

Shared Inference of Urban Morphology

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Abstract: "Sharing" disintegrates the boundaries of urban spatial. According to "graph theory", public is like collection, private is like decomposition and sharing means re-synthesis. As a verb, sharing represents behaviors and as a noun, it's a method of model expression. Meanwhile, sharing is not only a response to sociology as an economic strategy, but also an architectural solution to the critical reconstruction of urban space. From the perspective of spatial topology, the involvement of sharing concept has brought four aspects in interpretation of urban morpheme: embedding and isolation; compounding and transformation; fuzzy and infiltration; collage and reconstruction, interpreting the Urban transformation. Berlin has undergone important changes in urban space due to wars and politics. When society becomes stability again, the involvement of shared culture and life have had various degrees of influence on using and forming Berlin space, and gradually Berlin becomes one of the typical shared cities. The paper expects to explore the meanings of sharing as a virtual urban morpheme by researching the shared place and the case studying.

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1. Introduction

Sharing research as an urban space strategy discusses the shortage of shared resources. Urbanization is the expansion of the limited spatial extent under limited space resources, which is manifested in the fact that the old stocks are more spatially differentiated, the tenure and use tend to be more specific, and the new incremental self-contained system is complete. aims. However, when the urban boundary has reached its limit, the deeper or closer to the regional core, the increased use rules and costs, and the inability to take more unowned space (natural or public) for their own use, There will be a shared space (private or collective) open to balance the space requirements for demographic changes.

The spatial definition of sharing is affected by a mix of public and private spaces. In 1991, Hans Monderman first proposed "shared streets" with traffic safety design, namely, canceling markers and weakening road boundaries, abandoning the private space and rules of pedestrians and vehicles, returning to the common attributes of public streets, and reducing vehicle speed

by creating psychological barriers. road safety. Although the initial shared street was strategically opposed by the transportation department and the disabled, it realized the change of the urban spatial form in the physical sense and challenged the transition of urban spatial differentiation. In the following decade, the proportion of urbanization in the world accelerated, the developed cities of high-speed developing countries represented by China (e.g. Shanghai) and the major cities of developed countries represented by Europe (e.g. Berlin, Germany). A relatively stable urban form has been achieved, that is, it is no longer and cannot be expanded. Faced with a limited urban environment, the concept of sharing has gradually involved the deployment and use of social resources. This paper will discuss the definition of shared space, and analyze the shared strategy rules and practice design synchronously. In this case, Berlin will be used as an example to summarize the impact of sharing on the type of urban form.

2. Methodology

2.1. *Boundaries & Contents of Sharing*

The shared space is based on the intersection of public and private spaces, and the publicity of spatial services is discussed in preference to spatial ownership. In German, the term “Allmende” (Common Land or Commons in English usage) describes shared ownership stake in a resource. This shared ownership establishes a “Third Space” between public resource space which is potentially freely available and the privatized space used by individuals or corporations. The common goods extracted from or created within this resource space can be both material and immaterial and therefore this third space can be either physical or virtual. As a collectively administrated partition of a resource. However, this third space is always given a spatial organization and corresponds with the sociopolitical organization of the community.

The share has a separate spatial attribute as a container for hosting shared content. The result of shared space, while pointing to set and, is essentially the collective use of private space. People who grow up in the collective society are not aware of the true freedom of the Lord, and have never experienced the private accumulation of space, but have transferred the existing space property through transactions. The personal territory is the original singular private space property, the most intimate feature. National land, including public ownership and partial government ownership, has the broadest collective attributes. For some shared spaces (such as office buildings, shopping malls, cinemas, etc.) of some collectives (enterprises, institutions, groups), people should understand the principles of collective space generation, space usage rules, and spatial ownership definition methods to jointly judge. In this context, we explore shared spatial properties. The narrative about shared space needs to be divided into two categories: one is the difference from the scope of public space collective services, and what are the service objects and service contents of shared space? The second is to define the ownership of the private space. How to clarify all the rights of individuals after sharing the space? These two issues together guide the design of the “sharing rules”. If we build an algorithm to determine the sharing of space. For a broadly free public or non-primary space, by reducing its “indiscriminate collective attribute” requires type differentiation, creating traits in a way that weakens and encloses the space. For a single collective public space and private space, it is necessary to upgrade its “specificity”. The singularity of the singularity, by superimposing the open space to bring it closer to the set, the two ways to clarify the composite situation within the shared

