



PÉCSI TUDOMÁNYEGYETEM  
UNIVERSITY OF PÉCS



**UNICA**  
UNIVERSITÀ DEGLI STUDI  
DI CAGLIARI

# Research on the Activation of Urban Leftover Space Based on Spatial Narrative

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A Dissertation  
submitted to the  
University of Pécs  
&  
University of Cagliari

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In Fulfilment of the Requirements for the Degree of  
DOCTOR OF LIBERAL ARTS&DOCTOR OF PHILOSOPHY  
IN ARCHITECTURAL ENGINEERING

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2022



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## ACKNOWLEDGEMENTS

I would like to thank all those people who helped make this dissertation possible. The paper would not have been built without them who played great roles in my four years training, who have continued to give me guidance.

To the members of my graduate committee: First, I am grateful to my Italian supervisors Dr. Ivan Blečić and Dr. Emanuel Muroi, for their promotion and patient guidance throughout my research program. I would also like to appreciate my Hungarian supervisors Prof. Bálint Bachmann and Dr. Pál Németh, for their relentless support and guidance during my studies. From Hungary to Italy, this meaningful learning period is valuable and unforgettable for me. I am particularly grateful for the assistance from the coordinators.

I would also like to thank Dr. Gianni Loddo, Dr. Valeria Saiu and Dr. Raffaele Argiolas. They recommended me with the research tools and ideas that I choose the right direction and complete my dissertation. To my interview participants who allowed me to be a part of their lives during the research process, I say thank you from the bottom of my heart. Through the research investigation process, I acquired friendships that will last forever. In addition, to my friends: Thank you for your support. I couldn't have done it without you. In particular, thank Rosa Zhe, Shanshan Wang, Yang Li, for being my lovely friend on many adventures. Finally, I would like to thank my best parents, Cuihong Yang and Xuejun Wu, for their love and encouragement.

## ABSTRACT (ENG)

In the history of city development, the utilization of space has been thought of as a key factor in urban planning. With the expansion of urban development, land was compressed and occupied. However, due to the separation of architectural design and urban planning in the early years, and the non-static nature of space, the city has appeared to be a kind of "leftover" spaces. Many of these spaces are low usage and long-term idle, as well as spaces that lack emotional connections. They are characterized by the fragmentation of urban spatial units, the strengthening of spatial divisions, the weakening of spatial connections and the decline in the overall spatial function. This study explores approaches to optimizing the leftover space in the Is Mirrionis neighborhood of Cagliari. Firstly, based on literature review and fieldwork, the author identifies the leftover spaces and summarizes the causes for their formation in different scenarios and the corresponding influencing factors. After continuous spatial exploration and resident interaction, it is proposed to further develop and improve the spaces in the neighborhood by using the behavioral activities as a clue to the leftover spaces in the scenes associated with the spatial narrative, offering a series of design concepts that operate and reconnect these neglected potential areas and try to solve the problem of idle spaces. Finally, subsequent research aspects and potential areas of development for the design concept are also being discussed.

The contribution of the present research involves (i) the identification of the vacancy status of the leftover spaces, which provides a reliable theoretical basis for subsequent spatial optimization. (ii) The redefinition of the identities of the people involved in the study, using the "co-narrators" as an entry point to establish connections between areas, rather than just the original fixed identities of designer and user. (iii) Thematic storytelling is used to try to guide and transform the leftover state of the space, thereby increasing the vitality and use of the space in the old neighborhood.

**Keywords:** *leftover Space, Spatial Narrative, Co-narrator, Walkable Neighborhood, Community life*

## ABSTRACT (ITA)

Nella storia dello sviluppo delle città, gestione e utilizzo dello spazio sono stati considerati fattori fondamentali per la pianificazione urbana. Con l'espansione dello sviluppo urbano, abbiamo assistito a compattazioni del tessuto edilizio e continue occupazioni di spazi. Tuttavia, a causa della separazione tra progettazione architettonica e pianificazione urbana nei primi anni, e della natura non statica dello spazio, disseminazione dell'urbano nel territorio ha ritagliato una moltitudine di spazi interstiziali, vuoti, residuali o, per meglio dire, “*spazi residuali*”. Molti di questi spazi sono poco utilizzati e inattivi rimangono inattivi per lungo tempo, così come spazi in cui mancano connessioni emotive. Sono inoltre caratterizzati dalla frammentazione delle unità spaziali urbane, dal rafforzamento delle divisioni spaziali, dall'indebolimento delle connessioni spaziali e, più in generale, dal declino della funzione spaziale complessiva. Questo studio esplora gli approcci per ottimizzare alcuni spazi residuali nel quartiere Is Mirrionis di Cagliari. In primo luogo, basandosi sulla revisione della letteratura e sul l'osservazione partecipante, l'autore identifica gli spazi inutilizzati e riassume le cause della loro formazione in diversi scenari ed evidenzia i fattori d'influenza corrispondenti. Dopo una continua esplorazione spaziale, mantenendo attiva l'interazione con i residenti, si propone di sviluppare e migliorare ulteriormente gli spazi nel quartiere utilizzando osservando i comportamenti come indizio per gli spazi rimasti negli scenari associati alla narrazione spaziale, verranno offerte una serie di proposte progettuali orientate alla riconnessione delle aree in analisi, al fine di esaltare le potenzialità di queste ultime e cercare di risolvere il problema degli spazi inattivi. Infine, vengono discussi anche i successivi aspetti della ricerca che vanno dalla proposta di un approfondimento sulle questioni che riguardano il potenziale delle aree, fino allo sviluppo della proposta progettuale.

Il contributo della presente ricerca comporta (i) l'identificazione dello stato di “abbandono (o) inattività degli spazi residuali, che fornisce una base teorica affidabile per la successiva ottimizzazione spaziale. (ii) La ridefinizione delle identità degli individui coinvolti nello studio, utilizzando i "co-narratori" come punto di ingresso per stabilire connessioni tra le aree, piuttosto che le identità e superare il concetto tradizionale che vede la rigida dicotomia designer-utente.



(iii) la strutturazione di uno storytelling tematico da usare per cercare di guidare e trasformare la condizione residuale dello spazio, aumentando così la vitalità e l'uso dell'intero quartiere.

***Parole chiave:** spazi residuali, narrazione spaziale, co-narratore, vicinato percorribile, vita comunitaria*

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# Chapter 1. INTRODUCTION

## 1.1 Research Background

All around the world, a developing extent of the populace lives in urban areas. Thirteen years ago, 51.1% lived in cities. By 2019, the portion of people living in cities has risen to 55.7%<sup>1</sup>. Urbanization has been most prominent in emerging economies during the previous ten years, particularly in creating Asia and Oceania (Figure 1.1), which saw the urbanization rate increment from 42.3% in 2009 to 49.1% in 2019<sup>2</sup> The extent of the worldwide population living in metropolises is relied upon to increment to 70 percent by 2050<sup>3</sup> (Figure 1.2).

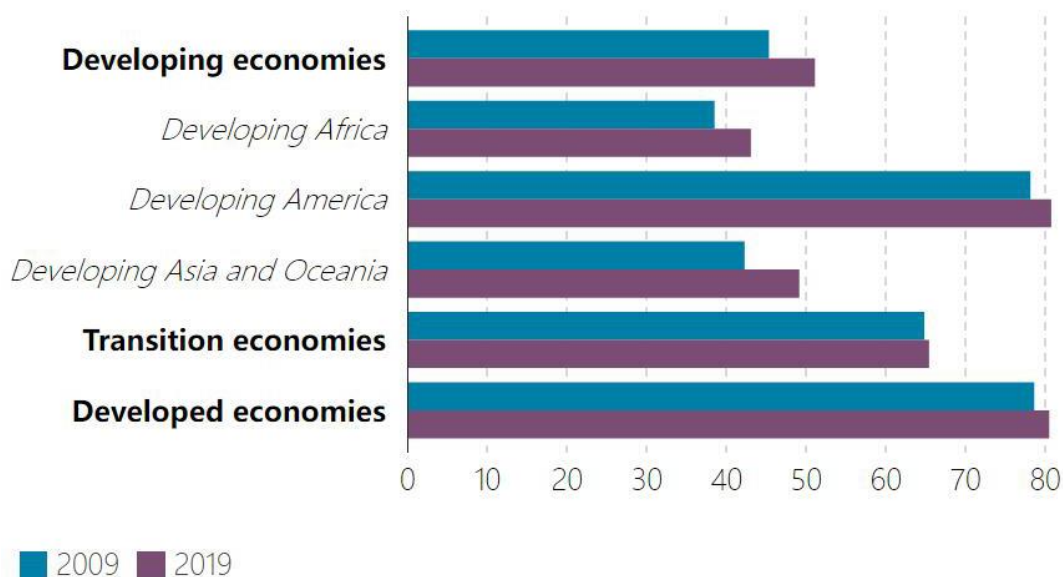


Figure 1.1 Urban population by group of economies (stats.unctad.org)

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<sup>1</sup> UNCTAD, 'Total and Urban Population', UNCTAD e-Handbook of Statistics 2020, accessed 12 November 2021, <https://stats.unctad.org/handbook/Population/Total.html>.

<sup>2</sup> UNCTAD.

<sup>3</sup> 'Global Share of People Living in Cities since 1950', Statista, accessed 12 November 2021, <https://www.statista.com/statistics/274520/global-share-of-people-living-in-cities/>.

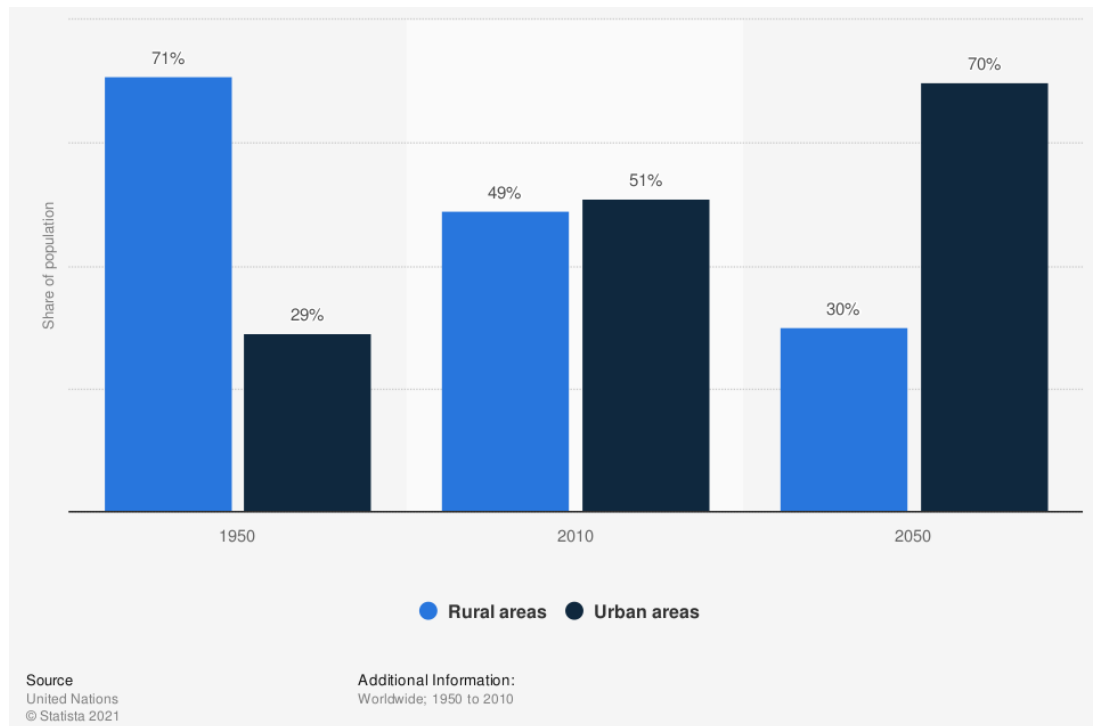


Figure 1.2 Global share of people living in cities from 1950 to 2050 (statista.com)

With the migration of population, the attributes of the land are also changing. This growth will bring about urban areas possessing a higher percentage of available land region. The rapid urbanization process at this stage has promoted the renewal and upgrade of urban construction, and it has also continued to iterate the lifestyles of citizens, which has changed the demands of urban activities for original space. The emergence of large shopping centers, high-density residential communities and integrated central business districts have replaced the original urban spatial forms in order to satisfy the needs of rapid urbanization and industrial agglomeration, and functionalism has become the mainstream of urban construction. In this context, problems emerged as well, in terms of the commodification of space and the social class contradictions in the development of capitalism. Urban space is treated as an object of production and of being produced, leading to the modulization of urban space morphology<sup>4</sup>. The control of urban space resources is concentrated in a small part of social elite, resulting in the loss of multiple attributes

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<sup>4</sup> Harvey Molotch, 'The Space of Lefebvre', *Theory and Society* 22, no. 6 (December 1993): 887–95, <https://doi.org/10.1007/BF00993685>.

of urban space and the abandonment of the spirit of the place<sup>5</sup>. With the explosive economic and social development of the city, urban land development continues to expand. Urban planning concepts including "functional zoning", "grid road", "landscape axis" and "geometric composition" have been deeply taken root. Similar images of urban space make people increasingly numb to the perception of their external environment, which not only deprives them of the ability to think and evaluate critically, but also contributes to many unconscious urban planning decisions. The continuous expansion of land, meanwhile the separation of architectural design and urban planning have led to a rapid growth trend of unused vacant urban land<sup>6</sup>. Many studies have shown the harsh effects of urban expansion, including the surging air pollution index, the aggravation of traffic congestion, the uneven distribution of resources and even scarcity, also the sharp rise in the cost of infrastructure<sup>7</sup>. The city has produced many low-utilization and long-term idle leftover spaces, which are also spaces that lack emotional connections. These are concentrated in the fragmentation of urban spatial units, the strengthening of spatial divisions, the weakening of spatial connections and the decline of overall spatial functions<sup>8</sup>.

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<sup>5</sup> Xiaodong Li and Ye Zhang, 'Urban "Leftover Space"', *World Architecture*, no. 01 (2009): 114–16.

<sup>6</sup> Nehad S. Abd El Gawad, Khalid S. Al-Hagla, and Dina M. Nassar, 'Place Making as an Approach to Revitalize Neglected Urban Open Spaces (NUOS): A Case Study on Rod El Farag Flyover in Shoubra, Cairo', *Alexandria Engineering Journal* 58, no. 3 (September 2019): 967–76, <https://doi.org/10.1016/j.aej.2019.08.011>; Yinghong Jiang and Xueli Fang, 'Study on the Application of Urban Vacant Land Renewal Under the Background of Delicacy Treatment: A Case Study of Shanghai', *World Architecture*, no. 04 (2021): 40-45+129.

<sup>7</sup> P. D. Hien et al., 'Impact of Urban Expansion on the Air Pollution Landscape: A Case Study of Hanoi, Vietnam', *Science of The Total Environment* 702 (1 February 2020): 134635, <https://doi.org/10.1016/j.scitotenv.2019.134635>; Juan Lu et al., 'Expansion of City Scale, Traffic Modes, Traffic Congestion, and Air Pollution', *Cities* 108 (1 January 2021): 102974, <https://doi.org/10.1016/j.cities.2020.102974>; Yehua Dennis Wei and Reid Ewing, 'Urban Expansion, Sprawl and Inequality', *Landscape and Urban Planning* 177 (1 September 2018): 259–65, <https://doi.org/10.1016/j.landurbplan.2018.05.021>.

<sup>8</sup> Peijuan Zhu et al., 'Research on urban space fragmentation', *GEOGRAPHICAL RESEARCH* 37, no. 03 (2018): 480–94.

About the "leftover", this research investigates and summarizes the objective properties within the object. Meanwhile, it incorporates the influence of external subjects on consciousness for exploring and investigating. Here three main aspects are reflected. It is dominated by the "existence" aspect of the objective description, which is redundant and omitted. Meanwhile, due to subjective factors, it manifests itself as an abandoned secondary feature in a given context. At the end it extends the potential of the "unused", which also means that the object has a value that can be explored and exploited.

About "space", it builds the environment that shapes our daily lives, behavior patterns and social relationships. It has the potential to gather people together and to easily separate them from each other. Communication with space is also the most fundamental interaction, which enables historical experiences and life moments and to be recorded. In spatial studies, when the human being gradually becomes the object and center of study, the experience of the spatial environment and the perception becomes a composite process. Under the influence of many scholars, philosophers and architects, the concept of "place", human needs, social relations, cultural connotations, and natural environment have been comprehensively introduced into spatial discussions<sup>9</sup>

### **1.1.1 Leftover space: at the corner of your eye**

In 2000 the American landscape architect Daniel Winterbottom introduced the concept of "leftover space"<sup>10</sup>. It is generally interpreted as something that remains or unconsumed, or remaining as an unused portion or amount, which is an objective abstract description of the state of existence of materials<sup>11</sup>. Firstly, the "leftover space" is a form of being in urban space. Its function in the urban space is expressed as a secondary feature. However, tracing the history of this space, it did not originally exist as a "leftover", but was transformed during environmental

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<sup>9</sup> Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill* (routledge, 2002); Martin Heidegger, '... Poetically Man Dwells...', *Canadian Journal of Psychoanalysis* 10, no. 2 (2002): 233–36; Christian Norberg-Schulz, *Existence, Space & Architecture* (New York: Praeger, 1971).

<sup>10</sup> Daniel Winterbottom, 'Residual Space Re-Evaluated [Portfolio]', *Places* 13, no. 3 (2000).

<sup>11</sup> Li and Zhang, 'Urban "Leftover Space"'.



shift, due to a combination reason of surrounding elements and its own state. Secondly, urban spaces primarily serve human beings, and generally viewing these spaces through a human perspective, which mostly means the areas are abandoned and neglected for the inhabitants. But "forgetting" does not only mean that there is nothing. Owing to its "leftover" status, people have insufficient experience of space and have not reached the level of stimulation of subjective consciousness, which has evolved into a habit of acquiescence and acceptance of this insensibility. Thirdly, the absence of spirituality and culture in this type of space itself. It had only few or almost no spiritual links, which include the multiple properties of space and the dynamic process of behavior. But space and act are both interconnected throughout. The leftover space is closely connected to the evolution of the demand for public activities and to the spatial "process" of the time dimension. It suggests a blurring of perceptions and senses, a deficiency in social relations, a decline in cultural values, and an absence of user experience.

The above description of leftover space does not mean that it has only negative aspects. Based on the characteristics of leftover, "unused" has a wider spatial content for the promotion of "process", especially in the temporal dimension. Its potential and multi-layered influence is easily ignored by those involved in urban space. This is the purpose of the continuing work on leftover space. In the "process" of ephemeral space, the "leftover" may only be a temporary state rather than a permanent and stable form. The abandoned, neglected or dangerous area of a space from a human perspective is also given potential and dynamic positive value due to the temporality, including its gradual ecological diversity, or the multi-functional temporary space

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### **1.1.2 Characteristics of the leftover space**

The distribution of the leftover space is relatively casual, in contrast to spaces with a given

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<sup>12</sup> Nurulhusna Qamaruz-Zaman, Zalina Samadi, and Nik Farhanah Nik Azhari, 'Opportunity in Leftover Spaces: Activities Under the Flyovers of Kuala Lumpur', *Procedia - Social and Behavioral Sciences* 68 (December 2012): 451–63, <https://doi.org/10.1016/j.sbspro.2012.12.241>; Jennifer Foster, 'Hiding in Plain View: Vacancy and Prospect in Paris' Petite Ceinture', *Cities* 40 (October 2014): 124–32, <https://doi.org/10.1016/j.cities.2013.09.002>.

function (large shopping malls, playgrounds, apartment, offices). The creation of space, however, is the result of a type of product and a period, the former having no regular "producer", while the latter has one or several clear productive actors (builders). This feature of leftover space also means that there is a challenge in predicting when it will appear and what form it will take. In addition, the leftover space does not have a particular spatial form<sup>13</sup>. It can appear in any pattern, including long strips on the back facade side of buildings, rectangular or curved shapes at street corners and irregular geometries cut by highways or carriageways, etc. As it is mostly inconspicuous and subordinate, it lacks a direct or indirect link or correspondence with the surrounding elements. There is no similar "architectural red line" in terms of scale, and the boundary appears rather vague, mostly in a discrete state. Next, it usually exists in an implicit role. Although the leftover space is the result of the subjective behavioral activity of the user as a subject in the spatial "process", they lack a sense of homeostasis, happiness, memory and significance<sup>14</sup>, also the lack of stimulation and sensitivity that the space conveys to the outside leads the people to feel that here is "nothing", which means that there is no element worth connecting with themselves. This invisible state tends to have varying degrees of erosion and potential threat to the city. And lastly, the leftover space is complex and open. As with cities, it is an aggregate carrier of all kinds of information, material, cultural, energy and activity. It is a reactor built on natural systems and contains many complex activities and complex elements. This variety also constitutes a continuous, multi-layered, and multi-dimensional system.

### **1.1.3 General principles of space usage and design**

The increase and decrease in the amount of vacant land determines the future trend of the city<sup>15</sup>. A high number of vacancies can have a negative impact on a city's development and lead to its

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<sup>13</sup> Roger Trancik, *Finding Lost Space: Theories of Urban Design* (John Wiley & Sons, 1991).

<sup>14</sup> Kevin Lynch, *The Image of the City* (MIT press, 1964).

<sup>15</sup> Ann O'M. Bowman and Michael A. Pagano, 'Transforming America's Cities: Policies and Conditions of Vacant Land', *Urban Affairs Review* 35, no. 4 (March 2000): 559–81, <https://doi.org/10.1177/10780870022184534>.

decline<sup>16</sup>; fewer available vacancy can also limit a city's development potential<sup>17</sup>, leading to over-densification and a degree of congestion<sup>18</sup>. As a result, vacancy is a critical issue in the construction and operation of cities. Both urban planning and the issue of leftover space are complex studies subject to multiple influencing factors. A single derivation and research will lead to a lack of information and biased results, but facing a complex discipline, the variables of the research problem are hard to completely resolve. To better clarify the direction of problems in leftover spaces at various levels, the author attempts to sort out a system for the operation of leftover spaces by using a control variable approach and combining the analysis of many scholars. Based on the tracing of a certain type of problem, the patterns of change of such spaces are logically defined. Roger Trancik proposed that urban design should consider the outdoor spaces of an urban district as a wholeness, emphasizing their clustering and sequencing, rather than considering them as separate modules<sup>19</sup>. Based on the classification forms generalized by the literature and the project, the author attempts to describe the transformation patterns of leftover space and design the method of adjusting the space for several hypotheses and simulation experiments to further complement the research in the field of leftover space. The design of the leftover space aims primarily to ensure that the main function of the area in which the space is located is not negatively affected. Secondly, the attributes of public and openness are emphasized, with the provision of public leisure, social activities and other functions for citizen interaction and interaction being the focus in the renovation, followed by further enhancement of the living, ecological and commercial values of the leftover space. Also, with lightweight updating as a priority, the concept avoids over design and arbitrary addition of buildings or structures, emphasizing operability and accessibility.

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<sup>16</sup> Pierre-Philippe Combes, 'Economic Structure and Local Growth: France, 1984–1993', *Journal of Urban Economics* 47, no. 3 (May 2000): 1984–1993, <https://doi.org/10.1006/juec.1999.2143>.

<sup>17</sup> Alan Berger, *Drosscape: Wasting Land Urban America* (Princeton Architectural Press, 2006).

<sup>18</sup> Justin B. Hollander, 'Moving toward a Shrinking Cities Metric: Analyzing Land Use Changes Associated with Depopulation in Flint, Michigan', *Cityscape*, 2010, 133–51.

<sup>19</sup> Trancik, *Finding Lost Space*.

## 1.2 Existing Problems and Defects

The idleness of a large amount of vacant land in the city can have a negative impact on the urban environment. For example, when some leftover space is not adequately used or maintained, a huge amount of rubbish accumulates on a regular basis, causing serious damage to the city's overall landscape and affecting the living experience of neighboring residents. Due to the original topography or the passage of time, some spaces suffer from drainage and waterlogging, resulting in rainwater siltation and serious surface runoff pollution, which has a negative impact on the ecology of the surrounding flora and fauna and on soil erosion. The neglected and scattered spaces are hidden in the corners of the city (Figure 1.3), and certain large vacant spaces with low demand or functionally disconnected from their surroundings have become a widespread and important urban phenomenon.



Figure 1.3 An unused area at the back of the building filled with waste (Author,2021)

The fragmentation of space is a noticeable aspect of the evolution of urban space. Main features: (i) Imbalance in the coordination of spatial functions. The distribution of residential, commercial and recreational spaces is imbalanced, and the function of the activity space becomes homogenized, which has also led to (ii) a blocking of spatial connections<sup>20</sup>. The connectivity of

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<sup>20</sup> Alfredo Mela, 'Urban Public Space between Fragmentation, Control and Conflict', *City, Territory and*

functions within the city decreases and to a certain extent spatial independence from each other and land use benefits become lower. In addition, (iii) the enclosed nature of spatial form. The large number of gated enclosed communities continues to fragment the spatial unit, further weakening the function of public space in the city, and the mode of transport tends to be more dominated by private cars. The sense of social belonging and community is becoming weaker and weaker, exacerbating social isolation and conflict<sup>21</sup>.

### 1.3 Research Questions

Recent theoretical developments have revealed that the enormous potential and the possibility of secondary activation of the leftover space, including the use of leftover space to alleviate the urban heat island phenomenon and urban overheating<sup>22</sup>, enhance social interaction and promote the creation of safe and livable cities<sup>23</sup>, and provide a rich space for the experiential, aesthetic and biophysical evolution of cities<sup>24</sup>. The majority of the existing literature on vacancy tends to focus on a particular city, mostly on the explanation of concepts and analysis of causes and presentation of solutions<sup>25</sup>. However, the systematic and targeted analysis of the identification

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*Architecture* 1, no. 1 (12 December 2014): 15, <https://doi.org/10.1186/s40410-014-0015-0>; Yu Wang, David Shaw, and Ke Yuan, 'Gated Neighborhoods, Privatized Amenities and Fragmented Society: Evidence from Residential Experience and Implications for Urban Planning', *Sustainability* 10, no. 11 (November 2018): 4301, <https://doi.org/10.3390/su10114301>.

<sup>21</sup> Bonnie M. Hagerty et al., 'Sense of Belonging and Indicators of Social and Psychological Functioning', *Archives of Psychiatric Nursing* 10, no. 4 (1 August 1996): 235–44, [https://doi.org/10.1016/S0883-9417\(96\)80029-X](https://doi.org/10.1016/S0883-9417(96)80029-X).

<sup>22</sup> Noushig Kaloustian et al., 'Leftover Spaces for the Mitigation of Urban Overheating in Municipal Beirut', *Climate* 6, no. 3 (21 August 2018): 68, <https://doi.org/10.3390/cli6030068>.

<sup>23</sup> Qamaruz-Zaman, Samadi, and Azhari, 'Opportunity in Leftover Spaces'.

<sup>24</sup> Foster, 'Hiding in Plain View'.

<sup>25</sup> Katherine Foo et al., 'Reprint of "The Production of Urban Vacant Land: Relational Placemaking in Boston, MA Neighborhoods"', *Cities* 40 (October 2014): 175–82, <https://doi.org/10.1016/j.cities.2013.12.006>; Aaron Peabody, 'THE CITY, INFRASTRUCTURE, AND LEFTOVER SPACE: AN ARCHITECTURAL SOLUTION, CREATING CONTINUITY IN A BROKEN URBAN FABRIC', n.d., 42; Abd El Gawad, Al-Hagla, and Nassar, 'Place Making as an Approach to

of leftover spaces and the causes of their formation has not been sufficiently researched. Furthermore, only a few studies have focused on the analysis of the interaction between the space and the surrounding elements<sup>26</sup>. This has led to a limited understanding of the vacancy issue.

In order to activate the role of the leftover space in the surroundings, this research has posed the following main questions:

- I. What is the form of the distribution of the leftover space in a specific area? Are there any regular features in the factors that affect its formation?
- II. How to construct the storytelling of the space narrative through the orientation of human behaviors and activities, thus activating the possibilities of the leftover space?
- III. How can spatial narrative optimize the leftover space and enhance the connectivity with its environment?

#### **1.4 Objectives of the research**

The focus of this thesis is not on the point-by-point revitalization of each leftover space in the city so that they can be completely utilized by people, but on the construction of the leftover spaces as collections in different hierarchical categories, integrating and laying out spaces with a global perspective. The innovative point is that the process of analysis is a reverse derivation method. Looking back at the spatial roles and mutual forces that were once primary and secondary. That is, the identity of the subjects of the various buildings in the system is in a weakened state, and the surrounding spaces that have (not) served the building, especially the various leftover spaces, are placed in the spotlight.

