THE MULTI-SCALE APPROACH IN ASSESSING THE SPACE PRODUCTION OF KITAZAWA GREENWAY IN TOKYO

ABSTRACT

Contemporary Tokyo is a city that has lost its connection to its abundant moat and waterway system due to its uncontrolled urban growth and environmental negligence. Now, the myriad of culverts-turned greenways stands as reminiscent of that time.

This paper examines the quality of space produced in the waterway’s afterlife by adopting the Lefebvrian space production. To do so, it is first recognised that scales are an integral part of assessing space production due to the linear nature of the public element being examined. A framework is constructed to serve as a tool to ‘read’ the lived, conceived and perceived space in different dimensions of the greenway. Its structure comprises different attributes and sub-attributes that provide a descriptive meaning to each scale. The framework is then applied to the case study, Kitazawa Greenway, a locally beloved waterway-turned-greenway in Setagaya ward in Tokyo.

It is concluded that the middle scale of the linear public element is where the predominantly lived space, thus lived quality, is generated. The perceived space is predominant on the micro-scale and the conceived space on the macro scale.
1. INTRODUCTION

This research builds on a previous study of the phenomena of the hidden waterways transformed into pedestrian greenways in Tokyo, where verifiable and quantifiable evaluations were done using The Good Public Space Index (GPSI) to access the efficiency of three different types of cases. Data was collected from Spring 2021 to Spring 2022, showing the seasonal, daytime and nighttime changes. The study measured the level of public space effectiveness of the different locations, ranging from very low to very high. The study showed a sufficient (middle) level of effectiveness in two of those public spaces and a high level of effectiveness in one case. It was concluded that an additional qualitative approach should be included to the investigation of the urban phenomena of the hidden waterways. Moreover, it was suggested that the linear aspect of the elements should be addressed in its different scales to indicate its meaning for the local communities. Accordingly, this study focuses on accessing the quality of life that emerges in those spaces on different scales. It seeks to bridge the empirical to the theoretical knowledge.

To recognise the urban quality of the space in its different lengths, this study is grounded in the theory of social space production. This concept was first proposed by the French philosopher and sociologist Lefebvre, most recognised as a critic of the everyday life in cities and the right to the city. When analysing the three levels of space production, a conclusion on the value of the given space can be made. The dimension of scale is brought up and viewed through the levels of space production. Consequently, this research proposes a fundamental and necessary analytical framework as a tool for ‘reading’ the space production in different scales of linear public spaces. The framework is then tested on the chosen case study, Kitazawa River in Setagaya Ward, now culverted and its ground level part designated as a greenway. This location scored with a sufficient level of efficiency of its public space and was selected among the other two cases from the previous study because of its: local characteristics: - among residential area; type: a greenway, and location: -proximity to the city center. According to the ward’s Green Infrastructure Library, there are six primary functions of this public space: groundwater recharge; watershed protection; expanding green; preserving green; rainwater utilisation and heat island countermeasures. However, with a presumption that this greenway serves a greater purpose than to provide the primary functions that it was initially designed for, this paper attempts to seek the ‘hidden’ meaning of the public space greenway. This ‘hidden’ meaning is recognisable as a quality of the space that is subtle and personal and yet is comprehensible and general in nature. Moreover, the hidden meaning of the space can be closely related to the
Gehl’s quality theme of enjoyment from the twelve Quality criteria tool\(^1\) and the Lefebvrian lived quality from the triad of space production.\(^4\)

2. THEORETICAL BACKGROUND

This chapter covers the theoretical background of the research that facilitates the construction of the framework to access the quality of space produced in the second life of the waterway. It includes two separate theories: 1) Lefebvrian space production and 2) The theory of scales.

