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PERCEPTION AND MEMORY IN THE DESIGN OF URBAN PUBLIC SPACES UNDER TIME SCALE

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ABSTRACT

This paper takes time as a clue, takes the experience of time as the entry point of research, discusses the landscape design of urban public space at different levels, explores the meaning and connotation of landscape design of public space from a different angle, emphasizes the understanding of the deeper role of time on the public space by analyzing the perception and experience of timeliness of the landscape space and hopes to draw more attention to the temporality of the landscape space, and brings new ideas to the current and future landscape design of the urban public space, which does not mean pursuing the "new", but rather injecting cultural connotations to embody the continuity of the landscape, and promotes the sustainable development of the landscape.

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INTRODUCTION

A landscape's natural characteristic is change, which conveys the dynamic interplay between its material and immaterial components. Modern ideas of urban planning are guiding the "growing" and "evolving" of public spaces in cities, with "space" serving as the primary component. What does "evolution" and "growth" mean in the context of time? What is the fundamental relationship to people's everyday lives? Traditionally, the temporality of space is the change of sky and light, the reversal of climate, the change of seasons and the flow of years, and these temporal effects are presented in the landscape space through plants and materials, and every subtle change can bring long-lasting amazement and touching to the people, and this kind of temporal design is a very important element in the landscape design system. It should be said that, in addition to these modern design emphasized in the "urban flow of the landscape", the more important content of urban public space is the perception of time stretches, people through the perception of time in the landscape perception of the role of space to produce a lingering perception. According to Bergson's theory of philosophy of life, time and space are viewed as follows: While time is continuous, indivisible, and almost useless when divided, space is divisible; time in this situation is qualitative time that is stretched out. States of awareness penetrate and merge in this condition. In continuity, all states are interpenetrating and intermingling, and as a whole it is impossible for them to be separated from one part and exist as an independent state. The impact that time plays in how we perceive urban space should be studied before delving into the design and perception of space. In addition to continuously influencing how space is seen on an intermittent basis, time's unity and continuity are inextricably linked to how urban space is designed.

Similar to someone who has spent a long time away from home and then returns, he experiences the surprise of his hometown at that same moment along with memories of the past and hopes for the future. The time perceived at that particular moment combines the past, present, and future, and it has been continuously extended since then. Bergson said that this genuine time is an internal, entirely aware extension in which continuity and extension play a crucial role in maintaining the unity of all relationships.

The connection between time and space: Temporal design in landscape garden is based on the record, inheritance and response of landscape to time, through the understanding and respect of site texture, historical lineage and humanistic feelings, and the use of design techniques such as showing, catalyzing, metaphor and creation, to achieve the design purpose of continuing the natural process, reproducing the historical picture, and triggering the resonance of the viewers. The experience people get from staring at a scene or an object for a minute differs greatly from that of staring at it for an hour, and the significance of the feeling duration is obvious. "In the case of very limited volume and size, consciously increasing the time of stay, the final amount of feeling determines the degree of participation in the landscape". On the one hand, the renewal construction of the city brings about the crowding of the spatial environment, and people's feelings for small volume and small scale spaces need to be obtained by consciously prolonging the staying time; on the other hand, There must be rich enough substance in the area to draw visitors in and enhance their impressions of it, which will increase their stay duration. The "big" in this context refers not just to the actual space but also to the "big" perception that comes from a prolonged visit, much like in traditional Chinese gardens, which stress "to see the big with the small."

