

A Review of Temporary Landscape Research in China and Other Regions

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ABSTRACT: This study aims to research the origin and development of temporary landscapes, combining the research progress of temporary landscapes in China and other regions in the world, and propose the development trend of temporary landscapes in the future. As a unique form of open space, the temporary landscape has the characteristics of "time limit," guidance, flexibility, and functionality. It is a spatial strategy for the temporary occupation of land in urban construction. This article first introduces the temporary landscape background, combs the temporary landscape's development and connotation, and puts forward the temporary landscape concept based on summing up previous studies. Then, starting from three aspects: the type mechanism, design practice, and comprehensive functional benefits of temporary landscapes, this paper focuses on the research progress of the phenomenon of temporary landscapes in China and abroad in recent years. Finally, it makes a comparative analysis of the research, summarizes the differences in the study of temporary landscapes between China and other regions, and proposes prospects for future research trends combined with the international development situation.

Keywords: *Temporary Landscape, Urban Public Space, Research Progress, The Prospect.*

INTRODUCTION

Temporary Landscape originated in the 1950s and gradually formed under the influence of the time background at that time. The application of new materials and new technologies to the "Crystal Palace" at the 1851 London Exposition provided technical support for temporary landscapes. After World War II, European countries used garden exhibitions to promote urban development, bringing development opportunities for temporary landscapes. After being influenced by Pop Art (Wang & Feng, 2017) and Process Art (Feng, 2017), landscape design began to emphasize time characteristics. Under the influence of these trends, more and more landscape designers in their works began to pursue the effect of the landscape in a short period. Such as Martha Schwartz's design of Bagel Garden, Necco Garden, and Power Lines (Figure 1); these landscapes full of time concepts and art forms laid the primary form of early temporary landscapes.

The temporary landscape has gradually evolved into a hot research direction integrating art, ecology, and landscape design from its emergence to the present. In urban construction, the traditional urban renewal model based on a material renewal is no longer sufficient to meet citizens' needs. As a public space practice (Mikadze, 2015), Temporary landscape is gradually evolving into shape with its openness. The strategy of urban connotation and vitality (Frenchman, 2004).

MATERIALS AND METHODS

The article research scope has spread from China to worldwide, collecting research literature on temporary landscapes through the Web of Science and Google scholar. A total of more than 70 papers have been collected, 20 of which are from China. Analyzing and summarizing the literature first combed the development and connotation of a temporary landscape. Subsequently, from two different perspectives of Chinese

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Fig.1: Bagel Garden, Necco Garden and Power Lines (Schwartz, 1979)

studies and other regional studies, the temporary landscape was researched and analyzed in three aspects: its type mechanism, design practice, and comprehensive functional benefits. Finally, it concludes and puts forward hypotheses about the future development trend of the temporary landscape.

Analysis of The Connotation of Temporary Landscape

Temporary landscape, a landscape form, has appeared for a long time. However, it appears in a written form to be traced back to Correy's (1978) "Ephemeral Landscapes: a case for temporary landscape design in a changing society." At present, there are still some differences in the definition of temporary landscape, and many scholars have carried out a series of analyses on its connotation (Table 1).

In summary, it can be found that the conceptual connotation of the temporary landscape has been continuously developed and improved. Based on predecessors' knowledge, it can be found that a temporary landscape is a kind of construction and demolition within a specific time that can be reproduced in different areas. Guide or self-organization of community groups to create a form of landscape, a composite function of ecology, economy, culture, and society, is a spatial strategy to activate social vitality.