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Revitalize Neglected Urban Open Spaces (NUOS)'; Jasim Azhar, Morten Gjerde, and Brenda Vale, 'Re-Imagining Urban Leftover Spaces', in *Smart and Sustainable Cities and Buildings*, ed. Rob Roggema and Anouk Roggema (Cham: Springer International Publishing, 2020), 307–18, [https://doi.org/10.1007/978-3-030-37635-2\\_21](https://doi.org/10.1007/978-3-030-37635-2_21).

<sup>26</sup> Azhar, Gjerde, and Vale, 'Re-Imagining Urban Leftover Spaces'.

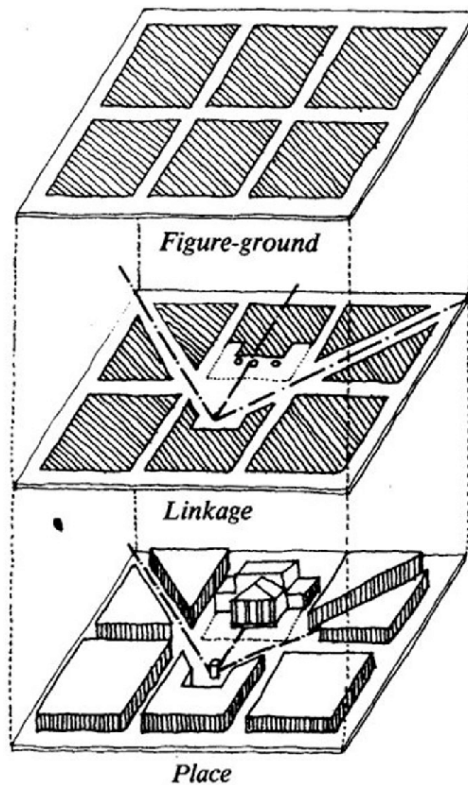


Figure 1.4 Diagram of urban design theories <sup>27</sup>

This analysis is based on Roger Trancik's research (figure 1.4), in which he identifies three main theories of urban space design: a) Figure-ground theory b) Linkage theory c) Place theory <sup>28</sup>. The figure-ground theory is based on the study of the proportional relationship between the built volume as a solid (figure) and the open space as a void (ground). Its main purpose is to clarify the urban spatial structure of a city or a district through spatial order. The linkage theory is derived from the study of the lines between separate elements and is more concerned with the efficiency of motion system or infrastructure. The place theory involves human demands, emphasizing the socio-cultural values and visual experience of the user and personal control of the relevant public environment. This study is a secondary analysis of space based on the framework of the figure-ground theory. The overall principle for the exploitation and design of space is to give structure to real and imaginary spaces, to establish connections between the sections, and to echo the needs of humanity and the particular elements of each environment,

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<sup>27</sup> Trancik, *Finding Lost Space*.

<sup>28</sup> Trancik.

while supplementing and demonstrating the content of urban space design theory.

We specifically sought to achieve the following objectives in this study:

- (i) Systematic identification and categorization of spatial leftover in vacancy, by comparing the leftover space with the surrounding infrastructure and architectural and landscape environment in different scales, forms, states and other elements.
- (ii) Focusing on the behavioral activities of people in a specific environment, recording the interaction between the leftover space and people, and trying to identify multiple factors that influence the strength of the connection.
- (iii) Reconnections to the leftover spaces. The story from the characters to the space is the dominant line, using the spatial narrative as a medium for the leftover spaces to be strung together with new possibilities.

### **1.5 Significance of Research**

The leftover spaces, scattered in the city, are closely linked to the evolution of the demands of public activity and to the spatial "process" of the temporal dimension. The space reflects the organization of society in different eras, behind every physical space hides a social space<sup>29</sup> Whether the leftover space is in a negative or positive context, the dynamics of this state are always interacting with, interacting with and contributing to the changes in human activity.

This study investigates the vacancy status of the leftover space, summarizes the causes of its formation in different contexts and the corresponding influencing factors, which provides a reliable theoretical basis for subsequent space optimization. This research proposes to use human behavioral activities as a clue to relate the leftover spaces in the scenes through spatial narratives, in order to operate and reconnect these neglected "potential spaces". This essay provides a detailed arrangement of the leftover space and the corresponding design concepts, which can be a useful guidance for reusing of the space. The purpose is to generate significant reference

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<sup>29</sup> Ignacio Grávalos Lacambra, Patrizia Di Monte, and Pei Lu, 'The Reprogramming of the City: Urban and Social Considerations Around the Programme "Estonoesunsolar"', *World Architecture*, no. 04 (2021): 10-16+129.



indicators relating to the city's current and future conditions, and to provide guidance for the city's development.

## **Chapter 2. REVIEW OF RELEVANT LITERATURE**

The literature review in the following chapters is the author's summary of the theoretical context of the research object. Chapter 2.1 is the exploration of the preliminary research scope. A rough but global overview, based on keywords, provides an idea of the field of study, the research orientation of the relevant issues and the strength of the attention. The screening of theoretical aspects that are low-density or weakly connected to the elements establishes the basis for the research direction of this paper. In Chapter 2.2, the author takes the research background as a starting point to review the shift in perspective from the urban area to the leftover space. This section discusses the changes and adjustments in the scope of concern in urbanization development, and the mutual checks and balances of space governance under the macro and micro levels. This includes from large-scale to small-scale renewal, from overall to partial improvement, top-down and bottom-up management and division of labor. An understanding of this part of the context can help us to rediscover and reactivate the leftover space in a more reasonable way. In Chapter 2.3, the author sorts out the theoretical development of spatial narrative. Through the tracing and analogy of the spatial narrative subjects in the art works, we try to grasp the core theoretical basis and the trends and focus of research on spatial narrative, and thus clarify the focus of the study. This is also part of the theoretical basis for the core method of project design in the following section. In chapter 2.4, author introduces those cases that explore the potential of leftover space, which are relevant project presentations and brief analyses from various countries around the world. The combing of these cases also provides a reference for the diversified design concepts for the research project of this article.

### **2.1 Current research progress**

The thesis on academic literature started from the databases of Scopus and Web of Science. The keywords selected here include, “leftover space(LS)”, “vacant space(VS)”, “abandoned space(AS)”, “space narrative(SN)”, “urban space(US)”, “storytelling(ST)”. The search of research results of the past five years, the results shown below (Table 2.1&Figure 2.1). We can see that spatial narrative has shown a relatively popular state of research. Among them, articles related to the field of urban space accounted for about 12.8%, and "storytelling" research only accounted for about 4%. Because the term "leftover space" covers a wide range of fields (Figure 2.2), including biology, medicine, aerospace, machinery, etc., which are not very related

to the research content of this paper, so the author added keywords to focus the scope of the results to initially filter the useful information. We can see that there is also a certain amount of research attention on this issue.

TERMS	TERMS(DETAIL)	DATABASE	NUMBER
LS/VS/AS	leftover space/vacant space/abandoned space	Scopus	1824
LS/VS/AS	leftover space/vacant space/abandoned space	Web of Science	2013
LS/VS	leftover space/vacant space	Scopus	820
LS/VS	leftover space/vacant space	Web of Science	738
SN	space narrative	Scopus	8553
SN	space narrative	Web of Science	8224
SN&US	space narrative & urban space	Scopus	1049
SN&US	space narrative & urban space	Web of Science	1104
SN&ST	space narrative & storytelling	Scopus	352
SN&ST	space narrative & storytelling	Web of Science	311

Table 2.1 Literature of the last 5 years (Author,2021)

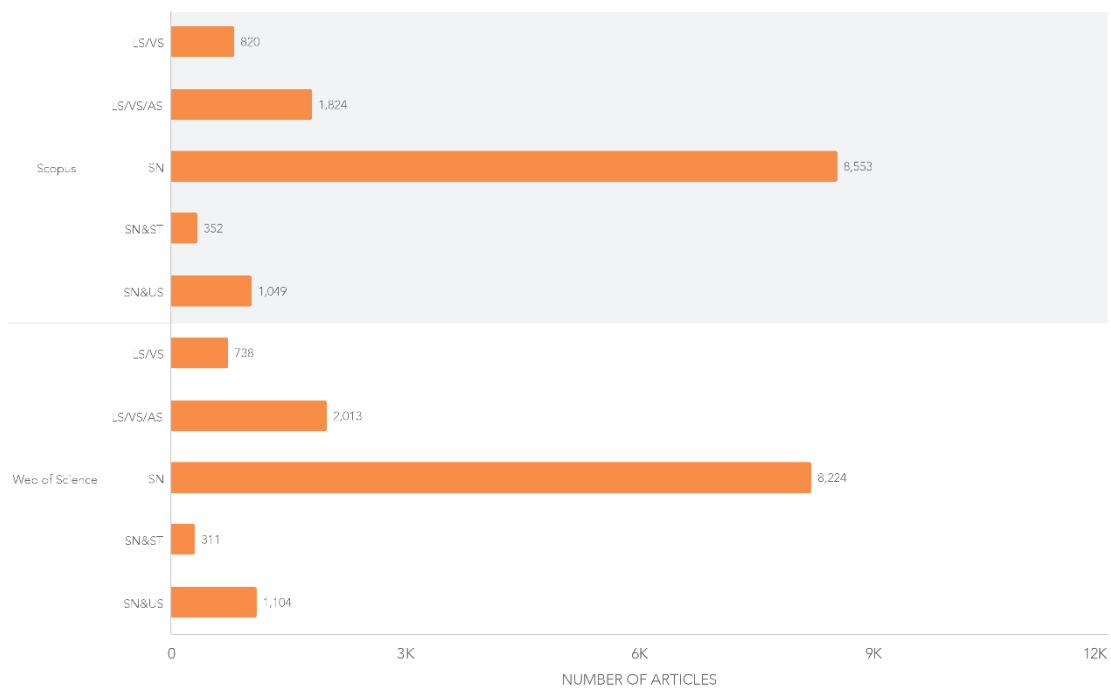


Figure 2.1 Visual comparison chart: Literature of the last 5 years (Author,2021)

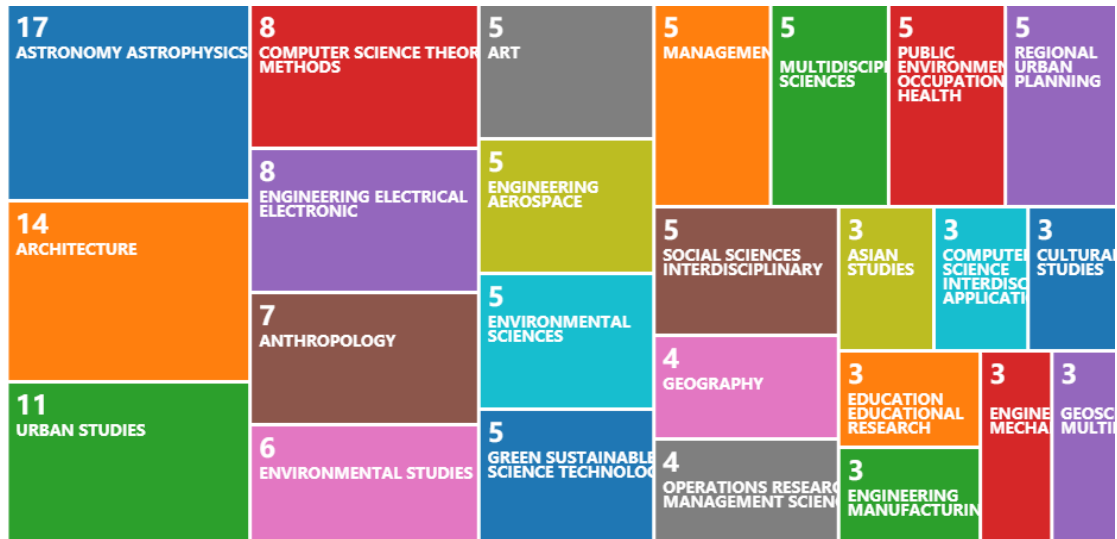
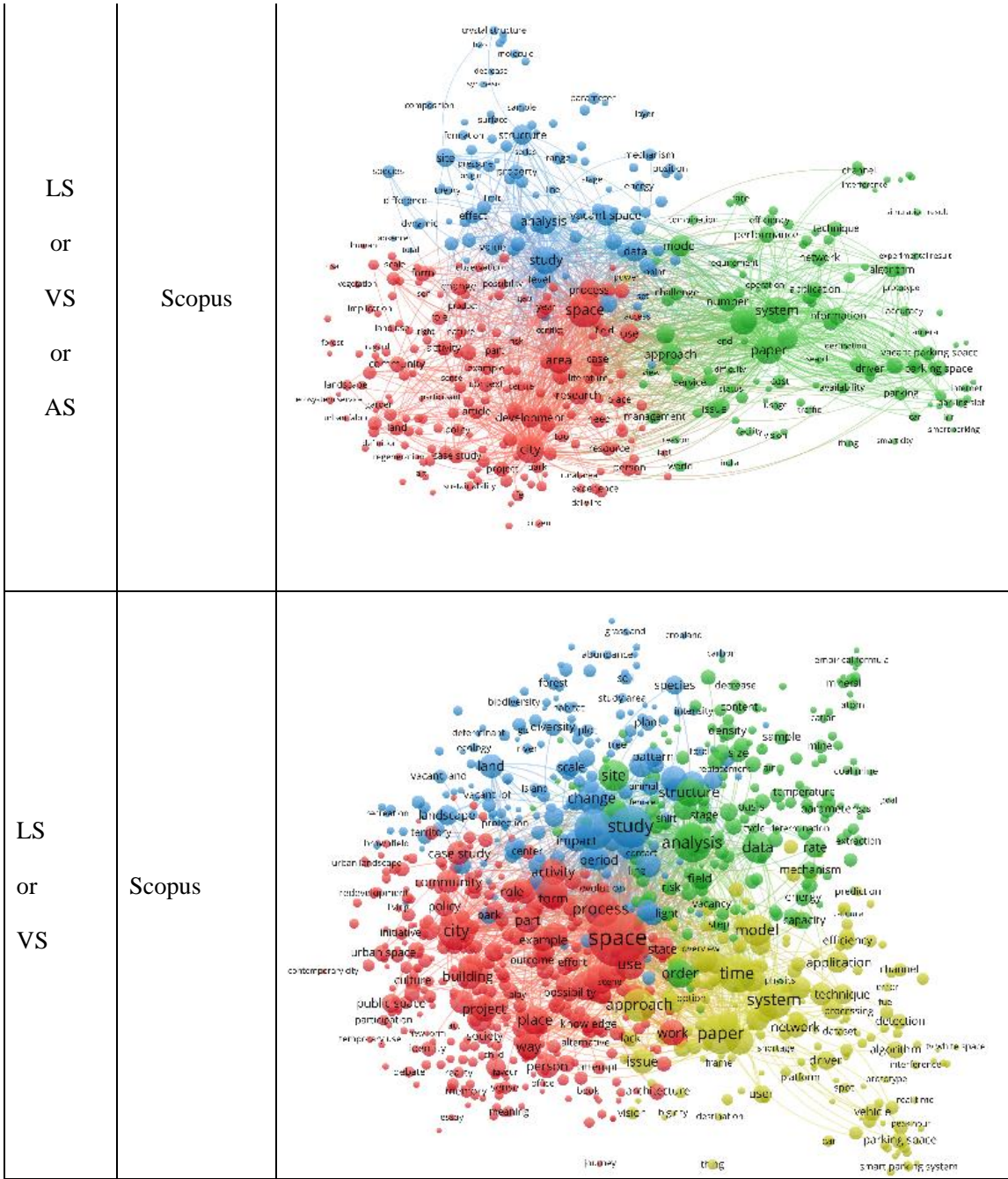


Figure 2.2 Research areas on "leftover space" (Author,2021)

After the initial collection, we shifted our focus to the content of the title and abstract. With the assistance of the VOS viewer tool , a visual analysis of the areas involved in the study was conducted. The terms will be extracted from the title and abstract. For example, in Scopus with "leftover space" or "vacant space" or "abandoned space " as the term, 1824 articles were found. Then, these files were imported into VOS viewer and the words that appeared more than 10 times were selected to be recorded and filtered into 4 groups of clusters, which included 966 items. It can be seen that related research similar to leftover space mainly focus on these categories: spatially oriented research on cities, architecture, culture, social activities, policies and roles, analysis of shifts and patterns and diversity in the temporal dimension, assessment of risk and volumetric ratios and sizes and densities in terms of data, and applicability and user relevance in terms of network systems and technology (Table 2.2). The density of research in this field can be discerned from the size of the circular area of the items in the graph. We can notice that there are further aspects of the living space that can be enriched, as well as dimensions that can be explored in the analysis of spatial patterns and user sensations and memories.

TERMS	DATABASE	VOS viewer
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<p>SN</p>	<p>Scopus</p>	
<p>SN and US</p>	<p>Scopus</p>	











the content. Therefore, the next step is to select and sort through the more relevant literature individually the points or gaps that can be enriched through the research.

## **2.2 A review of the shift in perspective from urban to the Leftover Space**

In the 1960s, the industrial countries of Europe were transformed from an industrial society to an urban society. In particular, the de-industrialization, urban renewal and red lines after World War II were the trigger for spatial fragmentation<sup>30</sup>. The rapid urbanization process has promoted the renewal and upgrade of urban construction, and it has also continued to iterate the lifestyles of citizens, which has changed the demands of urban activities for original space. The emergence of large shopping centers, high-density residential communities and integrated central business districts have replaced the original urban spatial forms in order to satisfy the needs of rapid urbanization and industrial agglomeration, and functionalism has become the mainstream of urban construction. In this context, problems such as the commodification of space and the eruption of social class contradictions in the process of capitalist development also emerged. In this context, problems emerged as well, in terms of the commodification of space and the social class contradictions in the development of capitalism. Lefebvre pointed out that behind these contradictions lies the issue of fairness, and that guaranteeing the exercise of the citizens' right to the city is the way to effectively respond to the demands of all sectors of society for a fair distribution of urban space and to achieve fairness in urban space<sup>31</sup>. Urban space is treated as an object of production and of being produced, leading to the modulization of urban space morphology. The control of urban space resources is concentrated in a small part of social elite, resulting in the loss of multiple attributes of urban space and the abandonment of the spirit of the place<sup>32</sup>. The citizen class only has the prototype space resources planned by the government, which is difficult to adapt to demand and update in a timely manner. Over a long period of time, urban planning concepts including "functional zoning", "grid road", "landscape axis" and "geometric composition" have been deeply taken root. Similar images of urban space make people increasingly numb to the perception of their external environment, which

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<sup>30</sup> Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (Oxford University Press, 1987).

<sup>31</sup> Don Mitchell, *The Right to the City: Social Justice and the Fight for Public Space* (New York: Guilford Press, 2003).

<sup>32</sup> Li and Zhang, 'Urban "Leftover Space"'.

not only deprives them of the ability to think and evaluate critically, but also contributes to many unconscious urban planning decisions. The city has produced many low-utilization and long-term idle leftover spaces, which are also spaces that lack emotional connections. These public and semi-public spaces tend to be monotonous and culturally homogenous, also it is hard to have a positive psychological connection with the local people. In recent years, many cities around the world have seen rapid urban population growth, economic depression, and poor communication between the government and citizens, which giving rise to the study of leftover space as an essential proposition that combines the rights and responsibilities of citizens with the construction of cities. The cognition and strategy of the leftover space can better respond to the remaining problems of urban over-sprawl. The issue of facility and resource renewal has prompted consideration of smaller-scale, gradual investment, and more efficient ways of dealing with leftover space.

While the initial process of deindustrialization was the source of this wave of abandonment and destruction, there are other reasons for the continued proliferation of urban leftover sapces, from ageing populations and shrinking cities to real estate and financial bubbles. These areas have traditionally regarded as the final state or "dead space" of urban development, caused by ageing and obsolescence, that is, the material structure cannot be accompanied by technological progress. Nowadays, leftover is seen as another stage of the city, in which multiple factors are involved – human beings, the passage of time, gravity, fungi, plants, animals, etc. Leftover is a movement or flow of substance in which an object is transformed from one state to another. Through this lens, we can see the once neglected vitality of abandoned urban spaces. Abandoned sites are no longer "dead spaces", but have become prosperous areas of non-human life and urban ecology. Other studies have shown that the end of an activity in a particular location, and consequently its formal abandonment, rarely turns into complete destruction, including urban gardens, leisure practices, artistic or creative practices<sup>33</sup>.

### **2.2.1 Interpretation of the urban form**

In terms of urban modelling, the early urban models were dominated by static models, and the early 20th century to the mid-1950s was the initial stage of urban modelling development. Some scholars try to establish a city model from the perspective of urban form and structure, and draw a time axis, and thereby better

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<sup>33</sup> Pablo Costa, 'Interim Reuse in Urban Derelicts: Uncovering the Community's Attitudes and Preferences through Scenario-Elicitation', 2021, 11.

understand the process of transformation of urban space<sup>34</sup>. As a product of industrial society, the mass media became the main window through which people viewed the world. The radio, the newspaper and the later birth of television and computer, constructed a form of electronic connection between people and the real world. In this sense, the distance between near and far disappears in a new system that sees immediacy as a value. Thus, reality is no longer directly presented to us, but is translated and put into a global system that swallows local characteristics and the resulting differences. In the face of this one-way flow of information, the digital network has been established. It is a multi-directional system that allows interaction and response, and a choice of options, so that the digital network has become one of the most efficient ways of responding to the world. Citizens desire a real interaction when confronted with this virtual online world and gain a sense of presence by participating in some perceptible space. In this respect, the city seeks a balance between physical and virtual space, proposing an urban space characterized by the complementarity between geographical and digital communication technologies. This has led to the continuous reduction of traditional infrastructure during the formation of a city, replaced by an invisible network centered on data and codes and composed of digital infrastructure<sup>35</sup>. Since 1990, the advancement of computer hardware technology, the development of artificial intelligence and other related fields, as well as the increasing maturity of Geographical Information System(GIS) have promoted the development of urban dynamic models, including Cellular Automata (CA) models, Agent-based Modelling (ABM) models, spatial imbalance model, etc. "Refinement" is the main direction for the development of urban models, which are dynamic, discrete dynamics-based, microscopic, "bottom-up" models of urban space.

From the city model to the city network. The key to understanding the city is to dismantle its physical form and reveal the networks that make it work at all levels. The city is treated as a collection of interactions, communications, relationships, flows and networks, rather than as a collection of zones, which are actually complexes of interactions<sup>36</sup>. The form of the city has a spatial order and structure. Human behavior over time

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<sup>34</sup> Lun Liu, Ying Long, and Mike Batty, 'A retrospect and prospect of urban models: reflections after interviewing Mike Batty', *City Planning Review* 38, no. 08 (2014): 63–70.

<sup>35</sup> Laura Benítez Valero, 'MUÑOZ, Francesc. UrBANALización. Paisajes Comunes, Lugares Globales.', *Enrahonar: An International Journal of Theoretical and Practical Reason*, 2010, 184–88.

<sup>36</sup> Michael Batty, *The New Science of Cities* (Cambridge, MA, USA: MIT Press, 2013).

has multiple types of activity which shape the spatial environment at different scales<sup>37</sup>. By contrast, the diverse states of space also reflect the way in which society was organized in each period. Under the perspective of geography, the study of urban space essentially takes "land use" and "human activities" as the basic objects, and mainly studying the distribution characteristics of spatial elements (form) and the mechanism of interaction between elements (process). The object of urban space research should include the urban form, the spatial distribution of elements within the city and the internal mechanisms of interaction between them, emphasizing not only its ecological processes but also its socio-economic processes<sup>38</sup>. In the space design and planning of the city, the city itself, as an important medium and carrier in the process of interpretation, is a place to spread historical information and accommodate social and cultural activities, and to show cultural characteristics<sup>39,40</sup>. The city is a porous ecosystem in which the basic living environment is met by the "large space", while the leftover space is the multi-featured supplement that people use as the "small and micro space" after the city functions are basically settled. These "features" are more likely to test or reflect people's real living demands and future life aspirations. The concept of the leftover problem is a further extension of the fragmentation of urban space, which is seen as a spatial system composed of numerous patches, corridors and substrates, including not only the objective fragmentation of natural and physical space, but also the fragmentation of the constructed social and relational aspects that are distinct from and linked to it. <sup>41</sup> summarized the characteristics of urban spatial fragmentation in three ways , including the closedness of spatial forms, the barriers of spatial connections, and the inharmoniousness of spatial functions.

### **2.2.2 Relevant description of the leftover space**

In response to the leftover problem of urban space, this type of space has been given lots of terminology to describe its state, it includes the lost, the transitional, the vacant, the vague, the uncertain, the neglected, the

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<sup>37</sup> Yu-Hsin Tsai, 'Quantifying Urban Form: Compactness versus "Sprawl"', *Urban Studies* 42, no. 1 (January 2005): 141–61, <https://doi.org/10.1080/0042098042000309748>.

<sup>38</sup> Larry S. Bourne, *Internal Structure of the City: Readings on Urban Form, Growth, and Policy* (Oxford University Press, USA, 1982).

<sup>39</sup> Setha M. Low, Dana Taplin, and Suzanne Scheld, *Rethinking Urban Parks: Public Space and Cultural Diversity* (University of Texas Press, 2009).

<sup>40</sup> Michael Larice and Elizabeth Macdonald, *The Urban Design Reader* (Routledge London, 2013).

<sup>41</sup> Zhu et al., 'Research on urban space fragmentation'.

negative, the blank, the potential and so on<sup>42</sup>. Roger Trancik introduced the concept of “lost space”, which refers to spaces in the city that do not contribute to the environment or its users, have no clearly definable boundaries and are not coherent with the various elements of the surrounding urban landscape<sup>43</sup>. Starting from the analysis of the history and evolution of modern urban space as an example, he also summarizes and proposes three major approaches to theories of urban form, which are figure-ground theory, linkage theory and place theory, which also provide a reference for the analysis of residual space in the later sections.

Temporarily Obsolete Abandoned Derelict Sites (TOADS) is a study of abandoned industrial land and residential projects<sup>44</sup>. This study analyses, in the form of interviews, how TOADS has been responded to from the perspective of city governments.

“Terrain vague” is a term promoted by the Spanish architect and philosopher<sup>45</sup> to describe the spaces that represent the edge of traditional urban forms. He describes these as territorial icons that occupy a sense of strangeness, and the aesthetic and ethical issues they are associated with, as well as those of contemporary social life. It may include obsolete industrial areas, ruined buildings, disused railways and abandoned port land.

"Spaces of Uncertainty" is a collaboration between two architects<sup>46</sup>. This project, which is distributed between urbanism, sociology and visual arts, shows urban research and a photo-essay about life in Berlin's leftover

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<sup>42</sup> Foster, ‘Hiding in Plain View’; Costa, ‘Interim Reuse in Urban Derelicts: Uncovering the Community’s Attitudes and Preferences through Scenario-Elicitation’; Sarah Dubeaux and Emmanuèle Cunningham Sabot, ‘Maximizing the Potential of Vacant Spaces within Shrinking Cities, a German Approach’, *Cities* 75 (May 2018): 6–11, <https://doi.org/10.1016/j.cities.2017.06.015>; Foo et al., ‘Reprint of “The Production of Urban Vacant Land”’; Peabody, ‘THE CITY, INFRASTRUCTURE, AND LEFTOVER SPACE: AN ARCHITECTURAL SOLUTION, CREATING CONTINUITY IN A BROKEN URBAN FABRIC’.

<sup>43</sup> Roger Trancik 1943-, *Finding Lost Space : Theories of Urban Design* (New York : Van Nostrand Reinhold, [1986] ©1986, 1986), <https://search.library.wisc.edu/catalog/999573787802121>.

<sup>44</sup> Michael R. Greenberg, Frank J. Popper, and Bernadette M. West, ‘The TOADS: A New American Urban Epidemic’, *Urban Affairs Quarterly* 25, no. 3 (1 March 1990): 435–54, <https://doi.org/10.1177/004208169002500306>.

<sup>45</sup> Ignasi Solà-Morales, ‘Presente y Futuros. La Arquitectura en las ciudades’, in *XIX Congresso Da União Internacional de Arquitetos (UIA)* (UIA Barcelona, 1996).

<sup>46</sup> Kenny Cupers and Markus Miessen, *Spaces of Uncertainty* (Müller und Busmann Wuppertal, 2002).

spaces. This research analyzes the micro-political issues of public space. As areas beside institutionalized public space buildings, Berlin's leftover spaces reveal their significance as contemporary cities. As an unobtrusive margin, spaces of uncertainty, it shows the city its potential and value in public life.

<sup>47</sup> also provide a definition of the leftover space, based on the descriptions of each scholar<sup>48</sup>. He identifies the leftover spaces as being outside of controlled regulations and surveillance associated with the established uses of organized urban public spaces, which are the void of the city's defined and fixed types of open spaces. In the pace of urban development, the leftover spaces are considered to be undefined functions<sup>49</sup>. <sup>50</sup> further explained, through the case of the Kuala Lumpur overpass, the " unplanned " aspect of the leftover spaces, the lack of officially given functions, resulting in them being mostly unused, and the strong sense of depression that they are outside the busy and urban planning. <sup>51</sup> have classified the leftover urban spaces into six types, which are located between the two facades of a building, between three walls, in front of a building, behind a building, under a building and in the roof area. Most of these spaces are in the enclosure of adjacent objects and have an impact on the social structure.