On the surface, people's actions in public spaces appear to be controlled by their own masters. However, the designer uses a range of landscape design techniques to direct and manage people's behaviour, creating the subconscious impression that urban environment is man-made. In a broad sense, design itself is the product of superposition of space and time, when we are engaged in design, the current situation of the site is precisely the imprint left by the past time in the space of the site, and our design influences the presentation of space on the site in the future. Thus, studying the concept of time in urban environments is related to studying memory. From an empirical perspective, Bergson defends memory by stating that there are two types of memory. Using urban public space as an example, he describes these two types of memory: memory of the scene and memory of the space. These two types of memory differ fundamentally from one another, memory of the scene is a performance, "it is surrounded by the intuition of the mind, and I can lengthen or shorten this at will performance; I give it whatever stretches I like; nothing prevents me from spontaneously grasping the whole of this performance". And the memory of space, "even if I merely repeat it in my mind, requires a definite period of time; and if they exist in the imagination, they must also occupy time in order to unfold, one by one, the whole of the movement intended for clear expression. In this way it ceases to be expression and becomes action." When separating the two types of memory described above, the first is referred to as a "memory-image" because it is an accurate account of regular occurrences and nodes that occur in urban public spaces. It is distinguished by the fact that it does not disregard specific details or consider their significance. All intuitions, however, are limited to an initial action; and once those images have taken up their position and hierarchy in this memory, their subsequent movements transform the organism, generating new bodily configurations in reaction to the action. This gradually creates an experience of an entirely different order, which accumulates in the body, a series of mechanisms that will be ready to respond to a greater number and variety of external stimuli, to give an already prepared answer to an ever-increasing number of possible appeals." The second kind of memory refers to the impression of past space that exists in the present consciousness, which is arranged in sequence according to the temporal relations of the movement of reality, and which, according to Bergson's theory of research, can no longer exist in the sphere of "memory", but which we still call "memory" because we still call it "memory". The name "memory" is given to it because "it is not that it preserves the image, but that it extends the effect of its use to the present". In actuality, temporality is one of the most important characteristics of memories since they are typically linked to life's events and specifics. When examining the two types of memory, it seems that the former is more worthy of the name, while the latter is nothing more than a habit that is interpreted by the memory, and is not even strictly speaking a memory. When the "memory-image" is formed, everyday occurrences in public spaces are documented at a certain moment in time, serving as a marker of place and time. This "past" is maintained whether or not it is useful for future purposes. The "past" is preserved in its own form, assuming different states and phases of reality in the present, and providing a special part of the "future". Such a memory helps to ensure that the remembered images fit in with conventional habits, that they are connected to current perceptions, and that they effectively combine the temporal images of the past and the present.

The perceptual experience of time: Views of modern metropolitan public spaces emphasis not just how traditional three-dimensional space is perceived, but also—and maybe more importantly—how time is perceived to go on. For landscape designers, this means not only comprehending how time plays a central part in how people see space and how time itself is perceived to continue, but also designing a location that leaves a lasting impression on visitors. The modernization movement of the city brings the modern society into a period of high-speed operation, the change of lifestyle and urban space replacement leads to the lack of social integrity, interrupting the continuity of space and time, which "directly creates a sense of disillusionment that all things are fleeting and people can't grasp the reality, and it seems that everything passes away in the process of

instantaneous flow of contingency." The discontinuous nature of contemporary urban life has become an irreversible fact, and the French poet Baudelaire summed up the essence of "modernity" as "excess, transience, and chance are half of art."

In fact, the perceptual experience of spatial form is more like the unfolding and switching of spatial images. If we analyze the perceptual experience of space, it is not difficult to find that the images in the perceptual flow in a fragmentary and non-continuous jumping characteristic, and this kind of intermittent and jumping perceptual fragment is especially obvious in the experience of the urban public space, looking back at the spatial places that we have experienced, whether they are very familiar or accidentally passed by. Looking back at the spatial places we have experienced, whether very familiar or passing by accidentally, our perception of urban space is clearly fragmented, while that which is continuous and uninterrupted is the movement of our bodies and timelessness, which is stretched time. The reason for this phenomenon is that when we feel and perceive the space of the "present" or the "present moment", it has already become the "past", and therefore what we perceive is always the perception of a memory. Therefore, what we perceive is always the perception of memory, and even if this memory is connected to the present for a very short time, it still belongs to the memory of the past. The design technique of "shifting landscape" explored by Kei Cheng, a landscape architect of the Ming Dynasty, is also to experience space through a dynamic process of time, and in this perceptual activity, through the physical movement of "shifting", it produces a "different" perception of landscape intention. In this perception activity, through the body movement of "shifting", the "different" perception of landscape intention is generated, and what we get is the perception of body memory - perceptual memory, which is the sensation of the moving organs with mechanical characteristics, while the perceptual memory is always going back to the past, which is the real memory. The memory is reflected in the city, which is the expression of cultural lineage. When we analyze the cultural veins, we will find some resonance and sense of existence that is hard to tell, as if I am also growing out of these veins, and it can be said that everyone is a strand of blood in the veins of culture. Therefore, the cultural vein is directly related to the people in a certain area's sense of identity with the landscape, which is also the source of perception. Time, as the fourth dimension, is in a state of cyclical repetition with the space it presents. The daily life of the city repeats itself in an irregular, intermittent state, free from the influence of mechanical time to a certain extent, and thus able to maintain its own existence. According to Bergson's theory of the continuity of time, we view time as an infinitely long and continuous line that contains both the "past" and the "future," with people's everyday engagement in any public area occurring at random and freely. People participate freely and randomly in daily activities in public spaces, displaying a jumping distribution in this line. However, through their participation in these activities, their bodies create a cyclic rhythm, and through their uninterrupted repetitive activities in public spaces, they leave a mark on the overall time line, creating a type of continuous time with a strong inner order that is difficult to interrupt. That is to say, we need to consider the perceptual experience of space as a length of time, since it does not unfold at a single moment but rather over numerous stretches of time. The extension of time gives space multiple meanings, and the interpenetration of time and space in spatial perceptual experience determines that spatial perceptual experience must be decentralized and intermittent.