Research Progress on Temporary Landscape outside China

From the 1980s to the present, research on the temporary landscape outside China mainly focuses on three fields: research on temporary landscape type and mechanism, practice

Table 1: Summary of temporary landscape concepts

| Researchers | Connotation of temporary landscape |
|--------------------------|--|
| Correy (1978) | Temporary landscape in urban vacant lots, streets and unused buildings, plazas, promenades, public open Spaces, etc |
| Wagenknecht-Harte (1989) | A landscape that is independent of the site and has the potential to be reproduced in many different sites |
| Rapoport (1990) | A scene consisting of fixed, semi-fixed, and non-fixed elements that change the state of the environment |
| Lawson (2001) | An active landscape created by semi-fixed elements to change the pattern of use of the environment |
| Carmona et al., (2003) | A form of landscape that brings about a positive experience through change |
| Fakouhi (2004) | A flexible space in a city created through events and time constraints under fixed and permanent sites |
| Temel (2006) | "A temporary alternative landscape as the "real thing" |
| Haydn & Temel (2006) | A multipurpose landscape in which land is used for other purposes in a short period of time |
| Spiegel & Teckert (2006) | Temporary landscape is a one-time landscape |
| Kohoutek & Christa(2006) | All landscapes and lands in the city are temporary |
| Yoshinobu (2006) | A space with special identification elements that often changes in time and space and leads to emotional changes; It varies with the seasons |
| Zhang (2008) | A flexible, showy form of landscape built for a short-term event with a short life span |
| Mayo (2009) | Temporary landscapes are platforms for expressing repeatable or non-repeatable events |
| Gert & Frits (2009) | Temporary landscape is a process art |
| Bishop & Williams (2012) | A particular stage of land use; Landscape with clear time constraints |
| Gehl (2013) | An urban gathering space consisting of flexible temporary facilities |

research on temporary landscape design, and research on the comprehensive functions of the temporary landscape.

-Study on Temporary Landscape Types and Mechanisms

In the early stage of the development of a temporary landscape, there is no perfect division mode. The differences between temporary landscape types require a more detailed division. The honorary professor of the University of Kansas James Mayo(2009), according to its different temporary landscape background of the divided into planned and reactive, Rachel Fox (2015), according to the mode of existence of landscape can be divided into different Event-based, Interim and Incremental three different types, and sums up the properties of different types of landscape structure and the relationship between each other. Unlike the above two researchers, SLeM classifies temporary landscapes according to their attributes and divides them into three categories: landscapes focusing on creating meaning by adding events to the site, landscapes based on location conversion, and landscapes with the leading public body and provoking thinking.

The research on the temporary landscape mechanism includes both composition and operation. Cheshmeghasabani et al. (2017) pointed out that the temporary landscape is generally composed of fixed, semi-fixed, and mobile elements through

analysis of relevant cases and literature. Its operation mechanism (Figure 2) There are two types: 1) through the interactive operation of people and environmental space; 2) through the social interaction between people in the community. Different from Chemeghasabani et al. (2017), SLeM also included artistic creation and pointed out that the temporary landscape is affected by the interaction between people, environment, and artistic creation (Table 2).

Practice Research on Temporary Landscape Design

The study on temporary landscape design practice includes two parts: the design method and the application field.

Research on Design Methods

In the study of temporary landscape design methods, SLeM studio proposed creating a temporary landscape with art discipline intervention. Taking the site as the background of artistic creation, and using artistic works, artistic behaviors, and artistic facilities to shape the relationship between residents and the environment. The Shouwburgplein project, designed by West 8, is a reasonable attempt by the art discipline to intervene in the landscape (Figure 3). Through cooperation with artists, the designer created the Flying Grass Carpet experience landscape, which will bring people together. Residents can