2.1 Urban quality and the triad of social space production

This study aims to comprehend the genuine urban quality of the space generated on the buried waterway’s ground level. It is acknowledged that this quality is both tangible and intangible, personal and collective. Urban spaces have a unique quality in relation to the context and the way people interact with the space. The ideas on what is and how to achieve good urban quality are ample. For instance, one study on urban space quality with dozens of samples worldwide showed there are similar traits to successful public spaces, like accessibility, activity, comfort, liveliness and sociability.\(^5\) Moreover, many scholars propose the idea of cities as living organisms\(^6\)–\(^8\) where the bond between the built environment and its users’ perceptions and experiences must be approached and accessed as one.\(^9\) Other scholars suggest responsiveness, meaningfulness, democracy and diversity\(^10\) as values of a good public space.\(^11\) It can be said that the amount to which different individuals engage in different forms with their public space is directly related to the quality of city life. A successful public open space should attract a range of people and foster social contact, whether individual or group, and it should be a democratic and inclusive area.\(^12\),\(^13\),\(^14\)

In a Lefebvrian framework, he described the public space in the city as a location where differences meet, recognise and investigate one another and are confirmed or ruled out. In his book *La révolution Urbaine*, he provided a new approach in describing the urban as an intercession between the public and the private, where assemblage, centrality, encounter and engagement are its other realms.\(^15\) He concludes that urbanity is defined by diversity. It is a setting where separate elements converge to create a novel space. The relationships between those different elements and how they are formed in society are quite complex and in response to this, the author has expanded on the definition of ‘space’ and proposed a more comprehensive theory of ‘production of social space’.\(^16\)
In “The Production of Space” book, he concedes that social space production is in a ‘permanent mode of production and reproduction’\(^\text{17}\). According to his theory, there are three levels of space production: spatial practices (perceived space), representations of space (conceived space) and spaces of representation (lived space). Moreover, when those three levels of social space production are used in analysing public spaces, there should always be a continuous dialogue between them. This triad of space production is related to the quality of urban space that is being generated by people’s interactions and interpretations of the space.

### 2.1.1 The triad of social space production in the hidden waterway

To better understand what those concepts represent for this research, they are applied and rendered in the case study area. Perceived space being defined as the physical space or the ‘spatial practice’ would represent the greenway’s mere physical, three-dimensional space. This would include all the flora and fauna in that space, the landscape design of the element, its urban furniture like benches, bins and drinking fountains and all the supporting structures. This level of space production is something that we can see, and it is the perceivable three-dimensional space.

Followed by the perceived space is the conceived space belonging to urban planners and architects. It signifies the conceptualisation of space or, in other words, what the space represents. Transcribed in the case study, this encompasses the many functions of the greenway, like biodiversity preservation (habitat for animals and plants), a green corridor for airflow and shade, a pedestrian infrastructure that connects, and a place for recreation. The perceived space is the space we can think of and ascribe basic functions to; thus, it can be assumed to be two-dimensional.

The lived space goes beyond the activities for which the greenway is primarily designed. People’s interpretation of the space, and the spontaneous functions that arise from their actions, give a second meaning to that space: the lived quality. Hence, there are other values that can be ascribed to the greenway, like cultural, educational, emotional and economic. For instance, it is a meaningful place to meet others and create social cohesion, like neighbours stumbling upon each other or social happenings and seasonal cultural events like the Bon Odori or Hanami festival. The ambience of the greenway is such to enable leisure activities that belong to Gehl’s theme of enjoyment\(^\text{18}\), like picnics, strolling around, or just admiring nature. It is a popular place for children to collect crayfish from the small creeks, hunt for insects like cicadas and observe...
the duck family or the unusual visitors like the heron and the white egret. Some Japanese words like ‘ikigai’: the deep pondering upon the reason for being, or ‘Yūgen’ pertaining to the subtle beauty that is pervasive but not literally seen, can better capture the essence of amusement of the natural landscape. This space also facilitates citizen participation through engagement in community development groups locally known as ‘machizukuri’. The volunteers manage the activities on the greenway, clean it and care for the plant life and fish. Furthermore, when public places like parks had restricted access during the pandemic, those green linear corridors saw a user surge. Based on their linear nature that enables a constant air and pedestrian flow, people felt safe using those public spaces over others. Lately, a few places from the hospitality industry opened, like a small restaurant and a flower shop, which further activated the greenway. The lived space is the space that is felt and it has more than three dimensions because it adds the senses, the ethereal aspect to it. Figure 1. sums up the meaning of each level of the social space production in the greenway.

