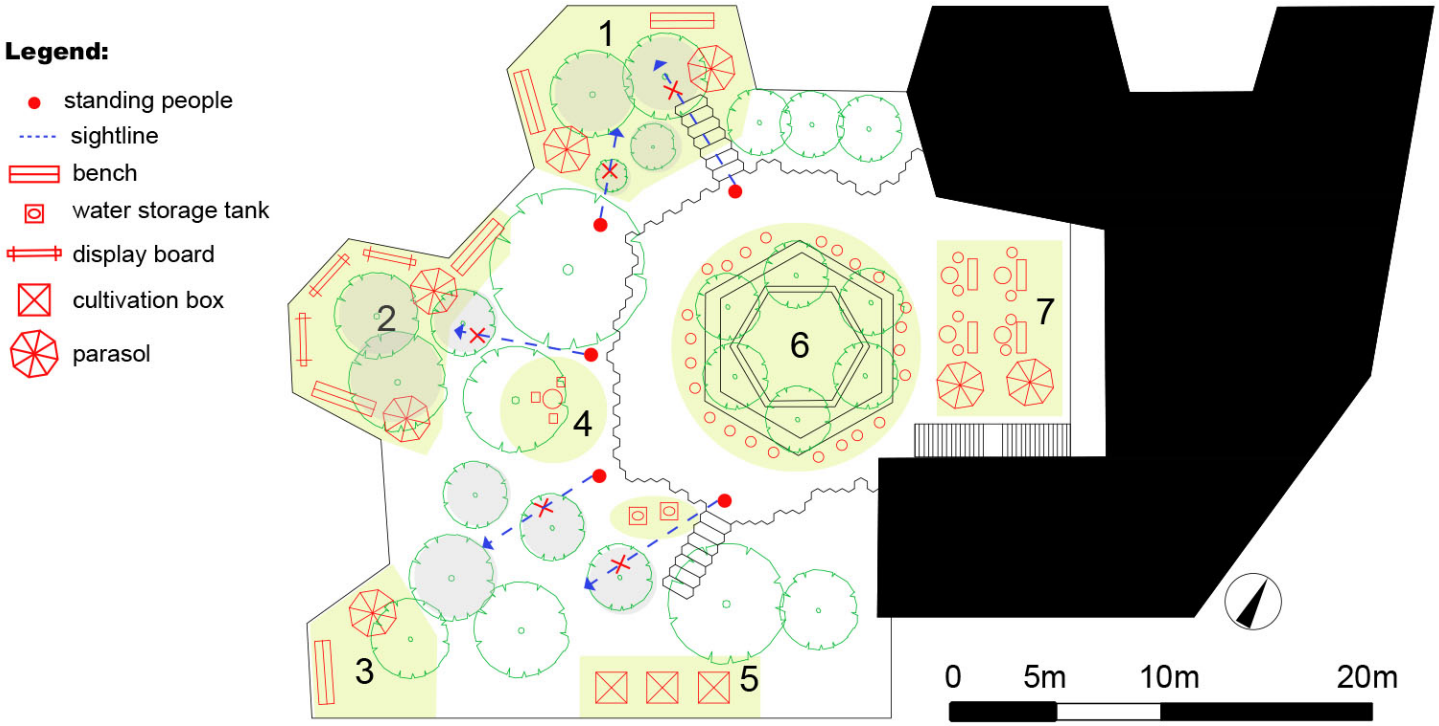

Figure 7.26 Furniture, bushes and trees on the rooftop plaza demarcate 6 zones. People's sightlines are blocked softly by greens, making the zone 1, 2, and 3 relatively private places for undisturbed activities. (Source from: drawn by the author)

Children were usually found to jumped or crawled upside and down on the steps beside their parents. They regarded people and flowerbeds as different kinds of ‘obstacles’ and devised a game of crossing the ‘obstacles’ in a competition (figure 7.27). They ran and chased each other in a circular route around the flowerbed in the centre of the plaza, turning the original open space into their playground (figure 7.28). Parents sat on the steps at a high position can easily overlook their children's every movement in a well-defined area within their visual scope. According to the interviews with parents on the plaza, they felt pleased to find the plaza as a safe place for their children to play away from the traffic on the street. Additionally, the wooden material, neat ground, appropriate height difference between steps, and the relaxed and cheerful atmosphere by surrounding people got acquainted during playing guaranteed children can initiate their own activities freely.

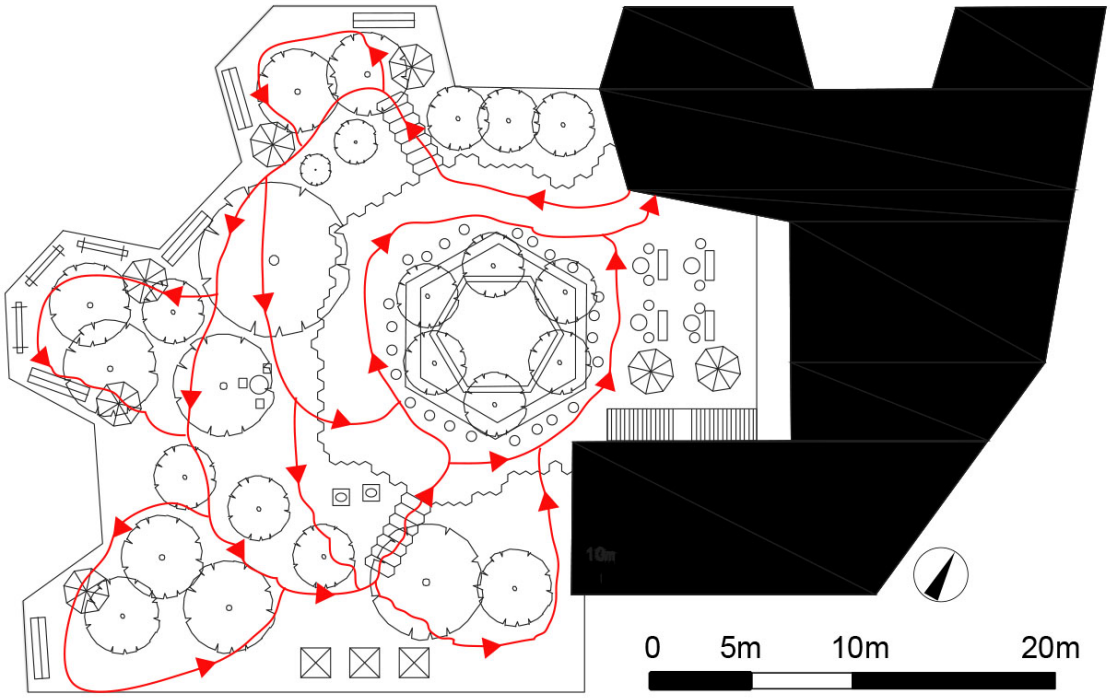

Figure 7.27 A looped circulation designed for the rooftop plaza for freely strolling and playing. (Source from: drawn by the author)

Figure 7.28 Children chase each other around the central flowerbed in a circular path; their parents observe them on a higher level. (Source from: photo taken by the author)

In the afternoon, more people came, and more previously unoccupied open space was appropriated by different activities (figure 7.29). There were people who played with laptops, read books, or doing works at the hexagonal wooden desk in the centre of the plaza (figure 7.30), tourists and shoppers who passed by and took a temporary stay, couples who chatted intimately on the benches in the deep corner of the plaza in the shade of trees, visitors who sited on the steps and watched the surrounding and enjoyed being in the crowd, and students after school gathered in a circle on the steps chatting while watching videos on a mobile phone (figure 7.31). Compared with the dispersed usage pattern in the morning, the usage pattern on the rooftop plaza in the afternoon seems more concentrated and evenly distributed, forming many small groups in a shared space. A group of people left, and a group of new people came. The number of people in the rooftop plaza was maintained in a dynamic way. The layout of users' positions was in a constantly changing pattern. However, the spatial intervals between different individual groups were kept.

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Figure 7.29 Mapping of users' positions and activities in the afternoon. (Source from: drawn by the author based on the plan from the official website of Nakamura & NAP, 2012)

Figure 7.30 A woman working with laptop. (Source from: photo taken by the author)

Figure 7.31 Students gather to play phone at rooftop plaza after school. (Source from: photo taken by the author)

When the number of users was at its peak in the evening, the rooftop plaza was in its climax of the day (figure 7.32). The spatial distance between users in different groups became closer on the steps (figure 7.33). When the spatial gaps on the steps left no rooms for more people, some users sat on the ground or the edges of flowerbeds. The hexagonal wooden steps provided users with a flexible way of sitting according to users' different needs. For example, a person can sit alone, with the upper step as the chair's back and the lower step as the footrest. A person can also lie down comfortably across three steps. Two people can hold their legs on the steps of the same height and sat in parallel. They can also lean on the steps in a more stretched manner, facing each other. The steps between them can be used as a table for placing food. Alternatively, one of the two people can sit behind the other on different heights. People on the back can give the people in front massage. Three or more people can sit on the

ground in a circle towards each other, forming an introverted and private space for the group (figures 7.34 and 7.35).

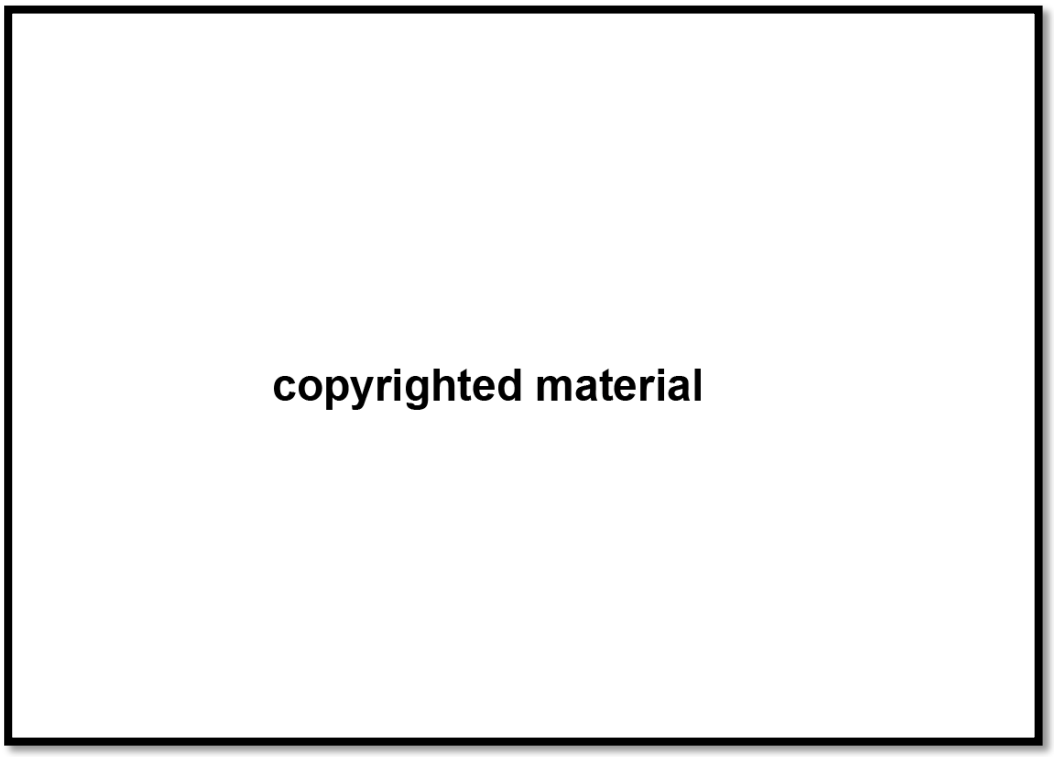


Figure 7.32 Mapping of users' positions and activities in the evening. (Source from: drawn by the author based on the plan from the official website of Nakamura & NAP, 2012)

Figure 7.33 Crowded situations in the evening. (Source from: photo taken by the author)

Figure 7.34 Various ways of sitting style on the steps by different number of people. (Source from: photo taken by the author)

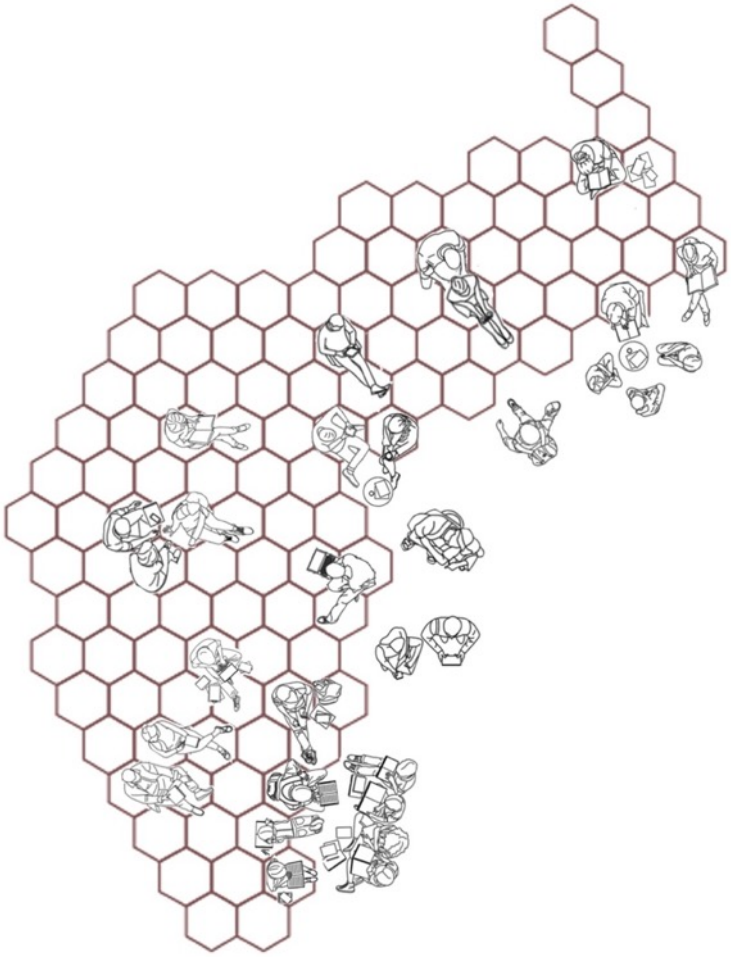


Figure 7.35 Plan of various ways of sitting and different groups of people for different activities at the rooftop plaza. (Source from: drawn by the author)

Through the interactions between people's behaviour and the attachment elements in the rooftop plaza, unused open space was appropriated and defined in use for different activities. In other words, the open space was in the process of *hiroba-ka*. Some people arranged the furniture in different combinations with steps on the plaza, such as adding soft pillows and moving the small tables to form a cosy place for drinking (figure 7.36). Some people adjusted the positions and angles of bar stools in the centre of the plaza according to the number of people in the discussion.

Figure 7.36 A table is moved from the café to adjust the step seating by two users for drinking and talking. (Source from: photo taken by the author)

The artificial environment created by the facilities in the rooftop plaza showed many advantages that cannot be obtained in the natural environment. On hot summer days, mist sprays on the trees and around the seats were provided to lower the outdoor temperature; when the weather is cold in winter, heaters were provided outside for users. At night, the rooftop plaza was illuminated by the light bubbles on trees and floor lamps beneath the steps or near bushes. The dim light environment and background music provided a pleasant and relaxed atmosphere that conventional parks cannot

achieve. The rooftop plaza provided an excellent spot to watch the starry sky and city's night view.

Although the notice board at the entrance of the rooftop plaza stated many rules (such as 'no smoking', 'no drinking', no dispose of garbage', 'no picking flowers and grass', and 'no ball games', 'cautions of the potential safety issues', such as 'pay attention to the height of the steps' and 'do not let the children leave the sight of parents', etc.), and public security patrolled the plaza every hour, as stated by the manager of the Tokyu Plaza Omotesando Harajuku, there were no strict regulations to rule users' behaviour. Indeed, everyone could use the place as they wish without disturbing others.[39] The inclusive management and pleasant atmosphere resulted in relaxed postures displayed by some users (for example, sleeping on the bench), which further prompted other users to imitate and repeat the behaviour in the same way. The chain reactions in imitating and repeating people's behaviour trigger the commonality and sympathy between people, indicating a 'sense of body resonance' in public space (Nakamura, 2010, p.13).

In addition to the considerations of stimulating public interactions, the users' privacy in *hiroba* was protected through the design of the detailed form of *hiroba* based on people's sightlines and circulations. The design of the polygonal steps directed the sightlines of users sitting on steps of different height levels to focus on the flowerbeds in the centre of the plaza, avoiding direct visual contact with other users nearby (figure 7.37). The height difference of steps also eliminated the visual disturbances between

[39] See the interview (the 1st question) with the manager of Tokyu Plaza Omotesando Harajuku by the author on February 13th, 2020, in Tokyo in Appendix 6.4. Most of the users in the interview also agreed that certain rules (as common sense) were necessary for making the *hiroba* to be collectively used. See interviews (the 4th question) with users in Appendix 5.4.

people in the front and rear rows. Plants in different heights and densities in the plaza created different layers of visual barriers. It served as the partition walls softly dividing the open space into different areas without losing the connections with the surrounding areas. It also created a looped circulation in *hiroba* with multiple choices to the same destination instead of a determined route, avoiding spatial interference.

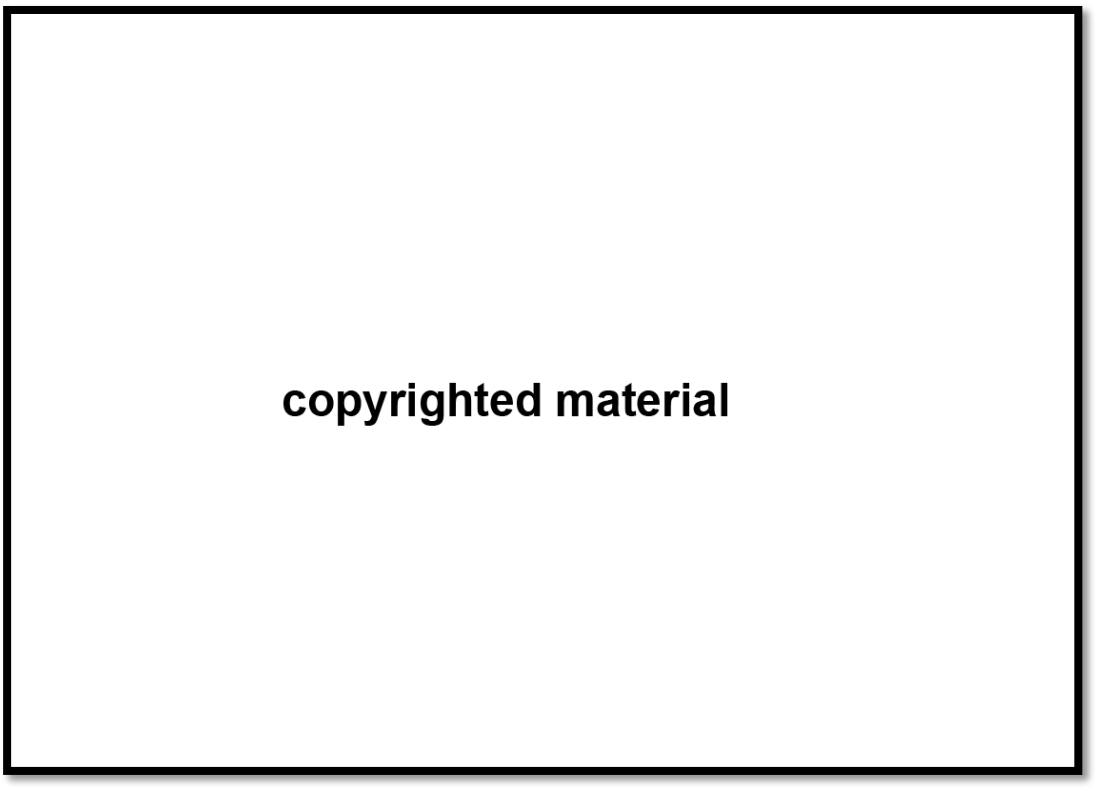


Figure 7.37 Visual design to protect privacy in the public rooftop plaza. (Source from: drawn by the author based on the plan from the official website of Nakamura & NAP, 2012)

The rooftop plaza successfully linked the rhythm of nature with the users' behaviour through the design of *hiroba* in architecture. Within the rhythm, individuals in different groups or activities were connected by the shared commonality in behaviour (figure 7.38). On the hot summer day, people in different groups were hidden in places under the shadow of trees. As the shadow changed through time, people constantly moved their positions on the steps following the shadow. In winter, people moved to places

that can be illuminated by the sun to warm the body. The changing locations of the sun decided the changing positions of the people carrying out different activities.

Flowers, grasses, and trees brought 'changes' to people's perception of the environment in the rooftop plaza throughout the day and the year. The sunlight passing through the leaves on the wooden platform casts mottled shadows moving on the ground from sunrise to sunset. The season changed the leaves on their colour, shape, and density. In addition to natural changes, the settings (such as the decorative themes and styles for the art wall, tables, and chairs) of the plaza in different seasons were updated according to various proposed events. For example, there were cinema broadcastings on the rooftop plaza at night.[40] In the summer beer festival, the *yatai* (food cart) to sell drinks and snacks was placed in the centre of the rooftop plaza. On Christmas and Halloween, pumpkin lanterns, thematic decorations, and colourful lights were added to the rooftop plaza for illumination shows (figure 7.39). The maintenance of greens was conducted by the developer out of the rooftop plaza's operation hours; visitors have no responsibility to maintain them; however, their careful use dedicates to the sustainability of the environment on the rooftop plaza. The cost and labour for updated settings and event proposals were also from the developer alone. The financial investment in building rooftop *hiroba*, which is from the Tokyu company exclusively, can be sustained by the money from consumers' shopping and rents from merchants. The financial profits of Tokyu company from other commercial sources (subway, resort, real estate, etc.) can be re-invested into the financial sustainability of rooftop *hiroba* in the studied case.

[40] See more details of promoted events in the interview with the manager of Tokyu Plaza Omotesando Harajuku by the author on February 13th, 2020, in Tokyo in Appendix 6.4 (the 3rd question).

Figure 7.38 The shared rhythm of body moving follows the path of the sun in summer (left) and winter (right). People hide in the shadow in summer and expose to the sun in winter. (Source from: photo taken by the author)

Unlike the spontaneous activities initiated by the users on the site, organized events by the management team of the Tokyu Plaza Omotesando Harajuku were promoted through the posters in the store, advertisement brochures, and Social Network Software (SNS) in advance. In addition to events hosted alone, the Tokyu Plaza Omotesando Harajuku also cooperated with surrounding shops to organize regional commercial communities to promote the Omotesando area, such as *matsuri* of the street dancing parade Harajuku Omotesando Genki Matsuri, and Halloween Kids Parade, and Christmas Avenue Illuminations. These activities turned not only open space on the rooftop plaza into *hiroba* but also the whole Omotesando as *hiroba.*

Figure 7.39 Illumination show at rooftop plaza. (Source from: photo taken by the author)

7.5 Conclusion of Tokyu Plaza Omotesando Harajuku Case Study

The Tokyu Plaza Omotesando Harajuku presents a good example of *hiroba* created in a commercial shopping mall initiated by the private sector. The rooftop plaza is created not based on the trade-in FAR from the government's stimulating policies in PFI and PPP projects but is turned from a rooftop open space for mechanical equipment, making the project different from most of the POPS in Tokyo. Trees and flowers in nature cherished by Japanese people in traditional public places are brought into the design of the *hiroba* design in architecture through the rooftop plaza, forming a three-dimensional urban green park integrated with greens in Omotesando, Meiji Jingu and Yoyogi Park afar.

Besides the developer Tokyu Corporation's considerations for economic profit, real estate value and brand promotion, the proposal of a place where people would like to take a walk every day in compensation for the lack of open spaces for pedestrians to

stay on Omotesando contributes to the formation of *ka* in *hiroba*. The architect Hiroshi Nakamura's 'microscopic design theory' focusing on the people's behaviour on the dimension of the body and perceptions in relation to the material, nature, and society further develops the form reasoning of *kata* in *hiroba* through compositional elements. Specifically, the different forms of open space based on a series of spatial elements provide the physical setting of *hiroba* (Appendix 8.4). The spatial configuration of different forms of open spaces is arranged on the three layers from outside to inside of the building. Based on the spatial characters of open spaces through spatial elements applied in the case from the perspectives of accessibility (circulation, sightline, level), enclosure (opening, scale, canopy), and identity (boundary, permeability, and attachment), one type of open space (the materiality of *hiroba*) within architecture are extracted (table 7.2). Several cases of open spaces cannot be grouped in any type, showing the distinct rather than common spatial characteristics shared in architectural composition. The layout of the position of open spaces considers users' circulations and sightlines from street level (figure 7.40). For example, people on the sidewalk of Omotesando can easily identify the existence of the rooftop plaza through trees planted on it or the parasols placed on it. In order to attract people's visit, the kaleidoscope-like mirror is wrapped around the entrance hall as an interactive installation for users' play. By taking the ascending escalator, the four-story atrium space and the trees' shadows from the rooftop skylight give signs to direct people's movement to the rooftop plaza. Exterior, semi-exterior and interior *hirobas* are linked to users' successive circulations in the building.