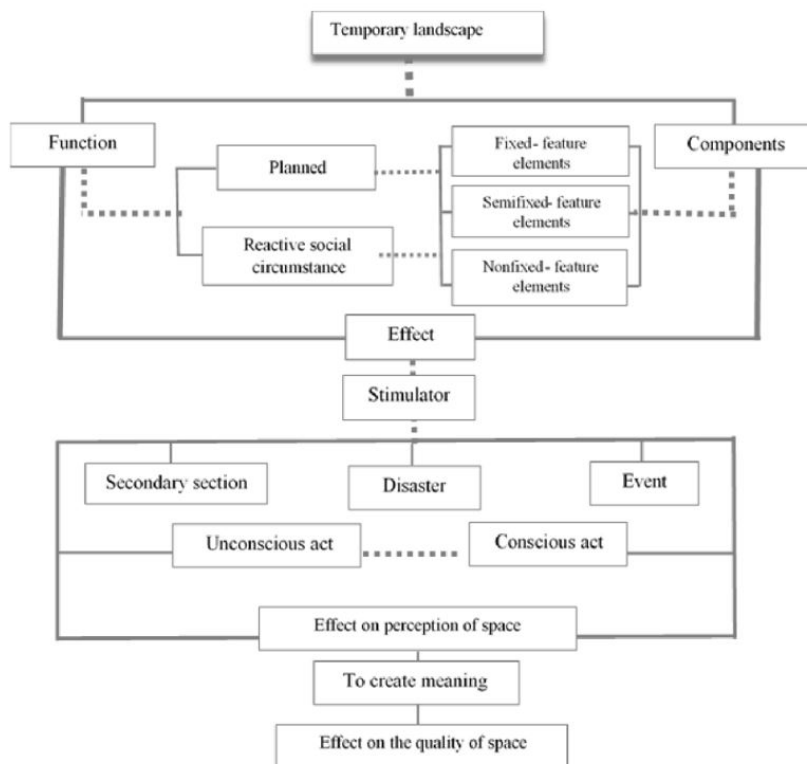


Fig. 2: Mechanism of temporary landscape and its effect on the quality of space

Table 2: SLeM's temporary landscape types and mechanisms

| Type | Elements | Operation mechanism | |
|--|---------------|--|---|
| Landscape based on location conversion | Place | Reconstructing the same landscape in different locations. | |
| Add an event landscape to the site | Event | By organizing events (art festivals, etc.) to attract residents to participate in them, thus arousing the vitality of the local society. | |
| A landscape in which the public is the main body and causes thinking | Citizen | By participating in the construction of a temporary landscape, the residents influence the site's psychological perception. | |
| | artistic work | Music | Art intervenes in the landscape through complete works, creative processes, and behaviors, thus giving the landscape additional functions: stimulating association, provoking contemplation, encouraging play, and promoting interactive performance. |
| | | Poem | |
| | | Literature | |
| Painting | | | |

make place-making of the Carpet according to their personal preferences to meet the needs of activities such as gathering, camping, resting, and Making friends, thus causing residents' social process. Compared with before, the temporary art landscape intervention makes the whole site more attractive (Figure 4), creates a space that residents prefer and are willing to stay in, and brings more vitality to the city.

Sickmann (2016) of Kansas State University proposed a framework pattern design strategy by analyzing Aggieville, Manhattan, Kansas. The activity framework was provided in the block without defining specific functions. Such a non-restrictive temporary landscape could effectively improve the attention and frequency of pedestrians to the public space. The Sasaki in Boston The Lawn on D project practice, the experiment is a success, a finite temporary landscape, projects in the future will be as commercial use idle land. Designers through the site construction surrounding institutions and harbor, the financial district, and the surrounding communities to integrate (Figure 5). Using asphalt and turf (paint), iconic furniture, and mobile devices to form temporary Spaces, visitors can enjoy mobile facilities as needed to create space. The temporary landscape in land for the construction period provides a powerful and flexible public space. The site can hold music festivals, weddings, table tennis, ice sculptures, and other activities (Figure 6). by building a highly flexible framework, the basis of the spontaneous participate in and guide the citizens a wide range of community participation process.