FIGURE 1: Interpretation of space production in the hidden waterway
2.1.2 Lived space and urban quality.

Relating to the study aim, the lived space corresponds to what is experienced as the genuine urban quality that the users can experience.

The lived space arises from the inter-correlation between perceived and conceived space and it is a space that is re-conceptualised from the total space to a third element. The lived space is the venue where interpersonal relationships are formed and the social space where citizens actively participate regularly. Lefebvre claims that, in order for things in life to function successfully on all levels, there must be lived space. He argues that a holistic space is formed not only by the conceived and perceived but by adding people’s lived experiences. The concept of lived space comes as a critique of only perceiving the space practically and adds the experiential dimension to perceiving the space. The French term ‘connaissance’ or ‘less formal or more local forms of knowledge’ might come closer to explaining the lived and its differentiation with respect to the perceived and the conceived space. This would be a space that aims to foster imagination and discourages alienation.

For example, Soja defines the lived space or what he calls the ‘thirdspace’, as follows:

A knowable and unknowable, real and imagined lifeworld of experiences, emotional events, and political choices that is existentially shaped by the generative and problematic interplay between centers and peripheries, the abstract and concrete, the impassioned spaces of the conceptual and the lived, marked out materially and metaphorically in spatial praxis, the transformation of (spatial) knowledge into (spatial) action in the field of unevenly developed (spatial) power.

In understanding Lefebvre’s ideas on the production of lived space, the exploration of his origins of inspiration is crucial. Independent studies on Lefebvre’s work show a significant influence of Fourier’s ideas of utopian societies and formulation of urban spaces based on people’s actions driven by passion. Whether Lefebvre acknowledged passion as the highest form of lived space is still arguable among scholars. Moreover, the lived quality can be associated with the site’s intrinsic or intangible meaning and correlates to the theories such as the ‘spirit of place’, ‘genius loci’ and the ‘sense of place’. Consequently, in response to the initial aim of this research, it is acknowledged that the production of the lived space represents genuine urban quality.
2.2 Scales and scenes

Working within different scales is an inherited part of city planning practices. Scales offer numerous narratives of the city; using them enables one to tap into each layer of city formation and sense of space. Many professionals in various fields are trying to comprehend scale from different angles. Nowadays, there exists a discrepancy in the urban theory regarding how to read the scale in different aspects of the city. Scholars and practitioners have diverse viewpoints on scale production and interpretation in the urban realm, which results in generating new city theories.

The scale definition most applicable to this study comes from geography and sociography. Namely, the pronounced geographer Nail Smith described scale as ‘the geographical organiser and expression of collective social action’.

He tries to conceptualise scale from a sociocultural approach, stating that scale production is the relations between physical space and different forms of consumption and governing.

Howitt allocates three facets of scale to describe the process of scale production better. Those are: areal facet that refers to size (census tract, province, continent); a hierarchical facet that refers to level (local, regional, national) and a dialectical facet that refers to relations (relations to other cities, to the social and political order and to the larger society). Moreover, a recent study on the debates on scale theories and their repercussion on city theories suggests a set of abstract tools incorporating the three facets of scale ‘based on cities in general at different places and times’. Their approach uses the scene theory that examines how a particular pattern of different urban structures, people’s usage of space and local and regional policies create scenes. Those scenes can be micro and macro and have similarities in scenes among cities but can also be very local and particular to the context. Furthermore, it can also be examined how the scenes reflect on the citizens’ value system and behavioural patterns.

2.2.1 Local sense of scale

When it comes to the local context, the sense of scale in Japan and particularly the city of Tokyo is different than in the West and has deep cultural roots dating back to the formation of the city. The social anthropologist Jinnai explains two main things in how the scale of Edo and the Western cities differ. The first one is the vastness of the land that the city of Edo covers and its connection to the natural conditions. Rather than concentrated within the vicinity of a wall, the city has spread in the Musashino Plateau, all the way to Tokyo Bay,
leaving space for hills, water bodies and agricultural land. Views from the dwellings towards big mountains like Mount Tsukuba and especially Mount Fuji were virtually protected and served not only as orientation points, but as the ‘repositories of symbolic meaning’.  