Typology and human behaviour are mutually influenced and integrated with the forming of *hiroba* within architecture. Human behaviour decides the specific shape of *hiroba-ka* open space. The researched *hiroba-ka* open spaces are not assigned any pre-determined functions. The attachment elements, such as the tables, chairs, benches, trees, and parasols, give clues to people (but not to restrain) on how to use those open spaces and turn them into *hiroba* through users' spatial practice in the

process of *hiroba-ka*. The attachment elements on the rooftop *hiroba* are carefully designed in detail, considering human behaviour. For example, the bowl-like steps provide a

Table 7.2 The open space typologies applied in making *hiroba* within contemporary Japanese architecture in Tokyu Plaza Omotesando Harajuku. (Source from: drawn by the author)

Name		Plan					Section			Group	Total	Type
Tokyu Plaza Omotesando		Boundary	Opening	Circulation	Sightline	Attachment	Level	Canopy	Scale	Permeability		
TPO	cP	3	2	3D	D	S	G	S	O	Y	1	
TPO	H and S	2	2	1S	D	/	U	C	A	Y	3	Type 1
TPO	Co	N	2	2I	I	/	U	C	A	Y		
TPO	At	4	2	1I	I	/	U	C	A	Y		
TPO	rP	N	0	1I	S	G+F+L+S	U	S	A	N	1	

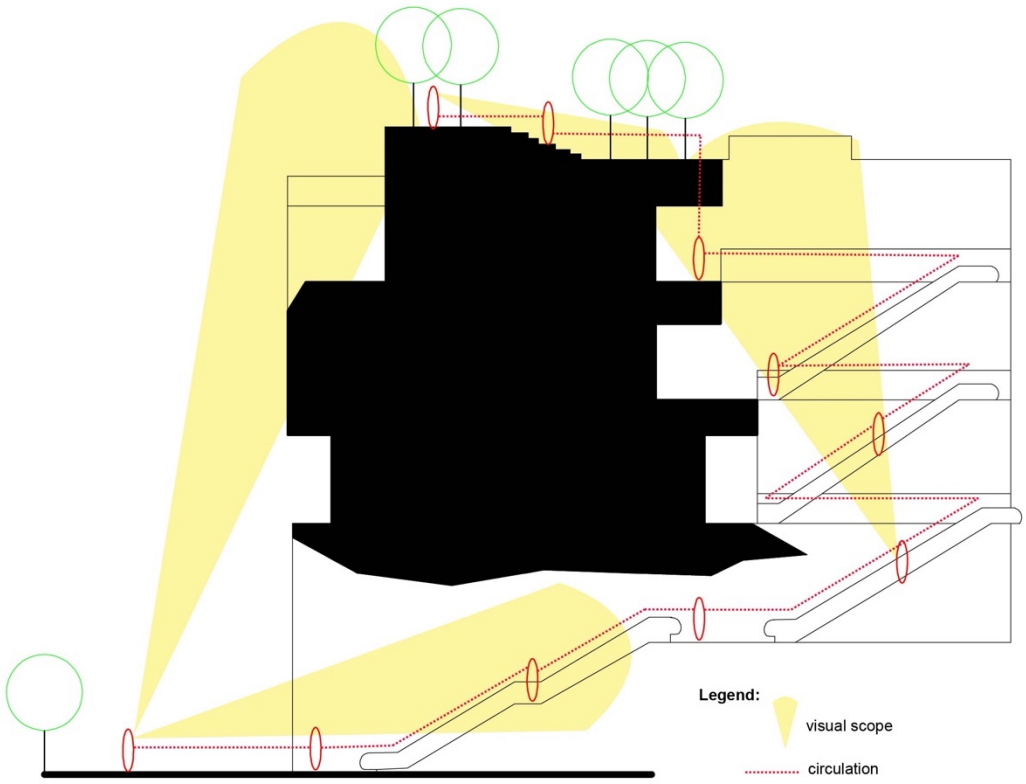


Figure 7.40 The visual scope and circulation in the *hiroba-ka* open spaces (space in white with red model figure) of Tokyu Plaza Omotesando Harajuku. (Source from: drawn by the author)

seating place for people to take a rest. The polygon modules used in steps and the height differences between steps on different levels enable various ways of sitting gestures for different numbers of people in different groups and avoid visual intersections from different people simultaneously. The typology of open space (as the physical setting of *hiroba)* through the spatial arrangement of compositional elements influence the patterns of human behaviour within. The layout of trees and the density of planted greens create different layers of space in relation to the public and private, demarcating multiple routes for users' circulations. Some quiet and small areas are created for intimate activities away from the disturbance by other people, such as areas for reading books and close chats between lovers. The attachment elements on the rooftop plaza, including food and drink provided by café or *yatais,* music, lights at night, mist sprays in summer, and heaters in winter, assist in cultivating a cosy atmosphere for users' stay and providing a comfortable outdoor environment for different spontaneous activities by users.

In addition to focusing on human behaviour and activities in converting the empty open space into *hiroba* as a public place (table 7.3), Nakamura also addresses the repetitive actions through behavioural imitations in Japanese *furumai* between individual people as a kind of connection. Composition elements (spatial elements and attachment elements) in architectural composition are designed to trigger 'resonance of actions', 'empathy of perception', and 'sharing rhythm' in behaviour. For example, the imitation of different seating gestures was conducted by people on bowl-like steps; people's movement of choosing the place for sitting and working followed the movement of the shadow in summer and the sunlight in winter. The shared behaviour indicates the commonality between different people, which defines the 'public' in *hiroba* through human behaviour.

Table 7.3 The relationship between spatial element and human behaviour in the *hiroba* of Tokyu Plaza Omotesando Harajuku. (Source from: drawn by the author)

No.	Spatial element / Behaviour	Corner Plaza(cP)	Rooftop Plaza (rP)	Atrium (At)	Corridor(Co)	Staircase (S)	Entrance Hall (eH)
1	passing through(foot)	●	●	●	●	●	●
2	sitting		●			●	● *
3	sitting and watching		●				
4	sitting and eating/drinking		●				
5	sitting and chatting		●				
6	sitting with pram		●				
7	standing	●	●	●	●	●	●
8	standing and watching	●	●	●	●	●	●
9	standing and eating/drinking		●				
10	standing and chatting	●	●	●	●	●	●
11	standing with pram	●	●				
12	strolling		●		●	●	●
13	strolling with pram		●		●		
14	running and playing		●				
15	playing games		●				
16	playing phone	●	●	●	●	●	●
17	playing laptop		●				
18	listening music		●				
19	studying		●				
20	reading		●				
21	observing(building/plant)	●	●			●	●
22	jumping		●				
23	crawling		●				
24	waiting	●	●		●		
25	selling	●	●				
26	working (personal business)		●				
27	sleeping/lying down		●				
28	phone call	●	●		●		
29	taking photos	●	●			●	●
30	selfie	●	●			●	●
31	be in a daze		●		●		
32	event	●	●				
33	being intimate		●				
34	patrolling	●	●	●	●	●	●
35	exhibition		●	●	●		

According to the interviews with users,[41] there were users who frequently came to the rooftop plaza, passers-by came without specific purposes, and visitors introduced by their friends or attracted by the information on SNS for the first time. The *hiroba-ka* open space (specifically the rooftop plaza) in the case was highly acknowledged and applauded by users. The attractive and spacious green space for outdoor activities,

[41] See the interviews with the users in Appendix 5.4.

convenient staying place accessible to people for free of charge, and the clear and safe wooden deck for children and their parents to play together were highlighted as the main characters for attracting people to come and the prospects for the future rooftop *hiroba.* No request and concern about *hiroba* on the political dimension, which is usually addressed in western public space in general, were mentioned by users in the interview. Most users expressed their desire to revisit it. Users generally believed that a certain limit of rules was needed to manage the rooftop *hiroba* of Tokyu Plaza Omotesando Harajuku. The interview found that users had no strong feeling about the developer's rules for restricting their behaviour. Users regarded rules in the rooftop *hiroba* as the common-sense showing care and respect for other users. Therefore, rules were agreed upon as a kind of courtesy and responsibility between people in using *hiroba*.

Chapter 8. Conclusions

8.1 Introduction:

This concluding chapter discusses the *hiroba-ka* open space within Tokyo's contemporary architecture in three parts to answer three main questions and six research objectives raised in Chapter 1. In the first part, the open space typologies of *hiroba* in Tokyo's contemporary architecture from the four case studies are investigated based on the theories on Japanese form in terms of *ka, kata,* and *katachi,* and architectural composition (Sakamoto et al. 2018) explored in the literature review in Chapter 2.2. In the second part, human behaviour in the *hiroba-ka* open space within Tokyo's contemporary architecture from four case studies is summarised in terms of the theories of environment behaviour studies discovered in the literature review of Chapter 2.3. The relation between typology and human behaviour and their integration in generating *hiroba* are explained and summarized. The third part compares the *hiroba* in the Edo period and the *hiroba* in Tokyo's contemporary architecture and the differences between the Japanese *hiroba* (as a concept), *'kōkyō kūkan'* ('public' space) and the Western plaza or square (as sensible form) and public space in general. It finally evaluates the notions of 'public' behind *hiroba* in Tokyo's contemporary architecture from four case studies under the context of Japanese public space development researched in Chapter 3. The limitations of the research and the possible future studies based on the current research are outlined at the end.

8.2 On Typology of *Hiroba* within Tokyo's Contemporary Architecture

The origin of *hiroba* indicates a state of collective living image of people with their desired activities filled in an open space. *Hiroba* is a concept, and it does not direct to any specific form. Putting *hiroba* as a concept in the Japanese form reasoning in a three-stage process of *ka* (prototype), *kata* (type), and *katachi* (shape), it is in the first stage without denoting anything related to form. It differs from the *hiroba* as one type of open space in the city centre (e.g. plaza, square, piazza, platz, etc.) in most Western

cities as symbolic and fundamental urban elements, which was imported and imitated from Meiji period based on its sensible form in making *shimin hiroba* and *ekimae hiroba* as a much-duplicated model in Japan. The *hiroba* as an intangible concept is indigenous Japanese-type *hiroba* (i.e., *hiroba-ka* open space), while the *hiroba* as a tangible form is Western-type *hiroba*. Therefore, *hiroba* as a concept shown in the *hiroba-ka* open space within Tokyo's contemporary architecture is argued in the thesis as the new urban model for *hiroba* making in today's Japanese society.

Based on Japanese *hiroba*'s origin from an intangible concept, the form of Japanese *hiroba* is not only constrained within the formal considerations in architectural or urban design discipline internally but significantly to be impacted by non-form factors derived from the environment externally in shaping the form. From the typological evolution of Japanese *hiroba* in relation to public space development in the history explored in the thesis, there are many non-form factors in the political, social, cultural, and economic dimensions giving rise to the formation of *hiroba*. From the four chosen case studies, the initial demands and expectations from the developers and concepts and ideas from the architects instruct the formal realization of *hiroba*. Those above-mentioned factors are *ka* for the presence of the primitive image of *hiroba* at the very beginning of its formal hypothesis*,* showing essential principles for guiding the development of *ka* into *kata. Kata* further assigns the structure and system of *hiroba* by organizing the compositional elements and their spatial configurations. The architects' specific design of compositional elements and their final layout as *shūji* (spatial operations for rhetoric meanings) in the individual case of the architectural composition further give *kata* shape to become *katachi* (Sakamoto et al. 2018). The typology of *hiroba* can be interpreted and understood from *ka*, *kata,* and *katachi* in the process of formal reasoning from the abstract hypothesis to the concrete shape.

The research finds that a series of compositional elements –including spatial elements and attachments elements– are conducive to the constitution of the physical setting of

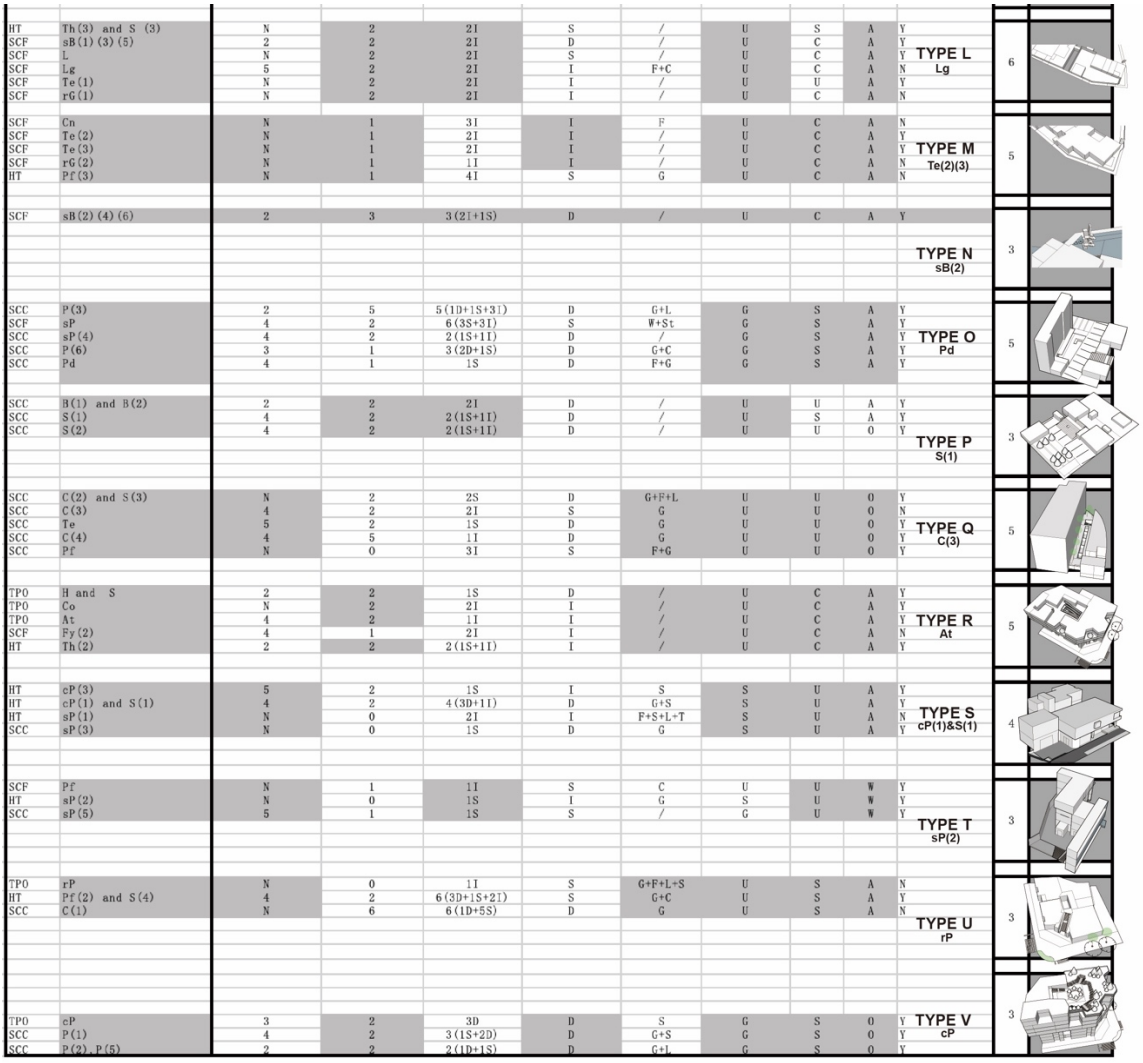
hiroba. Some spatial elements for building the physical setting of the *hiroba* in the four studies are also confirmed through interviews by architects Fumihiko Maki, Itsuko Hasegawa, and Riken Yamamoto or confirmed by Hiroshi Nakamura with an additional address on the consideration of human behaviour in architectural planning for proposed activities. The spatial elements, which are represented in various forms of open spaces, are repeatedly applied in Tokyo's contemporary architecture as typified elements for constituting the physical setting of *hiroba* based on the first-round architectural composition analysis in the extracted 135 building projects in Tokyo from *JA* magazine. The four case studies, which vary in ownership statuses, building functions, building scales, built years, building locations, contexts, and design theories and concepts, also share those compositional elements.

By gathering the findings about open space typologies in the second-round architectural composition analysis in four cases and repeating the same classifying process based on the spatial characters of accessibility through 'circulation', 'sightline' and 'level'; enclosure through 'opening', 'scale', and 'canopy'; identity through 'boundary', 'permeability', and 'attachment', the open spaces in four cases were coded and put in one table. The open spaces that shared similar spatial characters were highlighted and grouped as one type. As a result, a total of 22 types (from A to V) of open space applied to *hiroba* making in the four cases are generated in table 8.1. Many open spaces that cannot be grouped as a type in each case are found shared spatial characteristics with open spaces in other cases to be categorized into a new type. The categorized new types of open space indicate the distinct open spaces in each case are commonly applied in making the physical setting of *hiroba* as a design language. The spatial and compositional meanings and characters of the final classified open space typologies of *hiroba* within contemporary architecture in the research can be presented in figure 8.1. 22 types of open space applied in the *hiroba* making are further classified into 9 groups (within the blue circle in figure 8.1) put in the four quadrants in terms of two axes ('accessible-inaccessible' and 'opening-enclosure'). The green circle

in figure 8.1 addresses the open space type with a shared identity (‘boundary’, ‘permeability’, and ‘attachment’) distinct from other open space types.

Table 8.1 Open space typologies of *hiroba* in the four cases. (Source from: drawn by the author)

Name		Plan					Section			Group	Total	Type
	Spatial Element	Boundary	Opening	Circulation	Sightline	Attachment	Level	Canopy	Scale	Permeability		
HT	eP(1)	4	2	2D	D	/	U	S	A	Y		
HT	Po(2)	4	2	1D	D	/	G	C	A	Y		
HT	Po(4)	4	3	3(2D+1I)	D	S+C	G	C	A	Y	TYPE A	
HT	eP(2)	4	2	2(1I+1S)	D	/	U	U	A	Y	Po(4)	5
HT	Po(6)	4	3	4(3D+1I)	D	C	G	C	A	Y		
HT	L(1) and Pf(1)	N	0	3(2D+1S)	S	C	S	C	A	Y		
HT	fR(1)	N	0	/	I	F	S	C	A	N		
HT	L(2)	N	0	2I	I	F	U	C	A	N	TYPE B	5
SCF	H	N	0	4(3S+1I)	D	F+S+C	G	C	A	N	L(1)&Pf(1)	
SCF	Fy(1)	N	0	3I	I	C	U	C	A	N		
SCF	fR	4	0	2I	I	F	U	C	A	N		
SCC	fR(1)	4	0	3(1I+2S)	D	/	G	C	A	N		
SCC	fR(2)	4	0	2I	I	F	U	C	A	N	TYPE C	4
SCC	fR(3)	4	0	1I	I	/	U	C	A	N	fR(1)	
SCC	Po	3	1	1D	D	/	G	C	A	Y		
HT	Sb(1)	3	1	3(1D+2I)	D	C	G	C	A	Y		
HT	Pf(3)	N	1	4I	S	G+S+F	U	C	A	N		
HT	Po(3)	5	1	1S	S	C	G+U	C	A	Y	TYPE D	6
HT	Ar(1)	4	1	1S	S	C	G	C	A	Y	Ar(1)	
HT	S(5)	5	1	1I	S	F	S	C	A	N		
HT	Pa(1)	4	2	3(2D+1S)	D	/	G	U	A	Y		
HT	Sb(3)	2	2	3(2D+1I)	D	S+C	G	U	A	Y		
HT	cP(2) and Sb(2)	3	1	1D	D	F+G	G	U	A	Y		
SCC	Av	2	N	N	D	/	G	U	A	Y	TYPE E	7
HT	Sb(7)	3	1	3(2D+1I)	D	/	G	U	A	Y	sP(1)&sP(2)	
SCC	sP(1)	N	4	7(4S+1D+2I)	D	G+C	G	U	A	Y		
SCC	sP(2)	N	3	7(4S+1D+2I)	D	C	G	U	A	Y		
HT	Po(5)	4	2	3(2D+1I)	D	C	G	C	A	Y		
HT	H(1)	6	2	3(2S+1I)	D	F+C	G	C	A	Y		
HT	L(3)	4	2	3(2I+1S)	I	/	G	C	A	Y	TYPE F	6
HT	Sb(4)	2	2	2(1I+1S)	D	/	G	C	A	Y	L(3)	
HT	Po(7)	4	2	1I	I	/	G	C	A	Y		
HT	Po(1)	N	2	3D	D	C	G	C	A	Y		
HT	C	N	3	5(3D+2I)	D	C	U	S	A	Y		
HT	S(2) and Th(1)	N	3	4(3D+1I)	D	C	U	S	A	Y	TYPE G	
HT	Po(8)	3	3	1I	I	C	U	S	A	N	C	3
HT	P(1)	3	3	5(3I+1S+1D)	S	G+C	G	S	A	Y		
HT	P(2)	4	2	3(1I+1S+1D)	S	G+C	G	S	A	Y		
HT	P(3)	3	3	6(4I+1D+1S)	D	G+S	G	S	A	Y	TYPE H	5
HT	P(4)	N	3	3(2D+1S)	D	G+F	G	S	A	Y	P(1)	
HT	P(5)	2	2	3(2D+1S)	D	G	G	S	A	Y		
HT	Co(1)	5	3	3I	S	/	G	C	A	Y		
HT	Sb(5)	2	3	2D	D	G+C	G	S	A	Y		
HT	Sb(6)	3	3	3D	D	G	G	U	A	Y	TYPE I	3
											Sb(5)	
HT	H(3)	N	0	2(1I+1D)	S	C	G	C	A	N		
HT	H(2)	N	4	4I	I	/	G	C	A	Y		
HT	fR(2)	N	1	3(2I+1S)	S	F	G	C	A	Y	TYPE J	3
											H(3)	
SCF	P	N	4	4(3D+1I)	D	C+G	G	S	W	Y		
SCF	S	4	1	6(3S+3I)	S	/	G	S	W	Y		
SCC	P(4)	4	2	3(1D+1S+1I)	D	G+L	G	S	W	Y	TYPE K	3
											P	



HT	Th(3) and S (3)	N	2	2I	S	/	U	S	A	Y		
SCF	sB(1)(3)(5)	2	2	2I	D	/	U	C	A	Y		
SCF	L	N	2	2I	S	/	U	C	A	Y	TYPE L	6
SCF	Lg	5	2	2I	I	F+C	U	C	A	N	Lg	
SCF	Te(1)	N	2	2I	I	/	U	U	A	Y		
SCF	rG(1)	N	2	2I	I	/	U	C	A	N		
SCF	Cn	N	1	3I	I	F	U	C	A	N		
SCF	Te(2)	N	1	2I	I	/	U	C	A	Y		
SCF	Te(3)	N	1	2I	I	/	U	C	A	Y	TYPE M	5
SCF	rG(2)	N	1	1I	I	/	U	C	A	N	Te(2)(3)	
HT	Pf(3)	N	1	4I	S	G	U	C	A	N		
SCF	sB(2)(4)(6)	2	3	3(2I+1S)	D	/	U	C	A	Y		
											TYPE N	3
											sB(2)	
SCC	P(3)	2	5	5(1D+1S+3I)	D	G+L	G	S	A	Y		
SCF	sP	4	2	6(3S+3I)	S	W+St	G	S	A	Y		
SCC	sP(4)	4	2	2(1S+1I)	D	/	G	S	A	Y	TYPE O	5
SCC	P(6)	3	1	3(2D+1S)	D	G+C	G	S	A	Y	Pd	
SCC	Pd	4	1	1S	D	F+G	G	S	A	Y		
SCC	B(1) and B(2)	2	2	2I	D	/	U	U	A	Y		
SCC	S(1)	4	2	2(1S+1I)	D	/	U	S	A	Y		
SCC	S(2)	4	2	2(1S+1I)	D	/	U	U	O	Y	TYPE P	3
											S(1)	
SCC	C(2) and S(3)	N	2	2S	D	G+F+L	U	U	O	Y		
SCC	C(3)	4	2	2I	S	G	U	U	O	N		
SCC	Te	5	2	1S	D	G	U	U	O	Y	TYPE Q	5
SCC	C(4)	4	5	1I	D	G	U	U	O	Y	C(3)	
SCC	Pf	N	0	3I	S	F+G	U	U	O	Y		
TPO	H and S	2	2	1S	D	/	U	C	A	Y		
TPO	Co	N	2	2I	I	/	U	C	A	Y		
TPO	At	4	2	1I	I	/	U	C	A	Y	TYPE R	5
SCF	Fy(2)	4	1	2I	I	/	U	C	A	N	At	
HT	Th(2)	2	2	2(1S+1I)	I	/	U	C	A	Y		
HT	cP(3)	5	2	1S	I	S	S	U	A	Y		
HT	cP(1) and S(1)	4	2	4(3D+1I)	D	G+S	S	U	A	Y		
HT	sP(1)	N	0	2I	I	F+S+L+T	S	U	A	N	TYPE S	4
SCC	sP(3)	N	0	1S	D	G	S	U	A	Y	cP(1)&S(1)	
SCF	Pf	N	1	1I	S	C	U	U	W	Y		
HT	sP(2)	N	0	1S	I	G	S	U	W	Y		
SCC	sP(5)	5	1	1S	S	/	G	U	W	Y	TYPE T	3
											sP(2)	
TPO	rP	N	0	1I	S	G+F+L+S	U	S	A	N		
HT	Pf(2) and S(4)	4	2	6(3D+1S+2I)	S	G+C	U	S	A	Y		
SCC	C(1)	N	6	6(1D+5S)	D	G	U	S	A	N	TYPE U	3
											rP	
TPO	cP	3	2	3D	D	S	G	S	O	Y	TYPE V	3
SCC	P(1)	4	2	3(1S+2D)	D	G+S	G	S	O	Y	cP	
SCC	P(2),P(5)	2	2	2(1D+1S)	D	G+L	G	S	O	Y		

In terms of types of ‘spatial elements’, ‘boundary’, ‘opening’, ‘circulation’, ‘sightline’, ‘attachment’, ‘level’, ‘canopy’, ‘scale’, and ‘permeability’, a statistical analysis of studied *hiroba-ka* open spaces in four case studies was summarised in figure 8.2. Based on the static result, the research finds that ‘plaza’ (P), ‘stair’ (S), and ‘porch’(Po) are the top three spatial elements applied in making open spaces within architecture in four cases. In four cases, most open spaces within architecture are not enclosed by four boundaries as squares or quadrangles, which is common in the form of Western plaza or square. Over half of the open spaces within architecture in four cases have at least two openings and circulations with direct sightline to access, indicating the easy identification and porous state of Japanese *hiroba* within Tokyo’s contemporary architecture. More than half of those open spaces in making *hiroba* are above or below

ground level rather than on the ground level. Over half of those open spaces in the four cases have attachment elements, are well covered (interior or semi-interior) with good enclosure and are in the appropriate human scale. The good spatial permeability in those open spaces in four cases shows the strong spatial connection and sequence between those open spaces in *hiroba* making, resulting in ambiguous public-private relations.