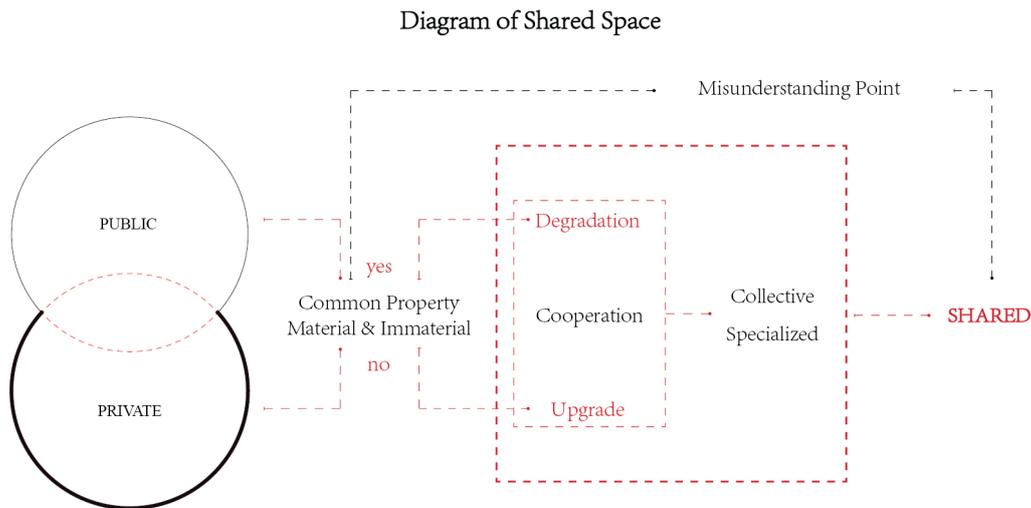


Figure 1. *Diagram of Shared Space*

scope. According to this calculation, the shared space is based on the two basic material spaces, public and private, and cannot be generated separately or in a void.

2.2. *Semantics of Sharing*

In the structure of the shared space, the subject, the object and the way correspond to different urban spatial elements. The author can synthesize the shared elements to express the two semantics of the spatial strategy and the spatial operation level.

- On the level of strategy. The discussion of shared concepts in cities, due to the accumulation of spatial stocks and the vulnerability to socioeconomic and regional political means, is more widely involved in spatial strategy research. Professor Li Zhenyu of Tongji University stated in the abstract of “Towards a Sharing Architecture”: *“This paper proposes three modes of a sharing architecture: the traditional “sharing for all”, “sharing by transfer” in constant development, and the emerging “group sharing”. Four spatial forms of sharing are brought up for discussion: separation, stratification, timing and differentiation. It claims as new forms of space and typology are emerging and sharing architecture becomes more closely connected to social development and technological progress, the new design concept of a sharing architecture will be the driving force in diversifying architectural practices and changing architectural meanings”*. From the perspective of phenomenology, the article discusses the ways of sharing in cities and buildings, and guides the sharing of basic space strategies embodied in cities, aiming at a subject from one of the three categories, can use the each four ways to achieve three different sharing types.
- On the level of Urban space operational. “Sharing” breaks through the boundaries between privacy and public. Sharing is based on the expansion of semi-public and semi-private spaces in the city. First, it is the urban external space, the street system, the square and the idle space, which constitute the shared network of the city; The second is the (enclosed) courtyard, the shared node that transitions from the urban environment into the building; The third is the architectural space level, for the function composite, build-

Discussion of Shared Space



Figure 2. *Sharing as an Urban Strategy.*

ing interface, volume, transition space (grey space) and etc., discussing on the formation of shared places. The article will summarize the topological into the four types of shared space: 1. Embedment (borrow) sharing, indicating that the private side is partially isolated from the public space, setting up shared use and positive feedback. 2. Compound sharing, means “homeomorphic deformation”. This is a function of composite and superposition of public spaces, through time-sharing and differentiation, changes in spatial form or type, and great potential for development space. 3. Flow sharing or “flow and connectivity”. This is to blur and weaken the boundary of the composite space, and realize the penetration and communication of multiple composite spaces. 4. Collage sharing, that is, “non-homeomorphic changes”. Through the communication of multiple composite spaces, they are spliced together into a whole area and then shared by space.