Second, differentiation in the urban sense of scale between Japanese and Western cities is the sense of compactness in the urban interior, the immediate places of interaction. The guiding city formation principle for the totality of the city of Edo and the neighbourhood level was completely different. Nonetheless, those two scales, the broader and the narrower, ‘often interacted on close and intimate terms’ and the city’s layout included both the direct and the wider topography. Edo’s human scale legacy is still strongly present in contemporary Tokyo and is a quality that provides a distinctive scenography unique to the Japanese context. The ‘intimate nature in so many of its spaces’ is rampant in the city and Tokyo has a particular ‘overwhelming sense of smallness’ unlike any other metropolis.

3. RESEARCH METHODOLOGY

The study’s main objective is to find where, in which scale of the greenway, the lived quality is generated, with the presupposition that this quality is experienced in the Lefebvrian lived space. To meet the objective, this study provides a holistic overview of the covered rivers’ phenomenon on each scale, both in a neighbourhood and on a city level simultaneously. Hence, it is necessary to look at the greenway as a linear public space from different angles provided in different scales. To do so, the study identifies a need to generate an analytical framework that would be able to identify and classify the Lefebvrian space production in each scale of the greenway. The multi-dimensionality of the element is taken as a prerequisite in developing the guiding tool: the framework to comprehend the overall phenomena of the covered rivers and its meaning for the city as a whole but also for the individual.

3.1 Multi-scale framework to read the production of space

First, the linear public space is divided into three major scales: micro(small), meso(medium) and macro(large) scale.

The framework is constructed mainly by two criteria. One uses the facets of scale mentioned in the previous paragraph, creating certain scenes in the scales. The other criterion comprises different attributes and their sub-attributes with which to read the space production on any scale. The attributes are taken from
the fieldwork perspective that the Japanese geographer and landscape architect Hajime Ishikawa uses in his investigation of the word ‘scale’ and its meaning in different settings. In his book, ‘The Landscape Book-A Look at the Ground’, he examines how seeing things from a different scale viewpoint forms different perceptions of conceived space, ‘or what can be made visible through both a wider context and closer examination’. The book is arranged around five keywords: terrain scale, map scale, time scale, boundaries scale, garden scale. After an in-depth semi-structured interview conducted with the author in the early stages of the research, it was decided that some of the keywords are to be adopted as the main attributes of the framework to read the production of space. Those keywords are time, topography and boundary.

Additionally, the framework accepts three additional sub-attributes to read the space production of the chosen element: learning, system and nature of water. The sub-attributes are, too, related to Hajime Ishikawa’s concepts of scale. They are recognised as repeating themes revolving around his keywords. The sub-attributes expand and add to the theory of scales.

Namely, the system sub-attribute is appropriated from social organisation theory and applied on different scales. There are different levels of societal structures developed between and among an individual and a group. In other words, the production of space in each scale is to be read through those social relationships. Another sub-attribute pertaining to the meaning of the presence of water is added as well. The physical display of water is often presented as a small surface stream on top of the covered waterway. In landscape architecture, the presence of water and its movement is considered a prime feature when designing. Thus, the framework adopts the nature of water as a sub-attribute to read the space production. The learning sub-attribute ascribed to each scale comes from the field of cognitive science and psychology and explains how each scale can be spatially processed and made sense of by the users of that space.

Ultimately, aside from the facets and variables, the framework uses the optimal speed of observation, as mentioned when investigating the terrain scales in Hajime’s book. He refers to an ideal speed with which to comprehend two or more contrasting scales. The framework determines how each scale is perceived, like walking, biking, or simply looking at a map. Figure 2. shows a schematic framework of space production in the scales, the facets of scales, the attributes and the optimal speed of observation that encompasses all.
4. APPLICATION OF THE MULTI-SCALE FRAMEWORK ON THE CASE STUDY

4.1 Case study

The case study was selected based on previous research on the effectiveness of the public space tested on three different types of covered waterways. Even though this case had an average effectiveness score, it was recognised that there is more to its quality. Based on the extended fieldwork and the researcher’s own embodied experience, it was concluded that the case had a distinguished local character, was well known among the citizens of the broader area and the local government showed efforts to protect it.