<sup>52</sup> discusses factors commonly considered to be associated with vacant and abandoned land and suggests that vacant land is not an absolute indicator of urban deterioration, with vacant land often associated with the delineation of political boundaries and structural abandonment more associated with the movement of urban

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<sup>47</sup> Karen Franck and Quentin Stevens, *Loose Space: Possibility and Diversity in Urban Life* (Routledge, 2006).

<sup>48</sup> Solà-Morales, 'Presente y Futuros. La Arquitectura en las ciudades'; Tom Nielsen, 'The Return of the Excessive: Superfluous Landscapes', *Space and Culture* 5, no. 1 (1 February 2002): 53–62, <https://doi.org/10.1177/1206331202005001006>; Jacqueline Groth and Eric Corijn, 'Reclaiming Urbanity: Indeterminate Spaces, Informal Actors and Urban Agenda Setting', *Urban Studies* 42, no. 3 (1 March 2005): 503–26, <https://doi.org/10.1080/00420980500035436>.

<sup>49</sup> Michiel Dehaene and Lieven De Cauter, *Heterotopia and the City: Public Space in a Postcivil Society* (Routledge, 2008).

<sup>50</sup> Qamaruz-Zaman, Samadi, and Azhari, 'Opportunity in Leftover Spaces'.

<sup>51</sup> Jasim Azhar and Morten Gjerde, 'Re-Thinking the Role of Urban In-Between Spaces', 9 December 2016, 11.

<sup>52</sup> Galen Newman et al., 'Vacant Urban Areas: Causes and Interconnected Factors', *Cities* 72 (February 2018): 421–29, <https://doi.org/10.1016/j.cities.2017.10.005>.

populations. <sup>53</sup> has tabulated the different terms given to the leftover space in chronological order.

We can see that the description of the leftover space has become increasingly refined throughout history and this space are abundant. However, it can be also noticed that the morphological features and functional attributes of many of the objects studied are particularly close. This includes multiple synonyms of "leftover" or additional corresponding states, including "uncertain", "ambiguous", "blank", "vacant", "temporary", "idle", "transitional ". This tendency towards a horizontal and relatively fragmented research content has led to this vast leftover space seemingly appearing as scattered across the respective fields of study, just like their own attributes. Their location, scale, spatial quality and other attributes that have been successively mentioned by scholars are also useful reference data as explanations. Although the descriptions of leftover spaces are rich, the definitional aspects of them lack connections to each other and there is a lack of organization in the case study of the leftover space. This signifies the necessity for a phased integration and graphic quantification of such spaces. The following sections provide a systematic identification and categorization of spatial surplus, through the collation of a wide range of academic literature, the comparison of relevant practical cases and the practice of fieldwork.

### **2.2.3 The implications of leftover space**

To analyze the connotation of spatial leftover, it is necessary to strengthen the cognition of spatial elements, including the distribution characteristics, mechanisms of action and the exchange states of human flow, material flow, energy flow and information flow between spatial systems. Understanding fragmentation in terms of "Constitution-Linkage", humans recognize the fragmentation of material space, the fragmentation of relational space governed by matter, and the fragmentation of spatial states and processes determined by the correlation of time and space. Urban spatial leftover is a fragmentation phenomenon formed by the interconnection and interaction of different functional elements. It is a process and state in which the overall space, which is morphologically homogeneous and continuous, structurally connected and functionally efficient, tends to become fragmented, heterogeneous, low-efficiency and discontinuous processes and states under the influence of natural or human factors, focusing on the fragmentation of urban spatial units, the

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<sup>53</sup> Jasim Azhar, 'Exploring the Potential of Urban Leftover Spaces', 2019,

<http://researcharchive.vuw.ac.nz/handle/10063/8559>.



strengthening of spatial division, the weakening of spatial connections and the decline of overall spatial functions<sup>54</sup>. In the leftover space, the limits on possibilities become blurred, thus cultivating user experimentation. Although leftover space exists in the fragmented spaces of the city, it holds a great deal of opportunity for the natural use of these areas, allowing local communities to decide the possibility of using it<sup>55</sup>. Each new intervention causes the space to be allocated and reorganized once more, and the spatial properties of the areas may be adjusted or remain as they originally were. Once again, this then includes two senses of spatial resources - "effective spatial resources", which are given a clear purpose, and another "leftover spatial resources", which are not given a visible value. Over a longer period, the former evolved into a landscape of the city, connecting with citizens and interacting with visitors, through repeated "selected" interventions, with relatively frequent replacements and the introduction of corresponding activities. But perhaps the latter suffer from the opposite situation. Since they have lost their connection and are "unselected" as adjustment objects, the traces of history that have settled in these spaces grow in marginal remnants that are not easily noticed, and the years of forgetfulness are transformed into the backstage of the city.

### **2.3 The theoretical lineage of narratology to spatial narrative**

Narrative is a basic human impulse inherent in human beings. It is essentially an information exchange activity, a process of passing information between the sender and the receiver of the information. In a sense, the social nature of human beings dictates that narrative exists wherever there are human beings. The origins of narratology have a strong formal system, which is a highly applicable form of the structuralist quest. A formal linguistics that analyses sentences through analogy and grammar as a basis, its early days was primarily text-centred, drawing on rhetoric, imagery, textual arrangement, plotting and even modes of argument to study narratives and narrative structures and how they affect the way humans perceive them. The theoretical lineage of narratology can be traced back to Aristotle's poetics. But it is not confined to the realm of literature, with the gradual enrichment of texts and themes, narrative began to combine with other disciplines, and a series of

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<sup>54</sup> Zhu et al., 'Research on urban space fragmentation'.

<sup>55</sup> Marcello Balbo and Françoise Navez-Bouchanine, 'Urban Fragmentation as a Research Hypothesis: Rabat-Salé Case Study', *Habitat International* 19, no. 4 (1 January 1995): 571–82, [https://doi.org/10.1016/0197-3975\(95\)00008-4](https://doi.org/10.1016/0197-3975(95)00008-4).

cross-fusion narrative studies appeared. There are narrative combined with images: painting and film narrative, historical narrative and news narrative related to social and humanities disciplines, as well as psychological narrative and philosophical narrative<sup>56</sup>. It has almost become a common concept and topic of common concern for all humanities and social sciences.

### 2.3.1 Preliminary Academic Theories of the spatial turn in narrative theory



Figure 2.3 Relevant literature on narrative and space before the 1950s (Author,2021)

As early as the 10th century BC, some artworks began to appear that combined events with space, with the intention of life in the text projected into the construction of residential spaces and homes. Among them are works that are well known from all over the world, including the Eastern "Han Yuefu" ("Music Bureau") and the Western "Homeric epics". The former uses common language to construct works that are close to life, which is rich in subject matter. It was set to music by collecting folk songs or poems by literati for performance

<sup>56</sup> Shuang Wang, 'Research on Theories and Methods of Spatial-temporal Narrative Visualization' (Information Engineering University, 2017), <https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CDFD&dbname=CDFDLAST2018&filename=1018702317.nh&v=>.

during court sacrifices or banquets. The latter is written in the hexameter, which is a masterpiece of ancient Greek oral literature. Most scholars agree that Homeric epics depict the customs and elements of the material world originating from different periods of Greek history. The growth of literature has directly influenced the construction of human settlements, from *The Craft of Gardens* written by Ji Cheng in 1631 to the *Theories of Pastoral Poetry* by Alexander Pope in 1709, which have influenced later theories and design approaches to landscape planning and garden creation.

From a literary perspective, in 1937, M.M. Bakhtin's essay "Forms of Time and of the Chronotope in the Novel" focuses on historical poetics, which is the connection between the text and its socio-historical context. He introduces the concept of the "chronotope", which refers to the forms of temporal and spatial composition that occupy a major place in the novel and are important to the unfolding of its plot, forms that are in some way closely linked to the author's form of perception of time and space. This is used as a method to investigate how real historical time and space and characters are expressed, and how novel time and space are related to characters in a particular genre or era. In the literary space-time body, the marks of space and time merge into a well-conceived and concrete whole; time becomes full, and space is also full, responding to the movement of time, plot, and history<sup>57</sup>. The chronotope is the primary way in which time is materialized in space and the means by which the various thematic elements of the novel are characterized.

French philosopher Maurice Merleau-Ponty, a representative of existentialism. He was deeply influenced by Edmund Husserl's concept of "Lifeworld", which is the objective life-world as an empirical reality, and the subjective life-world as a purely Transcendental Phenomenology, separated by a boundary of transcendental reduction. Merleau-Pont emphasized the primacy of perception, allowing us to always maintain the original relationship with the world, instead of applying a certain rational model everywhere. Perception is the basis on which all actions can progress and is a prerequisite for behavior. In this context, he argues that space is not the environment in which objects are arranged, but the way in which their position is made possible. We should not conceive of space as a firmament full of objects, or abstractly as a feature common to objects, but rather as a universal capacity to connect objects. Space is placed in the perspective of perception for investigation<sup>58</sup>. For space, what is essential has always been 'constituted', and if we were to return to a world without

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<sup>57</sup> Mikhail Mikha\u0438 Bakhtin, *The Dialogic Imagination: Four Essays*, n.d.

<sup>58</sup> Maurice Merleau-Ponty, 'Phenomenology of Perception', *Translated by Colin Smith. New*, 1965.

perception, we would have difficulty understanding space. If we want to understand it, we have to go back to perception and make the connection between space and the body. With things, the world, human beings, we need to grasp not only the distance of their planes, but also to experience their spatial depth, which is mediated by perception and the body. This view can be regarded as a prelude to the discussion of space. Merleau-Ponty emphasizes perceptual space and argues that our perception of the world is intimately connected to our bodily awareness and intentions, but that the body itself will reject a precise conceptualization of analysis. Our conceptions of both space-time and object depend on our intentions in the world.

In 1945, Joseph Frank combined with the discussion of modernist literary works in "Spatial Form in Modern Literature", and clearly raised the issue of spatial forms in literature<sup>59</sup>. The basic point of this article is: Modernist literary works are "spatial" in form. They replace the "Sequence" of time with the "Simultaneity" of space. This essay has caused a long-term controversy and has drawn attention to the issue of spatial form in literature. Since its publication, the discourse on space has received much attention from the theoretical community, and a 'spatial turn' has subsequently emerged in academic circles. With the "spatial turn" of critical theory rooted in the cultural transition from modern to postmodern in the second half of the 20th century, the shift in narrative theory towards the concept of space is closely related to it.

As a representative of the study of literary space, Gaston Bachelard took the lead in exploring space issues in the field of literature and art as early as around the 1950s. "*the poetics of space*" is a book about architecture published in 1958, which draws on phenomenology, psychoanalysis and psychology to give full play to its imaginative view of the unity of the material and the poetic. He proposed the theory of "spatial poetics", which introduced spatial discourse into literary criticism, and instead of summarizing literary styles and characteristics with diachronic research approach, he regarded poetic space as the place where people really exist, revealing the meaning of space as a shelter, existence and dwelling. This concept fills a gap in the field of literary theory and promotes the exploration and development of space issues in intellectual power, social production and cultural studies. Bachelard pointed out that space is not a container filled with objects, but a dwelling place for human consciousness, and architecture is the poetics of dwelling.

"... For the moment, I should like to point out the original fullness of the house's being. Our daydreams carry

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<sup>59</sup> 'Spatial Form in Modern Literature: An Essay in Two Parts on JSTOR', accessed 23 August 2021, <https://www.jstor.org/stable/27537575>.

us back to it. And the poet well knows that the house holds childhood motionless “in its arms”: Foucault

Maison, pan de prairie, ô lumière du soir.

Soudain vous acquérez presque une face humaine.

Vous êtes près de nous, embrassants, embrassés.

(House, patch of meadow, oh evening light.

Suddenly you acquire an almost human face.

You are very near us, embracing and embraced.)...”<sup>60</sup>

The spaces in "*the poetics of space*", the house - from cellar to garret - the significance of the hut, are the conscious and unconscious images that entered the memory and experience of the poet as a child. The cellar and the garret are a metaphor and a metonymy at the same time. The garret dominates the day, the shadows of the cellar, the flickering candlelight from which the dreams are born.

Jorge Luis Borges, who was deeply influenced by the idealistic philosophy of Plato and Schopenhauer, and Nietzsche’s voluntarism, adopted the methods of reincarnation and pause in time and space, the transformation of dream and reality, the synchronic existence of death and life, and the mysterious implication of symbols and signs to open the boundaries between history, reality, literature, and philosophy, and blurred their boundaries. Borges found a passage between reality and illusion, and keeps going back and forth. The complexity of his existential and literary geography makes Borges a labyrinth maker in his narrating stories, a circular labyrinth of time in which there is infinite confusion and uncertainty. In 1962, Jorge Luis Borges' representative selection *Labyrinths: Selected Stories & Other Writings* gave the answer to his own labyrinth:

En el pálido polvo he descifrado  
rastros que temo. El aire me ha traído  
en las cóncavas tardes un bramido  
o el eco de un bramido desolado.  
—Jorge Luis Borges

(In the pale dust I have deciphered

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<sup>60</sup> Gaston Bachelard, *The Poetics of Space* (Penguin, 2014).

tracks that I fear. The air has brought to me  
in the concave afternoons a braying  
or the echo of a braying, desolate voice.)

—Jorge Luis Borges (translated by David Bowles, October 2003)

Borges' labyrinth is a world of fallible minds, a world of fleeting impressions, a world without distinction between matter and spirit, subjectivity and objectivity, a world without an ideal spatial architecture: " a world made of time, of the absolute uniform time of the Principia, a tireless labyrinth, a chaos, a dream"<sup>61</sup>.

### 2.3.2 Significant writings on spatial narrative theory

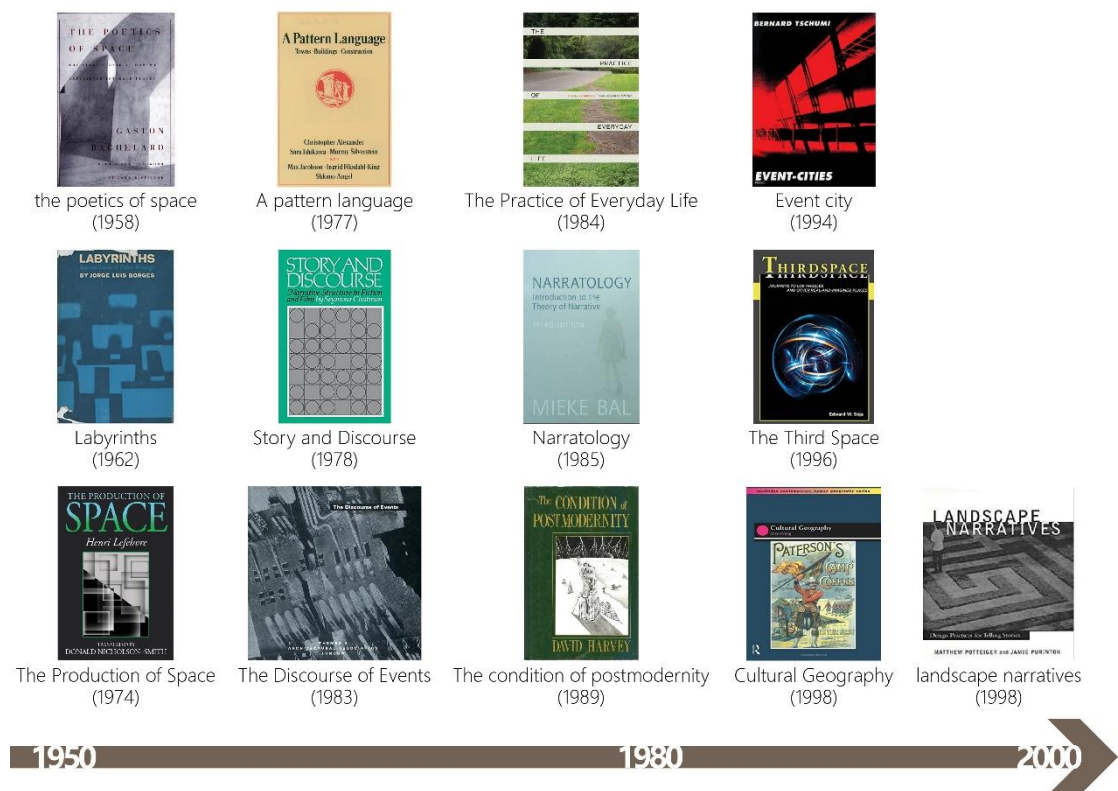


Figure 2.4 Significant literature on spatial narrative theory after the 1950s (Author,2021)

In 1978, Seymour Chatman introduced the concepts of story space and discourse space in "Story and Discourse: Narrative Structure in Fiction and Film"<sup>62</sup>. The former refers to the place and location where the

<sup>61</sup> ‘Jorge Luis Borges: A New Refutation of Time’, accessed 26 August 2021, <https://www.columbia.edu/~ey2172/borges.html>.

<sup>62</sup> ““Story and Discourse: Narrative Structure in Fiction and Film” by Seymour Chatman (Book Review) - ProQuest’, accessed 23 August 2021, <https://www.proquest.com/openview/231a2710ad01da186327a88bef7dd655/1?pq->

story takes place, while the latter points to the place and location in the text where the narrator narrates the story. There are some differences between these two concepts and the stratification of time. Story time means the time when the story actually happened, whereas discourse time refers to the time used in the story for the narrative to be disrupted and rearranged. The dimension of story events is temporal, while the dimension of story existents, such as characters and settings, is spatial.

Mieke Bal's "Narratology: Introduction to the theory of narrative" has become an important work in narrative theory. The article involves the basic theories of narrative theory, starting from the three levels of text, story, and material, and detailed explanations of the internal mechanisms that constitute narrative texts and their mutual relations and functions. At the same time, a special discussion on space issues is made, including the representation, connotation, function of space and its relevance to other factors<sup>63</sup>.

Around the 1970s, Henri Lefebvre wrote a series of works on space and urban issues. For example, *The Production of Space* published in 1974, he put forward the concept of "social space", that is, social relations promote the generation of social space, and social space causes social relations to be reproduced in space. Lefebvre points out that the space in which we live is material, spiritual and social. The "space of life" is the imaginary and fictional space, in the eyes of artists, writers and philosophers, as well as various symbolic spaces, that is transformed and occupied by the imagination. The physical space is obscured in it, and it acts on other things in a symbolic way. Unlike the 'conceived space', the 'living space' is a 'space of domination' and, at the same time, a space chosen for struggle, freedom and liberation, which Lefebvre referred it as an 'anti-space'. It is a "count-space". He opposed the traditional view of space as a platform for the evolution of social relations and instead saw space as an essential part of social relations, arising in the development of social history and being re-structured and transformed as it evolves. He argued that space emerges from purposeful social practices, which are the product of social relations. He distinguished between natural space and social space and understood space as the spatialization of the social order.

If Henri Lefebvre was concerned with the decisive significance of space in the production of commodities, Michel Foucault shifted the focus of his thinking to the discipline and practice of space and the history of

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origsite=gscholar&cbl=1818357.

<sup>63</sup> 'Narratology : Introduction to the Theory of Narrative | Seminary Co-Op Bookstores', accessed 23 August 2021, <https://www.semcoop.com/narratology-introduction-theory-narrative>.

social concepts carried by it. Foucault had already noted that the history of ideas was dominated by spatial issues: " The great obsession of the nineteenth century was, as we know, history: with its themes of development and of suspension, of crisis, and cycle, themes of the ever-accumulating past, with its great preponderance of dead men and the menacing glaciation of the world..... Yet it is necessary to notice that the space which today appears to form the horizon of our concerns, our theory, our systems, is not an innovation; space itself has a history in Western experience, and it is not possible to disregard the fatal intersection of time with space..... It was this complete hierarchy, this opposition, this intersection of places that constituted what could very roughly be called medieval space: the space of emplacement. <sup>64</sup> In contrast to Lefebvre's logic of the political economy of spatial production, Foucault is concerned with the micropolitics of spatial production<sup>65</sup>. For Foucault, Space not only an epistemological but also a political significance. In Foucault's view, if there is no spatial category, we can neither describe history nor power. It is not difficult to see that Foucault's aim in introducing the concept of space was to overturn previous views of knowledge and power, to rewrite the history of human social life, and thus to develop his own unique and insightful concept of knowledge and power: that is, the spatialization of knowledge and power.

In 1984, this "The Practice of Everyday Life" theory by Michel de Certeau provided us with a subtle perspective, reminding us of the subtleties embedded in the ordinary daily life that seem mundane to the masses, and thus exploring the unearthing of resistances that are subject to domination "tactics". Michel de Certeau proposed the concept of 'spatial storytelling' as a practice of urban life, emphasizing the combination of material and metaphorical space to reveal how we find ways of making our environment our own. He argues that every story is a travel story - a spatial practice. The narrative structure has a state of spatial syntax. Like buses and trains, stories pass through several locations each day and organize them; they choose locations and link them; they construct sentences and routes from these locations, they are the trajectories of space.

Also in the early 1980s, "The Discourse of Events" by Bernard Tschumi and Nigel Coates, who have pioneered the practice of exploring modern narratives between the interdisciplinary disciplines of architecture and

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<sup>64</sup> 'OF OTHER SPACES: UTOPIAS AND HETEROTOPIAS', R / D, accessed 29 August 2021, <https://www.readingdesign.org/of-other-spaces>.

<sup>65</sup> L. I. U. Tao, 'Social Media and Social Production of Space: A Contemporary Interpretation of Michel Foucault's Theory of Space Discipline', *Chinese Journal of Journalism & Communication*, 2014.



literature and film. The narrative offers more creative possibilities for the building within the original architectural design system. The book shows how Bernard Tschumi and Nigel Coates, with their students, draw on narrative strategies to translate the temporal dimension of spatial experience, the building in use, and the time dimension of the place into a cartoonish “discourse of events” of urban space and architecture.

This “cartoonish” approach to architecture has been criticized by architectural authorities. As a result, Nigel Coates and his students formed a research group called “Narrative Architecture Today” in the 1980s, which borrowed ideas and techniques from the Situationist City to create an Ecstacy that blends reality and ideals. In 1989, “*The condition of postmodernity*” by David Harvey introduced the concept of “time-space compression” in postmodern life. He uses this concept to try to show that : “the history of capitalism has been characterized by speed-up in the pace of life, while so overcoming spatial barriers that the world sometimes seems to collapse inwards upon us .<sup>66</sup>” In his view, “Spaces can be more easily 'liberated' than Foucault imagines, precisely because social practices spatialize rather than becoming localized within some repressive grid of social control <sup>67</sup>.” He argues that bodily, conscious and psychological spaces are suppressed by the “enlightened absolutism” and these internalized spaces can only be liberated through a rational organization of external space and time. This book played a key role in introducing the idea of space and geography into cultural and literary studies.

In 1991, Fredric Jameson claims that our postmodern culture has become “increasingly dominated by space and spatial logic”<sup>68</sup>. The author criticizes modernism and postmodernism from the perspective of Marxism, linking two features of the postmodernism, which is surface and fragmentation, with the spatialization of time, declaring that “time has become the eternal present and thus spatial. Our relationship with the past is also spatial”.

In 1996, *The Third Space* by Edward W. Soja drew on theoretical insights from Lefebvre, Foucault, feminism, postmetropolis and Social Theory to expand the concept of spatiality, focusing on power relations in the

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<sup>66</sup> ‘David Harvey The Condition of Postmodernity’, accessed 30 August 2021, [http://www.eng.fju.edu.tw/Literary\\_Criticism/postmodernism/postmo\\_urban/harvey.html](http://www.eng.fju.edu.tw/Literary_Criticism/postmodernism/postmo_urban/harvey.html).

<sup>67</sup> ‘David Harvey The Condition of Postmodernity’.

<sup>68</sup> ‘Navigating Spaces: The Human Textual Body (Travel)’, accessed 30 August 2021, <https://faculty.georgetown.edu/bassr/lynn/travel.htm>.

construction of space and forms of oppression in social life in terms of class, gender, and race<sup>69</sup>. The concept of "Third space" is to grasp the dialectics of daily life and space production from an interdisciplinary standpoint. If the "first space" can be called the "real place" and the "second space" can be called the "imaginary place", then the "third space" is a combination of reality and imagination. It has created the "space of difference" between reality and imagination, a space of "thirdization" and "otherization". In other words, the "third space" is a strategy of flexibly presenting space, a possibility of transcending traditional dualism in understanding space<sup>70</sup>. It stimulates a different way of thinking about the meaning of space and represents a questioning of contemporary thought about traditional notions of space and the ways of thinking it implies.

In 1998, In "Cultural Geography," Mike Krone discussed the meaning of space in literature and examined how culture shapes the space of daily life. With the "cultural turn" and "spatial turn" of the critical paradigm brought about by cultural studies in the second half of the 20th century, the disciplinary content of cultural geography has been continuously developed. It is in this theoretical context that Cultural Geography emerged. The cultural geography of "literary space" is a reinterpretation of literary works in the context of the "spatial turning".

In 2009, Sophia Psarra, a professor from the University of Michigan, systematically identifies the relationship between narrative and architecture in her book "Architecture and Narrative: The Formation of Space and Cultural Meaning". The author focuses on the value of narrative for the construction of architectural cognition, spatial order and socio-cultural meaning. She provides a comprehensive account of the value and significance of architectural narrative as a separate branch of architecture, discussing how space and culture are constructed in architecture and how the designer's meaning is conveyed to the participants<sup>71</sup>. The theory is explained through well-known and representative examples of strong narrative scale, including the Parthenon and the Erechtheion, Mies van der Rohe's Barcelona Pavilion, Borges' Library of Babel, the House-Museum of Sir

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<sup>69</sup> Christian Borch, 'Interview with Edward W. Soja: Thirdspace, Postmetropolis, and Social Theory', *Distinktion: Scandinavian Journal of Social Theory*, 1 March 2011, <https://www.tandfonline.com/doi/abs/10.1080/1600910X.2002.9672816>.

<sup>70</sup> Karin Ikas and Gerhard Wagner, *Communicating in the Third Space*, vol. 18 (Routledge, 2008).

<sup>71</sup> 'Architecture and Narrative: The Formation of Space and Cultural Meaning', accessed 24 August 2021, <https://www.routledge.com/Architecture-and-Narrative-The-Formation-of-Space-and-Cultural-Meaning/Psarra/p/book/9780415343763>.

John Soane, New York (MoMA) and others, discussing the close connection between spatial arrangement and narrative restructuring.

There are many articles about narrative space theory. Gabriel Zoran's "Towards a Theory of Narrative Space" constructs what is probably the most pragmatic and theoretically high-minded model of space theory to date. His discussion of spatial issues builds on the fictional world of the text, emphasizing that space is a constructive process in which the reader is actively involved. He distinguished the three different levels of the structuring of space in the text<sup>72</sup>:

The topographical level: space as a static entity (expressed in the diagram by the bottom of the cube).

The chronotopic level: the structure imposed on space by events and movements, i.e., by spacetime (in the diagram, the projections of the inside of the cube on the lower square).

The textual level: the structure imposed on space by the fact that it is signified within the verbal text.

In order to further this analysis, the author also considers "horizontal", that is, the various parts of space, including the units of space, the complex of space and the total space. In Zoran's view, the sum of all these factors is not enough to summarize and describe the overall space reappeared in the narrative process.

In "Space in Fiction", Ruth Ronen put forward the concept of the "frame" that represents the structure of space. The author assumes that space is a semantic structure constructed by the linguistic structures used in literary texts, describing the various categories of spatial composition and the relationships between their manifestations. It is a fictional place, which refers to the actual or potential setting of characters, objects and specific places in the novel. They provide a kind of topographical boundary. The various frames in the text form the general structure of a story space<sup>73</sup>.

Jeffrey R. Smitten and Ann Daghistany co-edited the significant anthology "Spatial Form in Narrative", which collects eleven articles. They discussed the spatial form and narrative language, narrative structure, reader perception, and the theoretical context of the spatial form<sup>74</sup>.

Introduction : Spatial form and narrative theory / Jeffrey R. Smitten

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<sup>72</sup> Gabriel Zoran, 'Towards a Theory of Space in Narrative', *Poetics Today* 5, no. 2 (1984): 309, <https://doi.org/10.2307/1771935>.

<sup>73</sup> Ruth Ronen, 'Space in Fiction', *Poetics Today* 7, no. 3 (1986): 421, <https://doi.org/10.2307/1772504>.

<sup>74</sup> Jeffrey R. Smitten and Ann Daghistany, eds., *Spatial Form in Narrative* (Ithaca: Cornell University Press, 1981).