Husserl's phenomenology "To the thing themselves", is to emphasize the direct experience, this experience along with the passage of time, resulting in phenomena, from the rational thinking in urban space design, return to the "life" of the world. It emphasizes the perception and experience of space in daily life. The argument made by John Ormsbee Simonds in *Landscape Architecture-A Manual of Environmental Planning and Design* is quite persuasive: "What people plan is not place, not space, not objects; what people plan is experience - firstly a defined use or experience, and then a conscious design of form and quality to achieve a sense of place and quality. of conscious design to achieve the desired effect.

Places, spaces, or objects are designed according to the ultimate purpose, to best serve and express the function, and to best produce the desired planned experience".

Timeliness expression and reproduction of public space landscape: The timeline of the landscape is the basis for the existence of the landscape, from form, space, function, to perception none of which expresses the concept of time, and experience in the time sequence, making the experience of the space has a variety of values. Time light and Landscape: The location experiences changes in its sensory aspects due to variations in light and shadow, which are influenced by the passage of time. The site as a carrier, the change of its external form is a temporalized space, which expresses the continuous change and growth of the site. The way that light and shadow shift is a result of time interacting with space; this contrast between light and dark, truth and fiction, forms the content of the space and enhances the rhythm of the landscape and the visual experience. Cloud Gate is a public art sculpture designed by British artist Anish Kapoor. This sculpture, which is part of Millennium Park, USA's AT&T Plaza, is a work of public art that reads, "a gateway to Chicago, mapping out a poetic city." The entire sculpture consists of 168 stainless steel plate collage, weighing more than 100 tons, although the volume is huge, but the appearance is very chic, from a distance it looks like a drop of mercury, but also like a huge silver beans, so the locals prefer to call it "silver beans". Because the surface material is highly polished stainless steel plate, the whole sculpture is like a spherical mirror, the sky, the building, the surrounding landscape, passing pedestrians, all reflected in it. Variations in viewing times and perspectives of the "silver beans" are evident in the variations in the "silver beans" photo scene. The "painting" that exists inside the bean is an actual "moving" painting that changes daily, minute by moment, and over time. This unique design makes an otherwise "monotonous" appearance very rich in content. Underneath the "Silver Bean" is a concave design with an arch that reaches up to about 4 meters, from which visitors can cross underneath the "Silver Bean". Tourists attempt to take photos of the "Silver Bean" with their cameras while also attempting to catch a reflection of the bean in themselves. A common example of the spatialization of time, the human leisure space is connected to changes in light and shadow, which reflect the direction of shopping into the space.(figure 1-2)



Figure 1-2, Cloud Gate in harmony with the surrounding scenery
(<https://www.choosechicago.com/articles/tours-and-attractions/the-bean-chicago/>)

The transmission of material discourse over time: Material is an important language of landscape design, the content of the site in the spread of time more or less produce traces of age, the most direct embodiment of such traces that is the change of the material, landscape materials, although can not be used as a standard condition for the success or failure of the design, but it shows the medium of the design. On the one hand, as the landscape spreads and develops over time, it brings vitality to the landscape; on the other hand, the materials' shifting timelines somewhat represent the site's cultural heritage, deepening the tourist's experience and perception. This is also deeply reflected in Cloud Gate in Millennium Park. Sculpture of the metal stainless steel plate presents a sense of modernity, mirror material is very good site environment and the sculpture itself for the connection, because of the material, people gather to the sculpture in front of the sculpture and it produces interaction, this behavior itself is the material language in the landscape interaction of the vitality of the embodiment.