3. Analysis

3.1. *Model of sharing theory*

The shared space can grow like a cell. If the modern city is likened to a rich petri dish and breeds a variety of nascent spaces, the inner space of the city is rich in nutrients. They are diverse and well-defined, and can be used as the basis for the birth and transformation of any kind of space. The external space, like the cell matrix, supports these contents and flows through them. It can be a bridge for transportation, supplement and connection at any time, with unlimited possibilities. However, there will be no new breakthroughs in a quiet and stable environment. The creation of new things requires external primary stimuli to determine how to use these resources. Although the origin of shared space is difficult to trace, with the rise of the sharing economy, the demand for sharing of space resources has begun to strengthen. As the level of technology has improved, the sharing mode and the physicality of space have been continuously questioned. The challenge, the space limitation of the original material space of the city, by sharing and breaking, sharing may also acquire more space foundation, and the originally deposited shared space is also restarted. After the shared thinking invades (embeds) the urban social life, the concept of isolation itself stands out in the environment and becomes the breakthrough point of the development of shared space.

Contents & Semantics

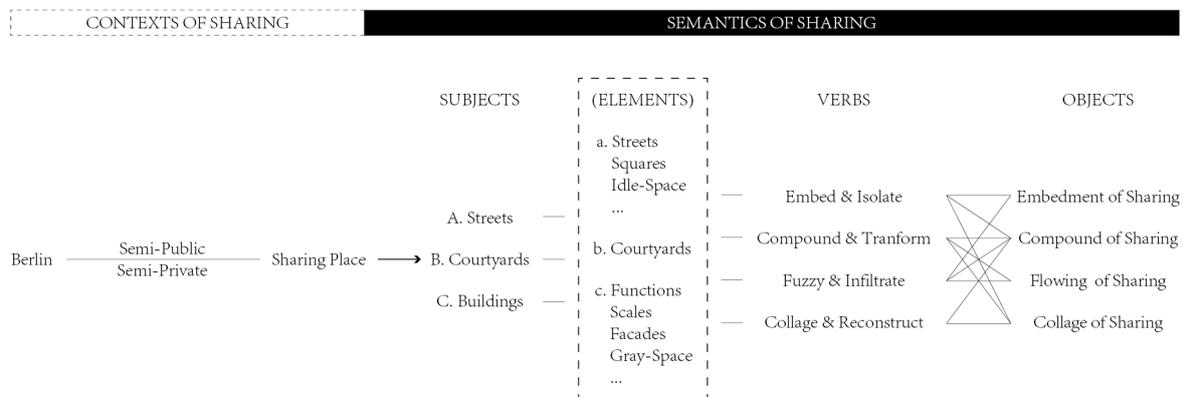


Figure 3. *Sharing as a space typology.*

Shared behavior and shared space alienate the spatial form. When the original single space in the city cannot meet the sharing needs, the most direct is the “composite and transformation”. In order to achieve collective use, the private space must undergo the first “reconstruction”. The result is that the “sending” is used to superimpose and accumulate different single spaces, and the second is to degrade the original functional space by “degrading”. The implementation satisfies the state of the upper level that can be functionally compounded. For highly developed cities or regions, the spatial differentiation will become more mature. If this is not the case, they can only follow the sharing strategy and open up some private use rights, provided that this highly differentiated space has the potential and potential for sharing. For example, collectively private office buildings, individual private Airbnb, tea restaurants, and more. In addition, for the open space of the city itself, such as the square, it has the strongest openness and publicity, can be used by anyone, is also owned by anyone, and is built on sharing. The scope. For a space to make it share characteristics and how to judge its sharing, it is necessary to make a detailed judgment on the space. In principle, the principle of “upgrading” and “degrading” can be used to make the space different depth and different direction. Space transformation is critical to sharing.

Shared space is not deposited and fixed. When a space has shared attributes, the shared traits are activated, which can lead to more space potential. The shape and boundary of space have always been under artificial constraints. In nature, the original unowned free space is fuzzy and flowing. Sharing allows space to become composite from a single, from private to collective, and similarly stimulates the surrounding space. When the “shared effect” occurs, these spaces are related by an invisible chain. The shared space can accommodate more material space and possibilities, and even break through the limits of physical meaning, realize non-material linkage, and the space boundary will become wider due to blur and flow, and its connotation will be more abundant.

Use space sharing to build a shared city. Human beings have the attributes of social gathering and will bring their belongings together. If we return to the metaphor of comparing the modern city to the petri dish of the shared space, the cells of the shared space will grow rapidly under these effects, and eventually the whole culture fluid will be filled with the shared matrix

and become the nutrition of the next space. In a specific urban space, shared space and sharing strategies will be spliced into various gaps in the city, repairing problems in the city, or supplementing the deficiencies of the city strategy with a sharing strategy. What is more, a sharing-based city can be established. Space and principles provide new opportunities for urban renewal. Starting with urban collages, cautious updates and critical refactorings, the future of the city will be full of challenges.