The novel as artifact / Jerome Klinkowitz

Romantic irony, spatial form, and Joyce's Ulysses / Ann Daghistany and J.J. Johnson

Types of spatial structure in narrative / David Mickelsen

Spatial form and plot / Eric S. Rabkin

Secondary illusion / Joseph Kestner

Time sequence in spatial fiction / Ivo Vidan

Spatial form in the context of modernist aesthetics / James M. Curtis

The aporia of recent criticism and the contemporary significance of spatial form / Ronald Foust

Spatial form / Joseph Frank

Space and spatial form in narrative / Jeffrey R. Smitten.



Figure 2.5 After 2000s, spatial narratives provide a systematic framework for analysis (Author,2021)

Since the 21st century, with the rapid development of information technology, the ability to acquire, store, and analyze data has continued to increase, and global data has shown explosive growth. The impact of big data, information technology and intelligent technology, space narrative design has also ushered in new methods, content and trends. In particular, spatial narratives provide a systematic explanatory framework when the statistical data of quantitative studies are insufficient to demonstrate the specific plot development and

orientation of a scene. Spatial narrative has been redesigned to support information exchange and scene connection, linking storyline and atmosphere in virtual and real environments through new technological means. The narrative representation methods of various levels of information are also diversified. The space is enhanced by light, shadow, music and narration, thereby arousing the emotional feedback of the participants in the real physical space. The visualization of data can help spatial stories to be better presented and perceived. The expanded capabilities of augmented reality spatial narrative design enrich new forms of communication and lived experience. Interaction-based spatial narrative design enhances the interactivity and immersion of spatial experience evaluation. Official system management (grand story) and daily scene display (detailed story) can also be integrated to help the design community expand its understanding of life behavior, social and mobile trends. Compared with the quantitative research in the data age, the relevance and penetration of social forces revealed by spatial narratives are often more abundant than other social surveys, and they are more instructive for design theory and innovation.

## **2.4 The case study of leftover space as a medium for narrative**

The renewed idea of leftover space is not only to sift through and find the gaps in the crowded city, then fill and reuse them, but also to calm down and feel the variety of experiences and emotions that our living environment gives us, to weave and create a richness of space, a sense of interaction with our surroundings, a sense of interaction that is more tangible than a screen. Some spaces are neglected or abandoned, perhaps many times we unconsciously choose to break the connection with it. It can also be described as a two-way choice, this space does not meet my wishes, and I choose to discard it. But on another level, it seems to be one-way. When we face the social environment of extremely rich material, the many options available make it seem easier to discard than to reuse, to simply choose one that I can use immediately, why bother with the effort of figuring it out. The result is that it is too easy to get and too easy to give up, and the sense of connection becomes increasingly fragile and one-dimensional. The most distinctive aspect of this is whether there is enough insight into people, as if the space is beautified in isolation from their lives, it is destined to be a mere façade project<sup>75</sup>.

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<sup>75</sup> William Hollingsworth Whyte, *The Social Life of Small Urban Spaces*, 7. print (New York, NY: Project for Public Spaces, 2010).

In addition to the academic literature, it may be necessary to analyze a few practical cases to help us better understand the potential related to infrastructure and space. Author collates meaningful and creative cases for exploring the potential of the leftover space, , which are relevant project presentations and brief analyses from various countries around the world. The combing of these cases also provides a reference for the diversified design concepts for the research project of this article.

Here are some very common scenarios where public spaces are neglected. Some of the large social squares in front of skyscrapers lack functional facilities, such as seating and greenery for shade. Almost no citizens stop here to rest or gather here for social activities. And the prominent section of the main intersection is ignored and wasted. In the book "The social life of small urban spaces", the research team of the "Street Life Project" also shows us the vibrant and the lifeless public spaces. However, these less vibrant spaces may be associated with some potentially positive consequences. For example, underutilized open spaces on the urban fringe are often valued for their development potential<sup>76</sup>. Many cities have developed proposals to make leftover space in the city center available to community groups and to transform it into community gardens<sup>77</sup>.

Aldo van Eyck wrote in 1962, "Failure to govern multiplicity creatively, to humanize numbers by means of articulation and configuration, has led to the curse of most new towns". It refers to the fact that modernist urban planning, in his view, puts the demands of the "functional city" ahead of human motivations and desires. Aldo van Eyck gradually developed a set of important conceptual frameworks against the current standards, which was expressed through his writing and practice. His goal is to replace the top-down, functionalist urban design approach with a "ground-up", "dirty real", "situational" design strategy <sup>78</sup>. Between 1947 and 1978, Aldo van Eyck designed and built hundreds of children's playgrounds in Amsterdam. These s are temporary and simple, often with minimal, minimal operations in open spaces, using only similar basic design elements,

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<sup>76</sup> Ann O'M Bowman, *Terra Incognita: Vacant Land and Urban Strategies* (Georgetown University Press, 2004); Benjamin W. Stanley, 'Leveraging Public Land Development Initiatives for Private Gain: The Political Economy of Vacant Land Speculation in Phoenix, Arizona', *Urban Affairs Review* 52, no. 4 (1 July 2016): 559–90, <https://doi.org/10.1177/1078087415579733>.

<sup>77</sup> Mark Tranel and Larry B. Handlin, 'Metromorphosis: Documenting Change', *Journal of Urban Affairs* 28, no. 2 (1 May 2006): 151–67, <https://doi.org/10.1111/j.0735-2166.2006.00265.x>.

<sup>78</sup> LM Lefavre, 'The Power of Play', ed. JH Gleiter, N Korrek, and G Zimmermann, *Die Realitat Des Imaginaren; Architektur Und Das Digitale Bild*, 2008, 177–82.

as shown in Figure 2.6&2.7. The idea behind such a design path is to give these unattended sites an active role in urban life by temporarily occupying these sites until a long-term renovation project is formed.

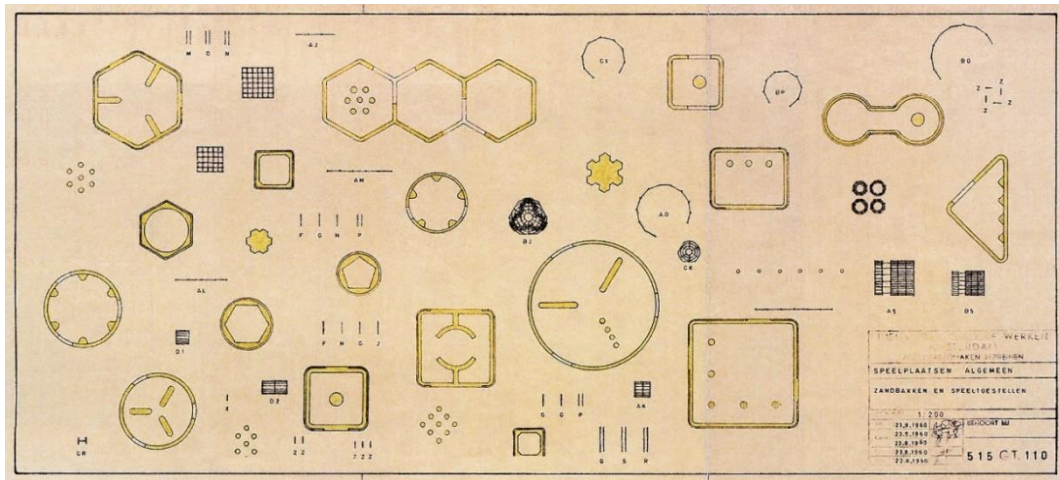


Figure 2.6 Catalogue of various sandpits and game elements to be used in Aldo van Eyck's playgrounds<sup>79</sup>

<sup>79</sup> Architectura Viva, 'The Rebel Humanist - Alexander Tzonis Liane Lefavre', Architectura Viva, accessed 19 October 2021, <https://arquitecturaviva.com/articles/the-rebel-humanist>.

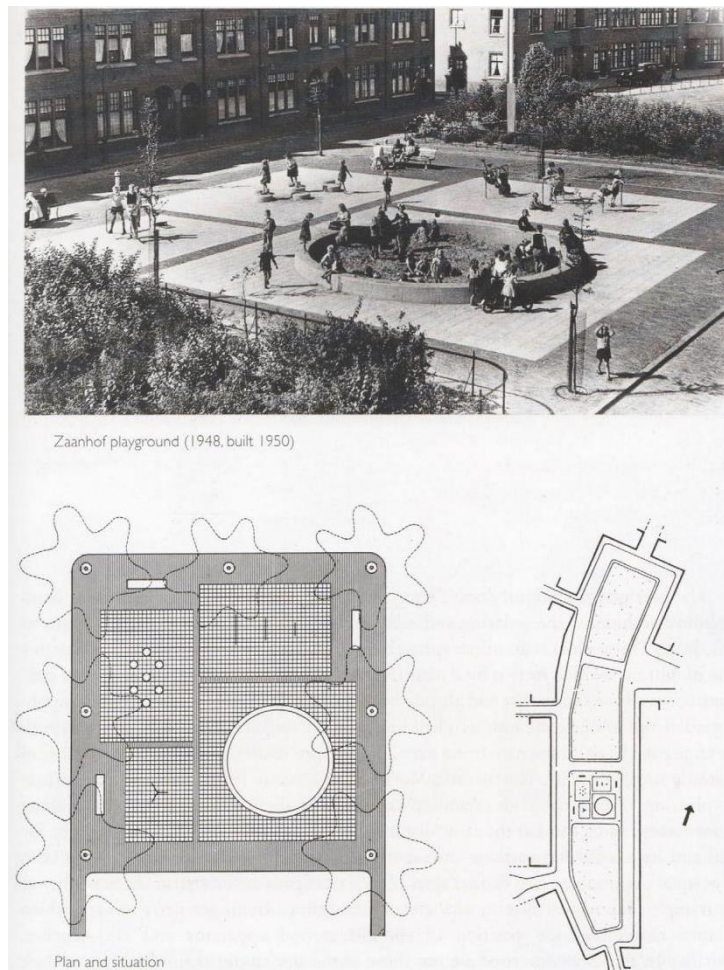


Figure 2.7 Zaanhof Playground (Source Amsterdam Archives)<sup>80</sup>

The development of social economy has led to the adjustment and reorganization of the original layout structure and spatial functions of the city, which has triggered changes in human lifestyles and settlement patterns. As many railways in the development of transportation, when it completed its historical mission, it was temporarily put aside, allowing the space to develop on its own. High Line Park is a greenway and strip park located on a viaduct on the New York Central Railway West Line abandoned in Manhattan, New York City. After the shutdown in 1980, the railway was in danger of being demolished, but it was eventually preserved and transformed into a unique “sky garden”. It is one of the success cases of the transformation of urban industrial waste into urban green communities. Since the first part opened to the public in 2009, the High Line Park has slowly developed into one of the leading tourist attractions within New York City, making

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<sup>80</sup> ‘Aldo Van Eyck’s Playgrounds’, issuu, accessed 22 October 2021, [https://issuu.com/matteolunetta/docs/m\\_lunetta\\_dissertation\\_paper/s/11609032](https://issuu.com/matteolunetta/docs/m_lunetta_dissertation_paper/s/11609032).



a remarkable contribution to the revitalization of Manhattan's West Side (Figure 2.8).



Figure 2.8 The development period of the high line park site<sup>81</sup>

At the time of urban development and the iterative update of citizens' travel modes, urban transport infrastructure constitute is superimposed on the urban form, creating one of the most overlooked types of urban space: the underutilized or wasted areas beneath the elevated motorways, metro and rail lines of towns and cities. These spaces are often considered to be places of decay, and the sudden darkness and uninterrupted noise make people feel uncomfortable and depressing. They are cuts in the urban fabric that divide the block or landscape. "An expressway may break off important visual and symbolic connections: destroy a fine view, or shut off psychological access between one section and another, as by visually disrupting a customary line of approach, or a continuous linkage of activity<sup>82</sup>."

For a space, rather than being designed or beautified, it may be more suitable to be understood and guided, telling and disseminating it, so that it can establish a story-like connection with the surroundings actively rather than passively. A similar case of the renewal of this type of urban space is the Underline project in Miami, which is a 10-mile (about 16.1 kilometers) long park and trail that is located below the Metrorail guideway, from the Brickell Backyard to the Dadeland South Metrorail Station<sup>83</sup>. The project is initiated and led by a non-profit organization run by community activists, which aims to reimagine the intervention in blind areas under the railway tracks (Figure 2.9). The project designed by urban designer Ken Greenberg and the landscape architecture firm Public Work. It features a walkable and bikeable corridor that brings together

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<sup>81</sup> 'History', The High Line, accessed 22 October 2021, <https://www.thehighline.org/history/>.

<sup>82</sup> Kevin Lynch and Donald Appleyard, 'Sensuous Criteria for Highway Design', *City Sense and City Design: Writings and Projects of Kevin Lynch*. MIT Press, London, 1990, 563–78; Kevin Lynch, *City Sense and City Design: Writings and Projects of Kevin Lynch* (MIT press, 1995).

<sup>83</sup> 'The Underline Project', The Underline, accessed 2 November 2021, <https://www.theunderline.org/phases/>.

spaces for recreation, exploration and relaxation, and improves connectivity between the surrounding communities. The previously unpopular road has been transformed into a vibrant street, with a people-oriented renovation plan that has won the city a new public space. Driven by an instinct for nature, designers are thinking about how to build more public spaces based on the existing urban environment. The original intention of The Underline project was to optimize the vacant space beneath existing infrastructure to create a pleasant and energetic environment.



Figure 2.9 The Underline is built in three phases<sup>84</sup>

Through the redistribution of the leftover space, a harmonious integration between the transportation infrastructure and the public space is created, from the activities of people to the connection of the site, the functions are refined and reorganized again, resulting in a more appropriate embedding in the urban texture. This shared public ground has been designed as a continuous large scale community park, while also providing a solution in its various parts that is unified in attitude yet appropriate to the individual lot to accommodate and reflect the unique community context.

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<sup>84</sup> 'The Underline Project'.

## Chapter 3. METHOD

### 3.1 Method selection rationale

#### 3.1.1 Introduction

With the aim of investigating the possible factors influencing the formation of leftover space in an existing environment and designing a strategy for spatial activation at a later stage, we propose a combinatorial methodology based on the theories of several scholars<sup>85</sup> (Figure 3.1): 1) the link between spatial form and environmental structure (based on urban space design theory); 2) the influence of individual behavioral activities in relation to space (based on spatial narratives); 3) concept and design (based on participatory design). Each of these and the methods used are described in Chapters 3 and 4. The methodology of this study is divided into three main phases: (i) Literature review, based on the theoretical foundations of leftover space and spatial narratives. (ii) Inductive approach, which includes the collation of existing leftover spaces in the city and the collection of examples of alternative types of spatial optimization. (iii) Case study, with research and spatial design practice in the Cagliari. For achieving the objectives of this study, the author has adopted a qualitative research approach, based on participant observation and interviews in addition to the analysis of existing data.

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<sup>85</sup> Trancik, *Finding Lost Space*; Zoran, 'Towards a Theory of Space in Narrative'; Franck and Stevens, *Loose Space: Possibility and Diversity in Urban Life*; Matthew Carmona, 'Re-Theorising Contemporary Public Space: A New Narrative and a New Normative', *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 8, no. 4 (2015): 373–405; Steinar Kvale and Svend Brinkmann, *InterViews: Learning the Craft of Qualitative Research Interviewing* (SAGE, 2009).

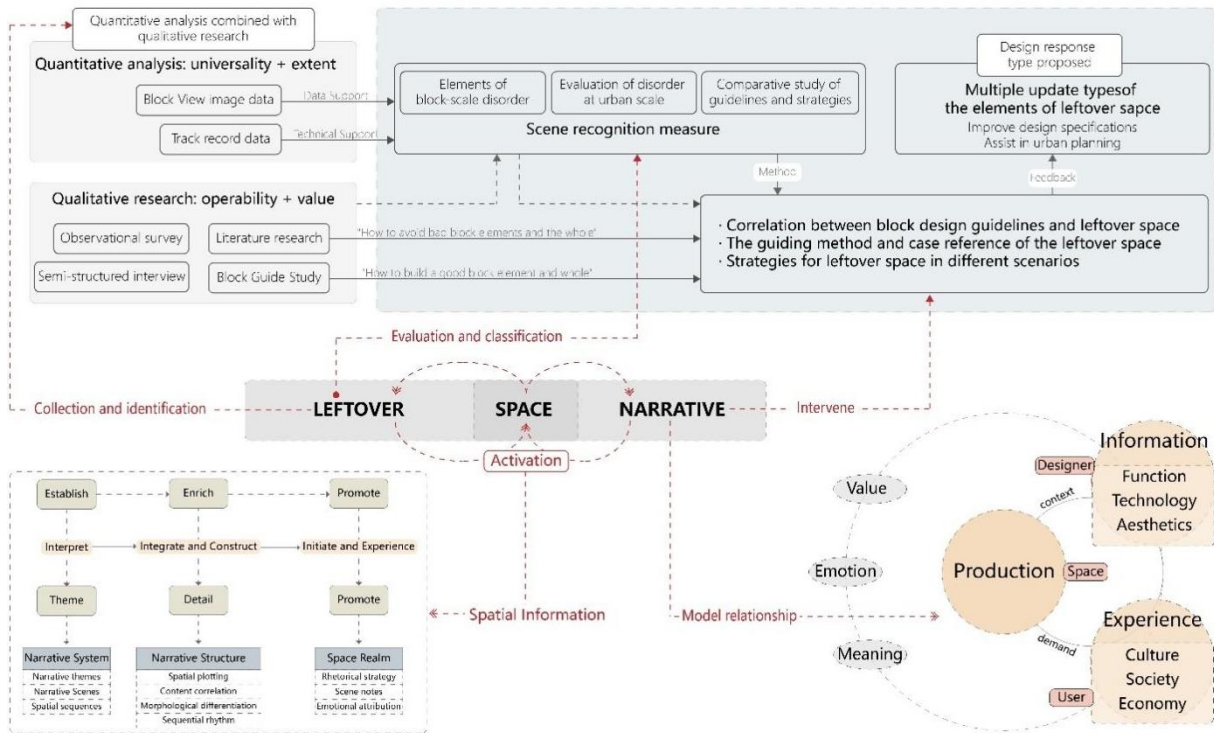


Figure 3.1 Framework of the research methodology (Author,2021)

### 3.1.2 The Qualitative Inquiry and the Interview Method

The most critical element of mining invisible systems in various spaces is to observe people's daily life closely based on the human scale. Both designers and researchers need to look at the city from a lower perspective, not stopping at spatial representations based on big data or indulging in graphic methods of visualizing space and time as static in three dimensions. Places are not defined by designers, but created by users. Events in real life always happen in a certain context, they all happen in a certain space, and they all have a certain time context.

The qualitative case study uses a new data collection technique that focuses on understanding and describing lived experience and aims to collect data where details are missing. This desire to understand the life experience of human beings echoes Heidegger's "Being-in-the-world", which is used to express the way humans relate to, behave and exist in the world. It also echoes Heidegger's "Being-in-the-world", which is used to express the relationship, behavior, and way of existence between humans and the world.

We need a visual communication that can be experienced personally and in a more microcosmic way: a deconstruction of the daily life from a human level. When observing the city, space, and people's life from the human scale, planners can more informedly record the connections and manifestations that can readily emerge

within a space. The process of mapping also reveals and visualizes the various activities and behaviors that gather in an everyday space, and these happen to sketch a rich picture of life. The space is experienced through the measurement of the walker and the perception of the five senses, revisiting the small, unnoticeable everyday things in urban space and incorporating reflection into the walk. Anuradha Mathur and Dilip da Cunha's "photo-walk" drawing explores the diversity of time and space (Figure 3.2). Their collection of photographs not only showed the walker's route, but recorded every scene, every stopping point viewed, every space and change in the walker's activity over time during the walk. In order to visualize the diversity of time and space, they collaged these processed or cropped photographs, maps, walking paths, text, sketches, timelines, relational lines and a series of isometric cutaway sections, and then linked these collages together to convey a more direct sense of the sequence of scenes and the passage of time.

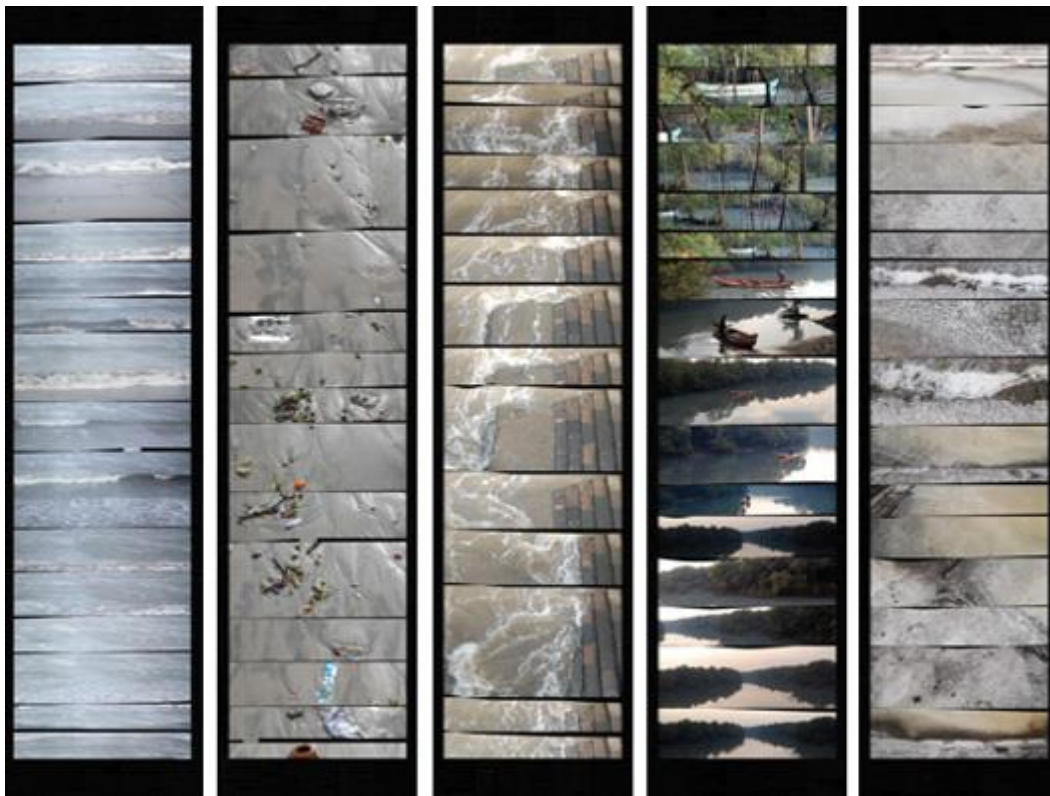


Figure 3.2 Thinking about the boundary between land and water in these landscapes of flux<sup>86</sup>.

"Photo Walk focuses on the events themselves and the symbiosis of various temporal scenarios. It has no clear boundaries, but shifting attention to the shifting territories formed by the activities of people. This allows us

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<sup>86</sup> Nicholas Pevzner and Sanjukta Sen, 'Preparing Ground', *Places Journal*, 29 June 2010, <https://doi.org/10.22269/100629>.



to better understand the urban landscape: the city is not just a map of where things are supposed to be, but also a complex and abundant system of life. Two points are key to narrative mapping to avoid routinization and simplification. Firstly, there is the concept of scale. Cartographers need to examine and interpret everyday life and urban landscapes from a human scale to better capture the intertwined and interactive relationships between people, between people and places, and between people and the environment. The second is the concept of time. Cartographers are expected to record spaces and events in their temporal diversity, and how human activity changes over time.



Figure 3.3 Using the “Photo Walk” of recording in Is Mirrionis (Author,2021)

The purpose is not only to draw the geographic scope of objects and their activities, but also to reveal the associations and relationships hidden within this geographic scope. This behavior may help cartographers create an unmapped or unmappable map (Figure 3.3). On the other hand, tracking should be both narrative and operational. "As a way of mapping, 'tracking' extends the ability to bring different things together. More importantly, tracking can give direction to individual experiences and engage them directly with the changing places and life circumstances of those being tracked. It can move away from a personal reading of individual

objects towards a more systematic reading of the city and everyday life<sup>87</sup>.

Qualitative research is based on a range of profound concerns such as understanding the language and behavior of other people, and it acknowledges that personal narratives are available as a source of detailed data for constructing theories. <sup>88</sup> emphasize the richness and integrity of qualitative research, and its detailed supply of collected data reveals the complexity of the contextual environment, providing wider significance to the subject of the study. Inspired by phenomenology, it focuses on the detailed description of ordinary conscious experience in everyday life, in the sense of perceiving the sensations associated with all physical actions. This study explores sensory tours as a narrative approach to qualitative inquiry, capturing people's exploration in social settings with limited distractions. Phenomenological meanings derived through words and phrases constructed between listeners and speakers, the lens images captured through sensory journey are used to promote reminiscence discussions and other interactive activities, allowing people to choose their own research topics, analyze and interpret the data they collect. In this way, observational methods are combined with methods that support people in socially constructing their experiences. The meaning of the project is sorted out through interaction and communication between the researcher and participants.

The interview method allows the researcher to capture a unique perspective on individual life experiences and world views . Through these records, social phenomena can be described before they are theorization, understood before they are interpreted, and seen as concrete qualities before they are seen as abstract quantities<sup>89</sup>. The semi-structured participatory interview<sup>89</sup> is chosen as the research method because they allow participants to revisit their life circumstances and deepen its relevance to them as individuals.

To understand the narrative construction of space and the self-construction of participants through the lens of a specific context, this study discards the structured interviews and turned to semi-structured interviews as an entry tool. The participants are not strongly guided through the interview, but are shown as freely as possible about their lives in this place. They do not only talk about the physical perception of this area or about spatial qualities, including moral indoctrination or aesthetic sensibility, but on the contrary, all of them are in this

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<sup>87</sup> Ho Jason, 'From the Ground Up: Mapping at the Human Scale', trans. Yang Weifen, *Urban Planning International* 34, no. 6 (December 2019): 13–20, <https://doi.org/10.22217/upi.2019.509>.

<sup>88</sup> Matthew B. Miles and A. Michael Huberman, *Qualitative Data Analysis: An Expanded Sourcebook* (sage, 1994).

<sup>89</sup> Kvale and Brinkmann, *InterViews*.

space, and the processes of everyday life and the evolution of the environment and the maturation of the space are the center of research method selection and attention. It is necessary to use interview methods with minimal intervention to allow participants to express what happened in this space, allowing them to feel free and unrestricted throughout the process. Atkinson notes that as a method of establishing and recognizing the impact of living space and interpreting life experience, there is no better way to understand life than from the perspective of an insider, a subjective narrative of life's story<sup>90</sup> The narrative description provides a way to understand the space and the construction of the participants, and it opens up access of study of memory, language and thought, socialization and culture<sup>91</sup>.

### 3.1.3 Narrative as Methodology

Meaning and conventional function need not necessarily be linked. Buildings need to coax people back into working with them rather than against them ... they need a time dimension, a mental dimension ... or what we could call narrative<sup>92</sup>.

Although "narrative" and "space" are two different disciplines, the study of spatial narrative or the construction of narrative space has a long history. In terms of the transmission of spatial narrative in traditional contexts, first, "space as a place for narration" focuses on the objective role of architectural space and its setting for drama. Secondly, "space as narrative" aims to explore the spatial narrative potential of space itself and to realize it through the language of space. In the contemporary context, regarding narrative space, it may be necessary to discuss how space conveys narrative, what the content of space is, how this content is produced, and what can be considered the substance of space. In this information age, the tools of communication have changed, and its diversity has redefined our spatial dimension and our sense of the digital environment. We use our sensory perceptions to select and absorb some of the information available to us, and continue to collect and organize the information we perceive through the use of language and symbols (Figure 3.4) (Figure 3.5). Narrative represents a method of extraction that helps us to reorder ourselves from the chaos of the

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<sup>90</sup> Robert Atkinson, *The Life Story Interview* (Sage, 1998).

<sup>91</sup> Charles P. Smith, 'Content Analysis and Narrative Analysis.', 2000.

<sup>92</sup> Nigel Coates, '„Street Signs” in *Design after Modernism: Beyond the Object*, Ed. John Thackara' (London: Thames & Hudson, 1988).



external world, imposing an understandable and predictable structure and sense of continuity on a sequence of events. As human beings, this is all we can do as producers of meaning, in the way we narrate and relay our experiences. It is through narrative that we make sense of the information we collect about our environment.