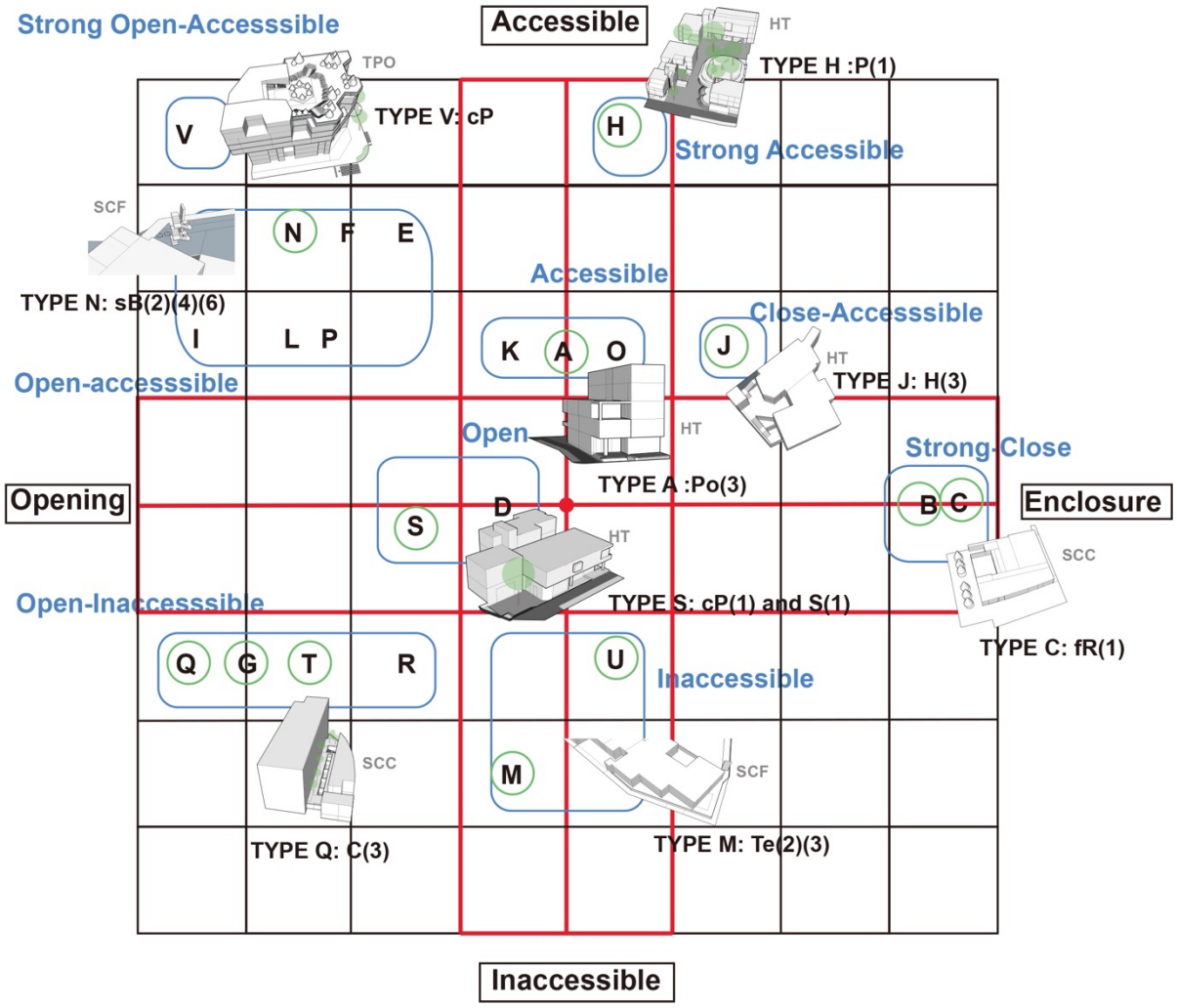


Figure 8.1 Spatial and compositional meanings and characters of classified open space typologies of *hiroba* within contemporary Japanese architecture in the four cases. (Source from: drawn by the author)

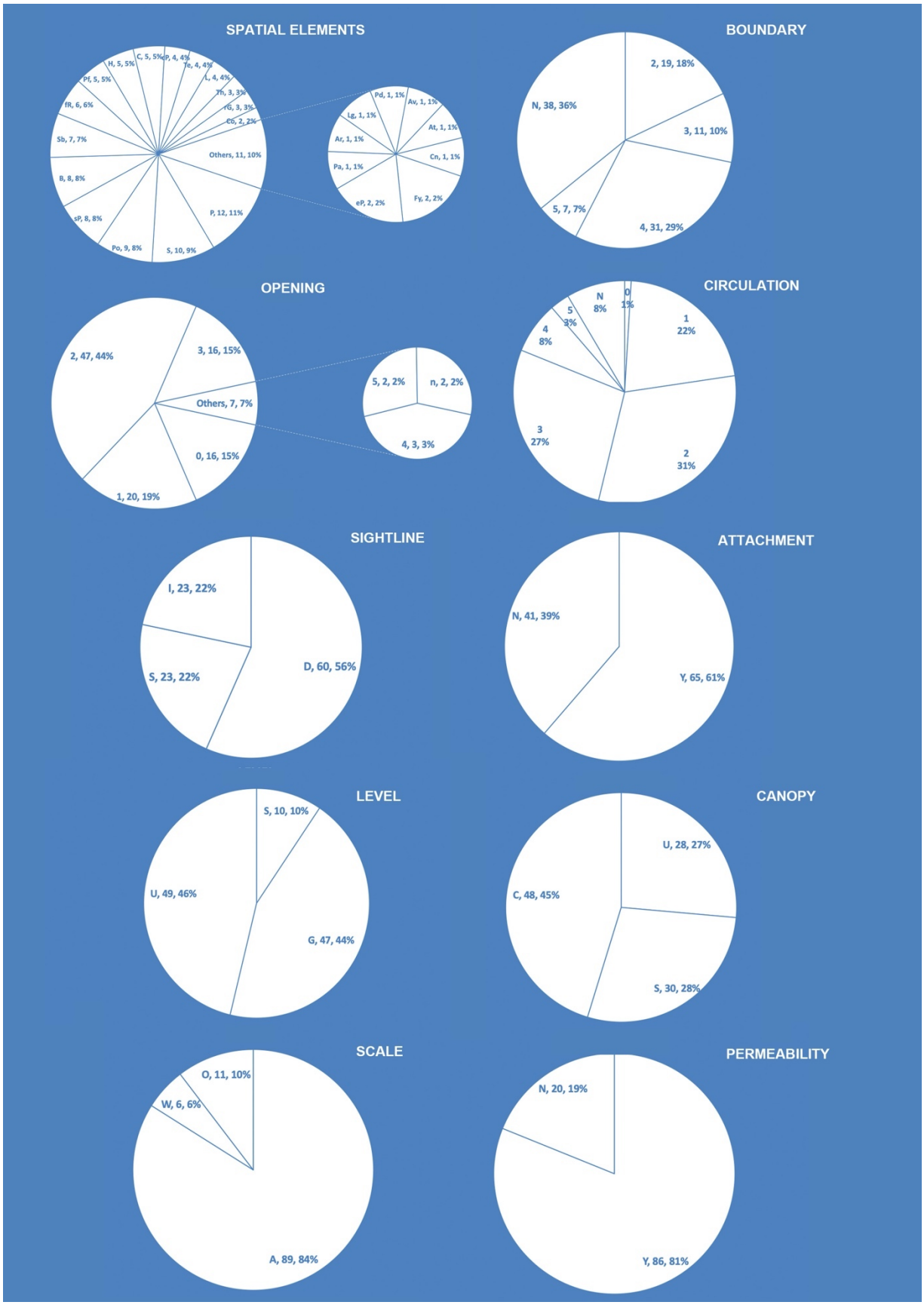


Figure 8.2 Statistical analysis of studied *hiroba-ka* open spaces in four case studies. (Source from: drawn by the author)

The spatial elements provide open spaces, which are not assigned any pre-determined functions and uses for people's behaviour and activities, responding to the 'white space' in architecture coined by Kojima (2013), who divided the architectural space into 'black' and 'white'. 'Black space' is the architectural space assigned with fixed function simplified and abstracted from users' diverse behaviour, ignoring the changing demands of users through time. However, in contrast, 'white space' is a multi-purpose space, which can be developed and decided by the users in different circumstances for flexibly various activities. In the four cases, those spatial elements are usually designated to play the role of central nodes for organizing and connecting various programs in different spaces (such as exterior plaza and courtyard in connecting different building volumes, or interior entrance hall and lobby to bond surrounding functional rooms), or to provide the spatially expanded paths for delivering circulation (such as the setback open space, s-avenue, platform, and corridor). The attachment elements, including furniture (table, chair, bench, food cart, parasol), greens (trees, grass, pot plant), constructions (tori gate, shrine, column), sign, water, lighting, etc. play the role of what Arata Isozaki (2011, p.68) called *keihai* (気配, 'sign, or a not-yet-manifest indication of something'), which give instructions or hints for users on how to use the open space and foster users' behaviour and activities through the invisible atmosphere. Especially, the landscape as permanent elements (differs from temporary furniture) equal to the architecture plays a significant role in making the *hiroba* within architecture in the four cases. For example, the canopy of trees decided the enclosure of the *hiroba* in Hillside Terrace; the height and interval of trees control sightlines to the central *hiroba* at the ground level in Sumida Cultural Factory; the grass and other greens defined the ground texture of *hiroba* in Shinonome Canal Court; trees help to spatially divide different area on the rooftop *hiroba* in Tokyu Plaza Omotesando Harajuku. Both spatial elements and attachment elements are indispensable to the constitution of the physical environment of *hiroba.*

The spatial configuration of the spatial elements of *hiroba* in four case studies is laid out in three layers: exterior, semi-exterior and interior, in a three-dimensional way (figure 8.3) beyond the traditional figure (private)-ground (public) relationship on a two-dimensional plane. Hillside Terrace forms a circulated route with a high-efficient linkage between indoor and outdoor *hirobas*. Shinonome Canal Court structures open spaces into a system through a central spine of s-avenue on the ground level. The *hiroba-ka* open spaces in the two cases are developed horizontally. On the contrary, the *hiroba-ka* open spaces in Sumida Culture Factory and Tokyu Plaza Omotesando Harajuku are developed vertically. Despite the sky bridges connecting three building volumes, the horizontal linkage between open spaces of *hiroba* within individual building volumes is very weak in the Sumida case. In Tokyu Plaza case, the visual and spatial continuity allow users to move through scattered *hiroba-ka* open spaces in a continuous sequence. The organization of the positions of the *hiroba* in four case studies takes the users' visual sightlines (for example, to be put at the conspicuous spots on the way of users' wandering in architecture) and physical circulations (for example, adjacent to or on the users' moving path in architecture, especially the interjectional node of several routes) into the construction of the spatial structure, which allows the *hirobas* scatted in three layers can be easily identified and accessed by users in architectural space (see figure 4.80, figure 5.39, figure 6.49, figure 7.40 in each case study).

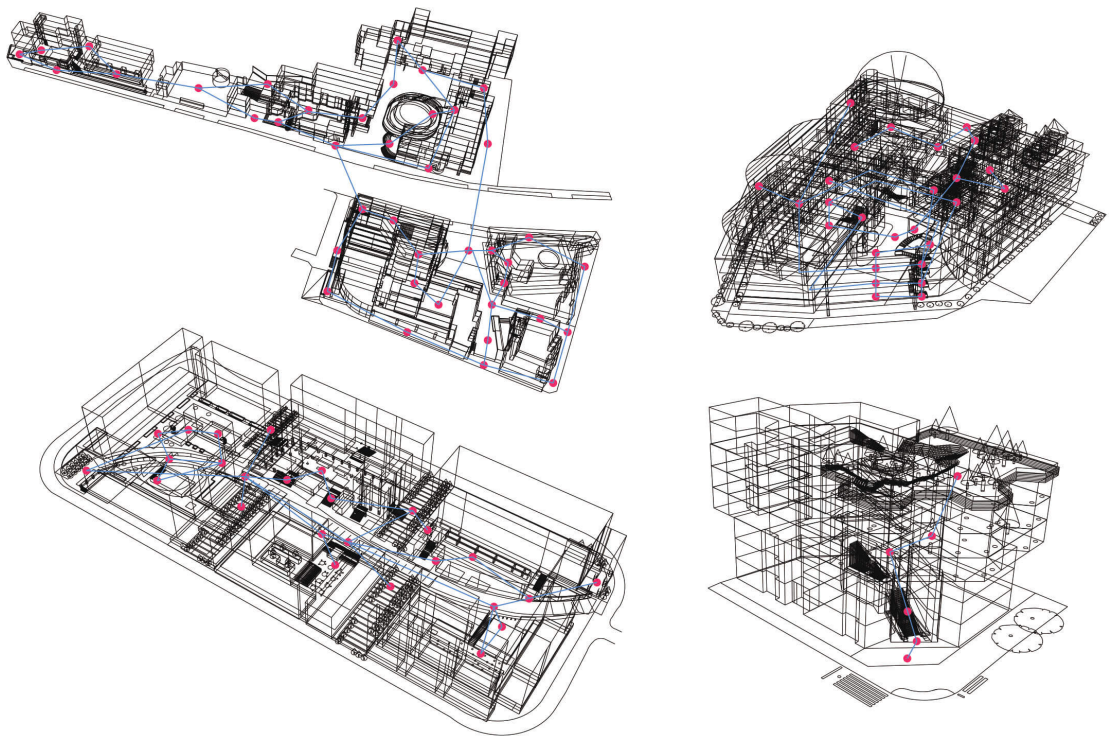


Figure 8.3 The *hiroba-ka* open spaces (red dot) within contemporary architecture in the four case studies are organized three-dimensionally. A circulated route (blue line) is created to connect individual *hiroba-ka* open space into a whole.

Despite those spatial elements constituting *hiroba* are under the influence of the architectural language under Western Modernism,[42] their arrangements in four cases are Japanese, involving the interactions of people's perception with internal architectural space and external nature, unfolding asymmetric, incomplete, and irregular geometry in the *katachi* of *hiroba*. The different *hirobas* distributed on the site are connected by the people's winding movement freely. Their mutually obscured arrangements in sightline make the *hiroba* appear one after another successively in time with the user's movement instead of appearing simultaneously. It reflects that the

[42] Fumihiko Maki acknowledged and classified his adopted 'corner plaza', 'lobby', 'sunken garden' and 'pedestrian deck' as many 'typical vocabulary in modern urban design' in his book *Hirusaidoterasu hakusho* (*Hillside Terrace White Paper*) (Maki, and Atelier Hillside, 1995, p. 17).

spatial organization of the *hiroba* in contemporary Japanese architecture is similar to the internally independent and self-disciplined mode in the spatial expansion of the traditional Japanese architecture denoted by Inoue (1969). The design theories derived from Japanese tradition and culture and further developed by the architects in four case studies help guide the *kata* to shape the *katachi* of *hiroba*, strengthening the Japan-ness in making the form of open space in *hiroba.* For example, *oku* creates deepness through positioning *hiroba* in different layers; *shikii* creates ambiguity in arranging the permeability between connected open spaces; *harappa* provides not only open space but also introduces free atmosphere in using the open space; *furumai* evokes resonations between body and mind to shape the form of open space and its *hiroba-ka*.

8.3 On Human Behaviour at the *Hiroba* in Tokyo's Contemporary Architecture

Through observations in four case studies in the research, various activities are found in the *hiroba* of Tokyo's contemporary architecture. Those activities can be divided into mainly two categories: the spontaneous activities on regular days (such as strolling, playing, waiting, sitting, etc.) and organized activities (such as monthly market, yearly *matsuri*, and activities by hobby groups or community), responding to the tradition of Japanese worldviews of ever-changing and re-birth in time discovered by folklorist Kunio Yanagita as '*hare to ke*' (sacred and vulgar), which is closely associated with Japanese daily life. The usage patterns (type of activities, number of people, time of stay, the atmosphere in use, etc.) change at different times in one day or the different seasons within one year.

Users are found to attend the building and decorate the physical setting of *hiroba.* For example, tables, chairs, *yatai*, tents, food and drinks were taken to the exterior plaza of the Hillside Terrace in the 6th phase for market use. Paintings, handwriting, and handcrafting made the entrance hall in Sumida Culture Factory an exhibition room.

Bicycles, toys, and tennis balls turned the sunken plaza of Shinonome Canal Court into a playground. Books, documents, and laptops brought by the white-collar workers changed the rooftop plaza of Tokyu Plaza Omotesando Harajuku a temporary working space. Even without the things, goods, or other materials at hand, people can adapt the space for multiple uses by interacting with the surrounding environment and communicating with other people through the human body (such as chatting, chasing, playing hide and seek, etc.) and perceptions (looking the urban views, observing other people's activities, listening to the sound of nature, and dialogues from people, etc.). Therefore, people's spatial appropriation and practice are crucial to the formation of *hiroba* in addition to the composition elements' provision of open space as the physical setting of *hiroba.* In other words, human behaviour and activities trigger the *hiroba-ka*, turning the sheer open space into a meaningful place.

Both typology and human behaviour are indispensable to the generation of *hiorba* in Tokyo's contemporary architecture. Typology (*ka* and *kata*) helps to foster the physical environment for inducing certain behaviour and activities as stage; human behaviour in reverse helps to animate the use of *kūchi* (open space) with desired activities engaged by people for *hiroba-ka*. The correlation between typology and human behaviour follows transactionism in the environment behaviour study discussed in Chapter 2.3. The *hiroba,* therefore, is socially constructed through the interaction between people and space in time. Compared to open space, the term itself contains not only the physical form but also in-depth thoughts on place-making by including human activity, meaning and value for turning open space into place (i.e., *hiroba-ka*) discovered in Chapter 2.1. The corresponding relation between function and use changes to the flexible adjustment between making and using. Time and people's initiative are brought to the formation of *hiroba* through *hiroba-ka* from open space, differing *hiroba* as place (*basho*, 場所) and event (*koto*, コト) with open space as space (*kūkan,* 空間) and object (*mono*, モノ) (figure 8.4). The function of *hiroba* is designed

by users. The generation of *hiroba* resonates with the Japanese perception and understanding of space from the concept of *ma* (間) as the space-time continuum.

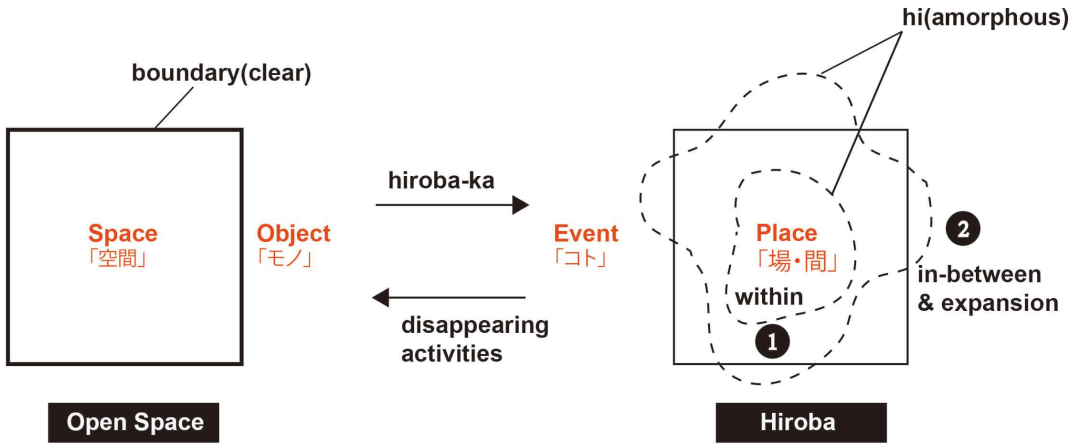


Figure 8.4 The mutual conversion between open space and *hiroba*. (Source from: drawn by the author)

Ma is unseen intervals, accentuating the 'imaginative space' composed in-between the visible materials (Toshi dezain kenkyū-tai, 1968). In the spatial creation of *hiroba* within Tokyo's contemporary architecture, the emergence of human behaviour and activities could be compared to the presence of the invisible *hi*. The people's activities create an invisible but tangible layer inside or outside the contour of the shape of *hiroba*. Intended and unintended activities happen spontaneously through time. The drawing outline of the layer is thus hazy, vague, borderless, and amorphous. Based on the above discussion, the spatial elements and attachment elements are symbols, and people's *furumai* is the *hi* permeating the intervals of the symbols of *hiroba.*

In the four case studies, many self-initiated groups, organizations, or communities are actively involved in the organizations of activities and events in the *hiroba*, similar to the traditional *chōnaikai* and *jichikai.* They promote the use of *hiroba* by posting updated events information online, which helps to improve the 'accessibility' of *hiroba* and the *hiroba-ka* of unknown open space hidden in the deep of architecture. Moreover, a sense of community is formed, and bonds the people from inside and outside the four building projects during people's interpersonal communications and interactions

in the held events and activities. Besides the active participation and organization of events and activities (e.g., the flea market in spring and autumn, summer matsuri, Halloween and Christmas in winter, and many organized workshops and seminars for children and their parents at Shinonome Canal Court), users are encouraged to make and manage *hiroba* and become more responsible for improving and promoting the local environment through workshops and seminars in a bottom-up *machizukuri* approach, for example, Tenant Association and Daikanyama Beautiful District Production Association in Hillside Terrace, participant workshops involving local residences for deciding the program and design of *hiroba* in Sumida Culture Factory, and Tokyu Coporations's CSR programs and the Harajuku Omotesando Association for the Promotion of Shopping Streets in Tokyu Plaza Omotesando Harajuku.

The way of managing human behaviour and activities is decisive to the extent to which the open space conceived by architects or developers could be used as *hiroba*. In the case of Sumida Culture Factory, some planned *hirobas* were locked and not allowed to be used by visitors due to various considerations, such as safety, cost-saving, and easy management. In contrast, some *hirobas* in four case studies were conceived as multi-functional open spaces, for example, the multi-purpose auditorium in Hillside Terrace, the entrance hall in Sumida Culture Factory, multi-functional rooms in Shinonome Canal Court. However, management decides specific purposes and programs for use within a specific time, and activities in some of them were sometimes charged fees. Moreover, rules for users were made in the *hiroba* of the four cases, such as no ball games, no selling activities, no smoking, no making noise, etc. Based on the interviews with the developers and managers in the four cases, rules are usually common senses to respect others and better use of *hiroba*. Not as strict as what rules state, those rules are compromised between users in use and the management side. Self-disciplined behaviour adjusts the relations between different individuals in using the *hiroba.* Concerning the interviews with users in the four case studies, rules are understood, accepted, and required. The conditions assigned in the *hiroba* within

Tokyo's contemporary architecture differ from the traditional *hiroba* discovered in the Edo period. The freedom in the *hiroba* of Tokyo's contemporary architecture in use is more or less influenced by the attached intentions, rules, fees, and time restraints by the management side.

8.4 On Architectural *Hiroba*, *'Kōkyō kūkan',* Western Plaza and Public Space

Hiroba is the prototype of Japanese public space for understanding and making Japanese *'kōkyō kūkan'* ('public' space) today. *Hiroba* as a concept is *hiroba-ka* open space: a public appropriating open space for collective use and a socially constructed place with desired activities and events. *Hiroba* in the Edo period was turned from vacant or leftover urban open space into commons or communal space in villages shared by a group of people without clear ownerships and specific functions. In exploring *hiroba* in Tokyo's contemporary architecture in the four case studies, *hiroba* is created based on the clear public or private properties and sometimes is assigned intended programs (or sometimes is also opened for intended people in a particular time). In the Meiji to Showa period, many public space typologies transplanted from the Western counties were imported and imitated in Japan without changes or adapted; they were rooted deeply in Western-type *hiroba* as a model in post-war years until the Osaka Exposition. However, the *hi* represented by the emperor and masses under the statism never fulfilled the role of either Western public space as the democratic symbol or Japanese *hiroba* as a concept.

The research finds the *hi* filled in the *hiroba* within Tokyo's contemporary architecture in the four case studies returns in the form described by Sand (2013) as 'everyday' and 'local' in replace of 'monumentality' and 'national politics'. Although as discussed above, the *hiroba* within Tokyo's contemporary architecture differs from the *hiroba* in the Edo period due to the dramatic changes in social and urban conditions, the three conditions (1) desire of using, (2) physically provided open space, (3) activities in use (Toshi dezain kenkyū-tai, 2009) are still emphasized to be essential in the formation of the *hiroba* within Tokyo's contemporary architecture from the four case studies. They result in many commonalities discovered from the Edo *hiroba*, such as the 'hybridity', absence of 'centrality' and 'order', 'time', 'activities', 'borderless' and 'autonomy', still being inherited in the *hiroba* within Tokyo's contemporary architecture, which make the Japanese *hiroba* (concept-oriented through *hiroba-ka* open spaces) distinct from the Western plaza or square (form-oriented presented by Western-type *hiroba*), not on the monumental form as an eternal symbol but unstable non-form as an instant event (figure 8.5). The contrast between the Japanese *hiroba* and the Western plaza or square also corresponds or echoes with the difference distinguishing the architectonic will of the Western '*sakui*' (artifice) and 'constructive and objective' from the Japanese '*jinen*' (nature) and 'spatial and performative' (Maruyama, cited in Isozaki, 2011, pp.23-31).