The wall of ice and Water in New York's Teardrop Park embodies the historical sense of the material's timeliness. Teardrop Park is designed as a "high north, low south" terrain, children and their parents in the canyon, surrounded by tall buildings like mountains, walking in it is like walking in the canyon, enjoy the fun of nature. The north side is like a hill and the south side is like a valley. And what divides the north and south is a high wall called Ice and Water Wall. The Ice and Water Wall gets its name from the thin streams that constantly flow out of the cracks in the stone throughout the year. In summer the wall is covered with moss, and the green life embellishes the wall with vibrancy, while in winter the water freezes and the wall adds a bit of mystery and coldness to it. As the landscape center of the whole park, the ice and water wall meets the landscape function and at the same time becomes the logo and business card of the park. The terraced topography of New York State, carved from sandstone, is symbolised by the blue-gray sandstone of the Ice and Water Wall, which is layered with high and low walls, each representing a rich experience in and of itself. People are fooled into forgetting that this park is situated in a residential neighbourhood by the stone wall's surface, colour, and shape, which all melt together like the words "water and ice."(figure 3-5)

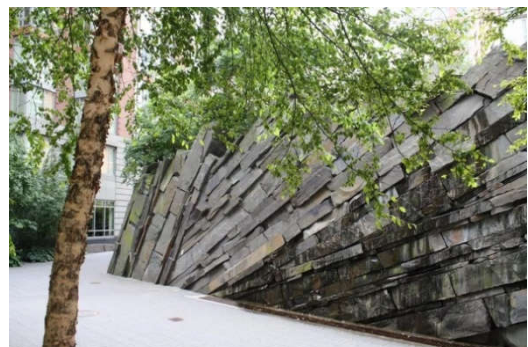




Figure3-5,The Ice and Water Wall. Feel the change of scenery and time in the change of seasons. (<https://ohios.tate.pressbooks.pub/exploiringarchitectureandlandscape/chapter/tea-rd-drop-park/>)

Time series of human landscapes: Everyday life has a repetitive quality in time, but this repetitiveness is not merely an external, mechanical temporal repetition that is subject to discipline, but a repetition that is close to the holistic and pervasive, indivisible nature of the essence of time. This is precisely what Bergson emphasizes as the true time of extension. Daily life is still in the extension of time, which makes the existence of things always presented as a birth to development, until the process of demise. This is true even though there is no fixed concrete material space form of urban public space; instead, it can exist for a long time due to the extension of time, not because of the suspension or transfer of spatial activities and gradually die. The composition of the city comes from the gathering of people and things in the urban space, and the interweaving of time and space constitutes the development of things, which generates the order of development, and the urban space constitutes a kind of orderly and continuous self-narrative in this development, which extends to the landscape design, and the expression of this temporality is shown through the uninterrupted landscape images and scenes, and the time is extended in the process of sequences and continuity. For instance, the well-known architect Lin Ying's Vietnam War Memorial Wall uses a folding line to "tear" an opening in the natural hill, illustrating the idea of "wound" in a clear and controlled manner. Additionally, visitors' walking paths are restricted to the masonry road that is directly next to the memorial wall, guaranteeing that they are able to walk on the masonry road (figure6-7). This key design ensures that the visitor enters into the rhythm of the design, in the process of traveling, as the ground sinks the height of the wall gradually increases, the atmosphere becomes more and more heavy, but through a turn in the wall everything gradually becomes lighter, and finally the obelisk in the distance as a guide to return to the calm. In the process of visiting, people complete the change of rhythm through the change of height, slope, sightline and landscape, and the power generated by the simple rhythm closely follows the narrative theme of Lin's story - wounds, and this narrative landscape itself has a time node and significance.