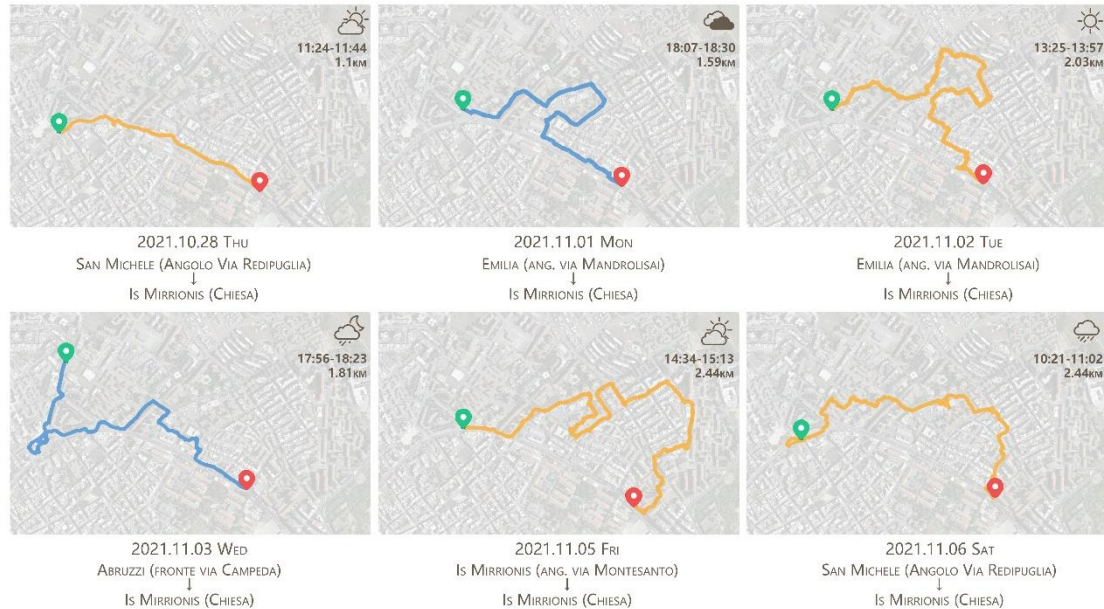


Figure 3.4 One week walking track record in Cagliari (Author,2021)



Figure 3.5 The walker (author) traced a scent map of the neighborhood (Author,2021)

In contrast to other research methods, when the narrative method is applied to the local space research, it

offers access to the full inner world and inward awareness associated with the context of the place. In this study, narrative was used not only as a situational presentation for participants to observe, explore, recall and describe daily and special events that occurred in and around them over the course of their lives, but also to explain the reasons for the depth of these events and the degree to which they were connected. We should not only explore the positive relationship between people and local space, but it is also necessary to focus our research on a series of people's emotions<sup>93</sup>. Through the linguistic of memory spaces, abstract and complex episodes are gradually and clearly sorted out, encouraging people to express their respective cultural backgrounds, social experiences, national beliefs, goal planning, and identity status, while providing the framework and context for their memory of life. The space of memory is filled with significance through narrative, where the emotional lives of individuals are interconnected with the lives of others, thus linking meaning together. The rich data collected through narrative interviews provides a wide range of information, otherwise the easily overlooked information may not be available or hidden from our field of vision.

Bakhtin proposed the inseparable nature of narrative and spatial contexts, introducing the term 'chronotope' to illustrate the connection between time, space and storytelling<sup>94</sup>:

*What is the significance of all these chronotopes? What is most obvious is their meaning for narrative. They are the organizing centers for the fundamental narrative events of the novel. The chronotope is the place where the knots of the narrative are tied and united. It can be said without qualification that to them belongs the meaning that shapes narrative... (chronotope) functioning as the primary means for materializing time and space, emerges as a center for concretizing representation, as a force giving body to the entire novel. (p. 250)*

Bakhtin believes that the narrative of life experience is perceived from the existing unique historical environment where the place has a dominant part.

Narrative is the main integrating force of space. The construction of spatial narratives may originate from people's collective memories of historical scenarios and happenings in urban contexts. The content of an architectural projects can be considered as the substance of space rather than the functional concerns of the

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<sup>93</sup> Lynne C. Manzo, 'For Better or Worse: Exploring Multiple Dimensions of Place Meaning', *Journal of Environmental Psychology* 25, no. 1 (2005): 67–86.

<sup>94</sup> Bakhtin, *The Dialogic Imagination*.

buildings, and it can be temporarily integrated spatially with the explicit and implicit contexts of the city or entwined with people's collective memories or experiences<sup>95</sup>. Narrative allows humans to grasp the long past, but more importantly, it also allows us to grasp more complex tracks in time, including the multi-level time scenes evoked in our memories. Narratives are the most suitable form for our complex temporal constructions, they are also the only form in which they can be communicated and integrated in our social life. From a semiotic point of view, the meaningful organization of all signs can constitute a narrative text.

Spatial narratology focuses on the temporal and spatial dichotomy of narrative, and its use of "image narrative" is the main method of combining time and space in its expression. Unlike non-narrative texts, narrative texts unfold as the stories. It is important to consider not only the narrative structure of the installation, but also the dialogue with the architecture, the urban surroundings and the history of the environment. That is, it will follow the two dimensions of the structure of cultural memory connections - space and time. The response to its material and symbolic environment is a commentary on the memory system that has been transformed through its sheer presence in the place. The narrative form is a simplification of the complexity of reality, a way of making our experiences easily communicated, easily shared with others and easily understood. Narrative also makes our experiences easy to remember, it helps us make sense of our lives, it explains our past, and it provides us with a sense of what we are likely to be like in the future. The stories we tell ourselves help us to understand, in a simplistic form, the memories and expectations that we accompany.

### **3.1.4 Image walking as Narrative**

"Image walking" is the author's extension of "Photowalking", which is a visionary free walk that combines daily walking with photo storytelling, allowing you to take action and establish a connection with the surrounding environment. It is sometimes compared to street photography, which is a documentary photographic activity<sup>96</sup>. "Image walking" can be portrayed as a narrative method to explore the hidden features

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<sup>95</sup> Ching-Pin Tseng, 'Narrative and the Substance of Architectural Spaces: The Design of Memorial Architecture as an Example', *ATHENS JOURNAL OF ARCHITECTURE* 1, no. 2 (31 March 2015): 121–36, <https://doi.org/10.30958/aja.1-2-3>.

<sup>96</sup> 'Photowalking', in *Wikipedia*, 10 March 2021, <https://en.wikipedia.org/w/index.php?title=Photowalking&oldid=1011367488>.

of a site and to present a more realistic representation of people's daily life. The main behavioral framework is "walking, focusing, connecting, exploring". It emphasizes the formation of a process from movement and attention to discovery and intervention, provides researchers with a way to understand the true characteristics of the area by digging out the complexity and richness of the site. It is also a unique and delicate act of practice , which provides us with a different perspective and narrative approach to better interpret the daily. By recording the experience of walkers when they walk through various areas, it is advocated that walkers have diverse interpretations of the connections between different spaces in the city. The aim is to interpret the city through continuous observation, rather than relying on preconceived concepts such as space, architecture and its functions (Figure 3.6). In the process of moving, the walker can feel how his or her desires and consciousness are attracted or resisted by varying spaces.

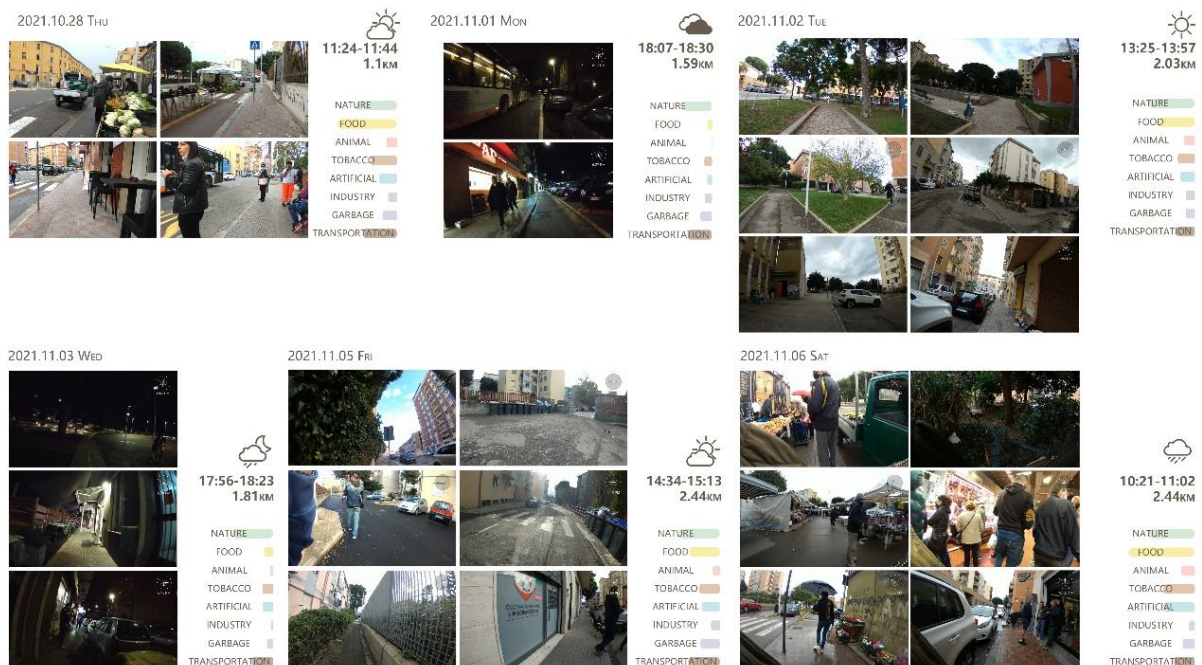
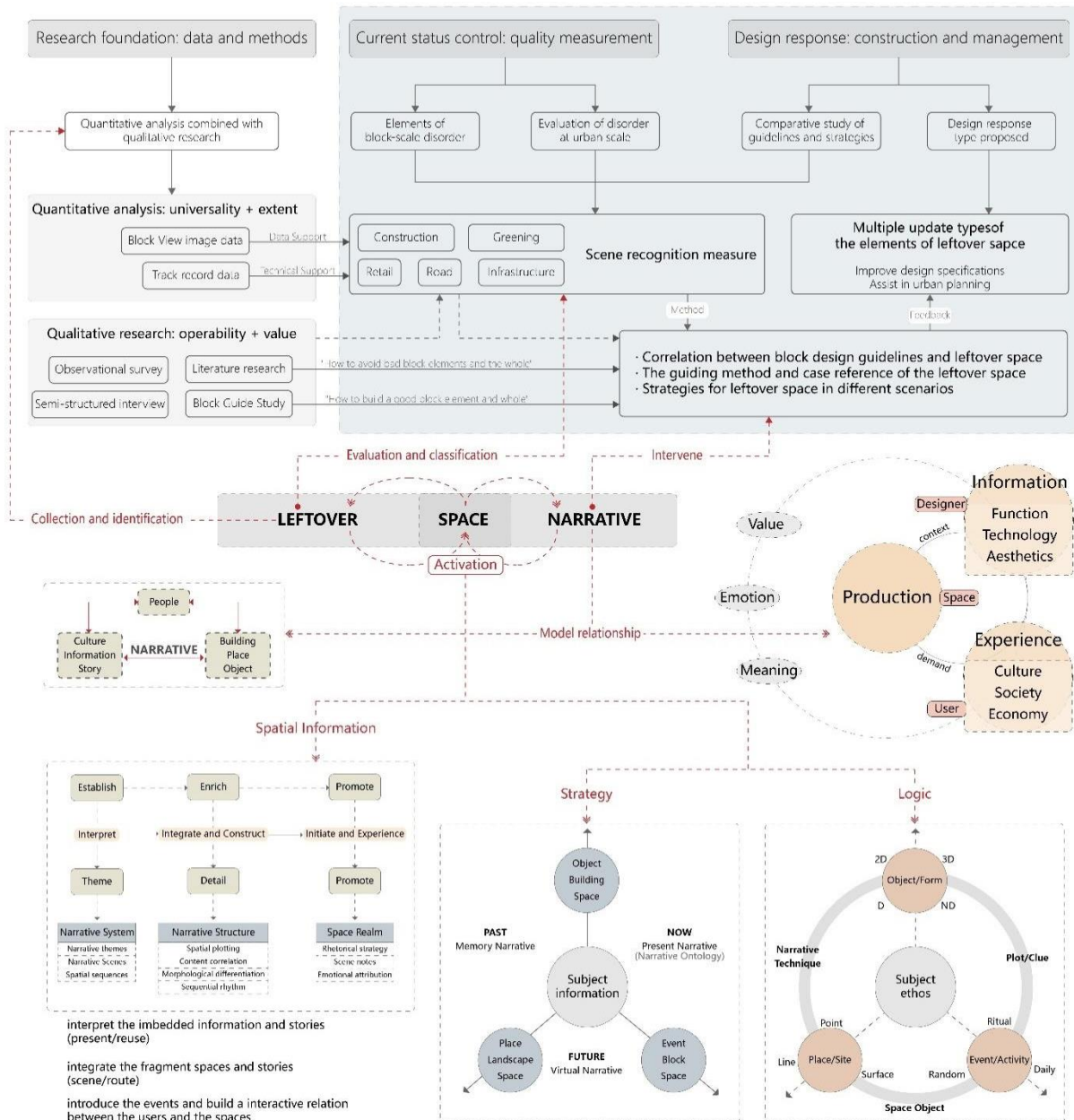


Figure 3.6 The author recorded through wearing a camera while walking (Author,2021)

How a person or object relates to a larger urban network formed by various fragments, crowds, and everyday events. This shift from focusing on the human scale to a larger scale of understanding the connection between what is being observed and the places, communities, cities, and even countries in which it is located provides the viewer with a perspective that transcends places and understands how a tiny thing can gradually affect the lives of different areas of the city and the people within them, without being limited by so-called "red line of construction" or the physical boundaries of places. Professor Sand Helsel of the Royal Melbourne Institute of Technology also pointed out that if you want to have a deeper understanding of a city and its complex daily

landscape, you need to collect data through first-hand experience and personal observations in specific locations, rather than just relying on Geographic Information System datasets and official census information<sup>97</sup>. While quantitative-based data analysis can provide clues and directions for resource allocation at the macro scale, it ignores the complexity and richness of the real-life world.

### 3.2 Research Framework



<sup>97</sup> Sand Helsel, *Taipei Operations* (RMIT University, 2004).



Figure 3.7 The overall research framework (Author,2021)

### 3.3 Information Collection and Analysis

The data collection combines images automatically captured using wearable cameras and semi-structured participatory interviews. These data allow participants to reflect on behaviors taken for granted and the everyday use of family adaptations, enhancing the collection of interview data in this study. This approach prioritizes the individual and enhances the importance of personal life and experience.

With the spread of digitalization and intelligence, new technologies and equipment are constantly emerging. Various commercial wearable devices are increasingly being made available to the public and have great potential for tracking and monitoring personal behavior. Consumers are becoming increasingly familiar with all types of cameras and sensors, including human-centric applications. With the record of self-centered vision, research on this issue has been booming in the past few years, and applications tailored to their needs and expectations have emerged. It takes a unique first-person perspective to deal with tasks such as horizon analysis, social relations, and so on, to understand the spatial area and event content that users are concerned about in a timely manner<sup>98</sup>.

Wearable devices currently used in individual monitoring divided into two categories: one focuses on monitoring physical status, including the use of wearable chest straps to monitor an individual's level of sleep level and heartbeat frequency, and the use of ECG (electrocardiographic) sensors to monitor an individual's mood swings. The other focuses on daily behavioral recording, including using a pedometer to analyze the wearer's physical activity, using the wearable camera Microsoft SenseCam to record daily life and travel behavior or helping people with amnesia to record their daily activities. In 1945, Vannevar Bush proposed the concept of "lifelog"<sup>99</sup>, that is, the use of smart devices to record individual life characteristics at all times, forming a large number of individual information databases, and recording individual self-activity in digital form, thus facilitating the understanding of the interaction between people and their environment. This is precisely the area of application for wearable devices. At present, wearable devices have been used in many fields, including medical and health, environmental perception, data analysis, etc. Although the tool has been

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<sup>98</sup> Alircza Fathi, Jessica K. Hodgins, and James M. Rehg, 'Social Interactions: A First-Person Perspective', in *2012 IEEE Conference on Computer Vision and Pattern Recognition* (IEEE, 2012), 1226–33.

<sup>99</sup> Vannevar Bush, 'As We May Think', *The Atlantic Monthly* 176, no. 1 (1945): 101–8.

used one after another in existing studies, it has mostly been used as an aid to supplement the data. In fact, every image is data that contains rich contextual information. We realized that wearable cameras could provide a great opportunity to quantify the state of an individual's attention to the leftover space, as they observe spatial qualities from the wearer's perspective by taking a large number of photographs, which could fill a gap in the existing literature on measuring an individual's attention to the leftover space.

Daily life experience is not easy to capture, due to its unique nature of personalization and privacy. Performance-based measures such as self-reports, questionnaires or diaries are used to measure various aspects of everyday life. However, these can cause some problems. Performance-based measures ignore personal experiences and contextual factors, while self-report measures may be constrained by their subjectivity and recall bias. Wearable cameras that take photos and their activities during your time cycle. Photos from the wearable camera may even have the potential to provide participants with long-term management prompts to reflect on their activities through interviews and diaries. This camera can be a small device that can be worn around the neck or clipped to clothes. By supporting reflection and recall, improving the reliability of self-reporting and validating different technologies, wearable cameras have the potential to aid the spread of knowledge capture technologies.

On the one hand, the wearable camera and the large amount of individual picture information recorded by it provide technical support for future research sites and individual behavior. On the other hand, wearable cameras can also be used in urban space surveys and space assessment practices, including user behavior research, site usage tracking, urban design quality and vitality assessment, etc. The use of wearable cameras and image analysis to study the relationship between individual behavior and urban space is still an emerging topic. In terms of spatial analysis, the use of wearable cameras can provide a more objective and direct confirmation of the participant's destination. Compared with third-party observations, this type of camera provides an opportunity to collect objective observation data in a less invasive, more efficient and comprehensive manner (Figure 3.8). In addition, wearable cameras eliminate the need for self-reported measurements, which can be affected by recall biases, and has also proven to be a reliable validation tool for GPS data. If GPS data is also collected at the same time, wearable cameras may provide a reliable method of understanding people's movement patterns.

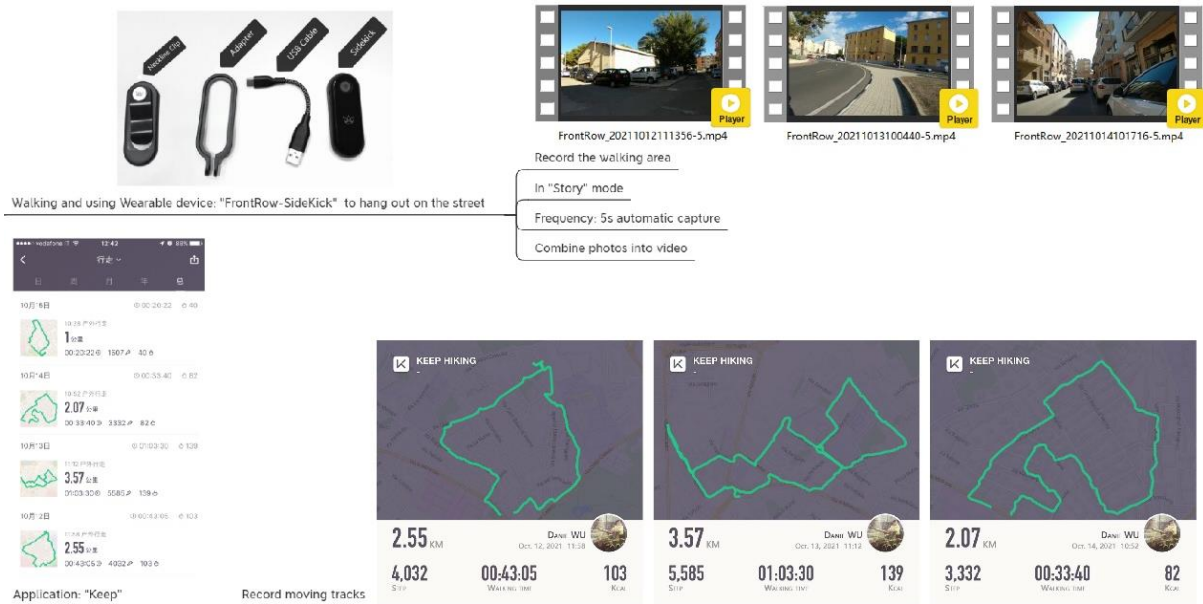


Figure 3.8 Video recording from a wearable camera and “keep” (Author,2021)

Wearable cameras offer a new way to measure aspects of daily life. The wearable camera that is worn on the body, which can continuously take pictures without the user's excessive intervention, framing a visual diary of the user's day. This allows the device to record multiple aspects of life, including contextual information<sup>100</sup>. Further research suggests using these tools in conjunction with other data collection methods to ensure that the participants' own subjective thoughts are also captured<sup>101</sup>.

The semi-structured participatory interview is an assessment and collation of information on social participation behaviors in the context of the study. Based on the assistance of electronic devices, the dynamic assessment of physical and living space mobility is to collect personal behavioral information and corresponding spatial data during daily activities. The data is collected in real time and in a natural environment, thus providing highly reliable information. By describing the period of time people spend on the move and their level of social engagement in daily life, recording the corresponding spatial form or state, searching for and creating different strategies for spatial narratives.

<sup>100</sup> Jacqueline Kerr et al., ‘Using the SenseCam to Improve Classifications of Sedentary Behavior in Free-Living Settings’, *American Journal of Preventive Medicine* 44, no. 3 (2013): 290–96.

<sup>101</sup> Gemma Wilson et al., ‘The Use of a Wearable Camera to Explore Daily Functioning of Older Adults Living with Persistent Pain: Methodological Reflections and Recommendations’, *Journal of Rehabilitation and Assistive Technologies Engineering* 5 (2018): 2055668318765411.



The aim of this study is to use this data collection method, that is, wearable cameras and semi-structured interviews combined with life mapping, to explore the factors influencing the level of spatial vitality and to analyze people's before and after optimizing the leftover space.

## Chapter 4. CASE STUDY

History is a piece of story for bystanders. However, it's the real joy and sorrow for the witnesses.

——A bite of China 2: EP6, Meeting

### 4.1 Evolution of ideas in case studies

In April 2019, I organized an online workshop called "Earth Observer". Participants are composed of different identities, including graduate students in industrial design, high school students who are interested in philosophy, advertising designers, classical music lovers, and so on. We are in different parts of the world and have various occupations. There are no restrictions on each topic discussion, which include "Classical music in daily life", "Meditation and Me", "The Invisible City", "The Traces", etc. Everyone matches, sorts and connects the memories of their life experiences with the current themes, and tells stories through a form of dialogue, image, text, or music sharing. The purpose of the discussion is not to take what happened for granted. When we are thinking, we are not just focusing on the answers, but the spiritual level that is directly or indirectly connected with ourselves in the process of continuous thinking. The purpose is to find and strengthen the daily life pictures that are ignored by the public. These stories have always been around us, but we instinctively regarded them as "the way they should be", but once the elements that connect them to each other are strengthened. To a certain extent, it may stimulate our sense of familiarity to generate resonance and strong perception. Also in October of this year, I took part in the Erasmus Programme at the University of Cagliari in Italy, where I spent an unforgettable 5 months. Before leaving, I would like to have a farewell earnestly with my friends and planned a small-scale painting exhibition "Ho una piccola storia". I prefer to narrate these months of Erasmus life in the form of "storytelling" (drawing + text), the people I have met, the elements I have seen. There are a total of 48 "mini paintings", at the same time, this is also an instant picture of my life in Cagliari. Finally, I gave all the artworks to locals as a gift and as a reminder of our memories. Through these exchanges and sharing, I feel the charm of "storytelling", whether it is for the narrator or the audience, it seems to be a kind of communication that spans time and space. The narrator retrieves the corresponding events from his mind according to the timeline, reviews the past feelings and integrates the present new feelings to organize the content of the story. The listener would absorb the image of the story

conveyed by the other person while matching his or her own similar or opposite emotional images from a certain period of time, so as to generate resonance or new insights. This conversation, which seems to be a dialogue of recalling and telling the past, has unknowingly brought in new emotions and thoughts of the present.

What about the spaces that coexist with our daily activities? Why are those ordinary corners or areas easily forgotten? The leftover space is often seen as “empty”, but is it really blank and nothing at all? If the answer is no, is there a potential to reconnect people with its abundance? Is it possible to re-establish its relationship with human activity? If we focus on space, can we make a type of space play a role similar to a narrator? Let it freely show the story of what happened here, and the author in turn serves as its tool to record. The richness and uncertainty of this "narrator" has given "tools" many possibilities, leading to more diverse recording. We chose the district of Is Mirrionis in Cagliari as a pilot study. with the most basic observation method as the main tool. Through prolonged field research and continuous visits to this "inactive neighborhood", the author (as an outsider) gradually approached the insiders, following the activities of the residents and the stories of the place. On this foundation, the concept of the insertion of narrative units was proposed. This was followed by a discussion with residents to make the concept more adaptable. Finally the interventions of the designers and the feedback of the residents are paired with each other, which attempts to activate the multifunctional potential of the scene to compensate for the demands of the residents. This study also aims to provide a guiding reference for subsequent community transformation.

## **4.2 Storytelling of the leftover space in the Is Mirrionis neighbourhood**

This section consists of the following two parts. (i) A documentary photography and overview of the current scene, which includes the state of the leftover space itself and its surroundings. (ii) A classification of the detailed elements contained in the corresponding space. The aim is to clarify the distribution and basic information about the leftover space for better proposals to optimise it.

## 4.2.1 Distribution of the leftover space

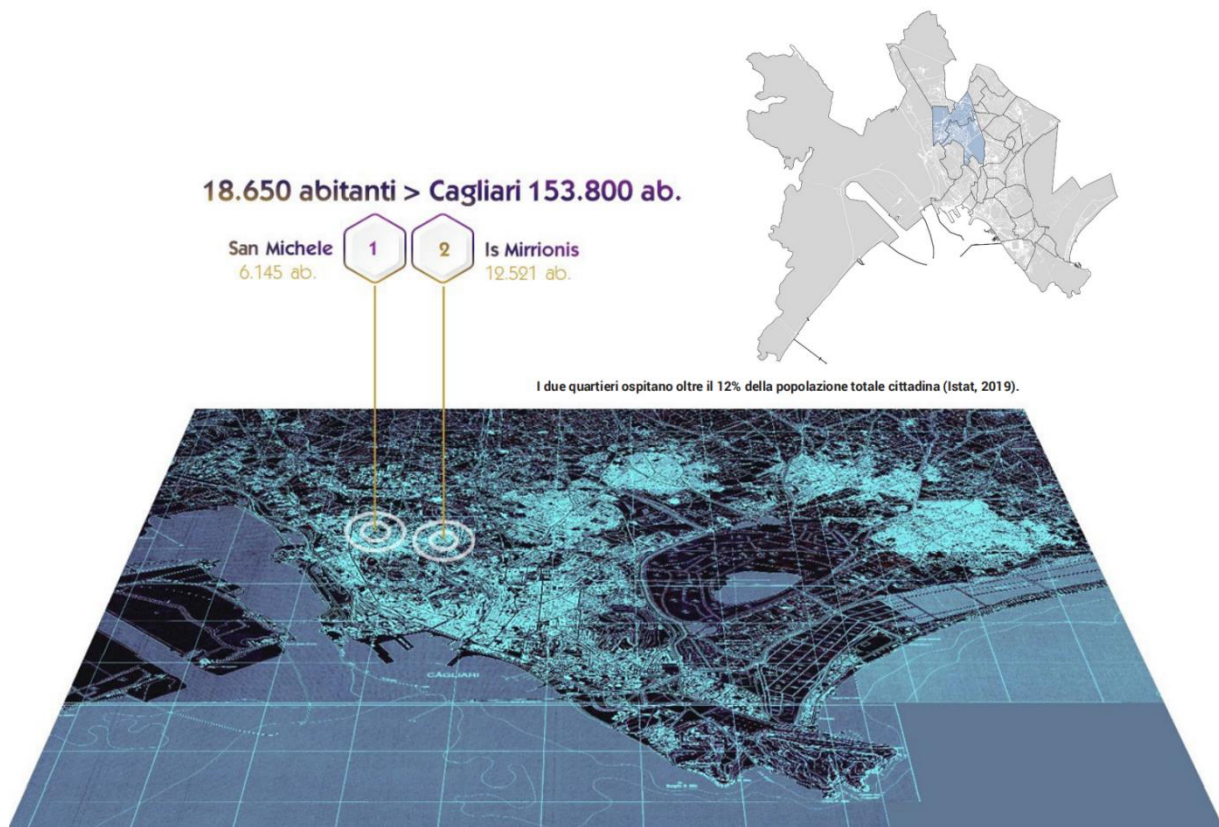


Figure 4.1 Location of the project in Italy <sup>102</sup>

Is Mirrionis is one of the largest social housing areas in Cagliari and the most populous district of the city with almost 14,000 inhabitants (Figure 4.1). The author's record of the leftover space in the Is Mirrionis neighborhood is divided into two main phases chronologically, the first spanning from October to December 2021, with a general search for the distribution of the leftover public space. A collection was made on the current state of the space, including spatial relationships, which is the degree of influence with the surroundings and the frequency of interaction with migrants or residents. The second period, from January to February 2022, focused on the attributes of the leftover spaces themselves, with a more systematic and detailed collation and analysis of the spatial quality in different locations.