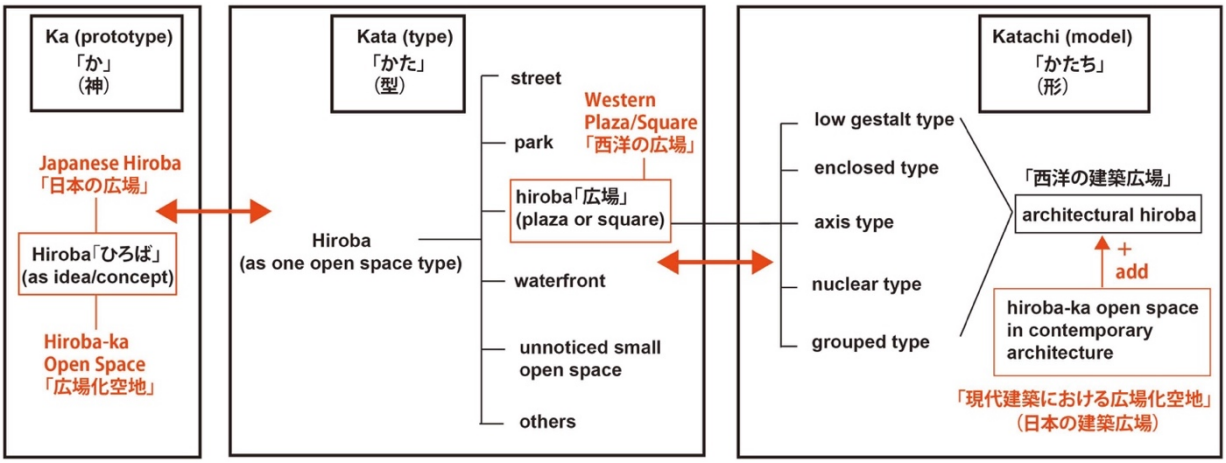


Figure 8.5 *Ka*, *kata* and *katachi* in Japanese *hiroba*. The thesis adds *hiroba-ka* open space in contemporary Japanese architecture into Kato (1985)'s architectural *hiroba*. (Source from: drawn by the author)

There are many reasons for giving rise to the formation of the *hiroba* in Tokyo's contemporary architecture. Besides the high-density urban condition with no abundant outdoor open space, the consideration of economic profit for the trade-in FAR and brand promotion, the preventions of protesting mass and riots, and the policies for the decentralized top-down bureaucratic system for releasing the government's financial cost to mobilize private sectors' investment through *machizukuri* in a bottom-up approach, the social responsibility and dedications to the public good (from the interviews with Asakura family and Tokyu Corporation) in the entrepreneurship from the private developers were worth to be underscored. Likewise, the initiatives for the people's public life in *hiroba* through architectural design by the four architects cannot be overlooked either. *Hiroba,* in the four case studies, is intentionally conceived as the linkage for creating open space (no matter whether it is owned by public or private sectors) accessible by the general public for use (open to be used); it fosters the common good, shared interests and values, and resonance of actions to bond the individuals to collective living in society (common things that related to all people, not to any individual). To discuss *hiroba* in relation to Japanese *kōkyō kūkan* based on the three notions of 'public' in Japan by Junichi Satoh (2000)*, kōkyō kūkan* provided by *hiroba* within Tokyo's contemporary architecture stresses the notion of 'public' more on 'common' and 'open' and less on 'official' aspect. Japanese *kōkyō kūkan* is different from but associated with Western public space. It is the synthesis of the two thoughts in dialogue: the indigenous one from the internal gaze in Japanese *hiroba*, the other global one from the external gaze in Western public space. *Hiroba* functions similar to the Western plaza or square, but both the developers and entrusted architects in the four projects are aware of its differences (the property ownership, the intensions, the management, and the uses) from Western public space.

The *hiroba* inherited from the Edo period, the Western types of public space (Western-type *hiroba*) imported after the Meiji period, and the *hiroba* within contemporary

Japanese architecture coexist in Tokyo. The former two types are generally scarce in quantitative numbers and located in the city centre (rather than dispersed in the city) compared to the *hiroba* within Tokyo's contemporary architecture. They all belong to Japanese *kōkyō kūkan* and are desired by local people in everyday life as Japanese *hiroba* (*hiroba-ka* open space). The interviews with users in the four case studies reveal that the 'safety' (away from the traffic and undesired homeless, the regulated space, and the clean and soft ground materials), 'convenience' (location to get access easily), 'anonym'(purposeless with no image related to authorities), 'inclusiveness' (people in different ages with diverse activities), 'free' (behaviour freedom with no dictations), and 'quality' (supportive facilities, comfortable atmosphere provided by natural greens, food, drinks, music, etc.) of the *hiroba* in Tokyo's contemporary architecture are crucial factors for its frequent use by Tokyoites. Many cherished values on the political dimensions in the Western public space, such as the pursuits of 'democratic demonstration' and 'civic life', are not mentioned or addressed as impressionable and expectational traits of *hiroba* in Japan by interviewed users in the four case studies. As the prototype of Japanese public space and the foundation of *kōkyō kūkan*, *hiroba* focuses only on three conditions (desire of using, physical open space, and activities), showing no interest in many Western concepts discussed above and the beauty of difference in Japan (Radović, 2003; 2020).

The chosen four cases are built at different times. On the one hand, each case reflects the period image of the historical changes in Japanese public space development and *hiroba* evolutions. On the other hand, each case shows differences or distinct characters away from the main trend of historical changes respectively. After the 1970s, more private enterprises and individuals attended the mass production of POPS depending on the economic stimulus policies by the Japanese government. The *hiroba* provided in the Hillside Terrace case by the Asakura Family was not the case of POPS in exchange with the trade-in FAR but the unconditional love for the building of the modern Dikanyama community. Similarly, in the case of Tokyu Plaza Omotesando

Harajuku, the POPS was provided not based on the relaxation on the building regulations through PPP or PFI in the urban renaissance movement after the 2000s but the private enterprises' contributions to the *hiroba* making and social responsibilities for promoting the local area (The Mori Memorial Foundation, 2011). Sumida Culture Factory introduced participant workshops for involving users' opinions. It changed the image of public architecture in Japan, which was much criticized as 'boxes' during Japan's economic bubble. The examination of the Sumida Culture Factory built in the 1990s found current issues faced by the government-led *hiroba* in today's society. For example, the lack of public-owned facilities and the insufficient fund to develop and maintain them, the shortage of professional knowledge to manage programs, and the fixed and predetermined programs caused by the over-consideration of safety. In Tokyo's urban redevelopment after the 1990s, by converting the previous industrial brownfield into a new residential area, Shinonome Canal Court not only created *hiroba* (initially as a common space in planning) opened to the residential area in use but also cultivated the local communities through many activities and events initiated and organized by the residences.

Different from the lament on the fall of public space in most Western cities (Sokin,1992; Sennett, 2002; Low, 2006), Japan as a country that lacks the notion of 'public' and spatial conditions to provide public space in the Western sense, from a long and historical overview, has made a considerable achievement today through the making of the Japanese *hiroba* and *kōkyō kūkan* as the alternative, distinct from many insurgent public open spaces appropriated by people found in many other Asian cities by Hou (2010) and his colleagues. The notions of the 'public' behind *hiroba*'s evolutionary history are also changing, evolving, and enriching.

Japan has developed its own interpretation of 'public' and a unique form of 'public' space (*kōkyō kūkan*) inherited from *hiroba* as the prototype, which keeps absorbing ideas from Western public space and adapting to the changing society of Japan in the

globalization. The notions of ‘public’ behind *hiroba* have shifted from officialdom signified by the feudal emperor, to the institutional democracy by bureaucratic government, and to the *minna* (みんな, everybody) in the sense of community (from both the geographic and spiritual dimensions), which shares similarities in value and commonalities in behaviour. In other words, *kyō* (共, together) embedded within *hiroba* is particularly underscored and well developed between *kō* (public, 公) and *watashi* (private, 私) in Japanese society today.

8.5 Limitations and Future Studies

From the literature review on the Japanese form and the evolution of the *hiroba* in Japanese history, as well as in the four case studies, many non-form factors as *ka* (hypothesis) from the external environment are found to be decisive in shaping the form of *hiroba* and in responding *hiroba* as a concept. The research covers only part of those non-form factors, and the additional knowledge from socio-culture, tradition, history, economy, religion, and geography, etc. in a broad field of Japanese studies (as the form of knowledge) would be included into the future research to study their relations to the form reasoning (as the knowledge of form). The current research compares the differences between the Japanese *hiroba* in relation to *kōkyō kūkan* and the Western plaza or square in relation to public space in general from the Western sense, particularly from the perspectives of typology and human behaviour. The explanation of the notion of ‘public’ from the angles of politics, laws and local regulations is touched without further detailed exploration in the current research. The future research would include those fields and locate Japanese *hiroba* in the background of the studies on the Western public notions and public space evolutions to have a comparison.

In addition, the aging population and declining birth rate in the shrinking society of Japan leave many existing buildings abandoned (Baba+Open A, 2013; 2015). A

compact, hybrid, ecological, and efficient city is asked for sustainable development in Japan (Nikken Sekkei ISCD Study Team, 2013; Nikken Sekkei ISCD Study Team and Shinkenchiku-sha, 2019). The *hiroba* created through the renovation of the old building repository and the *hiroba* integrated with transportation infrastructure (not *ekimae hiroba*, which is derived from Western-type *hiroba* and have been much studied by scholars and practiced as a model by architects in Japan) in the TOD (Transit Oriented Development) system worth to be studied in future research. The typology and human behaviour in the *hiroba* produced through the above urban renaissance movement (after the 2010s) can supplement the current research findings from the four case studies (from the 1960s-2010s) and help to understand Japanese *hiroba* in the updated urban conditions comprehensively.

The current research on the typology of *hiroba* within Tokyo's contemporary architecture is mainly based on the open spaces extracted from four case studies together without considering their categories under different spatial elements. The future research would further investigate the open space typology of *hiroba* focusing on the particular spatial element from a large number of specific cases. For extracted spatial elements that help to provide the physical settings of *hiroba* (open space) in the current research, such as 'atrium', 'plaza', 'courtyard', 'lobby', etc., future research would study open space typologies under each of those spatial elements based on the collections of cases broadly in specific architectural projects published in the architectural magazine (such as *JA* and *Shinkenchiku*). The future research would include the attributes of the 'function', 'FAR', 'location', and 'built year' into the discussion of their relations and influences on the typology of open space in *hiroba* besides the consideration of accessibility from 'circulation', 'sightline' and 'level'; enclosure from 'opening', 'scale', and 'canopy'; identity from 'boundary', 'permeability', and 'attachment' in spatial composition of open space typologies within four cases. The spatial meanings and characters in different architectural compositions of open spaces in *hiroba* (i.e., the syntagmatic relations and paradigmatic relations) would also

be explored. It is worth noting that the extracted open space typologies of *hiroba* within contemporary Japanese architecture in Tokyo only provide the instrumental tools for building the physical settings of *hiroba*, the formation of which needs to be activated by human behaviour through *hiroba-ka*. As discussed in the thesis, the Japanese perception of space is based on the concept of *ma* (space-time continuum). The character of de-materiality in Japanese architecture also implies the limitation of physical form represented by the typology in the interpretation of *hiroba* in architecture. Therefore, over-emphasizing the significance of typology (specific spatial patterns) and applying it in the design practice as a methodological manual would only result in formalism and turning *hiroba* into a specific model for form repetition rather than abstract type as a concept for form creation.

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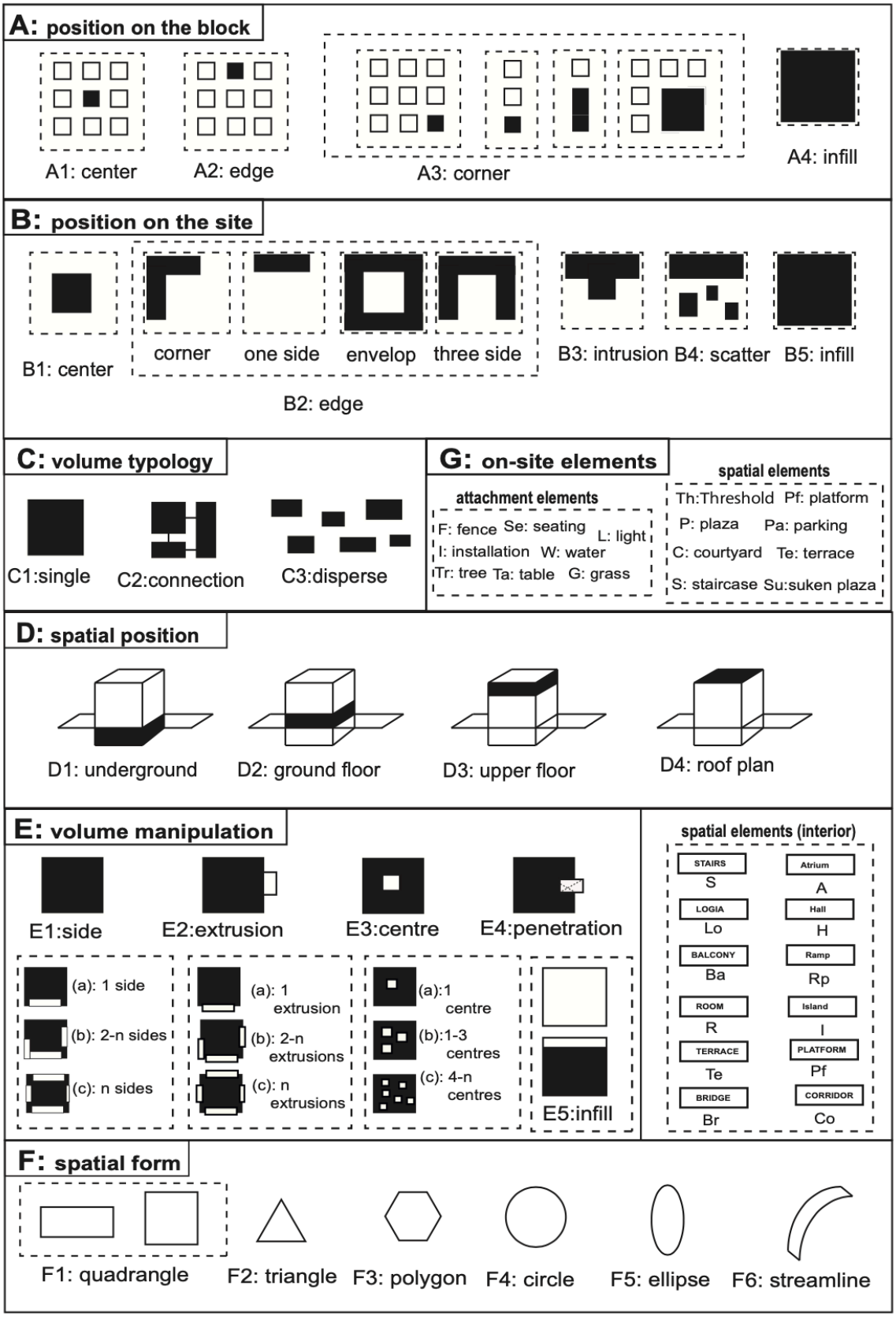
Appendix

1. 135 chosen projects in Tokyo published in *JA*

No.	Name	Issue	No.	Name	Issue
1	Chihiro Art Museum Tokyo	JA 36	69	Building K	JA 72
2	University Art Museum, Tokyo National University of Fine Arts and Musi	JA 36	70	Hi-ROOM Meidaimae A / row house near rail track	JA 72
3	Chitose All-Season Swimming Pool	JA 36	71	SIA Aoyama Building	JA 72
4	Hillside Terrace	JA 36	72	Figured Glass House	JA 72
5	A.P.C Building	JA 36	73	Tokyu Hospital at Ookayama Station	JA 72
6	OmniQuarter	JA 40	74	sarugaku	JA 72
7	Tokyo Sankei Building, First phase	JA 40	75	LAPIS	JA 72
8	hhstyle.com	JA 40	76	Nomura Headquarters Building	JA 72
9	Shinonome Canal Court	JA 41	77	HUNDRED CIRCUS East Tower	JA 73
10	SAK	JA 44	78	T.I.T. Midorigaoka No.1 Building Retrofit	JA 73
11	Maison Hermes	JA 44	79	MHS Head Office Renovation	JA 73
12	Tokyo Ginza Shiseido Bld.	JA 44	80	House K	JA 74
13	W House	JA 44	81	Nerima Apartment	JA 74
14	NTT Docomo Yoyogi Building	JA 44	82	Tokyo Apartment	JA 74
15	Tokyo National Museum the Gallery of Horyuji Treasures	JA 44	83	Mado Building	JA 74
16	Gallery TOM	JA 46	84	Natural Patches	JA 75
17	Dentsu Headquarters Building, Shiodome Annex Building	JA 48	85	Nezu Museum	JA 76
18	Marunouchi Building	JA 48	86	Marunouchi Park Building / Mitsubishi Ichigokan	JA 76
19	Keio Yochisha Elementary School New Wing "Shinkan 21"	JA 48	87	Tokyo Tech Front	JA 76
20	International Library of Children's Literature	JA 48	88	Mokuzai Kaikan	JA 76
21	National Museum of Modern Art, Tokyo, Renewal	JA 48	89	ZA-KOENJI Public Theatre	JA 76
22	Pacific Century Place Marunouchi	JA 48	90	Keyaki Garden	JA 76
23	Flat in Todoroki	JA 49	91	Omiyamae Sports Facility	JA 78
24	Project E	JA 49	92	Tokyo International Airport International Passenger Terminal	JA 80
25	Shimouma 4 Houses	JA 49	93	Yutenji Apartments	JA 80
26	Louis Vuitton Roppongi Hills	JA 52	94	Flower Shop H	JA 80
27	Nikken Sekkei Tokyo Building	JA 52	95	Ring Around a Tree	JA 83
28	Prada Boutique Aoyama	JA 52	96	Sakura Apartment	JA 84
29	ONE Omotesando	JA 52	97	Shibaura Building	JA 84
30	TV Asahi Headquarters	JA 52	98	Jissen Gakuen Junior & Senior High School Freedom Learning Manor Hou	JA 84
31	Tokyo Metropolitan Roka Senior High School	JA 52	99	Lino Building	JA 84
32	Glass Shutter Studio	JA 52	100	Shakujii Apartment	JA 84
33	Dior Omotesando	JA 54	101	Sony City Osaki	JA 84
34	Apartment in Tamagawadenenchofu	JA 54	102	Fukagawa Fudoudo	JA 84
35	Nihonbashi 1-Chome Building	JA 56	103	Forum Building	JA 84
36	Takenaka Corporation Tokyo Main Office	JA 56	104	THE SCAPE(R)	JA 86
37	Jodoshu Chokokuin	JA 56	105	Jinumae Building	JA 86
38	Library Building and Lecture Hall, Daito University Campus	JA 56	106	Asakusa Cultural Tourist Information Center	JA 88
39	Umegaoka Cooperative House	JA 56	107	Akasaka K-Tower	JA 88
40	studio d	JA 60	108	Shibuya Hikarie	JA 88
41	hhstyle.com/casa	JA 60	109	JP Tower	JA 88
42	Tod's Omotesando Building	JA 60	110	Daikanyama Tsutaya Books	JA 88
43	Space Block Nozawa	JA 61	111	Sunny Hills Japan	JA 89
44	MIKIMOTO Ginza 2	JA 62	112	Library in Asagaya	JA 90
45	The Tokyo Club	JA 62	113	Ginza Kabukiza	JA 92
46	Omotesando Hills	JA 64	114	GrandRoof	JA 96
47	International House of Japan	JA 64	115	Yoshida Printing Tokyo HQ	JA 96
48	QUICO Jingumae	JA 64	116	Apartments with a Small Resterant	JA 96
49	Meijiseimeikan	JA 64	117	WKB	JA 96
50	House & Ateler Bow-wow	JA 64	118	Yamate Street House	JA 96
51	Moriyama House	JA 64	119	Toranomon Hills	JA 96
52	Nihonbashi Mitsui Tower	JA 64	120	Nihonbashi Dia Building	JA 96
53	St. Ignatius Church	JA 65	121	The Otemachi Tower	JA 96
54	Garden & House	JA 66	122	The Yomiuri Shimbun Building	JA 96
55	Seijo Townhouse, Garden Court Seijo United Cubes	JA 68	123	Apple Store, Omotesando	JA 96
56	Kamiyoga Court House	JA 68	124	Shimouma Apartment	JA 96
57	The Natural Shoe Store Office	JA 68	125	FDM House	JA 96
58	Fuji Kindergarten	JA 68	126	egota house B	JA 96
59	GYRE	JA 68	127	Kyobashi Child Institution	JA 96
60	Shin Marunouchi Building	JA 68	128	Shimizu Corporation Head Office	JA 96
61	Nicolas G.Hayek Center	JA 68	129	Tokyo Plaza Ginza	JA 104
62	Apartment 1	JA 68	130	SodaCCo	JA 104
63	Sony City	JA 68	131	Omori Lodge Hakobuie	JA 104
64	TORANOMON TOWERS	JA 68	132	la kagu	JA 104
65	Studio Gotenyama	JA 68	133	Between Natsumezaka	JA 105
66	The National Art Center, Tokyo	JA 68	134	Yoyogi Terrace	JA 106
67	Safety & Security Center	JA 68	135	Daiwa Ubiquitous Computing Research Building	JA 109
68	HIGASHIAZABU SAN-AI Bldg.	JA 69			

(Source from: drawn by the author)

2. Architectural composition analysis map



(Source from: drawn by the author)