4.1.1 Neighborhood of Setagaya ward

The neighbourhood of Setagaya has around one million residents. It is also the most densely populated ward in Tokyo, with 15.497 persons per square kilometre and is mostly residential. It is known as ‘the bedroom of Tokyo’. Its proximity and well connectivity to the commercial centres of Shibuya and Shinjuku make it a very convenient area to live in. Two major rail lines connect the ward with the rest of the city in the east-west direction. In the past, forty-two villages were in the area with the main purpose of providing the city of Edo with food, mainly transporting it by boats using the water canals. The descriptive meaning of Setagaya’s characters (世田谷) is society, rice field and valley, sequentially. Regarding the topic of the research, the local authorities have been focusing on the construction of green roads to effectively utilise the upper-covered-part of small and medium-sized rivers that have been...
culverted since 1969. They are attempting to preserve the good quality of the greenways by effectively promoting their significance and attracting citizens’ engagement in many of the voluntary groups who care for the greenway. According to official data, Setagaya ward has sixteen greenways spreading over fifteen hectares, the largest amount per ward in Tokyo. The greenways were created with the intention of ‘regaining nature, ensuring pedestrian safety and emergency evacuation passages’.

4.1.2 Kitazawa Greenway

Kitazawa River, now called Kitazawa Greenway, is a 6.2 kilometres long canal, all submerged underground. 4.5 kilometres of the waterline is landscaped as a greenway and falls under the ‘Park’ category, as defined by Setagaya Ward officials. The greenway merges with Karasuyama Greenway and flows into Meguro River in Shibuya Ward. It is a man-made waterway excavated from the Tamagawa Aqueduct to bring water for the numerous rice fields and agricultural land for the area’s settlements in 1658. The river was named by Mr Kira, who established his castle (around the present Gotokuji Temple) and ruled the area from 1469-1487. The river served its function as an irrigation canal until the late 60s when due to over-construction and heavy pollution ended up with decaying aquatic life and an unpleasant smell. Finally, at the beginning of the ‘70s, after complaints filed by the local citizens for the bad condition of the waterway, it was completely culverted into an underground pipeline.

The transformation of the ground level of the culvert as a pedestrian greenway was done in conjunction between the local government and the machizukuri groups. At the time, locals participated in the greenway’s design, and today it represents a beloved and well-known place in the neighbourhood. Even though the waterway is submerged, its top part has surface water like a narrow stream, where fish and small aquatic animals thrive. People tend to use the pathway in many ways, like strolling, cycling beside it, running, walking a dog, playing or simply sitting on a bench as if in a square or park. Figure 3. depicts the traditional enjoyment of the hanami (cherry blossoms) on Kitazawa River throughout history, where the quality of life, or Lefebvrian lived quality, is apparent.

In this ‘thirdspace’ space domain, a new culture thrives, a culture related to the use of waterscapes, different from that of the past.
4.2 Reading the production of space by applying the multi-scale framework to the case study

Figure 4. shows the multi-scale, multi-faceted framework that is being constructed for the means of this research. The analytical framework comprises two main criteria: the process of scale production incorporating the facets of scale and the fieldwork perspective incorporating the attributes and the sub-attributes. Lastly, referring to the article’s section 2.1.1, the predominant space production is ‘read’ within each scale.
The findings of this research show that scale has to do with the level of livability. For a livable and thriving city, there must be social coherence and connections, and when assessing the urban quality of life in urban spaces, ‘we need to think about a particular city and decidedly local scales’. When it comes to linear public spaces, scales need to be approached differently than areas with clear boundaries, like parks or squares. The Japanese sense of scale lies in the smallness and human scale public spaces are prevalent even in the metropolis of Tokyo. This contextual sense of scale adds to the quality of urban life. The multi-scale framework shows that each level of space production corresponds to a certain scale of the linear public space, in this case, Kitazawa greenway. In the case studied, the perceived space is predominant in the micro-