Figure 4.2 shows the scope of the researcher's walking from October to November (light yellow area). Based on the subjective judgement of the researcher (first-time visitor), the general distribution of the leftover space

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<sup>102</sup> Ivan Blečić et al., 'NeighbourHUB PER UN DISTRETTO SOCIO-CULTURALE DIFFUSO NEI QUARTIERI IS MIRRIONIS E SAN MICHELE A CAGLIARI', 7 February 2021.

is marked. Green represents roads covered with greenery or unpaved, orange is pavement The points are in private or enclosed neighborhood spaces, while the solids are relatively open public zones.



Figure 4.2 Distribution of leftover space during the initial visit (Author,2021)

Participant observation is the main recording form. Multiple reviews of real-life scenes are shot through first perspective from the wearable camera, and the storyline in the scenes is captured through the written narrative of travel notes, and using application for location capture to record moving routes (Figure4.3). The assistance of the camera compensated for some omissions in the researcher's recollection of the walk, corrected the deviations between memory and reality, gave more objectivity and authenticity to the data collected. It also sets the stage for the story line.





Figure 4.3 Three selected examples of the researcher's walking routes using Keep as a recording tool (Author,2022)

Based on the fieldwork, the researcher has made a preliminary classification of the types of leftover space which were collected. As shown in the table 4.1, it can be divided into 4 categories, which contain a total of 9 sections.

Classify	Contents	Description
Street side space	Corner plot	Underutilized land parcels located on both sides of the street due to irregular land use and other reasons
	Building (red line) setback space	Underutilized buildings retreat from the red line of urban roads
	Road intersection	Road intersections that can be optimised because the corners of the road or width is too wide
Space under the building	Vacant spaces under apartment buildings/buildings	Downstairs passage with low space quality/low utilization
Space around infrastructure	Around highway/vehicle road	The original space is divided by car roads and disconnected from the surroundings
	Neighboring facilities surrounding space	Space that is not fully utilized due to the neighboring effect of garbage transfer stations, substations, sewage treatment plants and other facilities

Inefficient land	Land not to be developed for a short time	The space is of poor quality and is currently almost maintenance-free
	Old/abandoned buildings/bases	Abandoned space that cannot meet the needs of the current era
	Vacant land in the old town	Due to location or historical reasons, long-term shelved and abandoned, resulting in the run-down of the site

Table 4.1 The categories of leftover space in the neighborhood (Author,2021)

Meanwhile, we have also visualized and classified these spaces in order to be able to explore their features and patterns more intuitively (Figure 4.4).

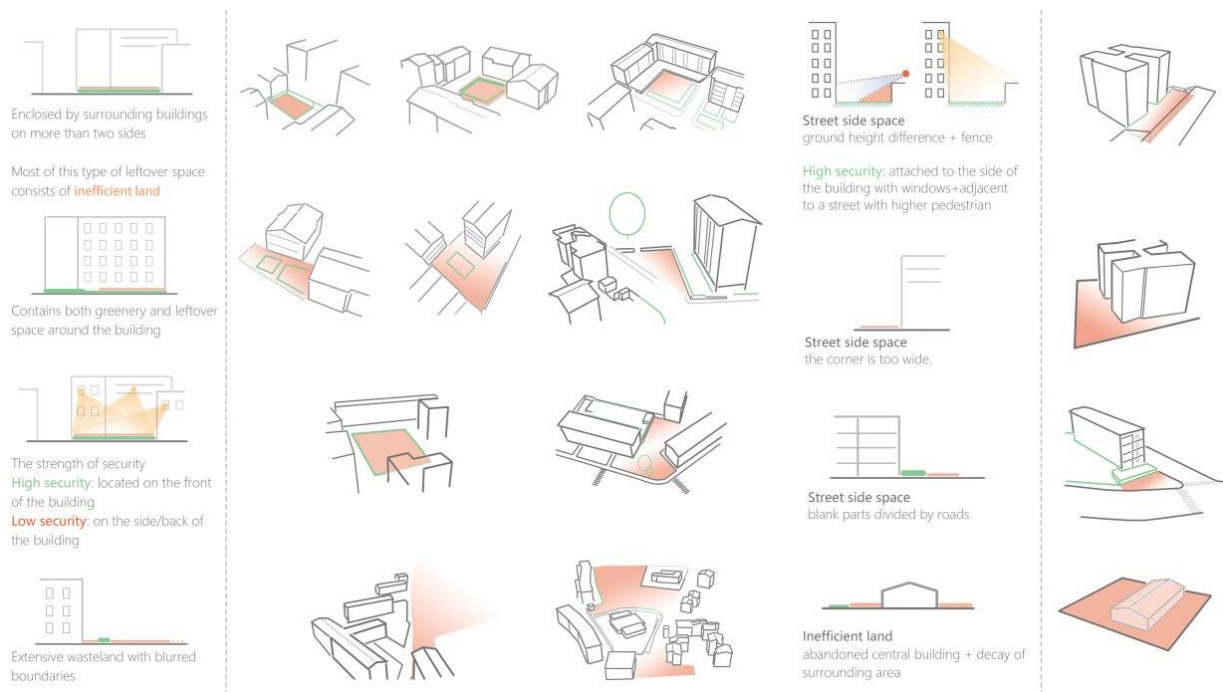


Figure 4.4 Visualization and organization of the leftover space (Author,2022)

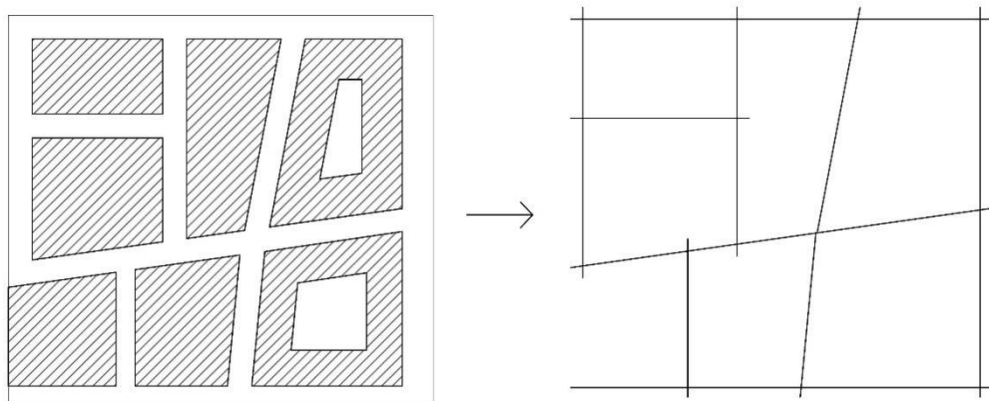


Figure 4.5 Roads that correspond to the structure of the building complex (Author,2021)

For these areas visited by the researcher, it can be seen from the graph that one of the reasons for the space being left over might stem from the irregular division between buildings and buildings, or between buildings and roads. If the road is generated with the building complex's own structural mass, the area produces less or no surplus space (as shown in Figure 4.5). Conversely, if the roadway is cut or spliced by a facade (fence/wall) or plane (paved roadway) outside the building structure, there is a higher risk of leftover space occurring.

#### 4.2.2 Status of the leftover space in Is Mirrionis

We chose the block of Is Mirrionis (Chiesa) as the first pilot for renovation. The leftover space is fragmented but relatively clustered. The area is 37,768 m<sup>2</sup> and there are eight obvious leftover spaces, with a total area of approximately 4,071 m<sup>2</sup>.



Figure 4.6 photos of zone 1, planned sunken green area (Author,2022)

Zone 1 is located between the residential building and the main road, which is a designed green area (Figure 4.6). However, due to its unique location, it has a height difference of more than two meters from the adjacent pedestrian street. At the same time, there are guardrails in place on site, which are obvious obstructions to sight lines. With stone barriers and wire fencing on both sides, it is a sunken green space that is "not easily seen and not accessible". During our research, we found that few passers-by on the main road cross the passage via the staircase, which makes the two spaces physically connected by the staircase, but in reality they do not 'communicate', but are separate and segregated. This phenomenon of almost 'zero interaction' is also one of the most critical aspects of the leftover space.





Figure 4.7 Photos of zone 2, occupied by vehicles, abandoned buildings and broken paving (Author,2022)



Condition of walls in abandoned building



State of the surrounding walls

Figure 4.8 The walls of the buildings in Zone 2 are in serious disrepair

Zone2 is situated around a disused one-store rectangular building with a sloping roof, and the leftover area of space extends outwards from this to the edge of the road (Figure 4.7). The whole area can also be seen as a unit, then it is also between the residential buildings and the community park. As can be seen from the figure, the quality of the space in this area is not as positive as in zone1, from the state of disrepair of the paving to the area of defacement of the facade walls and the scattering of domestic waste (Figure 4.8). Due to the large occupied area of the building, the outer walls are in serious decay and the aesthetics are worse. Even though this area is not fenced off from view and is not a blind spot for residents, the ripple effect of the crumbling building causes people to seem less inclined to approach it voluntarily, except for the occupation of temporary private cars.



Figure 4.9 Photos of zone 3, Football field no longer in use, covered in plants (Author,2022)

Zone3 is an unused football field not far from zone2. The two goals still stand in the original area, but the lack of care for the area has turned it into a haven for plants (Figure 4.9). The long period of undisturbed life has also allowed the field to become more natural and casual. We have found many plants growing here. In contrast to the tall buildings that surround it, this large green area also seems to be a "wild ecosystem" in the city. This is its unique charm, but it has also failed to enter urban life. If it was once just for playing football, what about now? It has undoubtedly been abandoned and has lost its only channel of interaction with the outside. Even though with time it has revealed itself once again, this kind of vitality has probably not been perceived for the moment. This disconnection seems to be explained by the uncertainty of what the purpose for entering this area is, but perhaps also by the lack of knowledge of how to engage with it, since it has become almost crowded with all kinds of plants.





Figure 4.10 Photos of zone 4, Gaps in the Triangle (Author,2022)

It is not uncommon for Zone 4 to be found, the boundaries are not clearly delineated, but you can see that it appears in the form of a triangle, which is the product of a road cut. The lack of consideration of edge space in the setting of traffic around the neighborhood has led to roads ranging in size from conventional to unconventional distances (Figure 4.10). The width of the road close to the building facade and the excessive width of the corner dimensions further accentuate the uninteresting nature of an already incongruous space through the strong separation of this ground, accompanied by a monolithic ground paving. This negativity also affects the atmosphere of the area. As we can see, the long strip of lawn on the periphery of the building has lost its vitality from its original decorative meaning, and the occasional scattering of rubbish has aggravated the deterioration of the space.





Figure 4.11 Photos of zone 5, abandoned and occupied landscape (Author,2022)

Zone5 is located in the extension area at the corner of the central park of the neighborhood, while adjacent to both sides and the back wall of the building (Figure 4.11). At this point, one of the landscaped areas is enclosed by a rusty guardrail and rubbish is also visible again inside. The other one, which is occupied by vehicles, is also accompanied by trash. It can be surmised from the degree of depression in the ground that the occupation by vehicles was relatively frequent.





Figure 4.12 Photos of zone 6, Abandoned gardens and crumbling walls (Author,2022)

Zone6 is a more private public garden in the direction of the road extension of zone5. It is at the end of the path, and if you do not continue along it, you are likely to ignore its existence, it seems like a "secret garden" (Figure 4.12). We can also notice that in fact the middle area near the wall is in a state of connection with the storage rooms of the neighboring inhabitants. However, the dilapidated and partly collapsed wall, combined with the fences and warnings surrounding it, which force the potentially interactive space to be off-limits. And all around it, as in the many spaces mentioned before, there is scattered rubbish.



Figure 4.13 Photos of zone 7, The chaotic central landscape is covered with vigorous vegetation (Author,2022)

Zone 7 is in the middle of a rectangular space in a residential area (Figure 4.13). The central park, untended and uninterrupted, has evolved over time into a petri dish of growing plants with strong and striking vitality. However, its disorder and chaos are also hidden within. As we walked along there, an old wooden gate was noticed on one side, while fruit trees were planted inside, allowing us to assume that it was once one of the places where the residents could spend their time outdoors. Today this story does not evolve, but has been sealed in the past. Its replacement is the surrounding private cars and abandoned vehicles that obscure the view.



Figure 4.14 Photos of zone 8, Sparse landscaping and inefficient parking (Author,2022)

Zone 8 was originally set up as a parking area, enclosed by the back of the building on three sides and a boundary wall (Figure 4.14). The space at the corner is connected to the exit by a staircase. Due to its isolated location and the restrictions on the one side of the entrance, not many vehicles are parked in this area and private cars park here randomly. As can be seen in the picture, the central rectangular greenery has also been degraded by the repeated crushing of vehicles.



BASIC INFORMATION	1ZONE Area ≈ 327.5m <sup>2</sup> Circumference ≈ 97.2m FEATURE: ① Irregular shapes follow the building structure ② Already planned landscapes	2ZONE Area ≈ 890.7m <sup>2</sup> Circumference ≈ 121.9m FEATURE: ① Abandoned building (social school) ② Next to the park + the centre of the block	3ZONE Area ≈ 1507.9m <sup>2</sup> Circumference ≈ 158.0m FEATURE: ① Old football field ② Open and regular ground	4ZONE Area ≈ 159.6m <sup>2</sup> Circumference ≈ 62.5m FEATURE: ① Irregular area cut by building and roadway ② Overly wide pavement	5ZONE Area ≈ 131.2m <sup>2</sup> Circumference ≈ 47.5m FEATURE: ① Low quality landscape ② Occupied by cars ③ On the back or side of the building	6ZONE Area ≈ 200.4m <sup>2</sup> Circumference ≈ 59.5m FEATURE: ① Low quality landscape ② Placement of fence - partial collapse of wall	7ZONE Area ≈ 104.8m <sup>2</sup> Circumference ≈ 41.0m FEATURE: ① Low quality landscape ② The old green area of neighbourhood centre	8ZONE Area ≈ 748.9m <sup>2</sup> Circumference ≈ 173.3m FEATURE: ① Almost vacant status ② Small entrance ③ The irregular shape separated by buildings
FIELD IMAGES								
SPATIAL FORMS								
SPACE & ARCHITECTURE								
CURRENT FUNCTION								
FLOW LINE								

Table 4.2 basic states of the leftover space zone1 to zone8 (Author,2022)

As previously stated, we have collated the elements of the more obvious eight leftover spaces, as shown in Tables 4.2. Its main contents include basic information about the area (area, perimeter, spatial characteristics), corresponding photographs of the actual site, the spatial shape of the plan, the position of the leftover space in relation to the surrounding buildings, the current main functions of the area, and the flow of people around the boundaries. As can be seen from the table, of the eight leftover spaces in relation to the surrounding tall buildings, six of them are in a state of being fully or semi-encircled, one is in a form of extending outwards from the middle of the area, and one is in a state of presentation with one side expanding to the other. However, for now there is no standard theoretical basis for the definition and determination of leftover space, which has led to a diversity of scholarly research on this space. In terms of boundaries, the boundaries of the leftover space are fuzzy. We also found in our fieldwork that the remaining state of the space is not only dependent on whether it is enclosed by buildings or not. But spatial quality is an even more important part of the influence on this state.

### 4.3 Co-narrators of the block's leftover spaces: Re-perception & Intervention & Coexistence

The history of space is a history of the body, of society, which accommodates and assembles the various

relationships in human and social space; it is narrative. Above all, space always extends in time to multiple dimensions; it is temporal. And space extends through history, it is inscribed with the traces of time, the changes of the environment<sup>103</sup>. The human inhabits space, giving it a vivid diversity, difference and openness. Likewise, space gives the human a vibrant place to live.

The urban renewal model constructed under the logic of social and spatial interaction implies an essential connotation - the reconceptualization of the "originality" of the community space. In fact, many scholars, designers and practitioners have embraced a new consensus that the meaning of "authenticity" is not a single point in time, but rather a sequence from the past to the present, from the new to the old to the new again, which is the most essential aspect of daily life. The aim of urban renewal is not to move from the old to the new, because what is "innovative" today will be "obsolete" some day, and the consequence would always be the demolition of the "older" and the construction of the "newer". This approach is primarily rooted in the mindset that urban renewal is an updating of physical space, which includes new paving, re-planting, painting of walls, construction of buildings or new facilities. Indeed, what we really need to emphasize is to shift a portion of the object of urban renewal to a more specific livelihood, to get in touch with the activities of citizens and to make sense of urban life. The object of the compilation is the spaces interspersed between the buildings, and the content is the story of everyday life itself, which relies on the interaction between the researchers and the people who are in it, in an attempt to link them together (Figure 4.15).

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<sup>103</sup> Zhongwen Yu, 'From poetic quality to desire: the space narrative of modern architecture', *Creation and Design*, no. 04 (2012): 49-56+79.



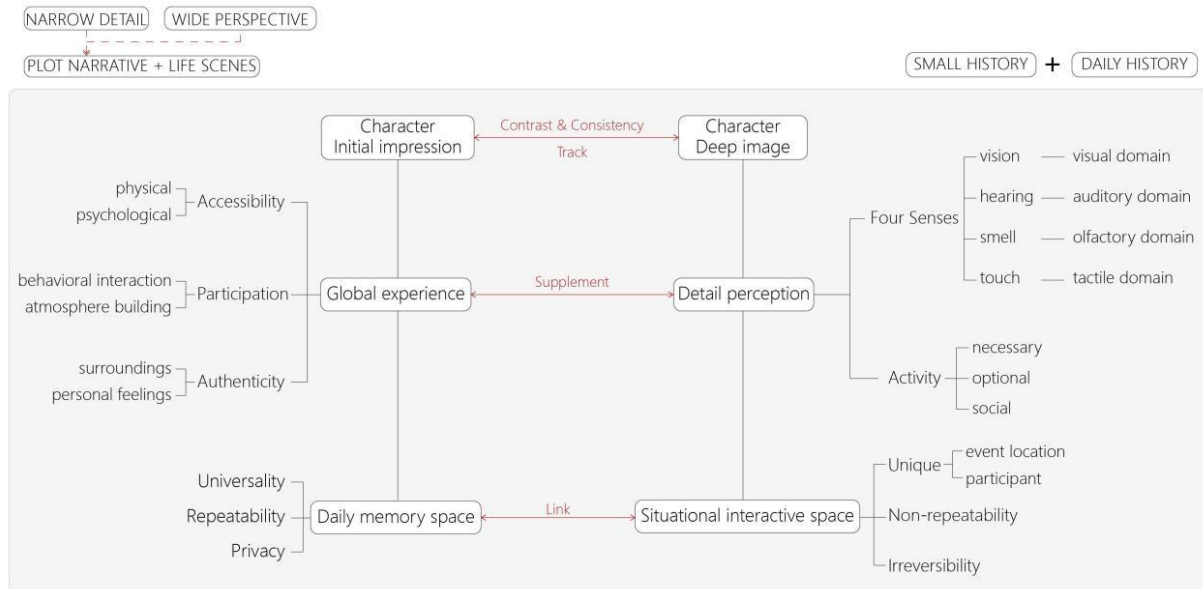


Figure 4.15 Interpreting activity and story memory in space (Author,2021)

For the space itself, which includes three layers of interpreting activity. One is the perception of spatial tracks, examining the evolution of space pattern maps in terms of temporal and dimensional changes, exploring their potential and recognizing the nodes and the linkages. The second is the creation of functional vitality, matching multi-directional and people flow lines of activity, enhancing spatial values and strengthening the identification of spatial zones. The third is the making of local interfaces, organizing the identity and relevance between the existing environment, public spaces and natural landscape to achieve spatial creation and improve spatial quality. These three periods are cyclically associated and collectively sustain the memory in the space.

### 4.3.1 Re-perceiving: Look around the neighborhood

In the previous section we introduced and characterized the current state of the eight leftover spaces. This chapter attempts to uncover the connectivity between spaces and potential entry points for interaction.

Area	Zone1	Zone2	Zone3	Zone4	Zone5	Zone6	Zone7	Zone8
Zone1	Diagonal lines	●●●	●●	○	○	○	○	○
Zone2	●●●	Diagonal lines	●●●	●	○	○	○	○
Zone3	●●	●●●	Diagonal lines	●●●	○	○	○	○
Zone4	○	●	●●●	Diagonal lines	●●●	○	○	○
Zone5	○	○	○	●●●	Diagonal lines	●●●	●●●	○
Zone6	○	○	○	○	●●●	Diagonal lines	●●●	○
Zone7	○	○	○	○	●●●	●●●	Diagonal lines	○
Zone8	○	○	○	○	○	○	○	Diagonal lines

Table 4.3 The strength of the connectivity between the eight zones (Author,2022)

During the four-month visit, the researcher analyzed the strength of the connections between the spaces from the distance between each area, the coverage of blind spots within the space, and the extent of sight occlusion caused by the surrounding buildings (Table 4.3). Even though the zones are not far apart, they are relatively divided, except for the closer spaces where there is better accessibility, as is the advantage in spatial layout between zone5, zone6 and zone7. Most of the others are in a relatively independent and isolated state. You can find many places filled with such spaces with the same materials, the similar void, the familiar low-quality environment. However, these spaces are neglected in mainstream architectural design. Today, our knowledge of geography is unlike anything we have ever known before, as if we have an awareness of space that no one before us had, but indeed many of the systems that assist software are a filtering mechanism. Places that are not navigable, those gaps in the road network, the areas that people don't pay attention to, which actually hide the invisible side of the whole geography. Since there is a deep relationship between human memory and space, the bond between man and land is close and the partnership between them is a direct living dialogue. There are many people who dream of exploring the world. But even if you can't afford to travel, or even have the desire to do so, what does it matter. Even if it's just a short street under your feet, do you already know it all? Have you ever thought that if you were able to change your identity and take on another role to get closer to where you are now, to walk the route you take every day, you might also have a different feeling like travelling to a special place (Figure 4.16)? Walking has the potential to be integrated into everyday life and is

seen as a practical and sustainable way to promote regular physical activity and thus improve health<sup>104</sup>

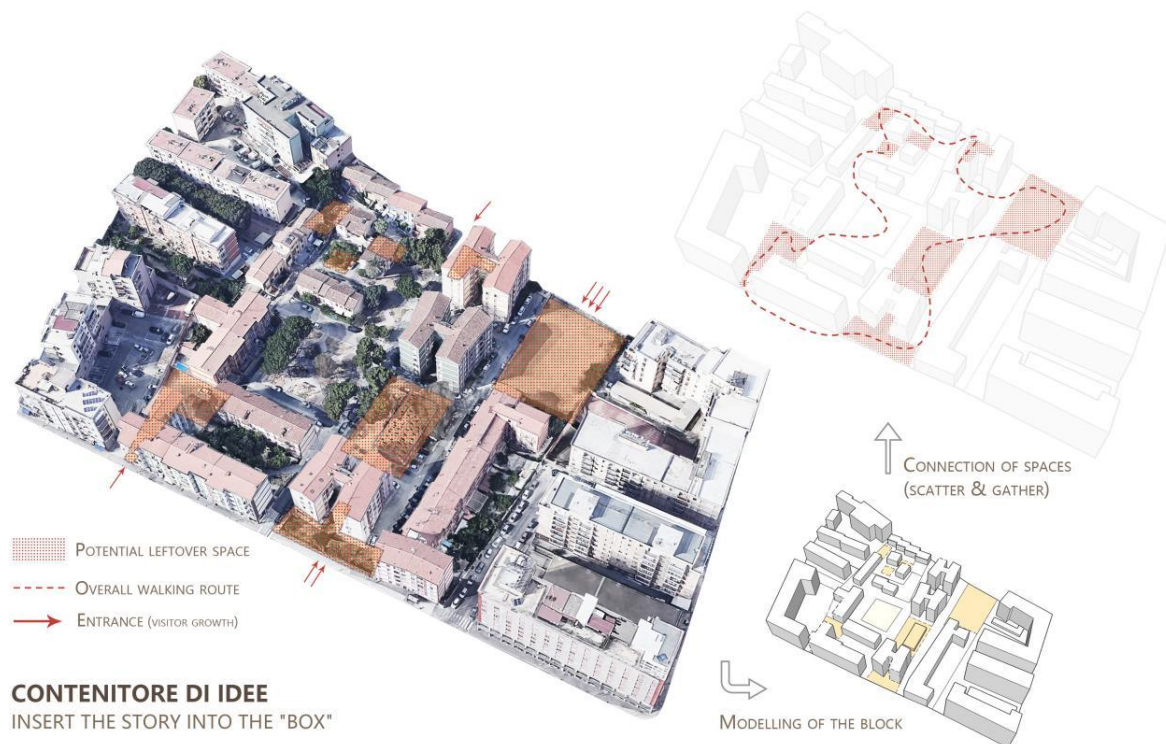


Figure 4.16 Location of the leftover space around the neighborhood (Author,2022)

As we pass through the main road, we are probably the first to see a wide area of sunken landscape in the corner of our eyes. The restricted width of the staircase also provides a sense of “ritual” for entering this block. It is easy to notice that as we gradually approach the district, it seems to grow quieter and the noise is partially isolated and muted by the high residential buildings and the lower terrain itself. Hence the area in which the story unfolds. The abandoned building is particularly noticeable, with a volume of dereliction and decay radiating from its surroundings. Formerly a social school, it was once described as "a place of our memories, a place that many people know, even if it is now abandoned." Probably it can exist not just in memory, but extend the function of this educational space. Adjacent to it is a green area, which is the football field with a long line of graffiti walls. Perhaps it is similarly sealed in history, only changing the colour with the seasons. Following the road, the corner space gradually becomes larger, which is not uncommon at the junction of the street and the building. Turning into the side street next to the residential buildings, it is even more pleasant

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<sup>104</sup> Mohammad Javad Koohsari et al., ‘Natural Movement: A Space Syntax Theory Linking Urban Form and Function with Walking for Transport’, *Health & Place* 58 (July 2019): 102072, <https://doi.org/10.1016/j.healthplace.2019.01.002>.

and peaceful, where you can occasionally hear the dialogue of the residents or the aroma of toasted bread and beef soup. Along the path you can find three potential and special leftover spaces, which are also the second level of the narrative link. Familiarity then springs up as you can see from a distance the ruined building, crumbling but it stands in the middle of the flat looking quite powerful. As the trail continues, there is a narrow entrance and a U-shaped barrier in the middle. On entering, here may be a parking lot. However, it appears to be separate, as compared to the number of vehicles elsewhere. Stepping along the shape of the area, it extends with long stairs that connect the exit/entrance to the road. Finally, the bustling traffic appears again.

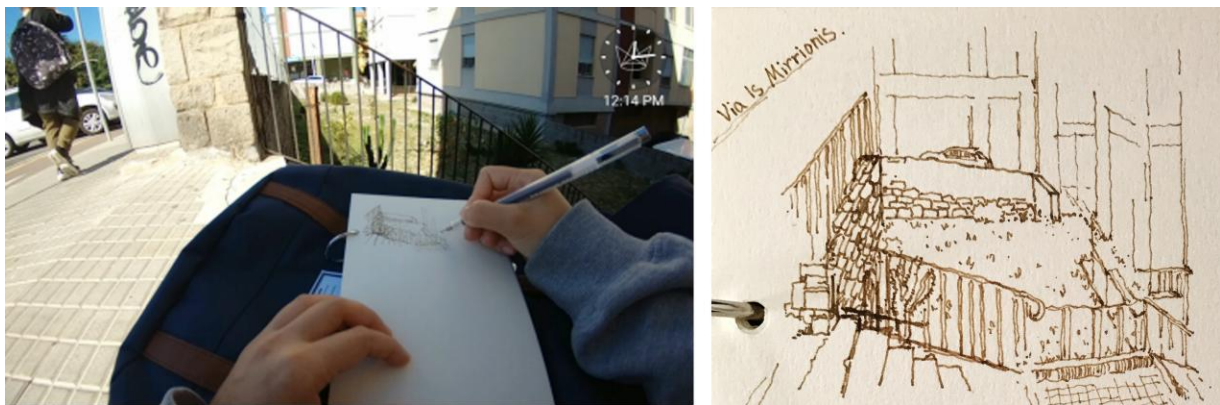


Figure 4.17 scene recording and sketching at the corner of the stairs in zone1 (Author,2022)

When entering the neighborhood, the researcher relied consistently on walking as the only mobility method to immersivity simulate the movement routes of the locals and experience their surroundings. Figure 4.17 shows the author's sketch at the entrance to the staircase, which was also an experiment to see the attention of the walkers. During the 20 minutes spent here in the act of "street art", the reactions of people passing by were recorded. During the 20 minutes spent here in the act of "street art", the reactions of people passing by were recorded. As shown in Table 4.4, 35 people walked through the area, 22 of whom were attracted to the sketcher and reacted with a lingering gaze, two of them paused and stood beside the sketcher.