3. Architectural composition of 135 chosen projects in Tokyo extracted from *JA*

	Name	Ward	Architect	Year	Issue	Function	Floors	Outer Space	Architectural Volume	Interior Volume Layout + Roof	Space Form
1	Hikarie Terrace	Shibuya-ku, Tokyo	Maki & Associates	1998	JA 36	shop/office/housing	5(2)	A2 B4 [T,G,S,Su, Pa,P,C,Pl, Th, Ta, Se, L]	C3	[D12/D23] [E1E3E4E5] [S,Lo,Ba,R,Ta,Co,HA\,Pl] (Ca)	F1F4
2	A.P.C Building	Shibuya-ku, Tokyo	Shoji Chemistry+Shumei	1998	JA 36	shop/office	6(1)	A2 B3 [Tg]	C1	[D23] [E1E3] [S,Lo,R]	F1
3	University Art Museum, Tokyo National University of Fine Arts and Music	Taito-ku, Tokyo	Kijo Rokkaku, Nihon Sekkei	1999	JA 36	museum(dining room)	4(-a),4(+1)	A2 B3 [P]	C1	[D12/D23] [E1E2E3E5] [S,Ba,R,Ta] (SK)	F1F3F6
4	Chitose Ali Season Swimming Pool	Setagaya-ku, Tokyo	Kunihiko Hayakawa Architect & Associate	1999	JA 36	pool	4(-2)	A2 B2 [G,Pa,C,L,E]	C2	[D12/D23] [E1E3E5] [L,o,R,Co] (SK)	F1F3F6
5	Chihiro Art Museum Tokyo	Nerima-ku, Tokyo	Hiroshi Naito & Associates	2002	JA 38	museum	3	A2 B3 [T,G,Pa,C,F]	C2	[D23] [E1E3E5] [R,Co,Te,Br]	F2F3
6	OmoQuarter	Minato-ku, Tokyo	Ko Kitayama + architecture WORKSHOP	2000	JA 40	mixed house(atelier/shop/office/gallery)	4(-1)	A3 B1 [T,G,S,Ta]	C1	[D12/D23] [E1E3E4E5] [S,Ta,R,Col] (SK)	F1
7	Tokyo Sankei Building, First phase	Chiyoda-ku, Tokyo	Takenaka Corporation	2000	JA 40	office(hall/shop)	31(-4)(+2)	A3 B1 [T,S,Ta,Se,P, Th]	C1	[D12/D23] [E1E3E4] [S,R,Te]	F1F3
8	hhstyle.com	Shibuya-ku, Tokyo	Kazuyo Sejima & Associates	2000	JA 40	shop(office)	3(-1)	A2 B5 [S, Ta, Th]	C1	[D23] E5 [R,Ba]	F1
9	Shinjuku Cancel Court	Kohoku, Tokyo	Rhein Yamamoto & Field Shop, Toyo Ito & Associates, Kengo Kuma & Associates, etc.	2003	JA 41	apartment	14(+1)	A1 B4 [T,G,S, Ta, S,Se, Pa, Su, Br,F,C,Pl,L, Th]	C3	[D23] [E1,C2C4C5] [HA\,Ba,R,Ta,Co]	C1F6
10	Tokyo National Museum the Gallery of Horyuji Treasures	Taito-ku, Tokyo	Taniguchi & Associates	1999	JA 44	museum	4(-1)	A3 B1 [W,Ta,Se,Pa,F,Th,Fl]	C1	[D23] [E1,E2E3E4] [S,R,Ta,Co] (SK)	F1
11	Tokyo Ginza Shiseido, Bld.	Chuo-ku, Tokyo	Ricardo Bofill, etc.	2000	JA 44	gallery/restaurant	11(-2)(+1)	A3 B6 [Th]	C1	[D12/D23] [E1E3E4] [S,R,Co]	F1
12	W House	Meguro-ku, Tokyo	Akira Watanabe Architect & Associates	2000	JA 44	apartment	3(+1)	A2 B1 [T,G,S,Te,Th,F,El]	C2	[D12/D23] [E1E2E5] [S,Lo,R,Te] (Te)	F1
13	NTT Docomo Yoyogi Building	Shibuya-ku, Tokyo	NTT P&B Facilities	2000	JA 44	telecommunication/office/shop	27(-3)(+1)	A3 B1 [T,G,P,Te]	C1	[D23] [E1E3E5] R	F1F3
14	SAK	Itabashi-ku, Tokyo	Toshiaki Ishida Architect & Associates	2001	JA 44	mixed house (shop)	3	A2 B5	C1	[D23] E5 [R]	F1
15	Maison Hermes	Chuo-ku, Tokyo	Renzo Piano Building Workshop/ Takenaka Corporation	2001	JA 44	shop/office/ exhibition room)	11(-3)(+1)	A3 B2 [P]	C2	[D23] [E1E3E5] R	F1
16	Gallery 10M	Shibuya-ku, Tokyo	Hiroshi Naito & Associates	1984	JA 45	gallery	3(-1)	A3 B5 [G,S,Pa]	C1	[D/E23] [E1E3E4] [R,Co,Te] (SK)	F1F3
17	National Museum of Modern Art, Tokyo, Renewal	Chiyoda-ku, Tokyo	Ministry of Land, Infrastructure and Transport Sakakura Associates Architects and Engineers	2001	JA 45	museum	3	A3 B3 [T,G,S,Ta,Se,P,Pl,Th,F]	C1	[D/E23] [E1E2E3E4] [S,R,Co,Te]	F1F3
18	Pacific Century Place Marunouchi	Chiyoda-ku, Tokyo	PCP Design Team(Nikken Sekkei + Takenaka Corporation)	2001	JA 48	office(hotel/shop)	32(-4)(+1)	A3 B1 [T,G,P,Th]	C1	[D23] [E1E3E4] [R,Co]	F1
19	Dentsu Headquarters Building, Shiodome Annex Building	Minato-ku, Tokyo	Obayashi Corporation	2002	JA 48	office(headquarters/shop/hall/parking/district heating and cooling facilities)	48(-5)(+1)	A3 B3 [T,G,Th]	C1	[D23] [E1E3E4] [S,R,Co,Pl]	F1F6
20	Marunouchi Building	Chiyoda-ku, Tokyo	Mitsubishi Jisho Sekkei	2002	JA 48	office(shop/hall/parking area)	37(-4)(+2)	A4 B5 [T,Ta,Th]	C1	[D/E23] [E1E3E4] [S,R,Co,Pl]	F1
21	Keio Yochisha Elementary School New Wing "Shinkan 21"	Shibuya-ku, Tokyo	Taniguchi & Associates	2002	JA 48	elementary school	4(-1)(+1)	A1 B3 [T,G,S,P Su, Th]	C1	[D12/D23/D4] [E1E2E3E4E5] [S,R,Co,Pl] (Sk,Te)	F1F3
22	International Library of Children's Literature	Taito-ku, Tokyo	Tadao Ando Architect & Associates Nikken Sekkei	2002	JA 48	library	7(-1)	A2 B1 [T,G,Pa]	C1	[D/E23] [E1E2E3E5] [S,R,Co]	F1F4
23	Flat in Todoroki	Setagaya-ku, Tokyo	Tsuruoyuki Toyoda Doken +Kuniaki Takahashi, Ayano Ishimaru/ A studio	2003	JA 49	apartment	5(-1)	A3 B1 [Th]	C1	[D23] [E1E3] [S]	F1F2F3
24	Project E	Nakano-ku, Tokyo	Kazunari Sakamoto Architectural Laboratory	2003	JA 49	apartment	3(-1)	A3 B4 [T,G,S,Pa,C,Ta,Sk]	C3	[D12/D23/D4] [E1E3E4] [S,Ba,Ta,Co] (Te)	F1
25	Shimouma 4 Houses	Setagaya-ku, Tokyo	Kon Kitayama + architecture WORKSHOP	2003	JA 49	apartment	2(-1)	A1 B3 [S, Te]	C1	[D13/D24] [E1E3E4] [S,R,Pl] (Te)	F1
26	Louis Vuitton Ropponqi Hills	Minato-ku, Tokyo	Jun Aoki & Associates	2003	JA 52	shop		A2 B6 [Th,Pl]	C1	[D23] [E1E5] [P,S,R]	F1
27	Nikken Sekkei Tokyo Building	Chiyoda-ku, Tokyo	Nikken Sekkei	2003	JA 52	office	14(-1)(+1)	A2 B1 [T,G,S,Te,Th]	C1	[D/E23] [E1E3E5] [R,Co,Te,HA\]	F1
28	Prada Boutique Aoyama	Minato-ku, Tokyo	Herzog & de Meuron	2003	JA 52	shop(office)	7(-2)	A3 B3 [G,Se,C,Fl]	C1	[D12/D23] [E4E5] [S,R,Pl,HA\] (Sk)	F3
29	ONE Omotesando	Minato-ku, Tokyo	Kengo Kuma & Associates	2003	JA 52	shop/office/residence)	8(-2)	A2 B3 [Pa]	C1	[D/E23] [E1E5] [R,Co,Te,HA\]	F1F3
30	TV Asahi Headquarters	Minato-ku, Tokyo	Maki & Associates	2003	JA 52	TV station/office/shop)	8(-3)(+1)	A3 B3 [W,T,G,S,Ta,Se,Pa,Th,Su]	C1	[D12/D23/D4] [E1E3E4E5] [S,R,Pl,Lo,Co,Te,U,Ta,Se]	F1F6
31	Tokyo Metropolitan Roka Senior High School	Setagaya-ku, Tokyo	Kunihiko Hayakawa Architect & Associate	2003	JA 52	senior high school	3, 2	A2 B1 [T,G,S,Se,Pa,Co,Ta,Th,St,F]	C2	[D23/D24] [E1E2E3E5] [S,Ba,R,Ta,Co,Pl] (M,Sk)	F1
32	Glass Shutter Studio	Meguro-ku, Tokyo	Shigeru Ban Architects	2003	JA 52	mixed house (restaurant)	3	A2 B2 [T,S,Co,Pl,F]	C1	[D/E23] [E1E4E5] [S,R,Pl,Te,Lo,Co]	F1
33	Dior Omotesando	Shibuya-ku, Tokyo	GANNA	2003	JA 54	shop	4(+1)	A3 B5	C1	[D23/D24] E5 [R] (Te)	F1
34	Apartment in Tamagawadenenchofu	Setagaya-ku, Tokyo	Yasushi Horibe	2003	JA 54	apartment	3(-1)	A2 B3 [W,T,G,S,Th,Pa,Su]	C1	[D/E23] [E1E2E3E4E5] [S,Lo,R,Ba,Br,Col] (Te,Tr,G,Se,Ta)	F1
35	Library Building and Lecture Hall, Daito University Campus	Itabashi-ku, Tokyo	Ben Nakamura and Yamamoto Hori Architects	5(-1), 5(-1)	JA 56	university	A1 B1 [T,G,S,P,Pl,L,Th]	C1	[D12/D23/D4] [E1E2E3E4E5] [S,Ba,R,Ta,Br,Co,Pl] (Te,Tr,G,Se,Ta)	F1F5
36	Umegaoka Cooperative House	Setagaya-ku, Tokyo	SOM Architect&Associates, Tamo Hino Architects, Takehiro Higa Architect & Associates	2003	JA 56	apartment	4(-1)	A2 B3 [T,G,Ta,F]	C1	[D/E23] [E1E2E5E4] [S,Ba,R,Pl,Ta]	F1F6
37	Nihonbashi 1-Chome Building	Chuo-ku, Tokyo	KPF Associates	2004	JA 56	office/shop(university/parking)	20(-4)(+1), 2(-2)	A3 B5 [Ta,Th, Tr,Se]	C1	[D12/D23] [E1E2E4] [R,HA\,Ta,S]	F1
38	Takenaka Corporation Tokyo Main Office	Koto-ku, Tokyo	Takenaka Corporation	2004	JA 56	office	7(+1)	A2 B5 [Ta,Th,Pa]	C1	[D23] [E1E3E4] [S,HA\,Co,Ta]	F1
39	Jodohiru Chokokuin	Edogawa-ku, Tokyo	Hiroshi Miyazaki / Planis Associates	2004	JA 56	temple	3	A1 B1 [T,G,Ta,Pa,Th,Pa,Th]	C1	[D/E23] [E1E2E4E5] [S,R,Ta,Ba,Co,HA\]	F1
40	Lord's Omotesando Building	Shibuya-ku, Tokyo	Toyo Ito & Associates	2004	JA 60	shop(office)	7(-2)	A2 B5	C1	[D12/D23/D4] [E1E3E4] [S,R,Co,HA\]	F1F3
41	studio d	Itabashi-ku, Tokyo	Hiroyuki Arima + Urban Furth.	2005	JA 60	mixed house (studio)	3	A3 B3 [Ta,Pa,Th]	C1	[D/E23] [E1E4E5] [S,R,Pl] (Ta,Sk)	F1
42	hhstyle.com/casa	Shibuya-ku, Tokyo	Tadao Ando Architect & Associates	2005	JA 60	shop	2(-1)	A2 B3 [S,Tr,Pl]	C1	[D12/D23] [E1E4E5] [S,R,Pl] (SK)	F1F3
43	Spiral Block Nezuwa	Setagaya-ku, Tokyo	CAt	2005	JA 61	apartment	4	A3 B3 [T,G,Ta,Th]	C1	[D/E23] [E1E4] [S,Co] (Sk)	F1
44	MIKIMOTO Ginza 2	Chuo-ku, Tokyo	Toyo Ito & Associates	2005	JA 62	shop(office)	9(-1)	A3 B5	C1	[D12/D23] [E4E5] [R]	F1
45	The Tokyo Club	Minato, Tokyo	Taniguchi & Associates	2005	JA 62	club	4(-1)	A3 B3 [T,G,S,Th]	C1	[D23] [E2E3E4] [S,Ta,Ba,R,Co,W,HA\] (W)	F1
46	QUOQ, Jingumae	Shibuya-ku, Tokyo	Kazunari Sakamoto Architectural Laboratory +Atelier and I	2005	JA 64	mixed house(shop/office)	3(-2)(+1)	A2 B3 [T,G,Pa,Th,Ri,F]	C1	[D/E23] [E1E4E5] [R,S,P,Ba] (Te)	F1
47	Meijiemeiken	Setagaya-ku, Tokyo	Takenaka Corporation/ Mitsubishi Jisho Sekkei Inc	2005	JA 64	office	8(-2)(+1)	A3 B3 [T,Th,Se,P]	C1	[D23] [E1E3E4] [S,R,Co,HA\]	F1
48	House & Atelier Bowwow	Shinjuku-ku, Tokyo	Atelier Bow-Wow	2005	JA 64	mixed house (office)	3(-1)(+1)	A1 B1 [T,Ta, Th]	C1	[D12/D23/D4] [E1E4E5] [R,S,P,Ba] (Ta,Tr,G,Ta,Se)	F1
49	Moriyama House	Tokyo	Office of Ryue Nishizawa	2005	JA 64	collective housing	3(-1)	A3 B4 [T,G,Se,Ta,Te,S,U]	C3	[D23/D24] [E4E5] [R,S]	F1
50	Nihonbashi Mitsui Tower	Chuo-ku, Tokyo	Pelli Clark Pelli Architects, Japan Inc	2005	JA 64	office/hotel/shop)	39(-0)(+1)	A3 B6 [Th,Pa]	C1	[D/E23] [E1E3E4] [S,R,Br,Co,HA\] (G)	F1F3
51	Omotesando Hills	Shibuya-ku, Tokyo	Tadao Ando Architect & Associates	2006	JA 64	shop/apartment/public lavatory/parking)	6(-6)	A2 B5 [P]	C1	[D12/D23/D4] [E1E5E4] [R,S,Ba,Pl,HA\] (Te,Tr,G,Sk)	F1F2F3
52	International House of Japan	Minato-ku, Tokyo	Mitsubishi Jisho Sekkei	2006	JA 64	assembly hall/inn/library	4(-2)(+1)	A1 B3 [T,G,W,Pa,Ta,Th]	C1	[D12/D23/D4] [E1E2E3E4E5] [R,Co,HA\] (Ta,G)	F1
53	St. Ignatius Church	Chiyoda-ku, Tokyo	Sakakura Associates Architects & Engineers	1999	JA 65	church	4(-1)	A3 B3 [T,G,Th]	C1	[D23] [E1E2E4E5] [HA\,Pl,R]	F5
54	Garden & House	Setagaya-ku, Tokyo	Office of Ryue Nishizawa	2011	JA 66	mixed house (office)	4	A2 B1 [Ta,Th]	C1	[D/E23/D4] [E1E3E5] [R,Te] (Ta,Se,Ta)	F1F6
55	Sony City	Minato-ku, Tokyo	Pfanner Architects, Inc	2006	JA 68	office/conference hall/shop(etc.)	20(-2)(+2)	A3 B1 [Th,Ta,Tr,G]	C1	[D/E23] [E1E2E4] [HA\,R,Pl,Co]	F1
56	TORANOMON TOWERS	Minato-ku, Tokyo	KAJIMA DESIGN	2006	JA 68	office/residence/shop)	23(-3)+2), 41(-2)(+2)	A3 B3 [T,G,P,Pa,Pl,F]	C3	[D12] [E1E4E5] [R,HA\,Co]	F1
57	Studio Gotenyama	Shinagawa-ku, Tokyo	Chiba Manabu Architects	2006	JA 69	apartment	4	A2 B3 [T,Ta,Th]	C1	[D/E23] [E1E4] [R,Tg] (Sk)	F1
58	The National Art Center, Tokyo	Minato-ku, Tokyo	Kisho Kurokawa + NIHON SEKKEI	2006	JA 68	museum	6(-2)(+1)	A1 B1 [T,G,P,Th,Pa]	C1	[D/E23] [E1E2E3E4] [R,HA\,Br,Co,Ta,I]	F1F4F6
59	Safety & Security Center	Koufu-ku, Tokyo	Taichi Takahashi/ SFS*21 + Shimizu Corporation	2006	JA 68	office	4(+1)	A2 B1 [S,Ta,G,Pl]	C1	[D1 E5 [R,Ba]	F1
60	Seijo Townhouse, Garden Court Seijo United Cubes	Setagaya-ku, Tokyo	Kazuyo Sejima &Associates +Taisei Corporation	2007	JA 68	collective housing	3(-1)	A1 B4 [T,G,S,Ta,Th,Pa]	C3	[D/E23] [E4E5] [R,Te] (Tg)	F1
61	Kamiyoga Court House	Setagaya-ku, Tokyo	Hiroshi Nakamatsu, Architect & Associates	2007	JA 68	collective housing	2(-1)	A2 B2 [T,G,Te]	C2	[D/E23] [E1E2E5] [R,Co,Te]	F1
62	The Natural Shoe Store Office	Chuo-ku, Tokyo	Open A	2007	JA 68	warehouse office	2	A2 B6 [D,Te]	C1	[D23] [E1E4] [R,HA\]	F1
63	Fuji Kindergarten	Tachikawa, Tokyo	Tezuka Architects	2007	JA 68	kindergarten	1	A3 A1 [T,G,Ch,Th,S]	C1	[D22/D4] [E1E3] [R,Co,Gl] (Te,Sk,Tr,S)	F5
64	GYRE	Shibuya-ku, Tokyo	MVRDV + Takenaka Corporation	2007	JA 69	shop	A3 B3		C1	[D12/D23/D4] [E1E3E4] [S,P,R,Co,,Te,Lo,HA\] (Te,G,Tr,Se,Ta)	F3
65	Shin Meurnouchi Building	Chiyoda-ku, Tokyo	Mitsubishi Jisho Sekkei Inc.	2007	JA 68	office/shop(park)	38(-4)(+1)	A4 B1 [T,G,Ta,Th]	C1	[D12/D23] [E1E3E4E5] [S,HA\,Co,Te] (Ta,G)	F3
66	Nicolas G Hayek Center	Chuo-ku, Tokyo	Shigeru Ban Architects	2007	JA 68	shop/customer center/office)	14(-2)(+1)	A2 B5 [Th]	C1	[D23] [E1E2E3E4E5] [R,Pl,S]	F1
67	Apartment I	Shibuya-ku, Tokyo	Office of Kumiko Inui	2007	JA 68	apartment	4(-1)	A2 B3 [S,Te]	C1	[D12/D23] [E1] [R]	F3