Figure 6-7. Vietnam War Memorial. Experiencing time sequences in scene changes (<https://magazine.art21.org/2017/03/15/the-black-gash-of-shame-revisiting-the-vietnam-veterans-memorial-controversy/>)

At the same time, the humanistic landscape connects the place of time, which displays many elements, all of which can make people produce associations and memories of the abstract nature, both expresses the continuity of time, and from the perspective of history to show. Most of the expressions of important events in such humanistic landscapes are associated with temporality. Important historical time and tasks in the process of social development, through the monumental human landscape for the best interpretation, "monumental landscape is a can make people recall or inheritance of history of the synthesis of the regional environment," it is "human monumental emotional landscape on the materialized form". The history is recreated in the well-known "The memorial hall of the victims in Nanjing massacre by Japanese invaders" using a variety of task sculptures, bas-reliefs, signboards, etc (figure8-10). Pebbles are also used to symbolize the sadness and vicissitudes of history, and through the ground paved with pebbles to express the lack of grass and dry branches. The atmosphere of death is further emphasized. Through the abstract expression of the natural environment and the time narrative technique in the landscape, an atmosphere is created to let the visitors have a psychological resonance, a kind of deep feeling of being in the miracle, reminding everyone not to forget this history. Humanistic landscape through the expression of time is not only used to inherit and preserve history, but also pay more attention to the experience of visitors as the main body of the landscape perception.





Figure8-10: The memorial hall of the victims in Nanjing massacre by Japanese invaders. Sculptures and reliefs are used to show historical scenes and render the narrative of time. (<https://www.meer.com/en/48485-remembering-the-nanjing-massacre>)

Time landscapes of daily life: In their daily lives, people create the temporal and spatial domains of socialisation and understand locations as being in the communion of space and time. Urban public spaces are places where people's lives repeat themselves in an irregular way, and people's informal group gatherings and meeting times are somewhat unaffected by the passage of time. People's participation in any urban daily public space is full of freedom and randomness. Even the square dance activity, which is highly temporal and regular, is undergoing constant changes in its daily activity time and participants, not to mention the behavior of stall vendors who adopt guerrilla tactics, or the daily photography activity, which is completely untraceable in terms of time. However, they still have their own cyclical rhythms, leaving traces in the overall time and space through their repetitive practices in the urban space, thus forming a kind of extended time with its own internal order, which is difficult to be truly interrupted. This time allows for multiple meanings of space. Bus stops can simultaneously sell food, the sidewalk boundary space can be used as a place to play chess, a living room or even a restaurant, and on-street parking spaces can become excellent night market spaces at night. In the same space, activities can occur one after another or simultaneously. The urban everyday public space is thus given the possibility of almost uninterrupted development in time.

Timeliness of Place Perception Understanding: Norbert Schulz, a representative of architectural phenomenology, explains "place" in the following way: A person needs to be able to find his way about and connect with his surroundings in order to calm down.

In short, he must be able to experience his environment as full of meaning. So settlement is not just 'shelter' in the sense that it really means that the space in which life takes place is a place. A place is a space with a clear identity. Since the spirit of place has been regarded in ancient times as a concrete fact that must be faced by human beings and must be compromised with in everyday life, it follows that space here is not only a place, but also a space that is full of meaning. This indicates that the space in question is both the material space and the realm of spiritual existence beyond the reach of human perception. It is possible to argue that without time, people would not be able to perceive life or comprehend spirit, and that a space would simply be a space and not a "place" because time is a dynamic factor in the category of nature, giving things and order in the space meaning and accommodating human life and the time of human life and nature. When we take the place as the carrier of culture, as the witness of history, the place will have the expression of the fourth dimension of time. Landscape design based on the fourth dimension also pays more attention to the harmony between people, culture and the environment, and the cultural lineage can be inherited in the landscape.

The most fundamental distinction between place and space is also the most essential difference between place and location. A place obtains its identity and essence when it takes on a cultural meaning derived from history, culture, society, activities, or geographical conditions. Neuberger Schultz believes that "the identity of place is a function of time", time intervenes to make space a part of life, and live scenes are arranged on a time axis to enhance the substance and arrangement of place. From the moment of construction, the landscape, like a conceived living organism, begins its process of growth, change and creation, and until its demise, it still remains in the form of memory. Time communicates with history, changes with people and the environment, identifies with the law of natural growth and evolution, and pays attention to social and humanistic development. The temporality of public space landscape offers fresh approaches to address the conflict between modern infrastructure and historical elements in urban development, as well as the absence of a feeling of place and history in the surrounding area, even though it does not exist as a stand-alone design approach. We also believe that by creating a temporal landscape, people will no longer feel as though they are drifting aimlessly beneath the development of a thousand cities, reestablishing both the historical connection that spans time and space and the relationship between humans and nature.

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