3.2. *Sharing Axis of Berlin Space*

Among the cities constructed with the concept of sharing, Berlin is one of the representatives, and its sharing in the urban axis has certain typical characteristics. First, Unter den Linden connects all the key nodes in the city. Starting from the city center of the Museum Island, Unter den Linden connects the Die Brandenburger Tor, der Reichstag, der Potsdam Platz, der Ernst-Rurter-Platz from west to east. These nodes correspond to historical culture, city signs, political centers, and economics. The center and the education center have strong sharing traits. Second, Unter den Linden itself acts as a space street. In the daily situation, Unter den Linden is the core trunk road of the city. The sharing of people and vehicles is not reflected. In the National Day, the streets in Tigergarten will be closed to the public, open to the public, and organized. Activities, become a rich activity space, such as parent-child activities, fun sports games, etc., in addition to the daily situation, every weekend, the sidewalk will organize Gebrauchtmart, the composite use of street space makes the weekly line full of vitality. Third, the urban axis and the core nodes jointly construct a skeleton shared by the city. From the connection between the urban axis and the important nodes, it can be seen that Berlin's sharing strategy can continue to radiate to the core of the area along the skeleton, and the sidewalks and secondary trunks on both sides of the main road of the city can also be based on the core axis of the city. The strategy implements different degrees of separation or time sharing. Berlin's shared skeleton can be continuously extended and gradually formed into a network, making the urban external space the most collective sharing place. On the basis of the above, the urban inward-oriented space such as courtyard, building, etc. can also realize the shared connection in steps. The shared fragments can be integrated, and even a shared system mechanism can be constructed to integrate and share all the resources in the city to achieve a comprehensive sharing of cities.

4. Conclusion and Hypothesis

Starting from the public and private spaces, the article explores the nature of shared space, establishes a context for discussing shared spaces, and proposes some basic assumptions about the sharing principle:

- Space property private: personal private, collective private: private individual superposition, or single collective private.
- Collective use: all individuals in the collective have the right to use space, and the original owner of the space still has the right to own.
- Non-profit purposes: shared space is a non-productive space that does not create social value and is only used for resource allocation.
- Dynamic relative: spatial sharing will change with the reference system.