NO.	ROLE	STATE	FEATURE (carry)	ATTRACTED BY
				SKETCHER
1	Young (F)	walk	backpack + document bag	√
2	Young (M)	walk	Walk the dog	√
4	Young (MM)	walk	backpack	×
6	Young (MM)	walk	backpack	√
7	Young (F)	walk	handbag	×

10	Family (2F+1M)	walk	M:Shoulder Bags, F:handbag	√
11	Elderly (M)	walk	No carry	√
13	Middle-aged (MM)	walk	briefcase	√
14	Middle-aged (F)	walk	No carry	√
15	Middle-aged (F)	walk	No carry	×
16	Elderly (M)	<b>walk + stop</b>	No carry	√( <b>stand aside</b> )
18	Young (F+M)	walk	No carry	×
19	Middle-aged (M)	<b>walk + stop</b>	Plastic bucket, safety helmet	√( <b>stand aside</b> )
20	Young (F)	walk	handbag	√
22	Young (F+M)	walk	F:handbag	×
23	Young (F)	walk	handbag	√
24	Middle-aged (F)	walk	handbag	√
25	Young (M)	walk	backpack	√
26	Middle-aged (F)	walk	No carry	×
27	Middle-aged (F)	walk	handbag	√
28	Young (M)	walk	shoulder Bags	√
30	Middle-aged (F)	walk	Stroller	×
31	Young (F)	walk	handbag	×
32	Young (F)	walk	handbag	√
33	Young (M)	walk	backpack	√
35	Young (F+M)	walk	F:handbag	×

Table 4.4 The reaction of walkers to temporary street behavior (Author,2022)

From this simple experiment, we can find behavioral activity in the neighborhood that affects the rhythm of movement of those around it, whether the initiator of the behavior is an outsider or an insider. In this case the temporary interaction can be described as a "break" of the stable situation, which can also be regarded as a new activity emerging from the existing space. The perception and use of space is a bottom-up "self-organization" process, while the planning and design of public space in residential areas is a top-down "other-organization" process. The optimization of the leftover space in the neighborhood is not simply the pursuit of an ecological natural environment or a beautiful physical space, but rather a convenient, pleasant, enjoyable



and safe space for the public at diverse levels, based on the guidance and arrangement of various leisure activities and the exchange of thoughts. Well-designed spaces make the space itself a recreational attraction, which means that as an independent variable it affects the surrounding environment and people, it can limit or divert people's behavior and activities, or it can configure a new scene, through a rational configuration with the peripheral context<sup>105</sup>.

### 4.3.2 Intervention: Insertion of story modules

As shown in the Table 4.5, based on the location of each space in the neighborhood, they are assigned individual stages of the plot and linked together through story lines.

The spatial story is formulated on the basis of the storyline development "beginning, development, climax, epilogue". However, we do not set limits on how it might happen after the intervention. The aim is to stimulate the desire to walk and the curiosity of those entering to explore the neighborhood, hence inspiring the potential of the space and gradually enhancing the vitality of the block.

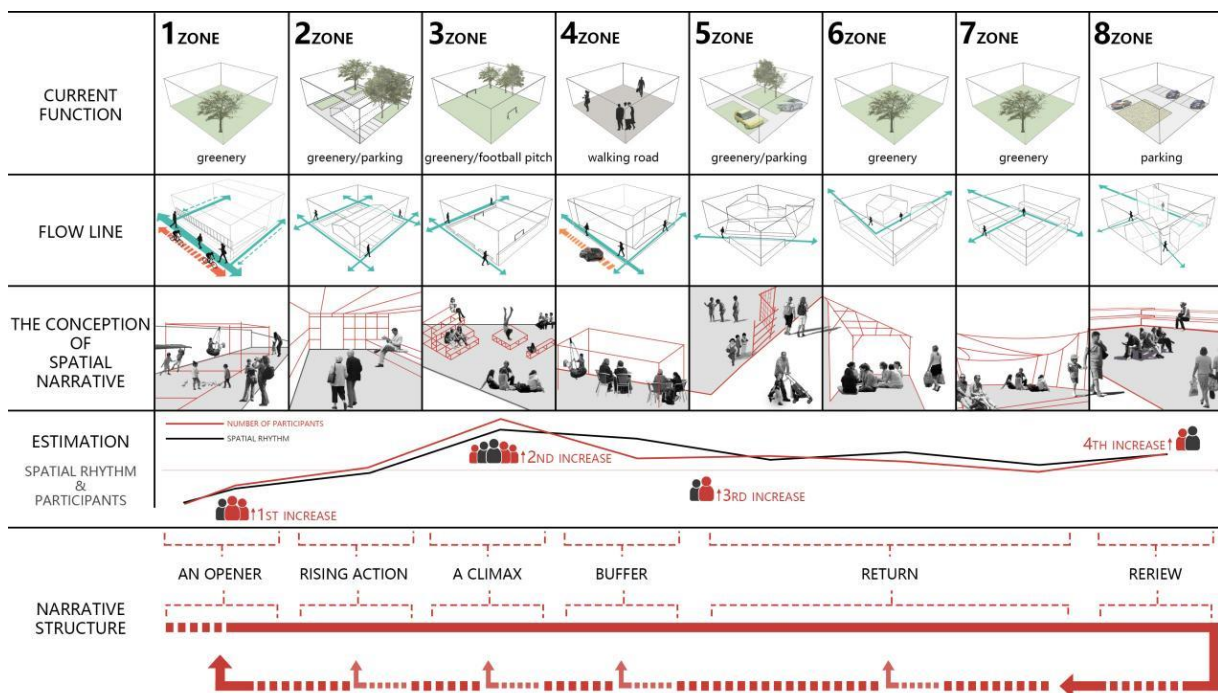


Table 4.5 Prediction of the scenario corresponding to each space (Author,2022)

Based on the location and dimension of the area, the researcher made a preliminary prediction of the change

<sup>105</sup> Wei Tao, Chuanbiao Ding, and Hengyu Gu, 'Urban Recreation Space Planning From Syntax', *Planners* 31, no. 08 (2015): 26–31.

in the number of participants and arranged the structure of the narrative. We have tried to organize a spatial tour by inserting participatory activity installations that predict human behavior and the flow of activity. Alternatively, it is an intervention from the outside that attempts to influence the original trajectory and rhythm of life.

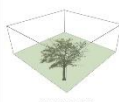





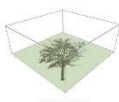
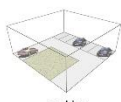
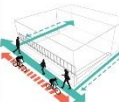
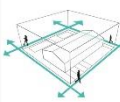
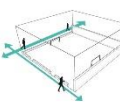

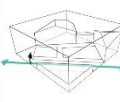
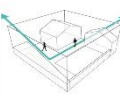
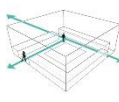
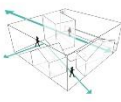
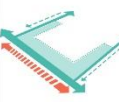
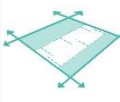
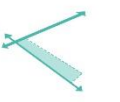



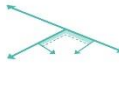

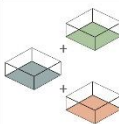
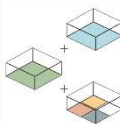
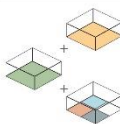
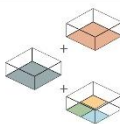
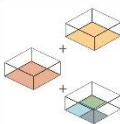
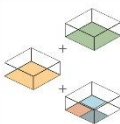
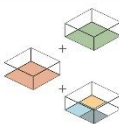
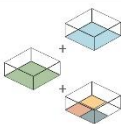
	1 ZONE	2 ZONE	3 ZONE	4 ZONE	5 ZONE	6 ZONE	7 ZONE	8 ZONE		
CURRENT FUNCTION	 greenery	 greenery/parking	 greenery/football pitch	 walking road	 greenery/parking	 greenery	 greenery	 parking		
FLOW LINE										
POTENTIAL FLOW AREA										
INTERVENING	IMPORT Event Notification Background Overview Seat Addition	DIVERSION A Educational space Cultural exhibition Creation-Community driven	DIVERSION B Playground Collaborative Creation-Destinations	PATHFINDING Socialable Stay Walkway Creation-Mobile Market	CO-BUILDING A Busking Event Information Creation-Dynamic form	CO-BUILDING B Semi-private Rest plaza Creation-Context	CO-BUILDING C Co-farming Napping zone Creation-Community driven	GROUPING Outdoor Library Meditation Room Creation-Free-moving		
INSERT FUNCTION	ENTERTAINMENT		EDUCATION		CULTURE		SOCIALITY		LINK	CREATE
										
ADAPTIVE ACTIVITY	POSTING SITTING CHATING	EDUCATING GALLERY	PLAYING WORKSHOP	SOCIALABLE CONNECTING	RECALLING NOTICING	YOGA RELAXING	FARMING DISCUSSING	READING MEDITATION		

Table 4.6 Spatial analysis and insertion of "functional box" (Author,2022)

As the Table 4.6 shows, the spaces are given their own main functions, which also tightly correlate with the rhythm of the overall story development. Next, a narrative strategy is proposed for each space in turn, which includes the choice of materials to correspond with their function, the suggestion of adaptive design and the scenario simulation of space stories.

Area	Scenario	Materials		Functions
zone1	Dialogue below ground: Hmm? I find you here!	<b>Existing</b>	<b>Joined</b>	Bar post
zone2	School memory in the neighborhood: You know? It was the school of my grandpa.	metal fence	wooden pallet	chat read
zone3	Not an empty football field: Come on! let's have fun together!	stone fence	wood	gallery relax
zone4	A moment of pause: It's time for a coffee break	discarded building	shipping container	garden stair
zone5	Reclaiming a vibrant neighborhood I: Do you remember that summer...	tree	Scaffold	link store
zone6	Reclaiming a vibrant neighborhood II: Be happy, be bright, be YOU!	street light	greenhouse shading screen	play workshop
zone7	Reclaiming a vibrant neighborhood III: When life gives u lemons, make lemonade	.....	flagging tape	
zone8	Is this the start or the end: We are always here to welcome you back		chalkboard	
road	Addicted to walking: Follow your heart, step by step		Safety net	
			car tire	
			brick	

Table 4.7 Selection of materials and allocation of functions (Author,2022)

After surveying the basic elements of the existing environment, the researcher selected a range of materials that were available, reusable, operable and adaptable. These materials were selectively reused in the eight scenes to create a unified connection between them (Table 4.7). Through the insertion of various "functional boxes", which simultaneously modify the units, exploring a sense of playfulness within the order. Not to interfere overly with the specific layout of the site, but to provide certain references and give the co-builders creative space.

Here are several installations that serve as narrative mediums for the scenes. These elements are selectively placed or repeated in the various spaces. The aim is to establish connections between the spaces through the similarity of the elements in an attempt to simulate possible stories and dialogues, thus giving a reference to the planning of this kind of leftover spaces.

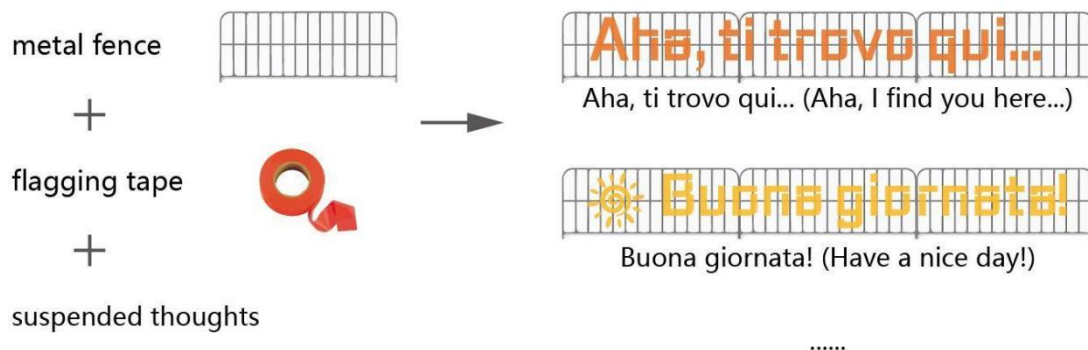


Figure 4.18 Visualization with elements from existing scenes (Author,2022)



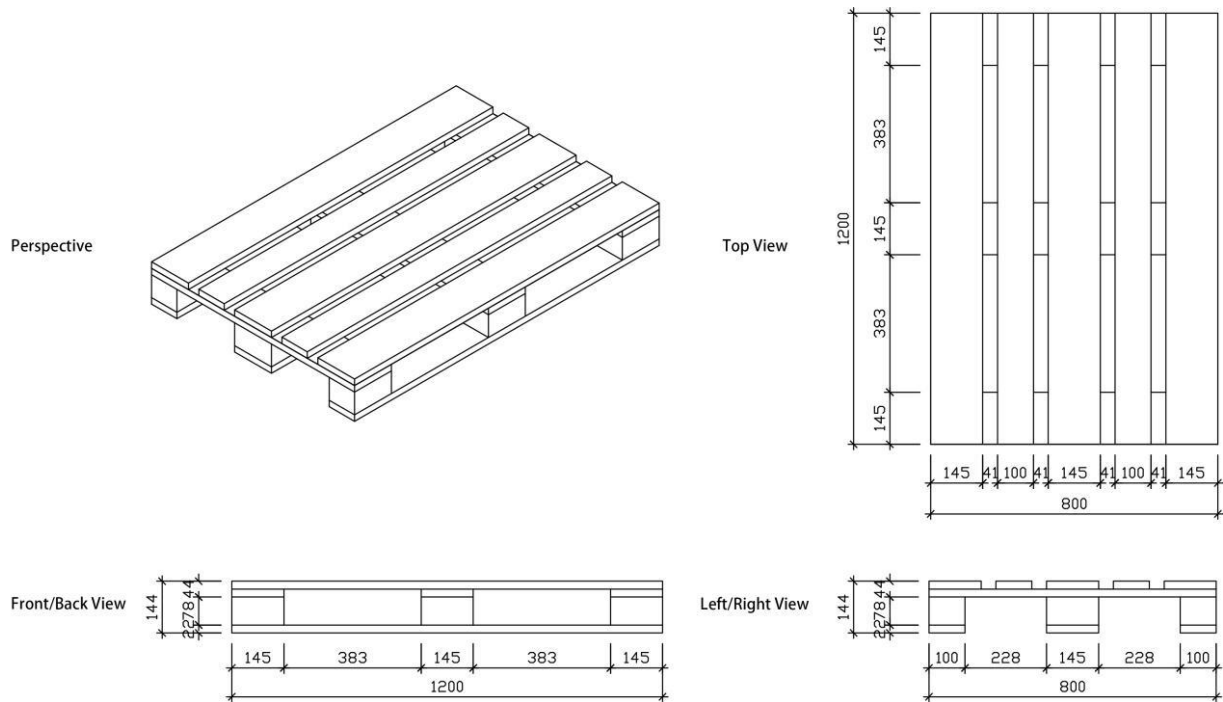


Figure 4.19 Size of one single pallet (Author,2022)

The pallet is used as a platform for people to stay (Figure 4.19). The safe working load of a EUR/EPAL pallet is 1,500 kg. When stacked, the maximum additional load can be up to 4,000 kg<sup>106</sup>. The main material for the seating in the chat area is also the wooden pallet that can be easily moved. The EUR-pallet is standard European pallet as defined by the European Pallet Association (EPAL). The designers have given a series of unit arrangements for reference and adaptation by the participants themselves (Figure 4.20).

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<sup>106</sup> 'EPAL Euro Pallet', accessed 25 February 2022, <https://www.epal-pallets.org/eu-en/load-carriers/epal-euro-pallet/>.

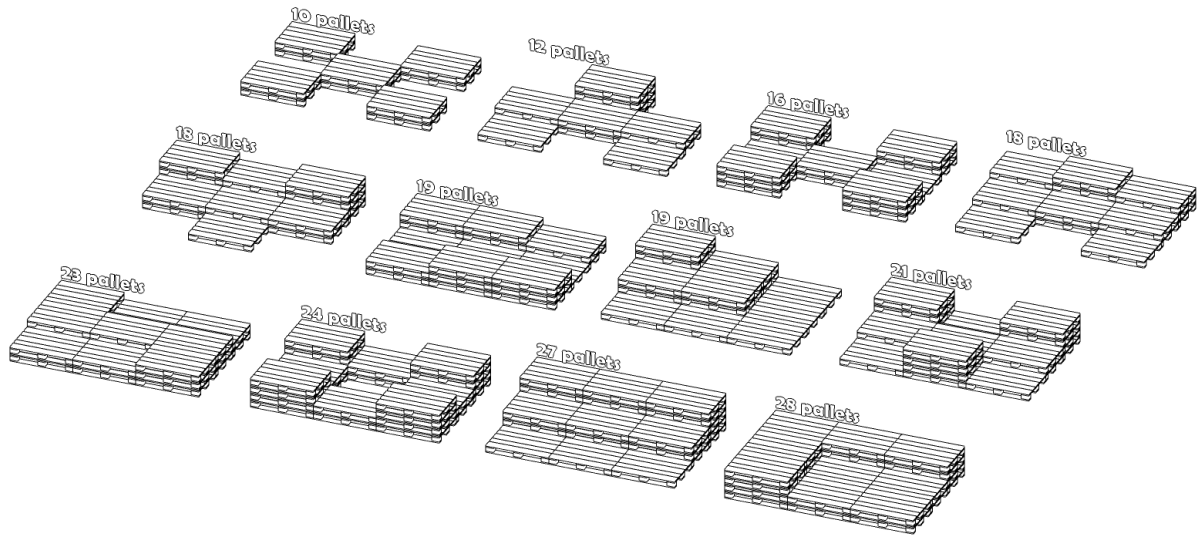


Figure 4.20 Various combinations of pallet units (Author,2022)

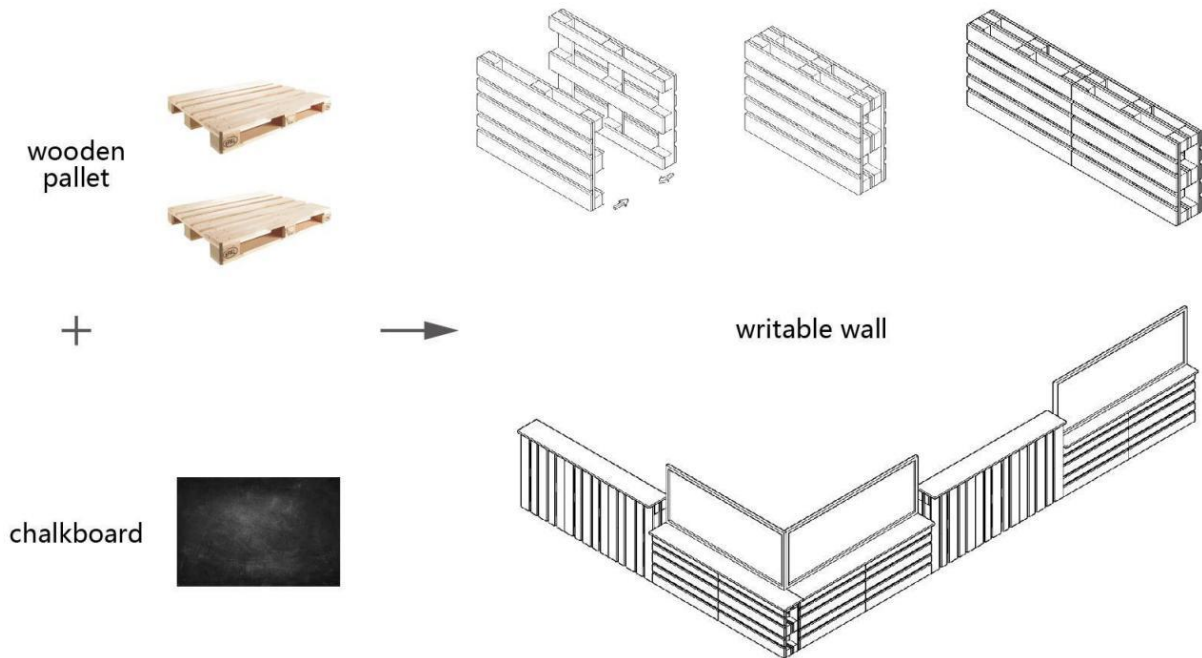
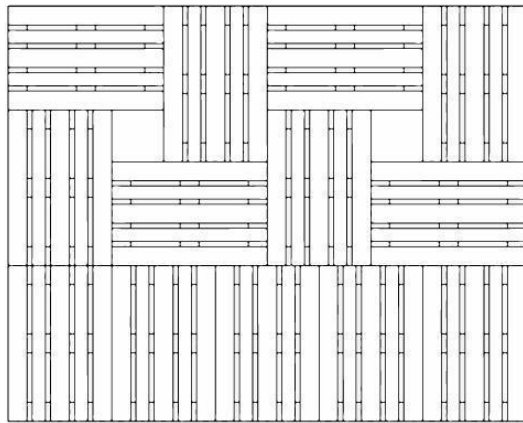
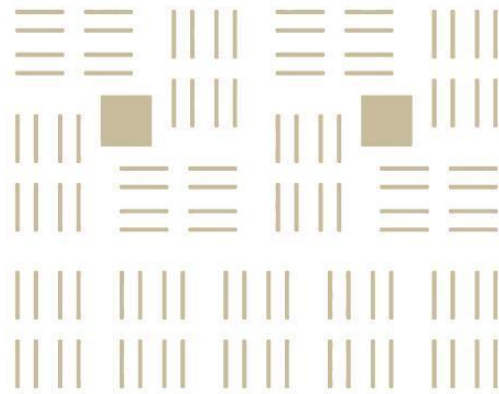


Figure 4.21 Repairable and interactive outer layer (Author,2022)

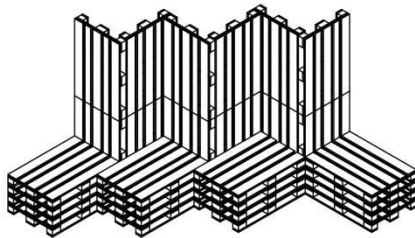


wooden pallet floor

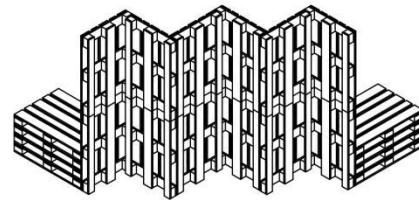


previous material shown

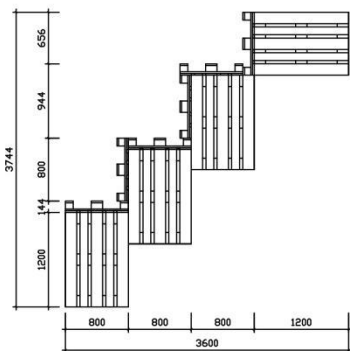
Figure 4.22 Matching old materials with new wooden pallet floor (Author,2022)



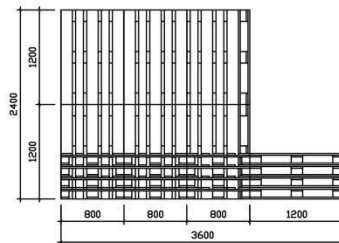
Perspective (front view)



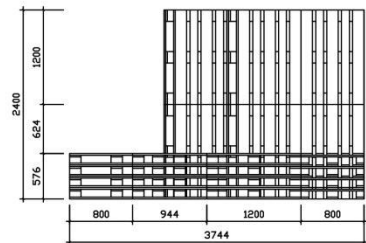
Perspective (back view)



Top View



Left View



Right View

Figure 4.23 Installation in the exhibition area (Author,2022)

The installation of the showcase area is divided into units, with the front and back available as a poster hanging or display facade, while incorporating the seating (Figure 4.23).

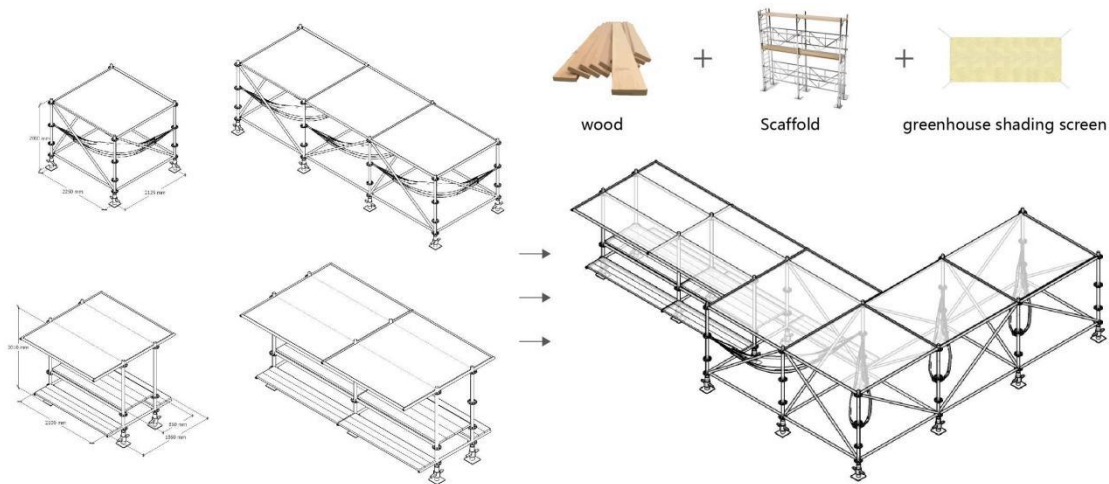


Figure 4.24 Scaffolding pavilions with hammocks or tables and chairs (Author,2022)

Here is a simple pavilion and a corner for a break (Figure 4.24). Although the seats are arranged in units, their structure is still continuous. Aside from the greenhouse shading screen at the top, there is no excessive obstruction of view. One can sit here and review or catch a glimpse part of the climactic scene, or see what comes next.

### **Zone1, Dialogue below ground: Hmm? I find you here!**

Zone1 is an opening chapter which carries the main function of "import". Based on its special height difference and narrow staircase, we tried to reinforce this feature to separate the flow of people. Based on the original space, we have inserted display areas to highlight and inform walkers of the upcoming events, as well as additional lounge areas where people can pause and chat. Adding value to the transition process by increasing chances of detours and pauses, giving pedestrians the opportunity to slow down.

The posting area provides two types of display. One is the visualization on the elevation. On the basis of the existing metal fence, flagging tape is used as a tool to "write" the theme phrase and the thoughts to be expressed, thus creating the effect of a suspended text. The bright colors attract the attention of passers-by. It's simple but obvious.

The other is to combine the posting area with aisles and stairs. The secondary division of the space by scaffolding uses the orientation of the strip space to lead the viewer directly into the "opening area". And the scaffolding above the road surface can be used as a skeleton for the poster.

For the design concept it is not static, but flexible and combinable. From simple to complex it can be optional depending on the practical needs. By collating the solutions, we propose an adaptive design for this area which

is available for further guidance and discussion.

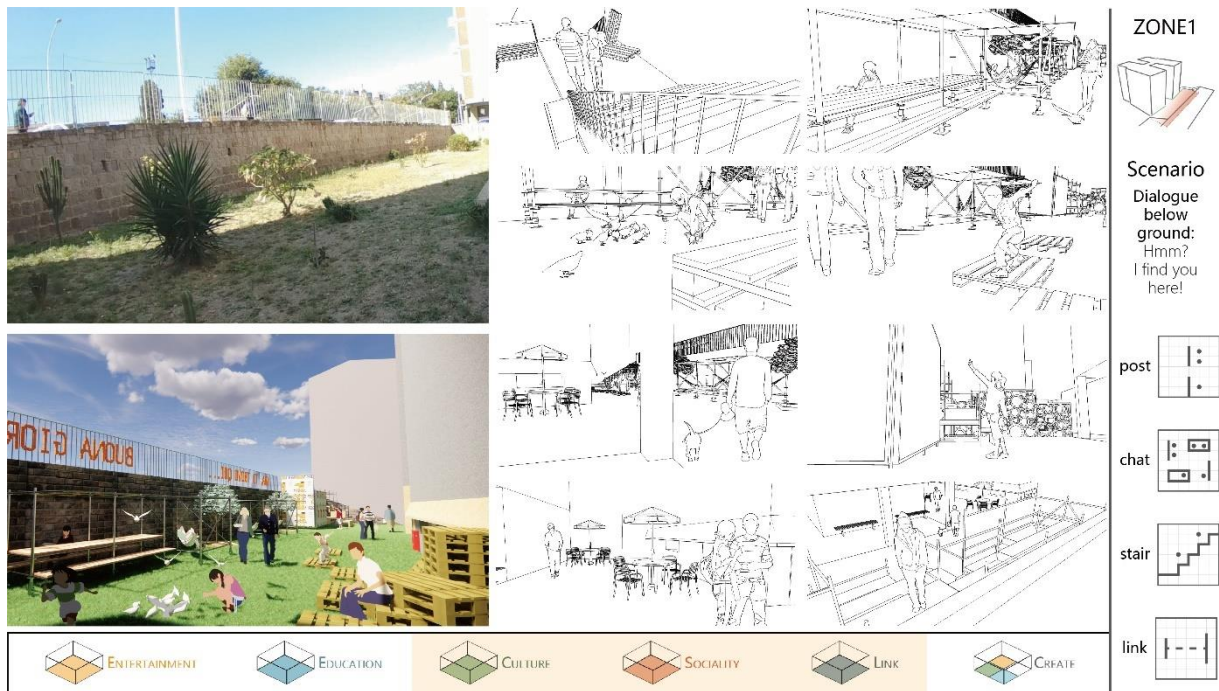


Figure 4.25 Before and after the scene1 and prediction of human activity (Author,2022)

**Zone2, School memory in the neighborhood: You know? It was the school of my grandpa.**

Zone2, the first branching line of the narrative, contains a special context, a period that was full of conflicts, tensions but also successful attempts at social gathering. Once the popular workers' school of Is Mirrionis and the first group in the neighborhood, it was officially launched on 11 October 1971 and ended in the summer of 1976<sup>107</sup>. In the five years, the school was very sensitive to what was happening in the city. It all became the study courses or assemblies as well, which was very important at the time<sup>108</sup>.