68	HIGASHIAZABU SAN-AI Bldg.	Minato-ku, Tokyo	Toshiaki Ishida Architect & Associates	2005	JA 69	apartment (shop)	6	A3 B3 [Te]	C1	[D2D3] [E1E4] [R,S,Pf,Te]	F3
69	Tokyu Hospital at Ookayama Station	Ohta-ku, Tokyo	Tokyu Corporation, Yasuda Koichi Laboratory +Yasuda Atelier, Daiken Sekkei	2007	JA 72	hospital	5(-1)	A3 B3 [Tr,G,Se,L,Rp,F]	C1	[D2D3D4] [E1E2E3] [R,H(A),Co,Te,Ba] (Te,Tr,G)	F1F6
70	sarugaku	Shibuya-ku, Tokyo	Akihisa Hirata + Yoshihiko Yoshihara	2007	JA 72	shop	2(-1)	A1 B2 [Tr,G,Ch,Th,Te,S,B,Pf]	C2	[D1D2D3D4] [E2E5] [R,S,Ba,Te,Pf] (Te,G,B)	F1
71	LAPIS	Minato-ku, Tokyo	Iida ARCHISHIP Studio	2007	JA 72	apartment (shop)	8	A2 B3 [F]	C1	[D2D3] [E1E4E5] [R,Ba] (Sk)	F1
72	Nomura Headquarters Building	Minato-ku, Tokyo	NIKKEN SEKKEI, et l.	2007	JA 72	office	13(-2)(+1)	A3 B1 [Tr,G,Te,Th]	C1	[D1D2D3D4] [E1E3E4] [S,R,H(A),Rp] (Te,Tr,G,Se)	F1
73	Building K	Suginami-ku, Tokyo	Ryuji Fujimura Architects	2008	JA 72	apartment (shop)	6	A2 B1 [Tr,Te]	C1	[D2D3D4] [E1E3E5] [R,Co,Te] (Te,Tr,Se,B)	F1
74	Hi-ROOM Meidaimae A / row house near rail track	Suginami-ku, Tokyo	Hitoshi Wakamatsu Architect & Associates	2008	JA 72	collective housing	2	A3 B1 [Tr,G,Te,C]	C1	[D2D3] [E1E5] [R] (Tr,G,Se,Ta)	F1
75	SIA Aoyama Building	Shibuya-ku, Tokyo	Jun Aoki & Associates	2008	JA 72	office	9(-1)	A3 B3 [Tr,G,P,Pa,F]	C1	[D2D3] E5 [R]	F3
76	Figured Glass House	Tokyo	Makoto Takei + Chie Nabeshima/ TNA	2008	JA 72	mixed house (office)	3	A1 B5	C1	[D2D3] [E1E4] [R,Te,Pf] (Sk)	F1
77	T.I.T. Midorigaoka No.1 Building Retrofit	Meguro-ku, Tokyo	Koichi Yasuda Laboratory + Toru Takeuchi Laboratory	2006	JA 73	university facility	5(-1)(+2)	A1 D1 [Rp,Tr,G,Th,Pf,Te,S]	C1	[D1D2D3] [C1C2E3] [S,R,Ba]	F1
78	MHS Head Office Renovation	Minato-ku, Tokyo	MHS Planner, Architects & Engineers	2006	JA 73	office	8(-1)(+1)	A2 B5 [Tr,G,L]	C1	[D2D3D4] [E1E3E4E5] [R,S,Co,Te,Ba,H(A)] (Te,G,Se,Ta,Sk)	F1
79	HUNDRED CIRCUS East Tower	Shinjuku-ku, Tokyo	NIKKEN SEKKEI, et al.	2008	JA 73	housing/hotel/shop/office	22(-4)	A3 B4 [P,Pa,Tr,G,Th,Pf]	C3	[D1D2D3] [E1E2E3E4] [H(A),R,Ba,Pf,S]	F1
80	Mado Building	Setagaya-ku, Tokyo	Atelier Bow-Wow	2006	JA 74	apartment	4(-1)	A3 B3 [Tr,G,Te,Th]	C1	[D1D2D3] [E4E5] [R] (Sk)	F1
81	House K	Tokyo	Office of Kumiko Inui	2010	JA 74	apartment	5	A2 B5 [Vd]	C1	[D2D3] E5 [R,Br,Te]	F1
82	Nerima Apartment	Nerima-ku, Tokyo	Go Hasegawa & Associates	2010	JA 74	apartment (shop/office)	7	A3 B1 [Th,Tr,G]	C1	[D2D3] [E1E3E4] [R,H(A),Ba,Co]	F1
83	Tokyo Apartment	Itabashi-ku,Tokyo	Sou Fujimoto Architects	2010	JA 74	apartment	3(-1)	A3 B3 [Te,S]	C1	[D2D3] [E3E5] [R,S,Pf] (Sk)	F1
84	Natural Patches	Nerima-ku, Tokyo	Masaki Endoh/ EDH Endoh Design House	2007	JA 75	mixed house (shop)	2	A2 B4 [Tr,Te,Th]	C2	[D2D3] [E1E5] [R,Br]	F1
85	ZA-KOENJI Public Theatre	Suginami-ku, Tokyo	Toyo Ito & Associates	2008	JA 76	public theater	3(-3)	A2 B1 [Te,P,Pa,Th,L,Se]	C1	[D1D2D3] [E1E2E3] [R,H(A)]	F1
86	Keyaki Garden	Setagaya-ku, Tokyo	Yasushi Horibe Architects	2008	JA 76	apartment (shop)	3	A3 B3 [Te,G,Tr,Th,Se,F,Pa]	C1	[D2D3] [E1] [R,Te] (Sk)	F1
87	Nezu Museum	Minato-ku, Tokyo	Kengo Kuma & Associates	2009	JA 76	museum	2(-1)	A3 B3 [Pa,Th,Tr,G]	C1	[D1D2D3] [E1E2E3E4] [H(A),R,Pf,Co]	F1
88	Marunouchi Park Building / Mitsubishi Ichigokan	Chiyoda-ku, Tokyo	Mitsubishi Jisho Sekkei	2009	JA 76	office(shop/fitness/gym/museum/district heating and cooling/parking)	37(-4) + 3(-1)	A3 B3 [Tr,G,Th,Te]	C1	[D2D3] [E1E2E3E4] [R,H(A)]	F1
89	Tokyo Tech Front	Meguro-ku, Tokyo	Kazunari Sakamoto Architectural Laboratory + Nikken Sekkei	2009	JA 76	university building	4	A3 B3 [Tr,G,P,Pa,E,S,I,Th]	C2	[D2D3] [E1E3E4E5] [S,R,Br,Pf,Co,H(A)]	F1
90	Mokuzai Kaikan	Koto-ku, Tokyo	Tomohiko Yamanashi, et al.	2009	JA 76	office(assembly hall)	7(-1)(+1)	A2 B3 [Tr,G,P,Th]	C1	[D2D3D4] [E1E2E3] [R,H(A),Te,Co] (Te)	F1
91	Omiyamae Sports Facility	Suginami-ku, Tokyo	Jun Aoki & Associates	2011	JA 78	sports facility	1	A3 B4 [Pa,P,Tr,G,Th,I]	C3	[D1D2D3D4] [E1E3E4] [R,H(A),Co] (Te, G)	F1F6
92	Flower Shop H	Chiyoda-ku, Tokyo	Office of Kumiko Inui	2009	JA 80	shop	1(-1)	A3 B4 [Tr,G,Co,Th]	C3	D2 E5 [R]	F1
93	Tokyo International Airport International Passenger Terminal	Ota-ku, Tokyo	Azusa Sekkei Co.Ltd. /Pelli Clarke Pelli Architects Japan, Inc.	2010	JA 80	airport	5	A1 B1 [Th,Tr,G,Pa,]	C1	[D1D2D3D4] [E1E3E4] [Pf,I,H(A),R,Co] (Sk, Te)	F1
94	Yutenji Apartments	Meguro-ku, Tokyo	Koh Kitayama + architecture WORKSHOP	2010	JA 80	apartment	4(-1)	A2 B4 [Te,C,G,Tr,D]	C2	[D1D2D3D4] [E1E5] [Br,Te,R] (Te)	F1
95	Ring Around a Tree	Tokyo	Tezuka Architects	2011	JA 83	kindergarten	2	A1 B1 [Tr,C,Te]	C1	[D2D3D4] E5 [S,Pf] (Te)	F5
96	Forum Building	Minato-ku, Tokyo	Takenaka Corporation	2009	JA 84	office	12(-2)(+1)	A3 B3 [Te,Th]	C1	[D2D3] E5 [R]	F1
97	Fukagawa Fudoudo	Koto-ku, Tokyo	Tamaki Architectural Atelier	2010	JA 84	temple	3(-1)	A2 B1 [P,Pa,Pf,S,Th]	C1	[D2D3] [E1E3E4] [H(A),Pf]	F1
98	Sakura Apartment	Meguro-ku, Tokyo	Hitoshi Wakamatsu Architect & Associates	2011	JA 84	apartment	5(-1)	A3 B4 [Te]	C2	[D2D3] [E2E3E4E5] [R,Te,H(A)]	F1F6
99	Shibaura Building	Minato-ku, Tokyo	Kazuo Sejima & Associates	2011	JA 84	office	5(+1)	A3 B1 [Te]	C1	[D2D3] [E1E4E5] [H(A),R,Pf,S,Te]	F1F6
100	Jissen Gakuen Junior & Senior High School Freedom Learning Manor H	Nakano-ku, Tokyo	Nobuaki Furuya +NASCA	2011	JA 84	school	3(-1)	A2 B1 [Te,Pf,S,Tr,G,F]	C1	[D2D3] [E1E3E4] [Pf,Co,R] (Sk)	F1
101	Lino Building	Chiyoda-ku, Tokyo	Takenaka Corporation	2011	JA 84	meeting place/ theater/ shop	32(+2)	A3 D1 [Te,Tr,G,Th,S]	C1	[D1D2D3] [C1C2E3E4] [I,H(A),R,Te,Co,Pf]	F1
102	Shakuji Apartment	Nerima-ku, Tokyo	SANAA	2011	JA 84	collective housing	2(-1)	A2 B4 [Te,Co,Tr,G,S,Pa]	C3	[D2D3] E5 [R,Te]	F1
103	Sony City Osaki	Shinagawa-ku, Tokyo	Nikken Sekkei	2011	JA 84	lab-office/ shop/parking	25(-2)(+1)	A1 B1 [Te,P,Tr,G,L]	C1	[D2D3D4] [E1E3] [R,H(A),Ba] (Te, Tr)	F1
104	THE SCAPE(R)	Shibuya-ku, Tokyo	Naruse Inokuma Architects	2012	JA 86	office(co-working)	4	A2 B1 [Th,Te,Pa]	C1	[D2D3D4] [E1E5] [R,Te,Ba] (Te,Se,Ta, Tr, G)	F1
105	Jinumae Building	Shibuya-ku, Tokyo	ChuoArchi	2012	JA 86	tenent building	4(-1)	A1 B3 [Te,Th,S]	C1	[D1D2D3D4] [E1E5] [Te,S,R] (Te,Sk)	F1
106	Daikanyama Tsutaya Books	Shibuya-ku, Tokyo	Klein Dytham Architecture/ RIA	2011	JA 88	shop(services/restaurant)	3(-1),2,3	A3 B4 [Te,Tr,G,Se,Ta,Co,D,Pa,Th,So]	C2	[D2D3] [E1E2E3E4] [S,I,Co,Br]	F1
107	Asakusa Cultural Tourist Information Center	Taito Ward, Tokyo	Kengo Kuma & Associates	2012	JA 88	information center/office/exhibition/restaurant	8(-1)	A3 B3 [Te,Th,G]	C1	[D2D3] [E1E4] [S,Pf,Co,Te]	F1
108	Akasaka K-Tower	Minato-ku, Tokyo	Kajima Design	2012	JA 88	office(apartment/shop/parking)	30(-3)(+2)	A2 B1 [P,Tr,G,Th,Pf,S]	C1	[D2D3] [E1E3E4] [H(A),R,Te,Co,I]	F1
109	Shibuya Hikarie	Shibuya Ward, Tokyo	Nikken Sekkei	2012	JA 88	commercial space/office/cultural facility	34(-4)(+2)	A2 B3 [P,Th,Tr,G]	C1	[D1D2D3] [E1E2E3E4] [H(A),Co,R,Pf,Br,S] (Sk)	F1F3F4
110	JP Tower	Chiyoda-ku, Tokyo	Taisei Corporation	2012	JA 88	office(shop/meeting place/exhibition/parking)	38(-4)(+3)	A3 B3 [P,Tr,I,Se,F]	C1	[D1D2D3] [E1E3E4] [H(A),Co,R] (Sk)	F1F2
111	Sunny Hills Japan	Minato-ku, Tokyo	Kengo Kuma & Associates	2013	JA 89	shop	2(-1)	A3 B3 [Te,Tr,G]	C1	[D2D3D4] [E1E2E5] [R,S,Pf,Te] (Te)	F1
112	Library in Asagaya	Suginami-ku, Tokyo	Yasushi Horibe Architects	2013	JA 90	library	2(-1)	A3 B1 [Th,Tr, G]	C1	[D1D2D3] [E2E3E4] [R,S,Pf] (Sk)	F4
113	Ginza Kabukiza	Chuo Ward, Tokyo	Mitsubishi Jisho Sekkei, Kengo Kuma & Associates	2013	JA 92	office(theater/shop/parking)		A2 B1 [Tr,P, L]	C2	[D1D2D3D4] [E1E3E4] [Te,R,Co] (Tr, G)	F1F3
114	Shimizu Corporation Head Office	Chuo Ward, Tokyo	Shimizu Corporation	2012	JA 96	office	22(-3)(+1)	A2 B1 [Te,Th,Tr,G]	C1	[D2D3] [E1E3E5] [H(A),R]	F1
115	Shimouma Apartment	Setagaya Ward, Tokyo	KUS +team Timberize	2013	JA 96	apartment (shop)	5	A2 B5 [Te,Th]	C1	[D2D3] E1 [S,R,Te,Pf]	F1F3
116	FDM House	Shinagawa Ward, Tokyo	Mio Tsuneyama/mnm	2013	JA 96	apartment	2	A2 B3 [Tr,G,Th,S,Te]	C1	[D2D3] [E1E2E5] [R,Co,Ba]	F1
117	egota house B	Nakano Ward, Tokyo	Atelier and I, Kazunari Sakamoto Architectural Laboratory	2013	JA 96	nursery	4	A2 B3 [Tr,G,S,Pa,Te]	C1	[D2D3] [E1E2] [Ba,R]	F1
118	Kyobashi Child Institution	Chuo Ward, Tokyo	Shimizu Corporation	2013	JA 96	office(warehouse)	5(-2)	A2 B5 [G,S,Se,P,Pf, Th]	C1	[D2D3] [E1E2] [R,Te,Wl] (Ca)	F1
119	GrandRoof	Chiyoda ward, Tokyo	Nikken Sekkei / JR EAST Design Corppration	2014	JA 96	retail/ railway facilities/ parking	4(-3)	A2 B3 [P,Th, Pa,Tr,G]	C1	[D1D2] [E1E3] [R,Te,Co] (Ca)	F1
120	Yoshida Printing Tokyo HQ	Sumida-ku,Tokyo	Kazuyo Sejima & Associates	2014	JA 96	office(tenent)	5(-1)	A2 B3 [Tr,G,Te,S]	C1	[D2D3] E5 [R,Te,H(A),Pf]	F1
121	Apartments with a Small Resterant	Meguro-ku, Tokyo	Naka Architect's Studio	2014	JA 96	apartment	3(-1)	A3 B1 [Te,L,Tr,G,Pf,Se]	C1	[D1D2D3] [E1E2] [S,Pf,Te,Lo]	F1
122	WKB	Setagaya Ward, Tokyo	Kenichiro Nizeki/ Nizeki Studio + Shuji Tada	2014	JA 96	mixed house (office)	4	A3 B3 [G,Tr,L]	C1	[D2D3D4] [E1E3E5] [S,Te,R,Ba] (Te, Sk, Se)	F1
123	Yamate Street House	Tokyo	Taichi Mitsuya & Associates + Unemori Architects	2014	JA 96	mixed house (shop)	6	A3 B3 [Th]	C1	[D2D3D4] E5 [R] (Te)	F1
124	Toranomon Hills	Minato-ku, Tokyo	Nihon Sekkei	2014	JA 96	office(residence/hotel/conference/shop/parking)	52(-5)	A3 B3 [P,Tr,G,S,Pf,W,Th]	C2	[D2D3] [E1E2E3E4E5] [R,Te,S,Pf,H(A),Co]	F1
125	Nihonbashi Dia Building	Chuo Ward, Tokyo	Mitsubishi Jisho Sekkei	2014	JA 96	housing/warehouse	18(-1)	A3 D3 [Te,Th, Rp,S, D]	C1	[D2D3] [C1C2C3] [R,Te,S] (Te)	F1
126	The Otemachi Tower	Chiyoda ward, Tokyo	Taisei Design Planners Architects & Engineers/ KPF	2014	JA 96	office(hotel/shop/parking)	38(-6)	A3 B1 [Te,Th, Tr,G,Su,Se]	C1	[D1D2D3] [E1E2E3E4] [R,H(A),Pf,S,Co]	F1
127	The Yomiuri Shimbun Building	Chiyoda ward, Tokyo	Nikken Sekkei	2014	JA 96	office(theater/meeting place/clinic)	33(-3)	A3 B1 [Te,Tr,G,Th, Pa]	C1	[D2D3] [E1E2E3E4] [R,H(A),Co] (Te)	F1F5
128	Apple Store, Omotesando	Shibuya-ku, Toyko	Bohlin Cywinski Jackson + Jun Mitsui & Associates Architects	2014	JA 96	shop	1	A2 B3 [Th]	C1	[D1D2] [E4E5] [R]	F1
129	la kagu	Shinjuku, Tokyo	Kengo Kuma & Associates	2014	JA 104	shop	2	A3 B2 [Pa,Te,G,Pf,S]	C1	[D2D3] [E2E5] [S,R]	F1F6
130	SodaCCo	Shibuya-ku, Toyko	BLUE STUDIO	2015	JA 104	office(restaurant)	6	A2 B3 [Tr,G,I,S,Pa,P,Se,L]	C1	[D2D3] [E1E2E5] [S,R,Co,Te]	F1
131	Omori Lodge Hakobuie	Otaku, Tokyo	Furuya Design Architect Office	2015	JA 104	apartment (shop)	3	A3 B3 [Tr,G,Te,Th,Pa,Se]	C1	[D2D3] [E1E4E5] [R,Te]	F1
132	Tokyo Plaza Ginza	Chuku, Tokyo	Nikken Sekkei	2016	JA 104	shop(restaurant/ parking)	11(-5)	A3 B3 [Pa,Th,S]	C1	[D1D2D3D4] [E1E2E3E4] [H(A),R,S,Cu] (Te,W,Tr,Se,Ta,B)	F1F3
133	Between Natsumezaka	Shinjuku, Tokyo	TNA	2015	JA 105	apartment	4	A2 B3 [Te,Th,Tr,G]	C1	[D2D3] [E1E4E5] [Te,R,S]	F1
134	Yoyogi Terrace	Shibuya-ku, Toyko	FUJIWALABO	2016	JA 106	apartment	3(1)	A1 B3 [Te,Su]	C1	[D1D2D3D4] E1 [R,Te,S] (Te,Pf,G,Se)	F1
135	Daiwa Ubiquitous Computing Research Building	Tokyo	Kengo Kuma & Associates	2012	JA 109	university facility		A2 B4 [Th,Te,Se,Ta,E]	C1	[D1D2D3] [E1E5] [R,Co]	F1F2

(Source from: drawn by the author)

4. The chosen four case studies and their architecture composition

Hillside Terrace	Time: 1969-1992	Function: Mix
	Activities:	Ownership: Private
Architectual Composition: A2,B4,C3,D1D2D3,E1E3E4E5(S,Ba,R,Te,Co,Pf, H, Lo), F1F4, G[S,Pa,P,C,Su,Pf,Th (Tr,G,Ta,Se,L,I)]		

Sumida Cultural Factory	Time: 1994	Function: Cultural
	Activities:	Ownership: Public
Architectural Composition: A2,B2,C2,D2D3D4,E1E2E3E4E5(H,L,Pf,R,Te,Br,Co), F1F3F4F6, G[P, S,Th,Pf,Te,Su (W)]		

Shinonome Canal Codan	Time: 2003-2005	Function: Residential
	Activities:	Ownership: Semi-Public
Architectural Composition : A1,B4,C3,D2D3,E1E3E4E5(R,Te,Ba,Co,H), F1F6, G[S,Pa,P,C,Su,Pf,Br,Th (Tr,G,Ta,Se,L)]		

Tokyu Plaza Omotesando Hrajuku	Time: 2012	Function: Commercial
	Activities:	Ownership: Private
Architectural Composition: A3,B5,C1,D2D3D4,E1E3E4E5(S,L,Ba,R,Te,Co,A), F1F3, G[S,Th,Te(Tr,G,S,Ta,Se,L)]		

(Source from: drawn by the author)

5. Processed interview transcriptions with the users

5.1 The users in Hillside Terrace

The researchers interviewed thirteen users in the *hiroba* or 'public space' on May 5th, September 21st, October 13rd and14th, 2019, at Hillside Terrace.

1st Question:

What are your reasons for coming here? How do you know here? What is your frequency of using the *hiroba* or 'public space' here?

Confidential Material

2nd Question:

What are your opinions and evaluations of the *hiroba* or 'public space' in the architecture?

Confidential Material

3rd Question:

What are your opinions on the comparison of *hiroba* or 'public space' in the project or other contemporary architecture (for example, station square, shopping complex, city hall, public library, community centre, etc.) and traditional outdoor public open spaces (For example, Imperial Palace, Ueno and Hibiya Park, Shinjuku Garden, Meiji Shrine, neighbourhood pocket park, waterfront, etc.)?

Confidential Material

4th Question:

How do you think about the restrictions on the management of users' behaviour in the project (for example, rules and the charge of fees for use)?

Confidential Material

5th Question:

What are your desires and outlooks of the *hiroba* or 'public space' in the project (or Tokyo)?

Confidential Material

5.2 The users in Sumida Culture Factory

The researchers interviewed twelve users in the Sumida Culture Factory on August 29th, November 7thand 10th, 2019.

1st Question:

What are your reasons for coming here? How do you know here? What is your frequency of using the *hiroba* or 'public space' here?

Confidential Material

2nd Question:

What are your opinions and evaluations of the *hiroba* or 'public space' in the architecture?

Confidential Material

3rd Question:

What are your opinions on the comparison of *hiroba* or 'public space' in the project or other contemporary architecture (for example, station square, shopping complex, city hall, public library, community centre, etc.) and traditional outdoor public open spaces (For example, Imperial Palace, Ueno and Hibiya Park, Shinjuku Garden, Meiji Shrine, neighbourhood pocket park, waterfront, etc.)?

Confidential Material

4th Question:

How do you think about the restrictions on the management of users' behaviour in the project (for example, rules and the charge of fees for use)?

Confidential Material

5th Question:

What are your desires and outlooks of the *hiroba* or 'public space' in the project (or Tokyo)?

Confidential Material

5.3 The users in Shinonome Canal Court

The researcher interviewed ten users in different forms of *hiroba* in Shinonome Canal Court on October 20th, December 14th, and December 21st, 2019.

1st Question:

What are your reasons for coming here? How do you know here? What is your frequency of using the *hiroba* or 'public space' here?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What are your opinions and evaluations of the *hiroba* or 'public space' in the architecture?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are your opinions on the comparison of *hiroba* or 'public space' in the project or other contemporary architecture (for example, station square, shopping complex, city hall, public library, community centre, etc.) and traditional outdoor public open spaces (For example, Imperial Palace, Ueno and Hibiya Park, Shinjuku Garden, Meiji Shrine, neighbourhood pocket park, waterfront, etc.)?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

How do you think about the restrictions on the management of users' behaviour in the project (for example, rules and the charge of fees for use)?

Transcriptions for the 4th question:

Confidential Material

5th Question:

What are your desires and outlooks of the *hiroba* or 'public space' in the project (or Tokyo)?

Transcriptions for the 5th question:

Confidential Material

5.4. The users in Tokyu Plaza Omotesando Harajuku

The researchers interviewed eighteen users in the rooftop *hiroba* on August 31, 2019, and March 15, 2020.

1st Question:

What are your reasons for coming here? How do you know here? What is your frequency of using the *hiroba* or 'public space' here?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What are your opinions and evaluations of the *hiroba* or public space in the architecture?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are your opinions on the comparison *hiroba* or 'public space' in the project or other contemporary architecture (for example, station square, shopping complex, city hall, public library, community centre, etc.) and traditional outdoor public open spaces (For example, Imperial Palace, Ueno and Hibiya Park, Shinjuku Garden, Meiji Shrine, neighbourhood pocket park, waterfront, etc.)?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

How do you think about the restrictions on the management of users' behaviour in the project (for example, rules and the charge of fees for use)?

Transcriptions for the 4th question:

Confidential Material

5th Question:

What are your desires and outlooks of the *hiroba* or 'public space' in the project (or Tokyo)?

Transcriptions for the 5th question:

Confidential Material

6. Processed interview transcriptions with the developers or managers

6.1 The developer in Hillside Terrace

On May 5th, 2019, the researcher interviewed Mr. Asakura Kengo, the developer of Hillside Terrace and the landowner of Asakura Real Estate at Hillside Terrace.

1st Question:

What are your observations and comments on the daily activities in *hiroba* or 'public space' at Hillside Terrace?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What is your position and initiative of creating *hiroba* or 'public space through the project?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are your opinions on the comparison of *hiroba* or 'public space' in the project and traditional outdoor public open spaces (For example, Imperial Palace, Ueno and Hibiya Park, Shinjuku Garden, Meiji Shrine, neighbourhood pocket park, waterfront, etc.)?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

How about the management of *hiroba* or 'public space' and the promotion of activities or events at Hillside Terrace?

Confidential Material

6.2 The manager in Sumida Culture Factory

The researcher interviewed an anonymous manager of the Sumida Cultural Factory in Tokyo on August 29th, 2019.

1st Question:

What are your views on the *hiroba* or ‘public space’ provided in the Sumida Culture Factory and the changing patterns in the use of those spaces?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What are the reasons and opinions on *hiroba* or ‘public space’ forbidden to be used?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are the daily activities of users and the proposed events held in the project?

Transcriptions for the 3rd question:

Confidential Material

6.3 The manager in Shinonome Canal Court

The researcher conducted the Interview with Mr. Nakagawa, the manager of Shinonome Canal Court in Tokyu Leasing company, in his office in Tokyo on December 21st, 2019.

1st Question:

How about the events and activities held in Shinonome Canal Court? Could you list them and tell me about their process in detail?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What are the usage patterns in *hiroba* or 'public space' of Shinonome Canal Court within one day, on weekdays, and weekends?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are the rules for the management of *hiroba* or 'public space' in Shinonome Canal Court? Are there any restrictions on people's behaviour on the site?

Transcriptions for the 3rd question:

Confidential Material

6.4 The developer in Tokyu Plaza Omotesando Harajuku

Researchers visited Urban Development Division and interviewed assistant manager Mr. Takaoki Wakatsu of the commercial facilities development department and senior manager Mr. Hidenobu Suga of Tokyu Plaza Omotesando Harajuku at Tokyu Land Corporation headquarters in Shibuya-ku, Tokyo on February 13th, 2020.

1st Question:

What are the activities and the rules of management on users' behaviour on the rooftop *hiroba*?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What are the design motivations for the proposed rooftop *hiroba*?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are the promoted events and activities organized in the rooftop *hiroba* of the project?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

How do you consider the contributions of private enterprises in the creation of *hiroba* or public space? What are the attempts made by Tokyu Land Corporation in other projects?

Transcriptions for the 4th question:

Confidential Material

7. Processed Interview transcriptions with the project architects

7.1 Interview with Fumihiko Maki

The researcher interviewed Fumihiko Maki, the chief architect of the Hillside Terrace at the backstage after the Waseda *Machizukuri* Symposium 2019: Urbanism Today & Future at the Waseda University International Conference Hall on July 21, 2019. Maki

provided short answers and suggested the author to find more answers from his books (he later sent a new book about Hillside Terrace to the author and marked answers to the author's questions) and lectures about Hillside Terrace made before.

1st Question:

What are your opinions on the comparison between traditional public space in the form of exterior open space (for example, park) in Japan and the *hiroba* or 'public space' created in the Hillside Terrace? Do you think the latter is more frequently used or popular than the former in modern city and society?

Transcriptions for the 1st question:

Confidential Material

Answers from other resources for the 1st question:

Confidential Material

2nd Question:

What are your applications of building typologies for the creation of *hiroba* or 'public spaces' in your architectural design? Among the different types of buildings you designed, you keep using the typologies of 'courtyard', 'atrium', 'plaza', 'loggia', etc.

Do you think these kinds of typologies help to generate *hiroba* or ‘public space’ in your architectural design?

Transcriptions for the 2nd question:

Confidential Material

Answers from other resources for the 2nd question:

Confidential Material

3rd Question:

How do you regard the design of the sightline in Hillside Terrace? Do you think it is important to have a visual connection between different public and private areas in your architecture?

Confidential Material

Answers from other resources for the 2nd question:

Confidential Material

7.2 Interview with Itsuko Hasegawa

The researcher interviewed Itsuko Hasegawa, the chief architect of Sumida Culture Factory, at the Itsuko Hasegawa Atelier in Tokyo on March 18th, 2020.

1st Question:

How are your concepts or theories of *harappa* and *garando* relate to *hiroba* or 'public space' in your public architecture?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

How about your applications of many building typologies ('bridges', 'plazas', 'exterior steps', 'rooftop gardens', and 'ramps', etc.) in the production of *hiroba* or 'public spaces' in your public architecture?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

What are your opinions on public architecture in Japan? What kind of 'public space' and 'publicness' is contained in it?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

I want to know more about Sumida Culture Factory's management and use status in *hiroba* and ‘public space’. It seems today, many of your designed spaces are chained and cannot get access by users due to the management.

Transcriptions for the 4th question:

Confidential Material

5th Question:

What are your impressions and expectations on public space in Japan in comparison with public space in the West?

Transcriptions for the 5th question:

Confidential Material

7.3 Interview with Riken Yamamoto

The researcher interviewed Riken Yamamoto, the chief architect and planner of Shinonome Canal Court, on February 8th, 2020, at his firm Riken Yamamoto & Field Shop in Yokohama.

1st Question:

What is the relation between ‘public’ and ‘common’ space in Shinonome Canal Court?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What is the application of building typologies for the creation of *hiroba* or 'public spaces' in your Shinonome Canal Court? You constantly applied 'platforms' (or 'decks'), 'courtyard', 'terrace', 'slopes', etc., in many of your architectural designs.

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

How is *shikii* (threshold) between public and private applied in your design?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

What are your opinions on the comparison between traditional public space in the form of exterior open space (for example, park) in Japan and the *hiroba* or 'public space' created in contemporary architecture?

Transcriptions for the 4th question:

Confidential Material

5th Question:

I want to know more about the program and management of *hiroba* or 'public space' in relation to your applied 'local community area' theory in Shinonome Canal Court. What are your images and suggestions of future Tokyo's public space?

Transcriptions for the 5th question:

Confidential Material

7.4 Interview with Hiroshi Nakamura

The researcher interviewed Hiroshi Nakamura, the chief architect of Tokyu Plaza Omotesando Harajuku, at Hiroshi Nakamura & NAP in Tokyo on February 5, 2020.

1st Question:

For Tokyu Plaza (especially Omotesando Harajuku) projects, what are your opinions on the *hiroba* –which functions as 'public space'– provided by the private company through commercial facilities in the current Tokyo urban context and related design thinking?

Transcriptions for the 1st question:

Confidential Material

2nd Question:

What is the relationship between typologies, human behaviour (especially your theory of '*furumai*'), and the creation of *hiroba* or 'public space' in architectural design?

Transcriptions for the 2nd question:

Confidential Material

3rd Question:

Taking Tokyu Plaza as an example, how do you compare traditional Japanese public space and the public space in the West?

Transcriptions for the 3rd question:

Confidential Material

4th Question:

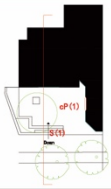
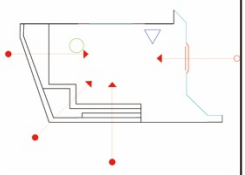
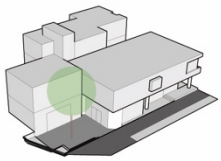
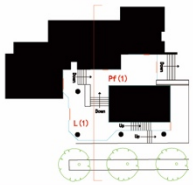
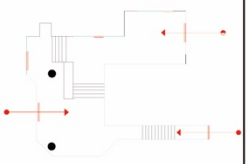
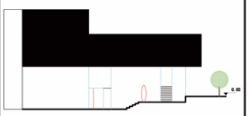
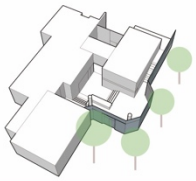
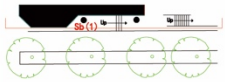
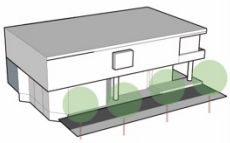
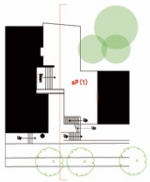
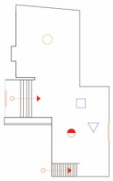
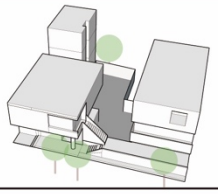
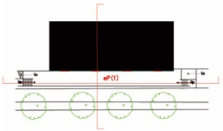
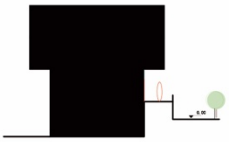
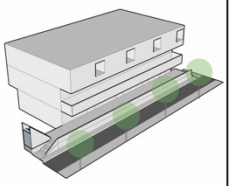
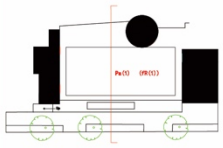
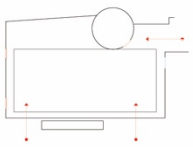
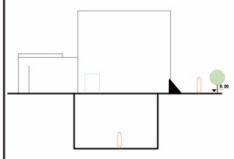
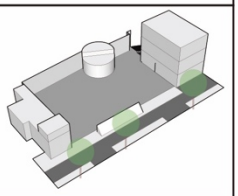
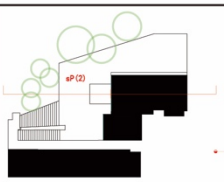
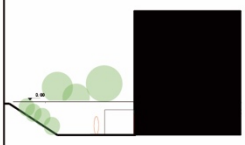
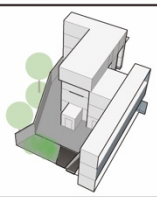
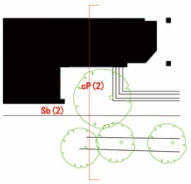
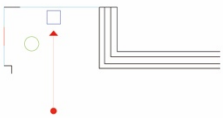
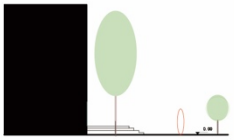
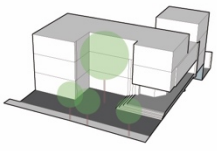
Based on the current urban conditions, what's your views on the future development of Tokyo's public space in architecture and urban design.