Graphic Theory of Sharing City

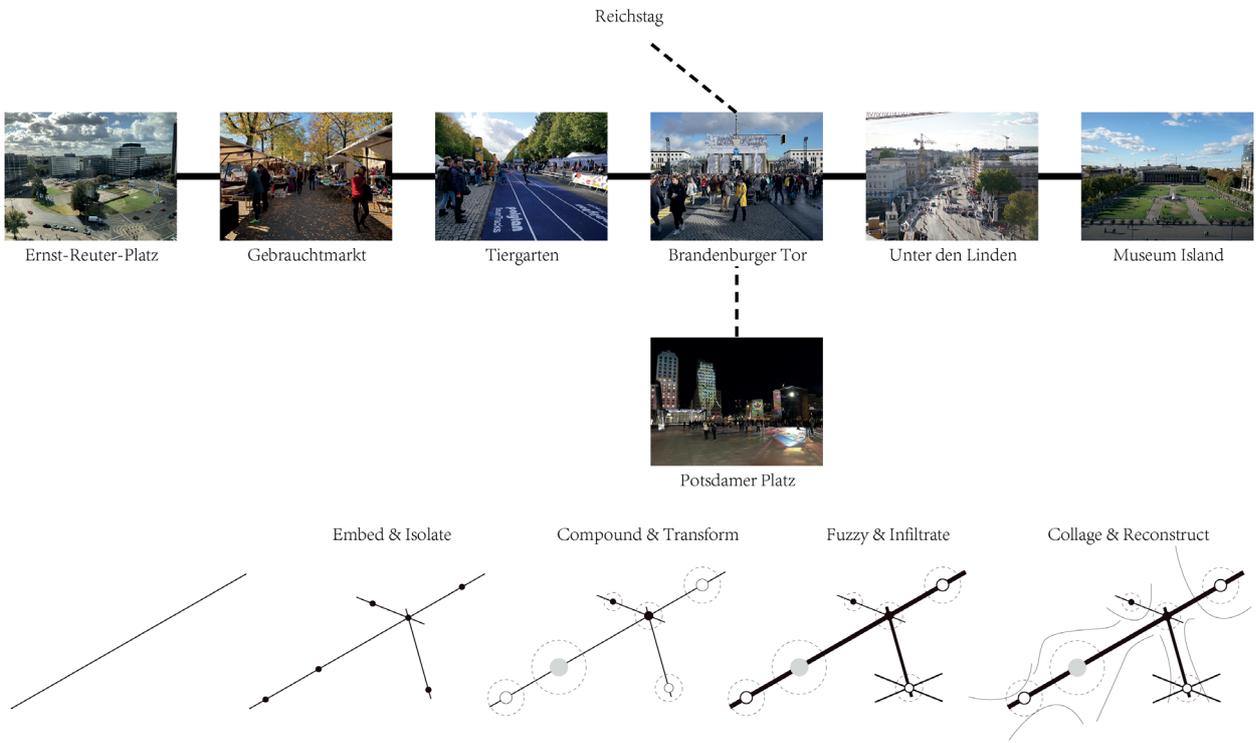
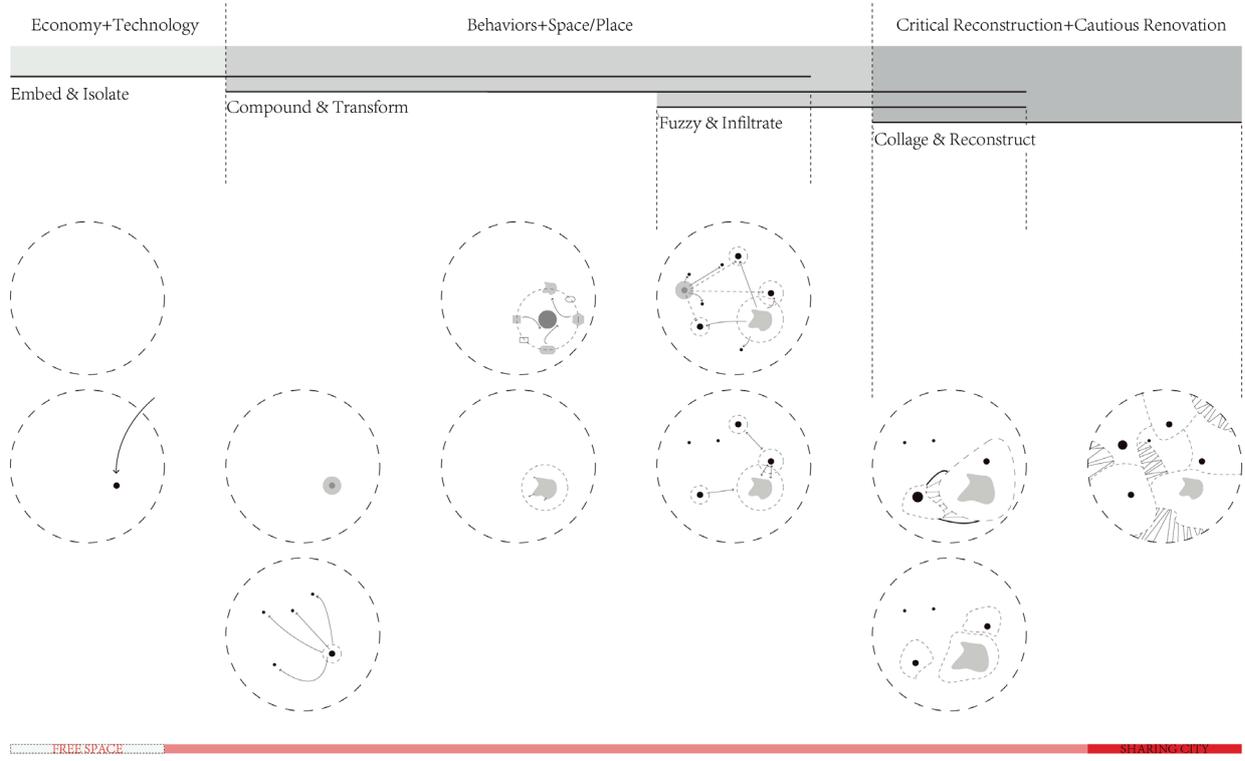


Figure 4. *Graphic Theory of Sharing City.*

The word sharing itself is the product of multidisciplinary intersections and finds its place in the social sciences. But compared to its definition and discriminating, the practice of sharing is more valuable than exploring its significance. In essence, space does not have physical entities, and it needs to be attached to other material spaces to be established. From a strategic point of view, shared thinking has more potential to expand and can be applied in more fields. If you want to ask, is sharing the city the ultimate goal of sharing ideas? The author believes that it can be understood that there is a certain limit in sharing, so that most of the public resources in the city are truly enjoyed by the public. Sharing itself does not have to be a goal, and its proper location is the process of assisting the development of the city.

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