![Multi-scale framework diagram]

**FIGURE 4: Implementing the multi-scale framework on the case study**

5. CONCLUSION

The findings of this research show that scale has to do with the level of livability. For a livable and thriving city, there must be social coherence and connections, and when assessing the urban quality of life in urban spaces, ‘we need to think about a particular city and decidedly local scales’. When it comes to linear public spaces, scales need to be approached differently than areas with clear boundaries, like parks or squares. The Japanese sense of scale lies in the smallness and human scale public spaces are prevalent even in the metropolis of Tokyo. This contextual sense of scale adds to the quality of urban life. The multi-scale framework shows that each level of space production corresponds to a certain scale of the linear public space, in this case, Kitazawa greenway. In the case studied, the perceived space is predominant in the micro-
scale and the conceived space is majorly produced in the macro scale. The meso scale of the linear public element is the scale where the predominantly lived space is generated. Figure 5. shows the correspondence between the scales of the greenway and the type of space being produced.

The analytical framework being constructed in this research can be used as an instrument by scholars in a procedural manner to read how and what type of Lefebvrian space produces itself in different lengths of the linear public space. It is rather demonstrative and self-explanatory, depicting each scale by its attributes which act like describers or identifiers. Its design allows for flexibility by adding, removing or replacing certain attributes and sub-attributes that can be adjusted according to the case and the research needs. Although the framework promises a successful application in different scenarios of linear public spaces in the city, it may not work in places like main squares or parks that act in isolation without being connected. Using the multi-scale framework on places that are linked and act together is advisable. For example, a network of urban gardens would be an appropriate case to test further and develop the multi-scale analytical framework proposed in the research.
NOTES


From the tool: Twelve Quality Criteria by Jan Gehl Architects. See: https://gehlpeople.com/tools/twelve-quality-criteria/


The former name of Tokyo (1603-1868)


Ibid.


In this research, they are referred to as 'attributes'


Ibid.


Boontharm, Davisi, and Darko Radovic. Measuring The Non-measurable 08. In the Search of Urban Quality: 100 Maps of Kuhonbutsugawa Street, Jiyugaoka. Flick Studio, 2014, p.4
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MULTI-SKALARNI PRISTUP U PROCENI PRODUKCIJE PROSTORA
KITAZAWA ZELENOG POJASA U TOKIJU
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Usled nekontrolisanog urbanog rasta i nemara za životnu sredinu, savremeni Tokio predstavlja grad koji je izgubio vezu sa svojim velikim šancem i sistemom plovnih puteva. Sada, bezbroj tada učinjenih propusta pretvoreni u zelene pojaseve, čine podsetnike na to vreme. Ovaj rad ispituje kvalitet prostora nastalog u procesu obnove plovnog puta, usvajanjem lefebvrovske produkcije prostora. Kako bi se to postiglo, pre svega, razmere/skale su prepoznate kao integralni deo za procenu prostorne produkcije, usled linearnosti javnog prostornog elementa koji se ispituje. Formiran je okvir koji služi kao alat za „iščitavanje“ proživljenog, zamišljenog i percipiranog prostora u različitim dimenzijama zelenog pojasa. Njegova struktura se sastoji od različitih atributa i podtributa koji pružaju deskriptivno značenje svakoj razmeri/skali. Okvir se, zatim, primenjuje na studiju slučaja zelenog pojasa Kitazava, nekada lokalno voljenog vodnog puta koji je pretvoren u zeleni pojas u okrugu Setagaia u Tokiju. Rezultati istraživanja pokazuju da se u okviru srednje razmere/skale linearnog javnog elementa dominantno generiše nastanjeni, življeni prostor, a samim tim i kvalitet življenja. U okviru mikro razmere/skale preovladuje percipirani prostor, dok se u makro razmeri/skali generiše koncipirani prostor.

KLJUČNE REČI: ZELENI POJAS, PRODUKCIJA PROSTORA, ŽIVLJENI KVALITET, LINEARNI JAVNI PROSTOR, MULTI-SKALARNI OKVIR