<sup>107</sup> “Per la strada non sarei più tornata” - una storia delle battaglie per l’abitare a Cagliari Ep.2’, Infoaut, 2, accessed 25 February 2022, <https://www.infoaut.org/approfondimenti/per-la-strada-non-sarei-piu-tornata-una-storia-delle-battaglie-per-l-abitare-a-cagliari-ep-2>.

<sup>108</sup> Gig72, “Is Mirrionis. Genesi di una periferia (e del suo barabba più famoso)”, di Mario Gottardi’, *Per Sergio Atzeni, a vent’anni dalla scomparsa* (blog), 13 May 2015, <https://sergioatzeni2015.org/2015/05/13/is-mirrionis-genesi-di-una-periferia-e-del-suo-barabba-piu-famoso-di-mario-gottardi/>.



Figure 4.26 The experience of the Popular School at Is Mirrionis took place in the 1970s<sup>109</sup>

In the midst of this abandoned and crumbling enclosure, the social experience of Cagliari's recent history is recorded. Probably these stories can be opened up instead of being buried in the rubble. Zone2 has been given two functional units (learning and outdoor exhibition) and an exploration unit (residents' co-construction). Just as it once existed as a communication platform, this attribute of gathering minds can be extended to the present place of studying and also to cultural exchange. In the context of the complex political properties of the building, we are leaving aside the problem of demolition but instead trying to switch to a more operational way to inspire the area.

A continuation of the wooden pallets from the zone1 design, the two spaces are linked by the secondary appearance of the same elements. In order to avoid monotony, the designer has transformed the wooden pallets from a horizontal to a vertical arrangement, while adding chalkboard, to "repair" the damaged wall by wrapping it and incorporating multiple functions.

The outdoor exhibition is placed on a wide area in front of the building, and because of the historical relevance of it, we have also attempted to connect both, relying on an extending of the material, which is the overall laying of wooden pallets. Although the floor is covered, traces of the history are again vaguely visible due to the gaps between the planks.

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<sup>109</sup> ““Per la strada non sarei più tornata” - una storia delle battaglie per l’abitare a Cagliari Ep.2’, 2.



People can experience and respond to this history while they are in the scene. In the perspective of identity, it means a transformation. From being a spectator trying to make sense of a story, to being a participant in a whole scene that builds up a fresh narrative.

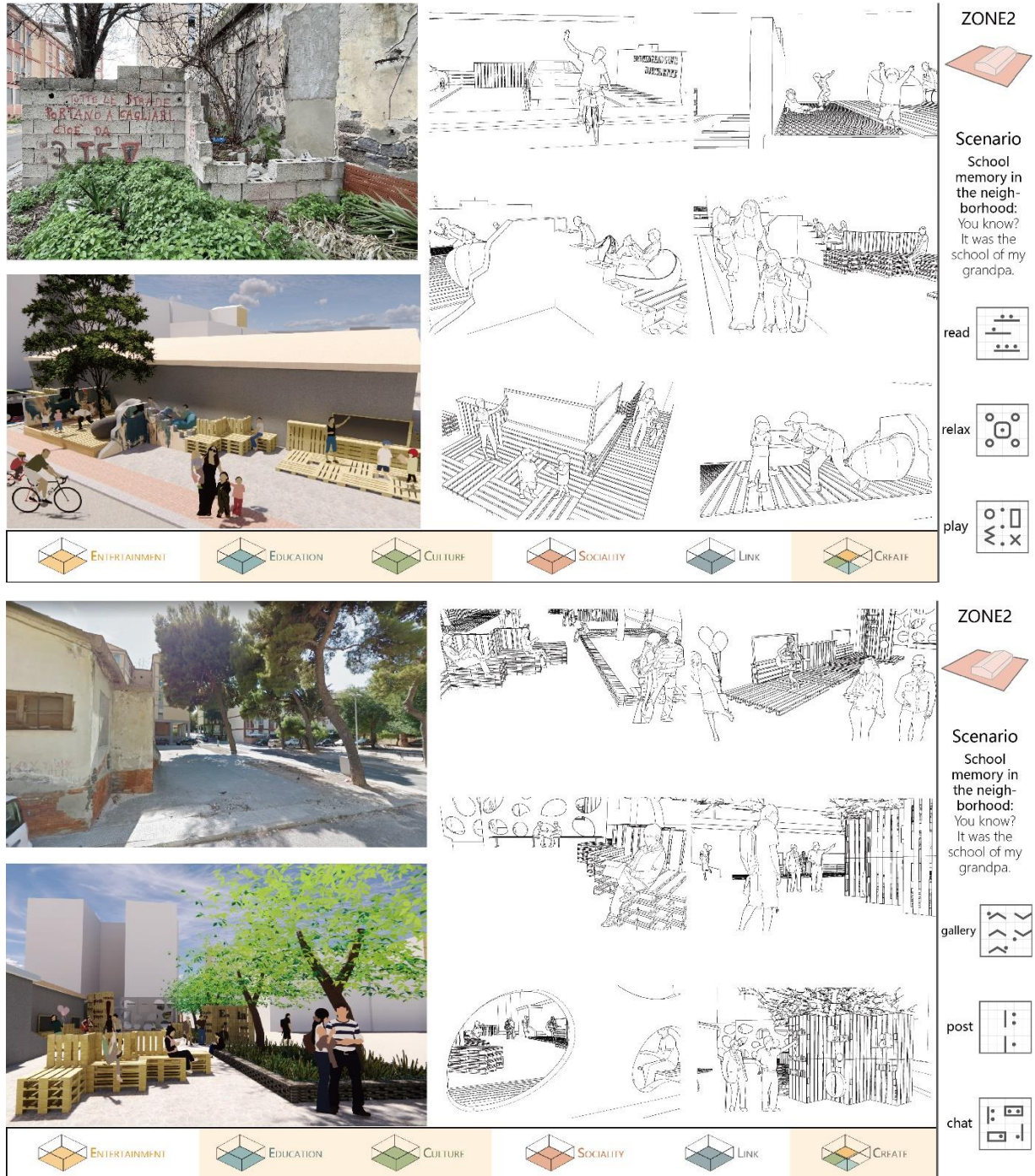


Figure 4.27 Before and after the scene2 and prediction of human activity (Author,2022)

**Zone3, Not an empty football field: Come on! let's have fun together!**

Zone3 is the second level and also the climax of the story line. The current state of the site reveals that it has

been used for football activities. The site is an irregular rectangle of approximately 32m\*44m, with a short distance of around 17m from Zone 2. The south-west facade is divided from the residential buildings by wire mesh fence, currently covered by dried creepers. Hereby, this facade follows the optimised approach of zone1, highlighting the theme of the site.

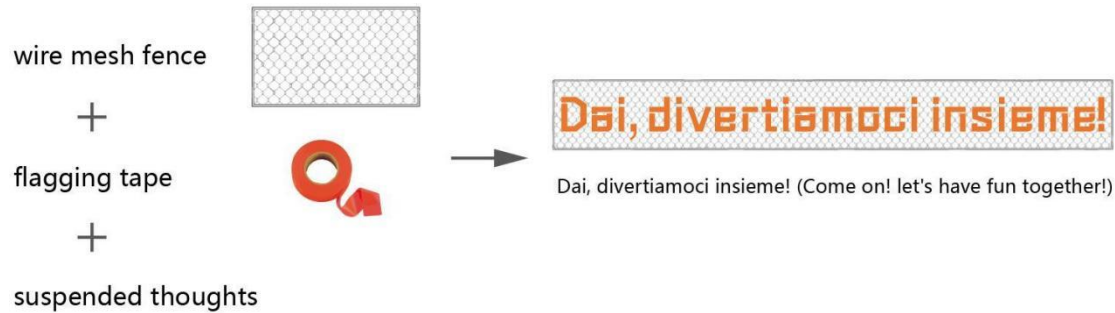


Figure4.28 Visualization with elements from existing scenes, part 2 (Author,2022)

Considering that this green space is connected to the street in the south-east and is raised about 1.2m above the ground, it is wider and more accessible than other areas in the neighborhood. The designers have conceived the area as a “common carnival”. The site has been placed in 'boxes' with diverse functions, and through the arrangement of the units, it is possible for all ages to play together. As you can see from the figure, this is a green and nature part, therefore the idea was to keep the vegetation and only do basic repairs to maximize its freedom and relaxation. The main focus is on "free play" and "exploring play", thus it consists mainly of entertainment and workshop settings.

This is a relatively free play area. Instead of having too many fixed entertainment facilities, the paths on the ground are separated to give participants a wider range of activities. The workshop at the corner was set up to provide an opportunity for a second exploration of the potential spaces in and around this area to be explored together.





Figure 4.29 Before and after the scene3 and prediction of human activity (Author,2022)

**Zone4, A moment of pause: It's time to take a break**

After the climax of a story, as the pace moves, we reach a "buffer zone".

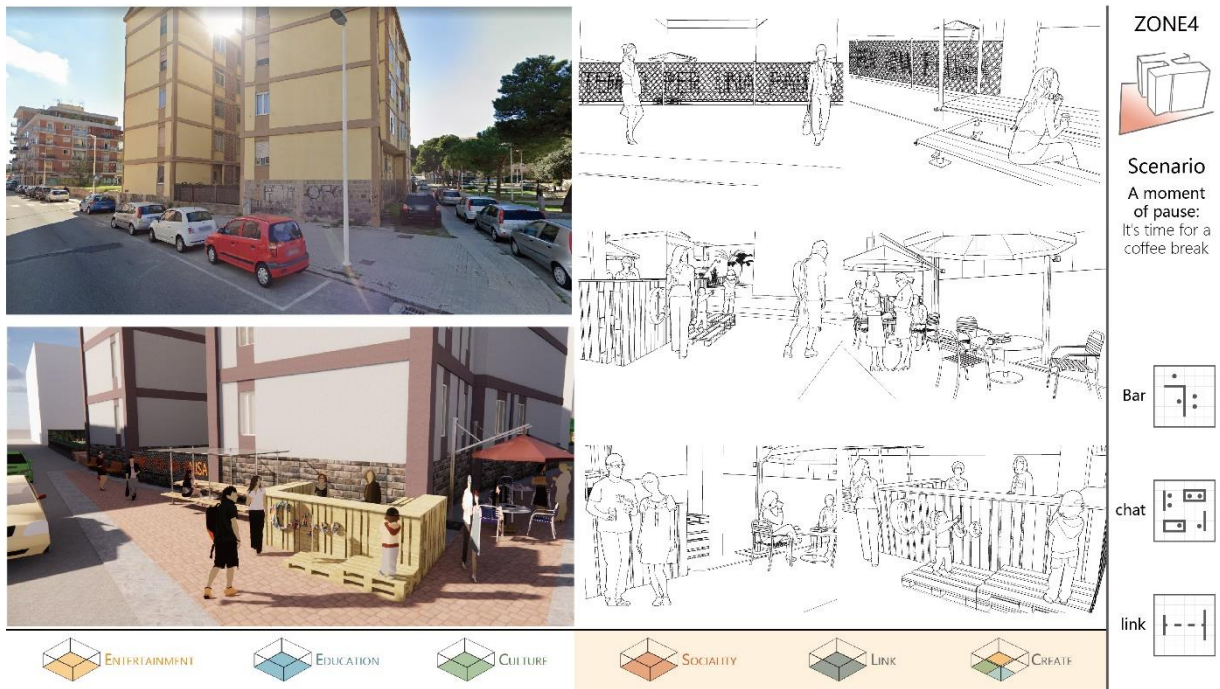


Figure 4.30 Before and after the scene4 and prediction of human activity (Author,2022)

**A trilogy of reclaiming a vibrant neighborhood**

Zone5, ReclaimingI: Do you remember that summer...

Zone6, ReclaimingII: Be happy, be bright, be YOU!

Zone7, ReclaimingIII: When life gives u lemons, make lemonade

These three zones are the “bonus series” of the story, based on their special and secluded location, especially zones 6 and 7, which are enclosed by the walls of private houses. They are not easy to spot unless one crosses a path first. This relatively fragmented layout can be transformed into a surprise for the walker. When you think it is over, you may find a novelty. You can find a spatial advantage that differs from the conspicuous exterior, which means that it is easier to condense the spiritual world, to concentrate and to follow your own feelings. Therefore, we tried to unite the three into an interpenetrating story.

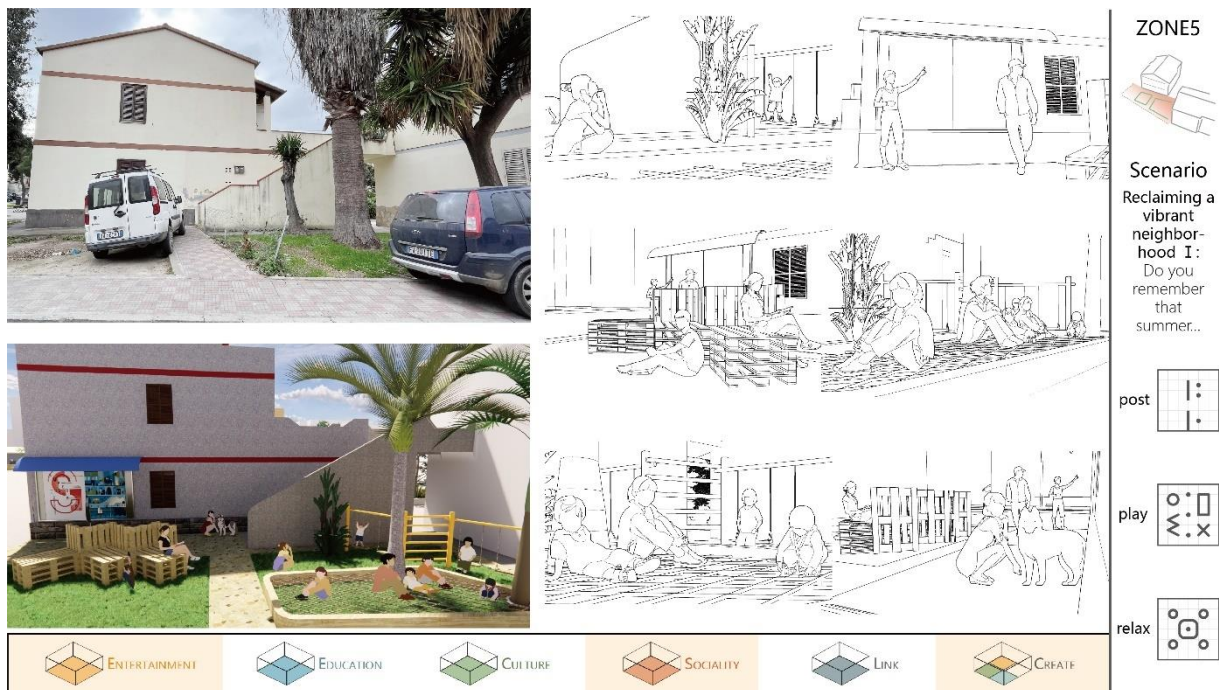


Figure 4.31 Before and after the scene5 and prediction of human activity (Author,2022)



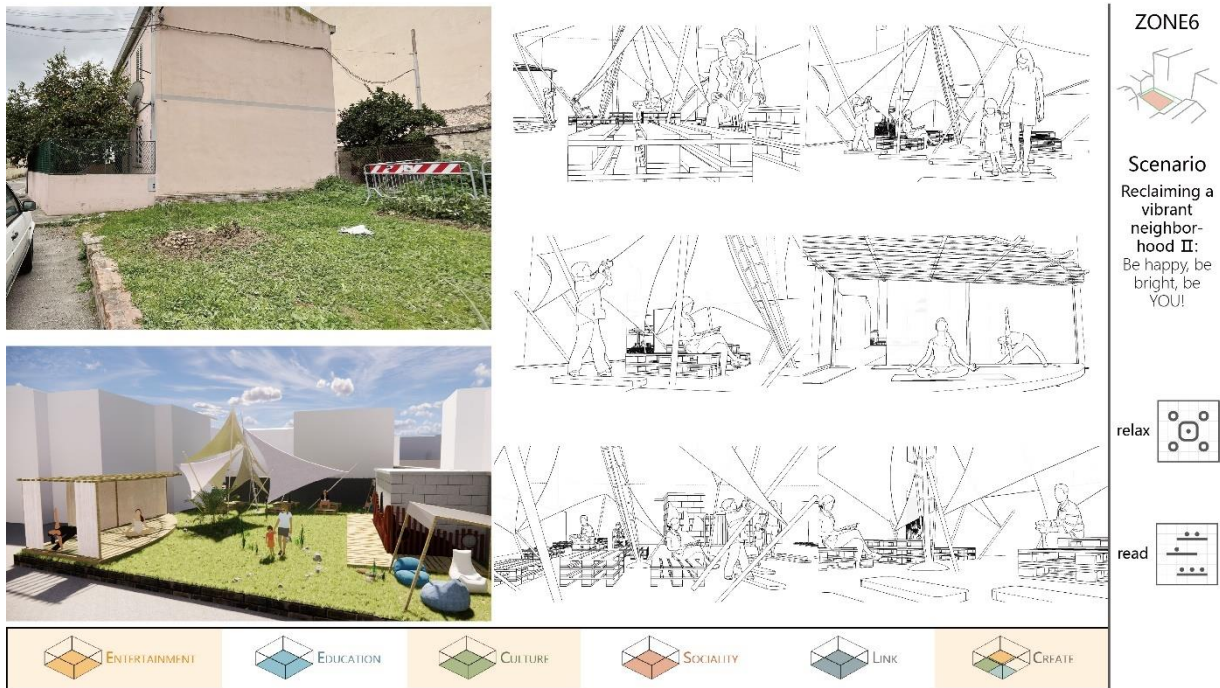


Figure 4.32 Before and after the scene6 and prediction of human activity (Author,2022)

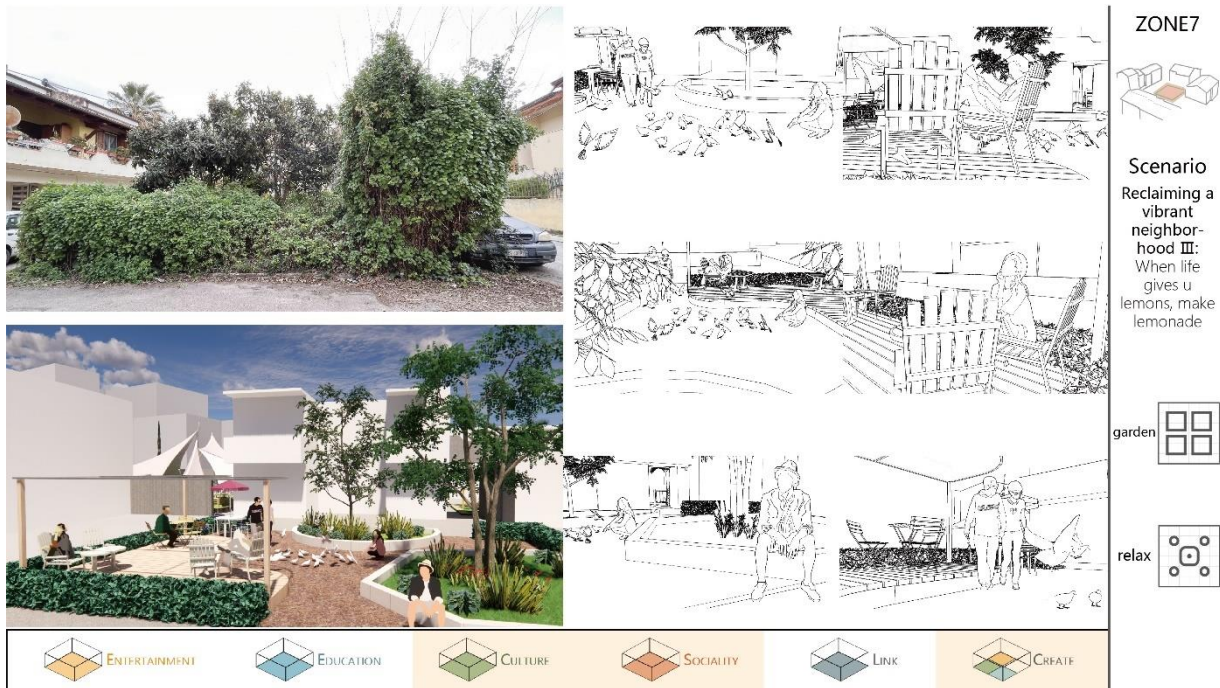


Figure 4.33 Before and after the scene7 and prediction of human activity (Author,2022)

**Zone8, Is this the start or the end: We are always here to welcome you back**

Afterwards, we step into the ending. Perhaps it is also the beginning. This is the most isolated of the 8 spaces. But with two exits, the choice is once again between leaving the tranquil neighborhood, returning to the hectic streets, or following the greenery of the fence towards zone 1, the starting point. Here is the last scene of the

show, but an "unfinished" space option.

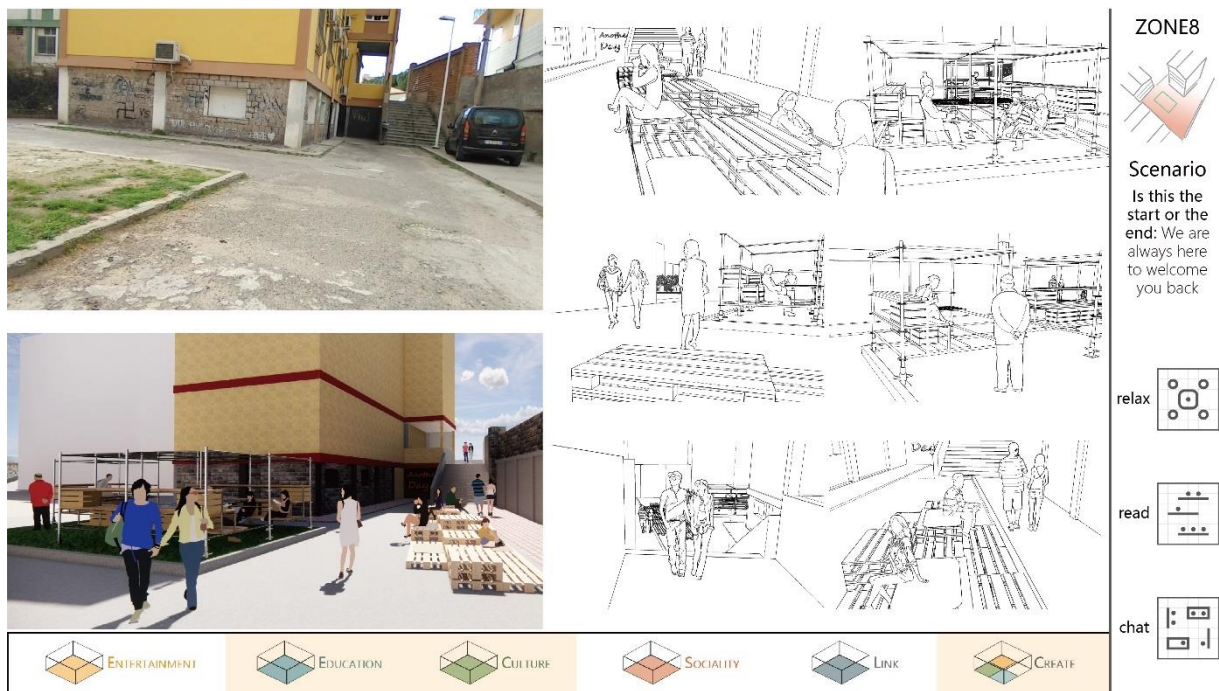


Figure 4.34 Before and after the scene8 and prediction of human activity (Author,2022)

### 4.3.3 Coexistence: Extension of the spatial narrative

While people construct space, it also influences and shapes their social activities accordingly. Life is a continuum and is renewed every day, as is space. With this value, the fusion of the new with the old should happen at any time and space. A truly rational state of affairs is one in which new stories are told in old areas. New areas should consider how to include old scenes, materials and lifestyles, which are the essence of the neighborhood story, and create more attractive communities accordingly.

When urban regeneration becomes an everyday spatial phenomenon, it involves a large number of people. Creation is a long, continuous cycle of construction. Under the existing system of architecture and planning, it is by no means easy to carry out the transformation of space, which involves a whole package of modifications to the regulations. Due to this status quo, the cost of community creation is relatively low compared to spatial renovation. The gathering of a group of artists, designers and residents is a flexible way of intervening in a space. For the present, the space only needs to be slightly adapted to meet the needs of the creation, but the atmosphere emerges effortlessly. This term "atmosphere" is essentially a redefinition of "place" from another perspective. The definition of "place", as we view it, is that the space is connected to the person and capable of generating meaning in relation to individuals.

This venue is using a number of narrative tools to facilitate three transformations in an attempt to establish a

new kind of connection between art and life. The subject of the first kind of transformation is the “object”: the elements that exist in the neighborhood become memory stories or artistic materials. They have finally taken on a meaningful display of their own, thus fulfilling the original purpose for which these objects were preserved. The subject of the second transformation is the “person”: it is not only the public and the designer's design concepts that constitute the series of spaces, but also the inhabitants themselves. It is for this “project” that they have rediscovered the living space and presented it to the public, so that in the future, as the transformation of this space progresses, everyone will acquire the identity of a co-builder. The third subject of transformation is the “relationship”: the designer and the local people become collaborators in a spatial project. They are no longer confined to their respective positions of identity, no longer designing and being designed, but have a closer connection. However, any transformation mentioned above need to be done in "time", and we will follow up with a record of its passage in an attempt to show its evolution more clearly.

These practices are understood here as revitalizing events that use media to express different stories embedded in historical urban scenarios. In participatory culture, social media enables traditional institutions and the wider public to tell the story of the city in new ways. In other words, they are the temporal structures that connect the past, present and future of the neighborhood. As these narratives can change over time, they are consistent with a dynamic understanding of the historic neighborhood scenario. According to Walter, narrative allows us to state what we want to pass on to future generations. It expresses the intangible meanings and memories which are associated with the historic urban context.

## Chapter 5. CONCLUSIONS

In recent years, various cities have carried out remodeling actions for the leftover space, which act as a "laboratory" in life, has established a bridge of communication between people. As a researcher, it is vital to understand social groups with a wide range of knowledge backgrounds in the field, to establish a multi-perspective and interdisciplinary research, and to focus on the "hidden" spaces in the living environment. Research on this type of space has always been a popular topic, mostly from the perspective of designers or planners, and has not been well explored and studied from a low perspective of living. The paper begins with the "collection" of the most common leftover spaces in daily life, from neglect to attention, as a catalyst for restoration, and ultimately for human life and interaction. Through the construction of spatial narrative, the public is guided to change from the role of "spectator" to "participant", to promote interaction in the process of participation, to enhance the relationship between people and space, in order to explore the social function of space.

After the field research, the author proposes a design concept that triggers the possibility of a narrative, considering the information collected. To begin with, an overall rhythmic space is associated with the leftover spaces based on their distribution to them. Next, it is proposed to incorporate some of the old elements of the site into some of the new materials, not randomly removing or covering the site, but making connections with each other. This kind of visible detail update is the process of allowing people to relate to the space in which they are located, and the gradual construction makes every corner of the place have a close relationship with the builder. Then, through the placement of interactive devices and the variation of combinations, more stories are possible. Lastly, some conjectures and inferences about what might have happened as a result of the intervention are made in relation to the current situation for comparison in subsequent studies.

The reshaping of the leftover urban space in the perspective of spatial narratives focuses on the practical process of public participation in design. This co-building process requires a "fermentation" of time. There are still limitations regarding the design concept due to the time constraints of the study, and the comparative analysis regarding the impact is not well established. More quantitative work and interviews with residents and related evaluations will be needed in the future. But this section will continue in the next phase of the researcher.

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