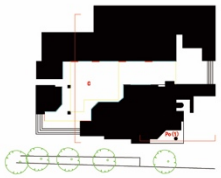
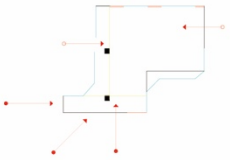
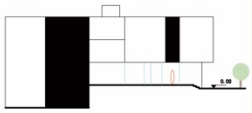
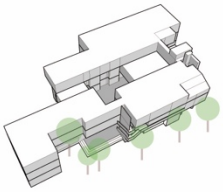
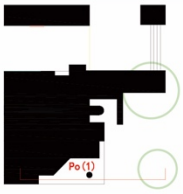
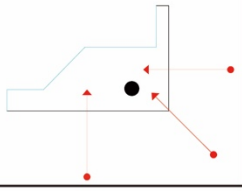
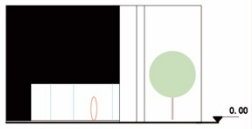
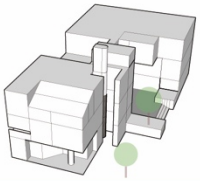
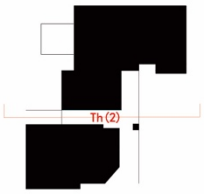
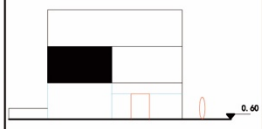
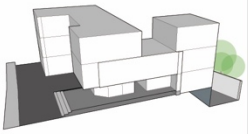
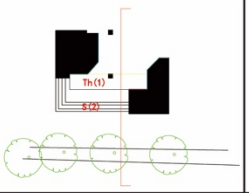
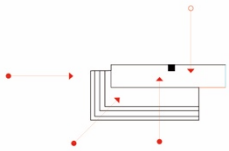
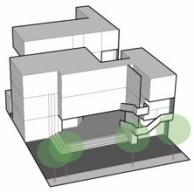
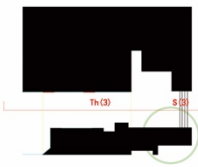
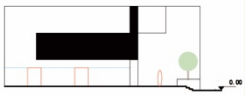
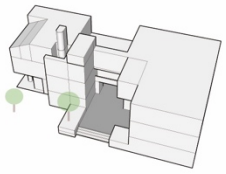
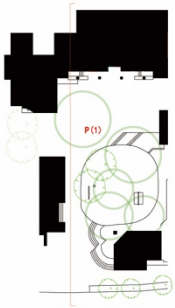
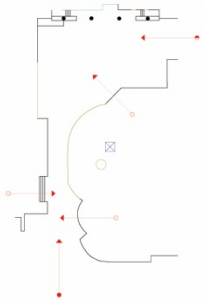
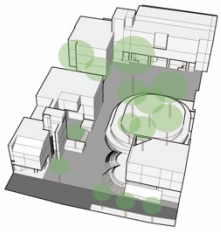
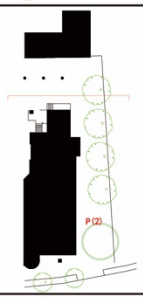
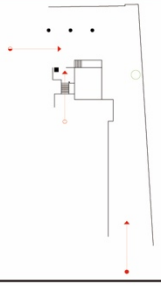
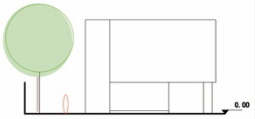
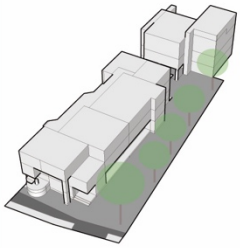
Transcriptions for the 4th question:

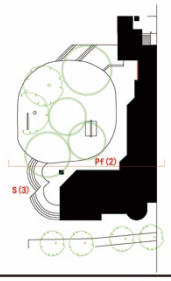
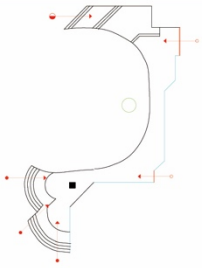
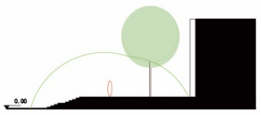
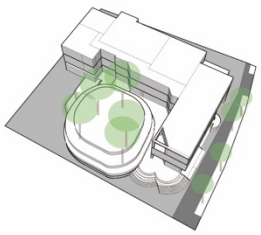
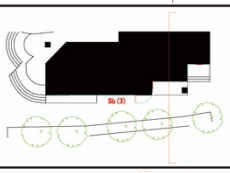
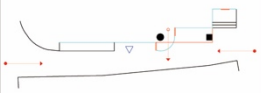
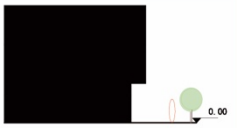
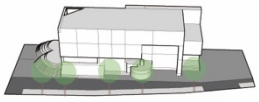
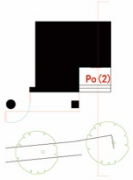
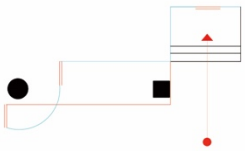
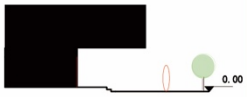
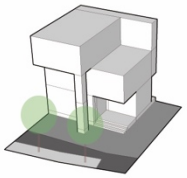
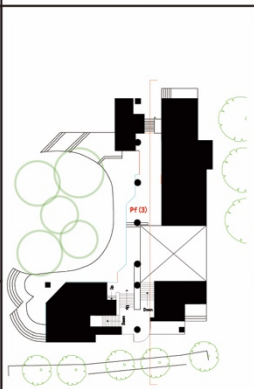
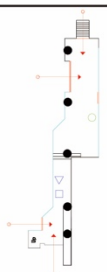
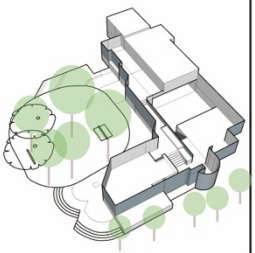
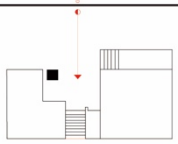
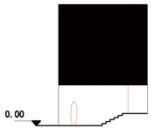
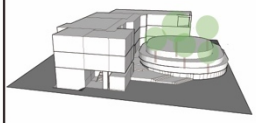
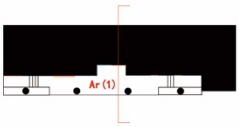
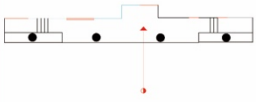
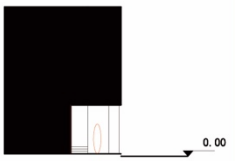
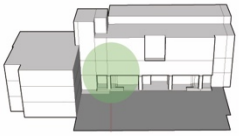
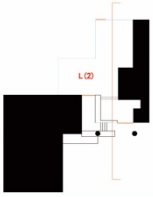
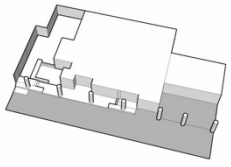
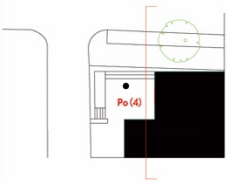
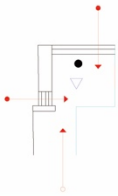
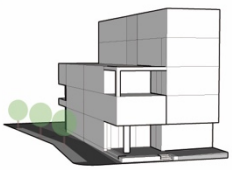
Confidential Material

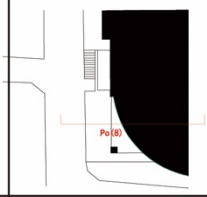
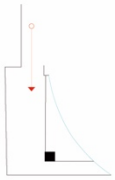
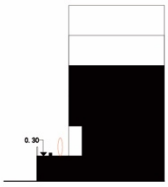
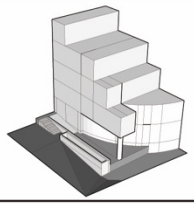
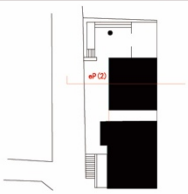
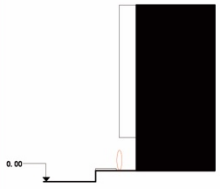
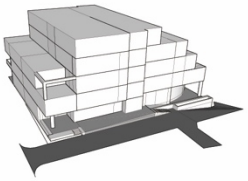
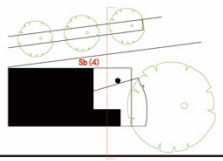
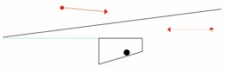
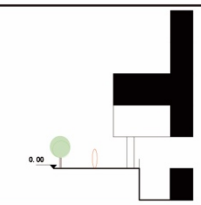
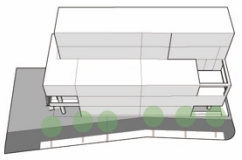
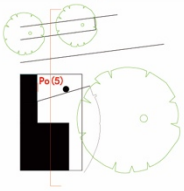
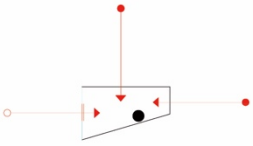
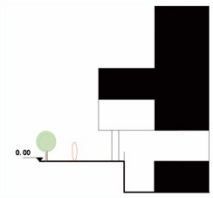
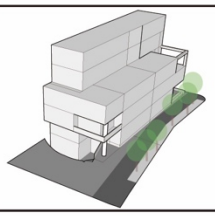
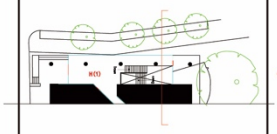
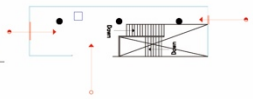
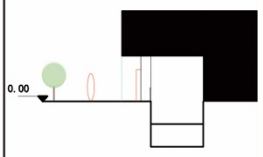
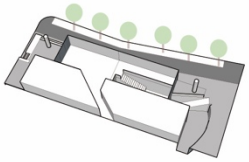
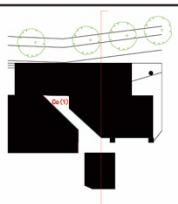
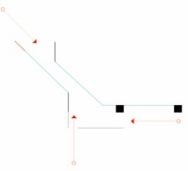
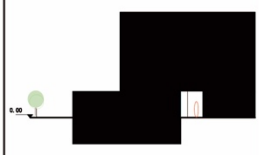
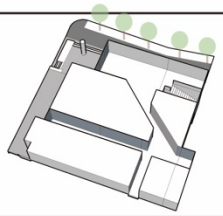
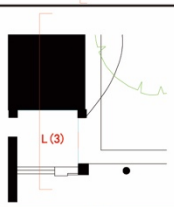
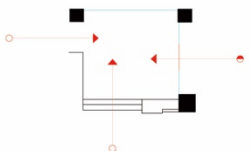
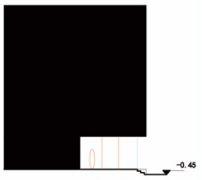
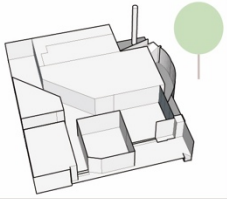
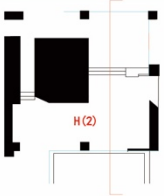
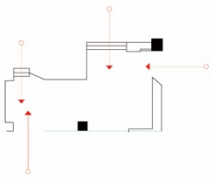
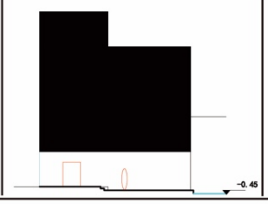
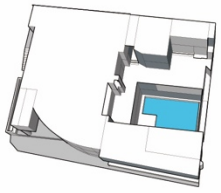
8. Open space typology of architectural *hiroba* in the four case studies

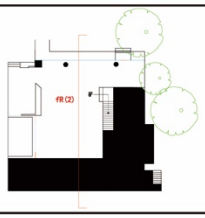
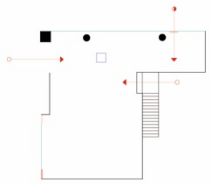
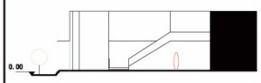
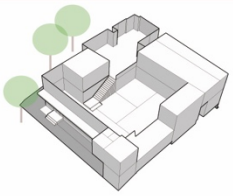
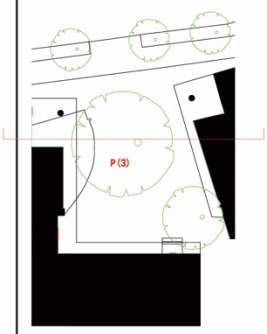
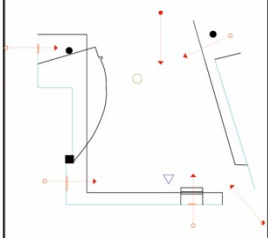
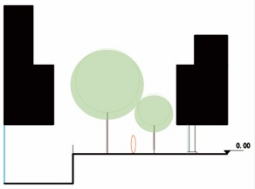
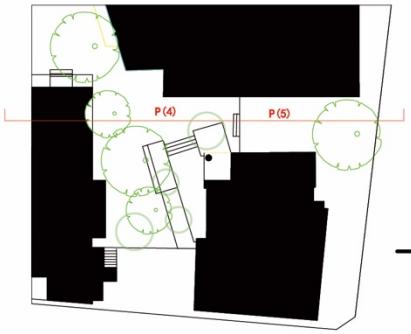
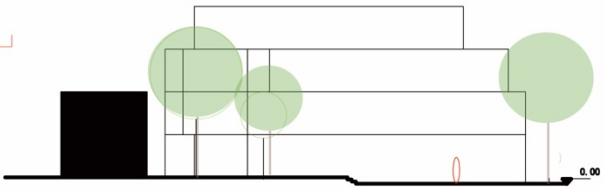
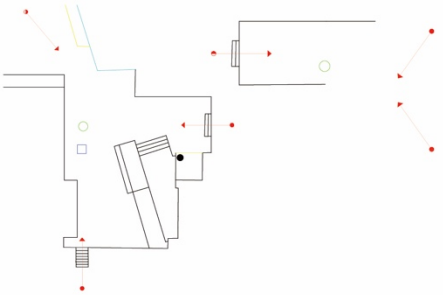
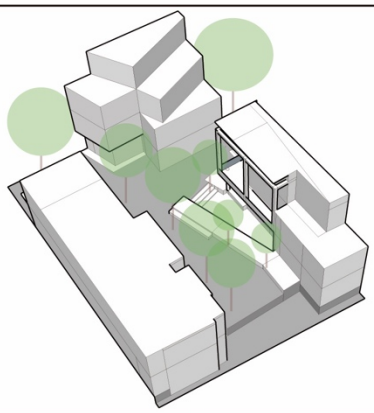
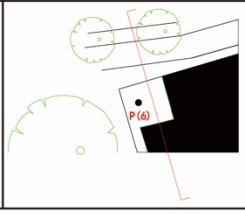
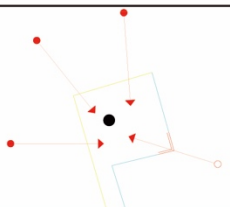
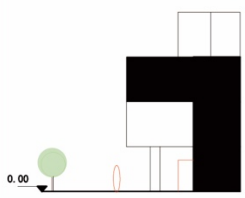
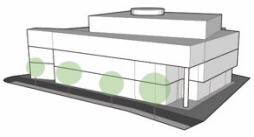
8.1 Hillside Terrace

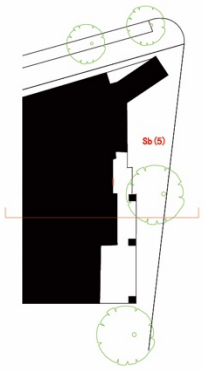
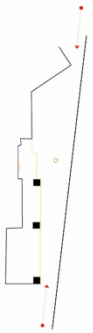
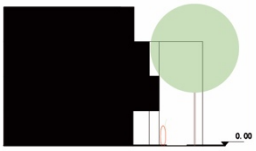
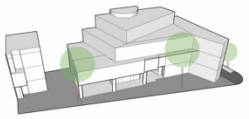
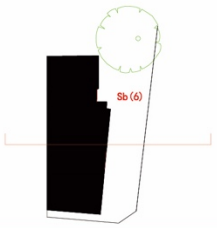
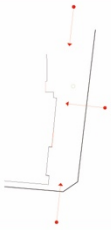
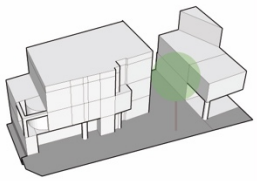
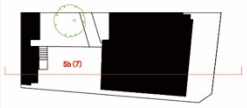
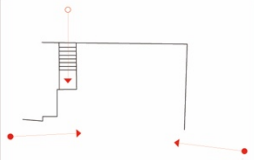
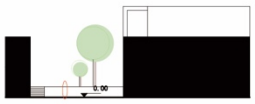
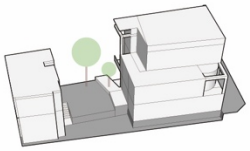
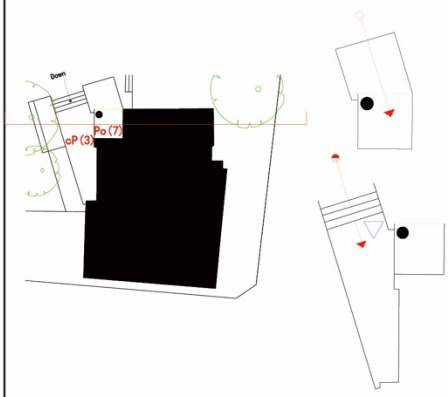
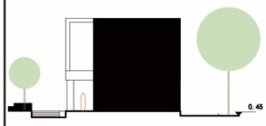
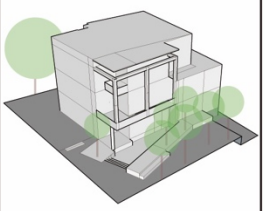
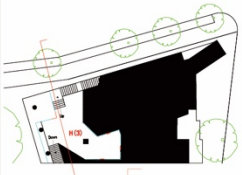
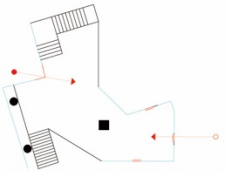
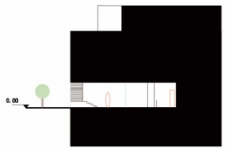
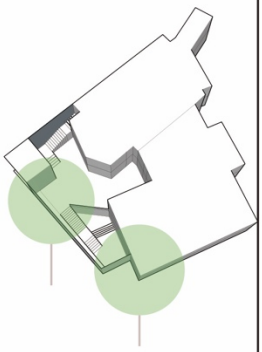
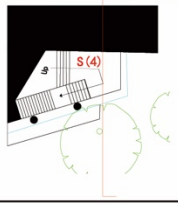
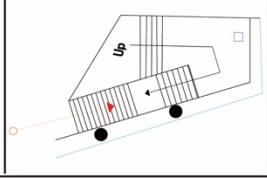
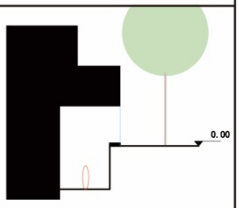
Name	Plan	Diagram	Section	Axonometric
cP(1) & S(1)				
L(1) & Pf(1)				
Sb(1)				
sP(1)				
eP(1)				
Pa(1) & fR(1)				
sP(2)				
cP(2) & Sb(2)				

Name	Plan	Diagram	Section	Axonometric
C				
Po(1)				
Th(2)				
S(2) Th(1)				
Th(3) & S(3)				
P(1)				
P(2)				

Name	Plan	Diagram	Section	Axonometric
Pf(2) & S(3)				
Sb(3)				
Po(2)				
Pf(3)				
Po(3)				
Ar(1)				
L(2)				
Po(4)				

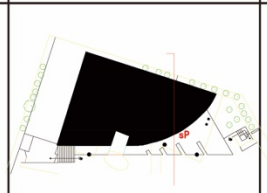
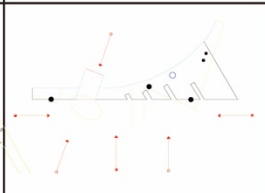
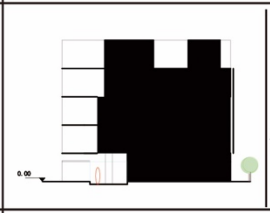
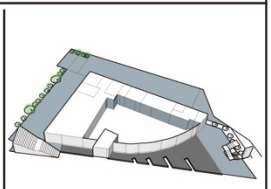
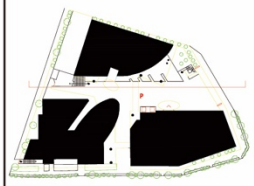
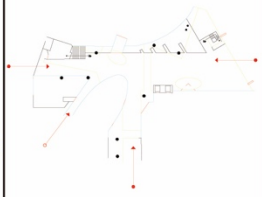
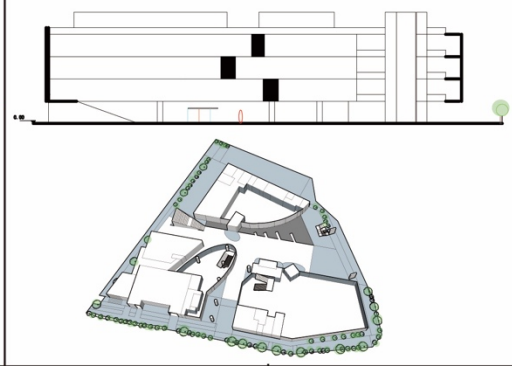
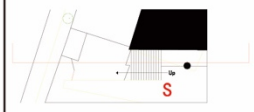
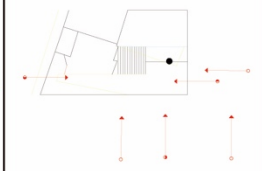
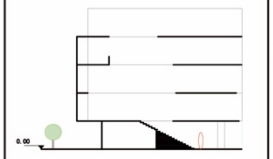
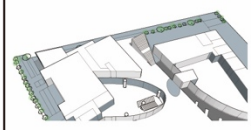
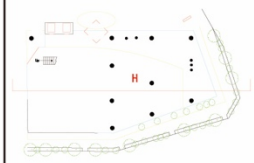
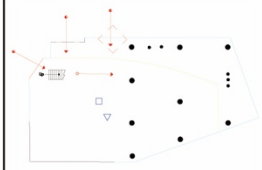
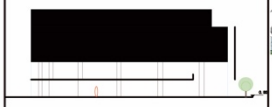
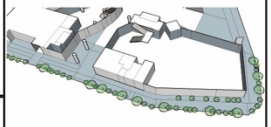
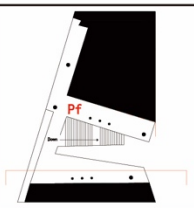
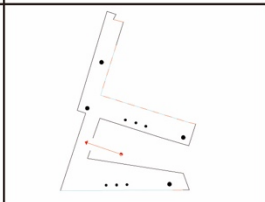
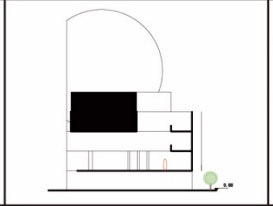
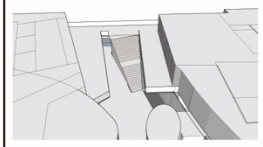
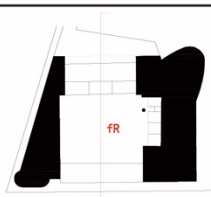
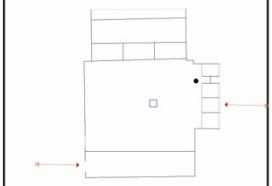
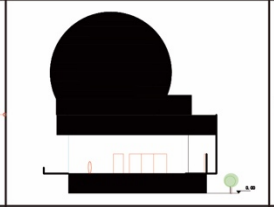
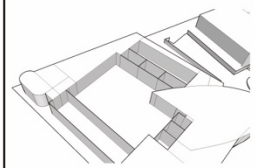
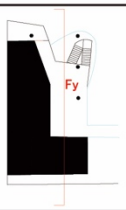
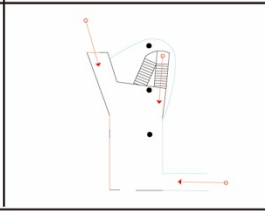
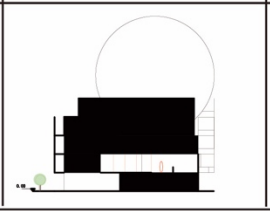
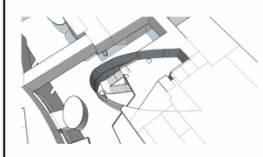
Name	Plan	Diagram	Section	Axonometric
Po(8)				
eP(2)				
Sb(4)				
Po(5)				
H(1)				
Co(1)				
L(3)				
H(2)				

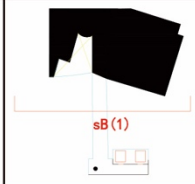
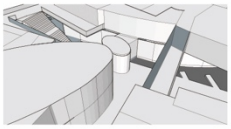
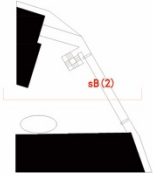
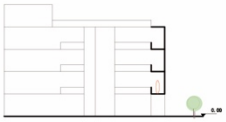
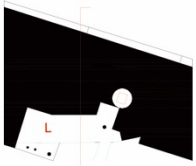
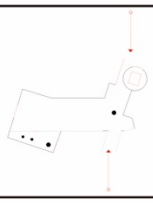
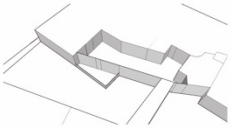
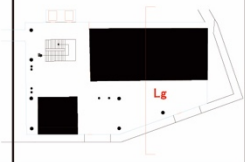
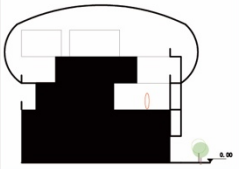
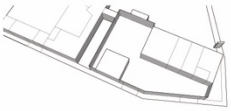
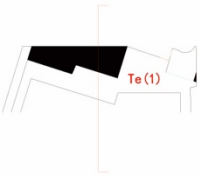
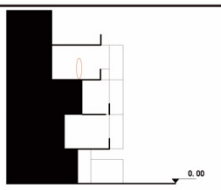
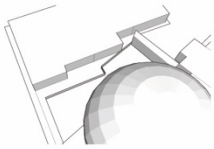
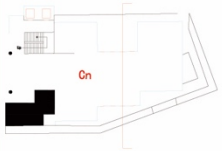
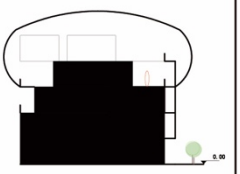
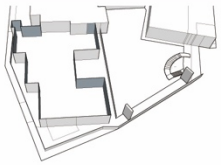
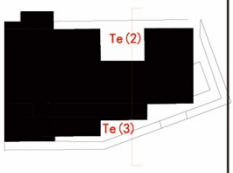
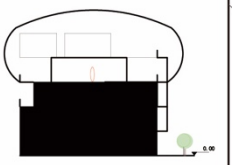
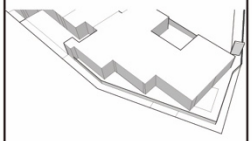
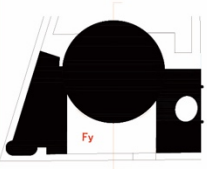
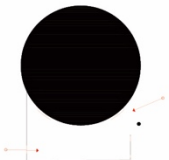
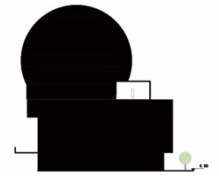
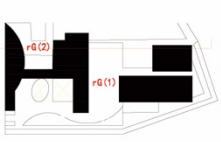
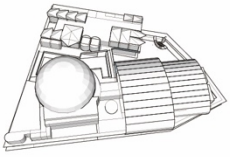
Name	Plan	Diagram	Section	Axonometric
fR(2)				
P(3)				
P(4)				
P(5)				
Po(6)				

Name	Plan	Diagram	Section	Axonometric
Sb(5)				
Sb(6)				
Sb(7)				
Po(7) cP(3)				
H(3)				
S(4)				

(Source from: drawn by the author)

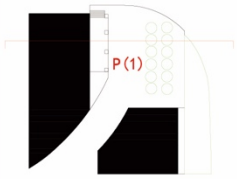
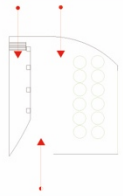
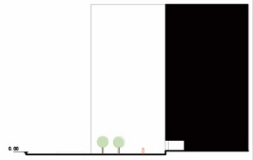
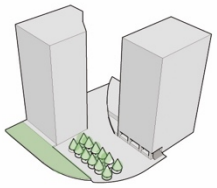
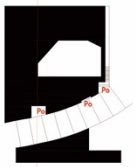
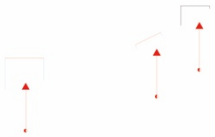
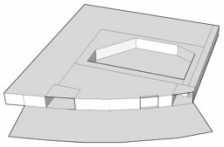
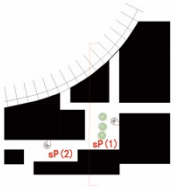
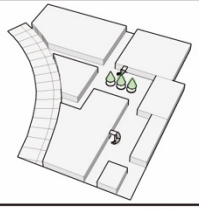
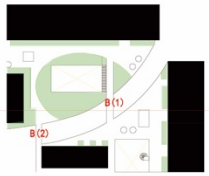
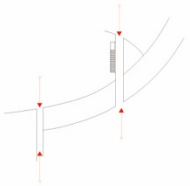
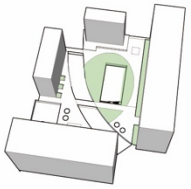
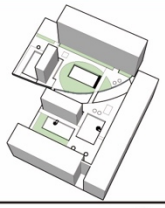
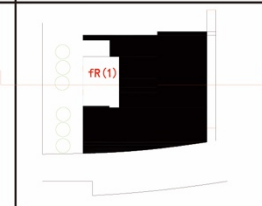
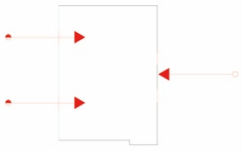
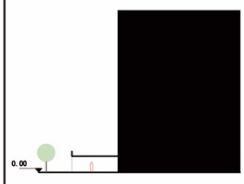
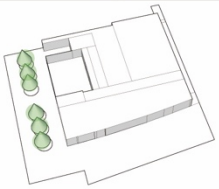
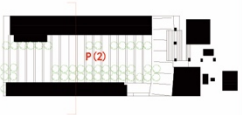
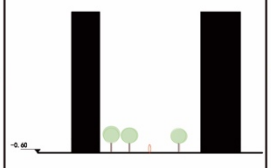
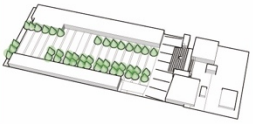
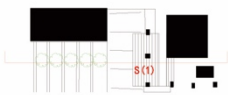
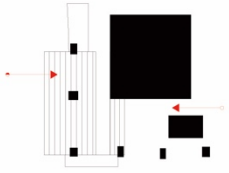
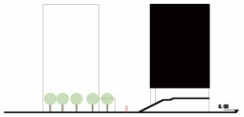
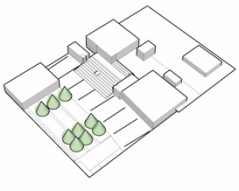
8.2 Sumida Culture Factory

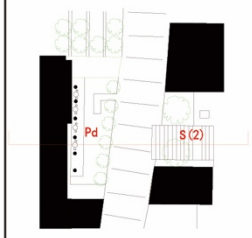
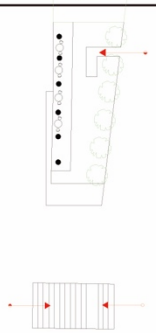
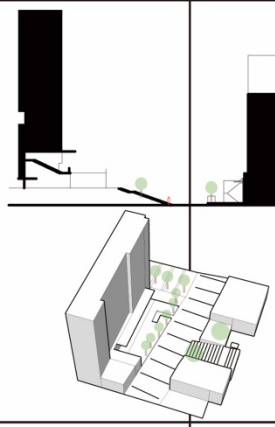
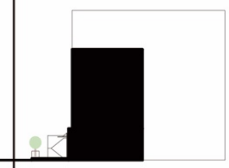
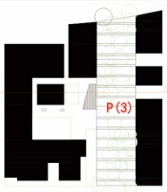
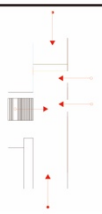
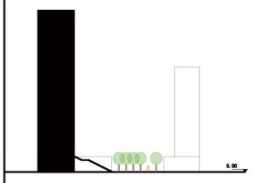
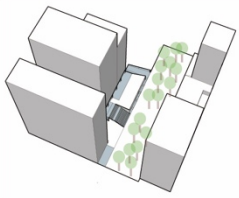
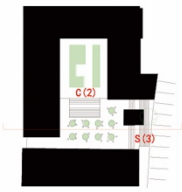
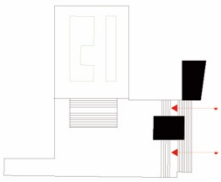
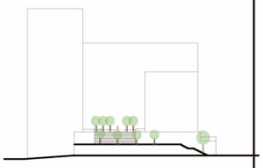
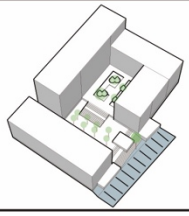
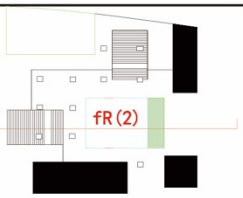
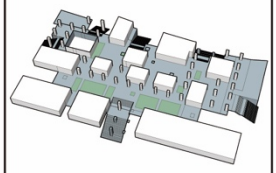
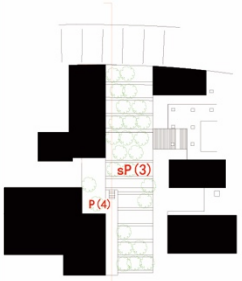
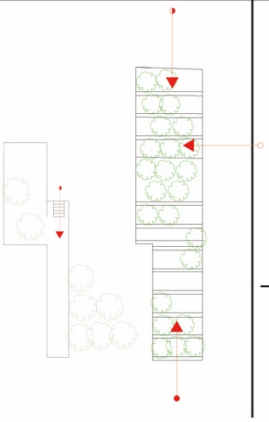
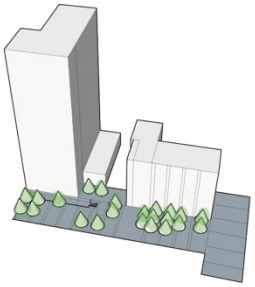
Name	Plan	Diagram	Section	Axonometric
sP				
P				
S				
H				
Pf				
fR				
Fy(1)				

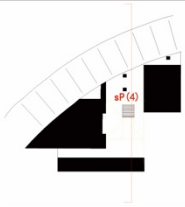
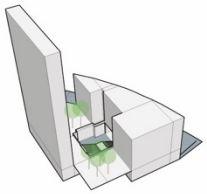
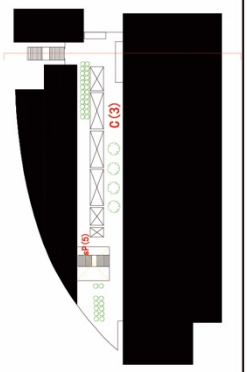
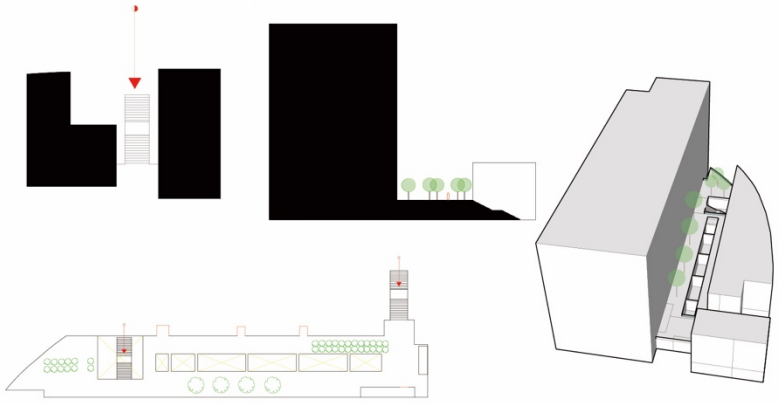
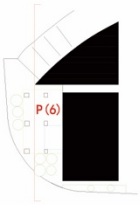
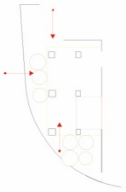
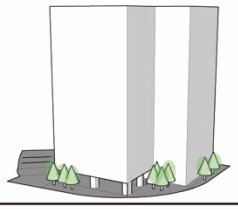
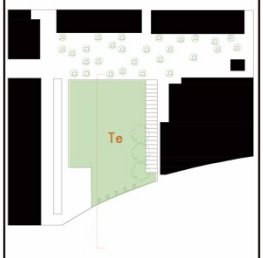
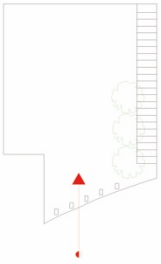
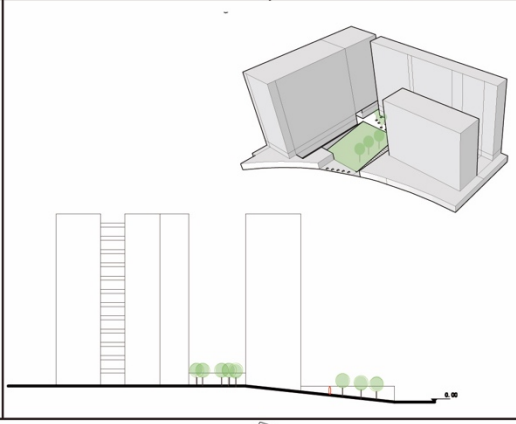
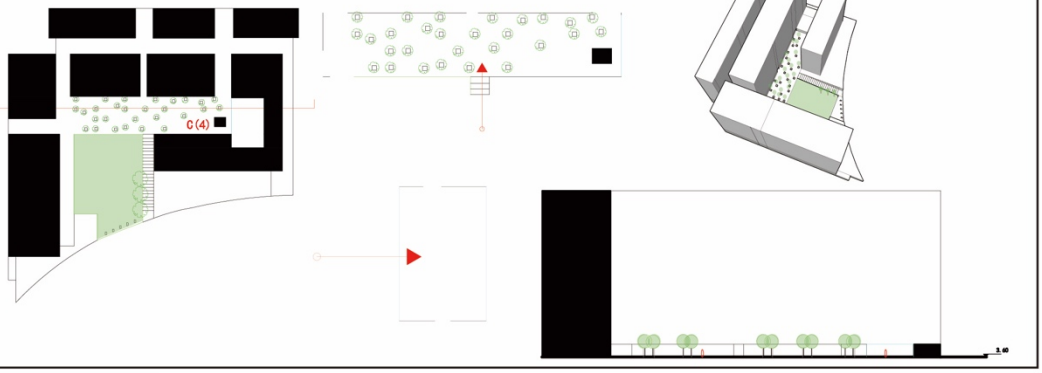
Name	Plan	Diagram	Section	Axonometric
sB(1) sB(3)(5)				
sB(2) sB(4)(6)				
L				
Lg				
Te(1)				
Cn				
Te(2) Te(3)				
Fy(2)				
rG(1) rG(2)				

(Source from: drawn by the author)

8.3 Shinonome Canal Court

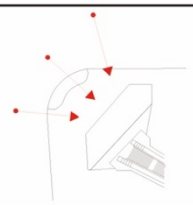
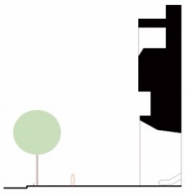
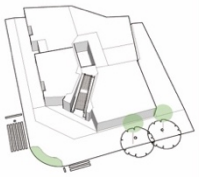
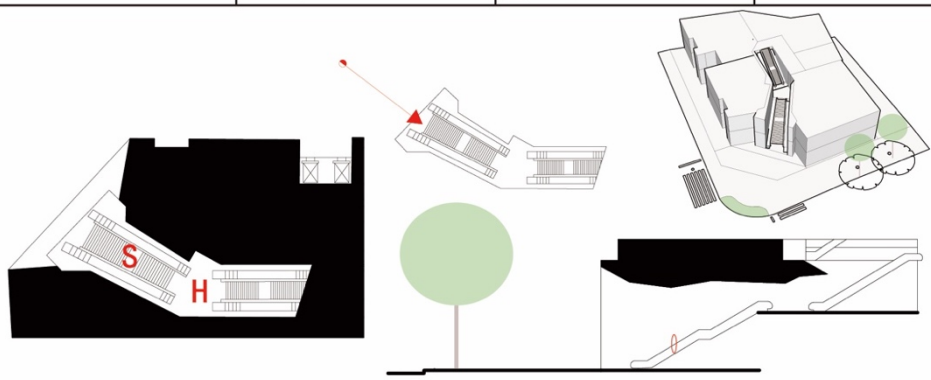
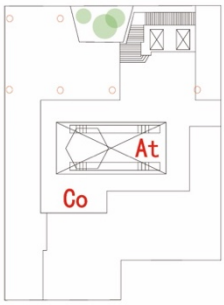
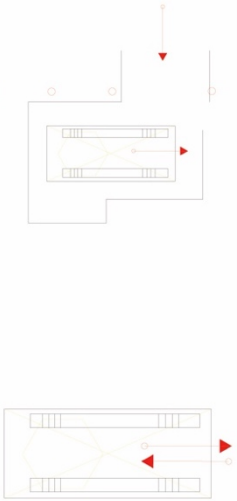
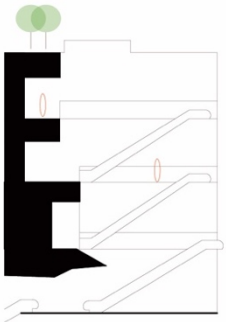
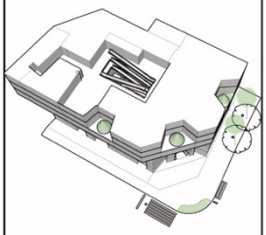
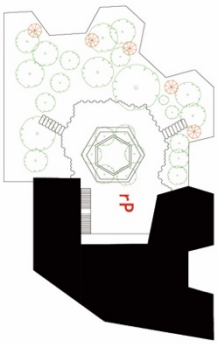
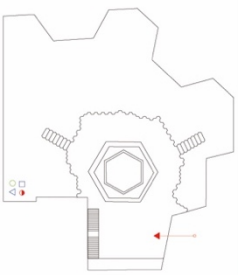
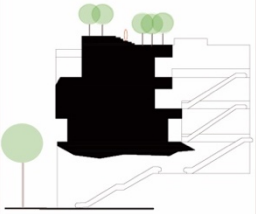
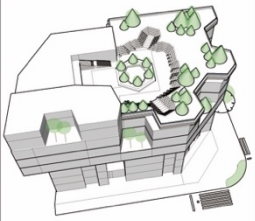
Name	Plan	Diagram	Section	Axonometric
P(1)				
Po				
sP(1) & sP(2)				
B(1) & B(2)				
Av & Pf				
fR(1)				
P(2)(5)				
S(1)				

Name	Plan	Diagram	Section	Axonometric
Pd S(2)				
P(3)				
C(2) & S(3)				
fR(2)				
C(1)				
sP(3) & P(4)				

Name	Plan	Diagram	Section	Axonometric
sP(4)				
sP(5) C(3)				
P(6)				
Te				
C(4) & fR(3)				

(Source from: drawn by the author)

8.4 Tokyu Plaza Omotesando Harajuku

Name	Plan	Diagram	Section	Axonometric
cP				
S & H				
Co & At				
rP				

(Source from: drawn by the author)

9. Participant information sheet for the interviewees

The University Of Sheffield.

School of Architecture

Typology and Human Behaviour Study in the *hiroba* of Tokyo's Contemporary Architecture
Participant Information Sheet

You are being invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the project's purpose?
This project is a 4-year doctorate research project for educational qualification. It aims to discover the creation of the *hiroba* in terms of typology and uses' behaviour in Tokyo's contemporary architecture, as well as the relation between *hiroba* and the Western notion of public space. The research outcomes will help to guide the design of the physical settings of *hiroba* in future architectural practice and improve the quality of citizens' public life.

Why have I been chosen?
We are inviting the *hiroba* users or the developers or managers, and the chief architects in our four chosen study cases to help to gather their ideas and opinions on the *hiroba* or public space created by Tokyo's contemporary architecture. The participant group of *hiroba* users is volunteers chosen randomly on site with no bias regarding their sex, age, occupation, etc. The participant group of the developers or managers and the participant group of the chief architects will be contacted by email for making an appointment in advance.

Do I have to take part?
No. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep (and be asked to sign a consent form), but you can still withdraw at any time without giving a reason before the publication.

What will happen to me if I take part? What do I have to do?
The research project involves completing a semi-structured interview about your opinions and expectation on *hiroba* or public space created by Tokyo's contemporary buildings. Interviews will be conducted on site. Individual interviews will take around 15-30 min (it can be longer if you would like to share more) to complete. During the interview, we will ask you to think about the relation between *hiroba* designs and the daily activities or events in the *hiroba*. Any issues or problems related to the design you discovered in use and your ideas and expectations for future uses will be asked from your side. You can also add questions or comments related to Tokyo's *hiroba* or public space during the interview.

What are the possible disadvantages and risks of taking part?
People participating in the research will not be exposed to risks greater than, or additional to, those they encounter as part of their everyday lifestyles. Taking part in this research will require you to commit some of your time to complete a semi-structured interview around 15-30 min. Your data will be collected, analyzed, used, and stored appropriately without disclosing any confidentiality.

What are the possible benefits of taking part?
There is no intended benefit to the participant from taking part in the project. The research is carried out on a voluntary basis.

Will my taking part in this project be kept confidential?
All the information that we collect about you during the course of the research will be kept strictly confidential and will only be accessible to members of the research team. You will not be able to be identified in any reports or publications unless you have given your explicit consent for this. Unless you agree to us sharing the information you provide with other researchers (e.g., by making it available in a data archive), then your personal details will not be included unless you explicitly request this.

What is the legal basis for processing my personal data?
According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice *https://www.sheffield.ac.uk/govern/data-protection/privacy/general*.

What will happen to the data collected and the results of the research project?
The data collected from you will be only used for academic purposes. Only researcher and associated collaborators, academic supervisor, interpreter, transcript assistant will have access to it. These people will be asked to keep all the data confidential without disclosing information to outsiders. Your data will be processed in a pseudonymised and anonymised form unless you ask your data to open. Your data used in the research will be published after the doctorate thesis is submitted to The University of Sheffield officially. All identifiable personal data will be stored as confidential data in safe places. For example: research data collections will always be carried out in the *hiroba* or public space of central Tokyo, which is rated as one of the safest cities in the world. All data collected on site will be kept with the researcher and stored as soon as possible in safe places for further studies after leaving the site. In detail, all data in the form of paperwork or digitized data stored in a hard drive will be locked in the university's cabinet. Other digital research data will be stored in the university's Google Drive or ORDA (The University of Sheffield Research Data Catalogue and Repository) with the password. Unless the participants ask to destroy their data within limited years after the thesis publication on the condition that this action will not affect the research purpose, research data will be stored safely for possible future reuse by the researcher. Due to the nature of this research, it is likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be used, stored, and shared in the above-mentioned ways in the consent form.

Who is the data controller?
The University of Sheffield will act as the Data Controller for this study, which means that The University of Sheffield is responsible for looking after your information and using it properly.

Who has ethically reviewed the project?
This project has been ethically approved via The University of Sheffield's Ethics Review Procedure, as administered by the School of Architecture.

What if something goes wrong and I wish to complain about the research?
If you wish to make a complaint about the research, then you should contact the lead researcher Yang Yang in the first instance. If you feel that your complaint has not been handled to your satisfaction, then you can contact the supervisor of the research and Senior Lecturer for Urban Theory, History and Design Dr Florian Kossak, or Head of the School of Architecture at the University of Sheffield Professor Karim Hadjri, who will then escalate the complaint through the appropriate channels. Their contact information is listed below:

Contact for further information
Leader Researcher: Yang Yang
Email Address: yyang91@sheffield.ac.uk
Phone Number:07593 687125

Research Supervisor: Dr Florian Kossak
Email Address: f.kossak@sheffield.ac.uk
Phone Number: 0114 222 0341

Head of School: Prof. Karim Hadjri
Email Address: k.hadjri@sheffield.ac.uk
Phone Number: 0114 222 0307

This information sheet is for you to keep. Thank you for your time and help.
(Please complete and sign the consent form if you would like to participate.)

10. Participant consent form for the interviewees

Participant Consent Form

Typology and Human Behaviour Study in the *hiroba* of Tokyo's contemporary Architecture

Please tick the appropriate boxes	Yes	No
Taking Part in the Project	☐	☐
I have read and understood the project information sheet dated __/__/____ or the project has been fully explained to me. (If you will answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)	☐	☐
I have been given the opportunity to ask questions about the project.	☐	☐
I agree to take part in the project. I understand that taking part in the project will include being interviewed and being recorded (audio and / or video).	☐	☐
I understand that my taking part is voluntary and that I can withdraw from the study at any time before research publication; I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.	☐	☐
How my information will be used during and after the project		
I understand my personal details such as name, phone number, address and email address etc. will not be revealed to people outside the project.	☐	☐
I understand and agree that my words may be quoted in publications, reports, web pages, and other research outputs. I understand that I will not be named in these outputs unless I specifically request this.	☐	☐
I understand and agree that other authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐
I understand and agree that other authorised researchers may use my data in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐
I give permission for the interview that I provide to be deposited by researcher, so it can be used for future research and learning.	☐	☐
So that the information you provide can be used legally by the researchers		
I agree to assign the copyright I hold in any materials generated as part of this project to the researcher and The University of Sheffield.	☐	☐

Name of participant [printed] Signature Date

Name of Researcher [printed] Signature Date

Project contact details for further information:

Leader Researcher: Yang Yang (yyang91@sheffield.ac.uk, 07593687125)

Research Supervisor: Dr Florian Kossak (f.kossak@sheffield.ac.uk, 01142220341)

Head of School: Prof Karim Hadjri (k.hadjri@sheffield.ac.uk, 01142220307)

The template of this consent form has been approved by the University of Sheffield Research Ethics Committee and is available to view here: https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/further-guidance/homepage

11. Ethics approval letter

Downloaded: 14/10/2020
Approved: 22/02/2019

Yang Yang
Registration number: 170119078
School of Architecture
Programme: Architecture (PhD/Architecture FT)

Dear Yang

PROJECT TITLE: Re-discoving and Re-evaluating Public Space in Tokyo: Focusing on Typology and Human Behavior in Contemporary Japanese Architecture
APPLICATION: Reference Number 022771

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 22/02/2019 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 022771 (form submission date: 05/02/2019); (expected project end date: 01/01/2022).
- Participant information sheet 1055827 version 1 (05/02/2019).
- Participant information sheet 1055826 version 1 (05/02/2019).
- Participant consent form 1055830 version 1 (05/02/2019).

The following optional amendments were suggested:

See suggested amendments of reviewers

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Chengzhi Peng
Ethics Administrator
School of Architecture

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.