-Applied Field Research

The application of a temporary landscape involves many aspects. On the one hand, as a landscape with a specific time limit, it can be used as a transitional landscape in the field of urban construction to occupy the urban space to be built(Sickmann, 2016), bringing vitality to the city and causing people's desire for open space and participation. Besides, as

the spatial planning that affects urban fringe areas most affects the daily life, temporary landscape intervention in urban and rural fringe areas in the form of transitional landscape can play an excellent supporting role in understanding their social and biological processes(Qviström, 2007). On the other hand, temporary landscapes can also play an essential role in public health. Saginatari et al. (2018) studied the Indonesian community medical project "Posyandu." They found that the project's mobility elements had a more significant role in medical events. The general study of Posyandu as a temporary healthy landscape is more valuable for future public health landscape design. In other aspects, Todd et al. (2016) from the University of Guelph in Canada found that temporary landscape also has a specific application prospect in terms of ecology, and explored a phytoremediation strategy with the temporary landscape as the carrier for the restoration and regeneration of urban polluted idle land. The Danish SLA in Frederick west port industrial area Fredericia C program design is a good cause. The designer, with many mobile plant facilities, provides temporary recreational space (figure 7). The residents can move freely according to the demand and reform of the cultivation pool to meet different functions. At the same time, many plant environments are built for the growth of natural landscape conditions. The guide will gradually establish a new natural order by giving priority to temporary green plants in the landscape value, gradually to restore the contaminated harbor area into a new community and then into the urban space development.

Study on the Comprehensive Function of Temporary Landscape

This level of research has been started since 2000, covering four aspects of ecology, economy, society, and culture.

Ecological Function

Compared with most urban parks, temporary landscapes



Fig. 3: Rotterdam Shouwburgplein



Fig. 4: Comparison of art installation before and after placement

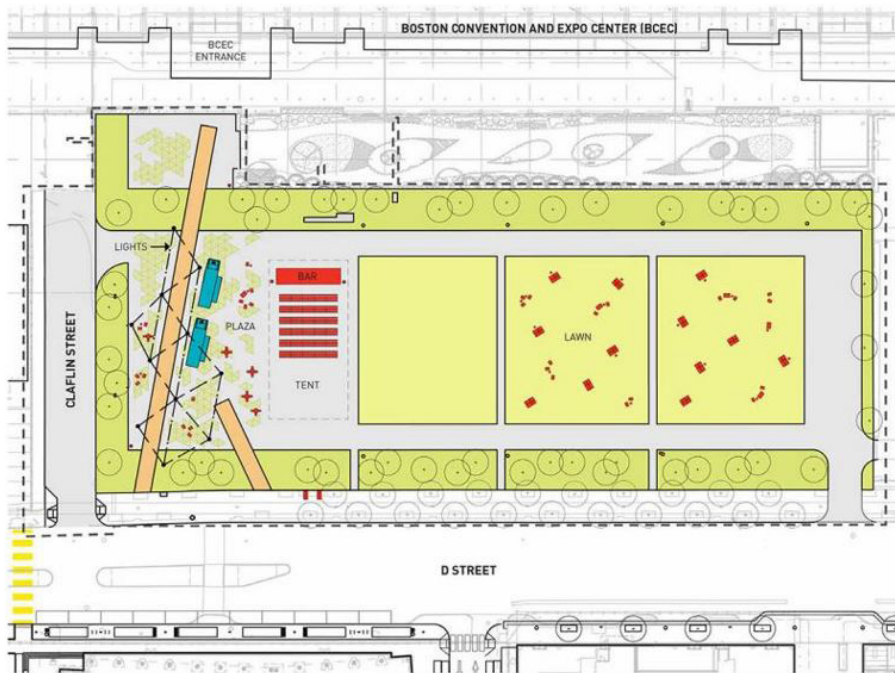


Fig. 5: The Lawn on D design by Sasaki

may not establish long-term ecological effects due to the limited time(Desimini, 2015). However, they can still play a positive role in improving the ecological environment and enhancing citizens' awareness of environmental protection. Golebieski (2019) found that ecologically sensitive temporary landscape facilities built with renewable energy materials

can play a positive role in alleviating the urban heat island effect and improving urban micro-climate through their research on urban mobile facilities. Adorján et al. (2015) studied the revitalization strategy of urban brownfields and pointed out the potential of building temporary gardens to restore the ecological environment. In addition, the temporary

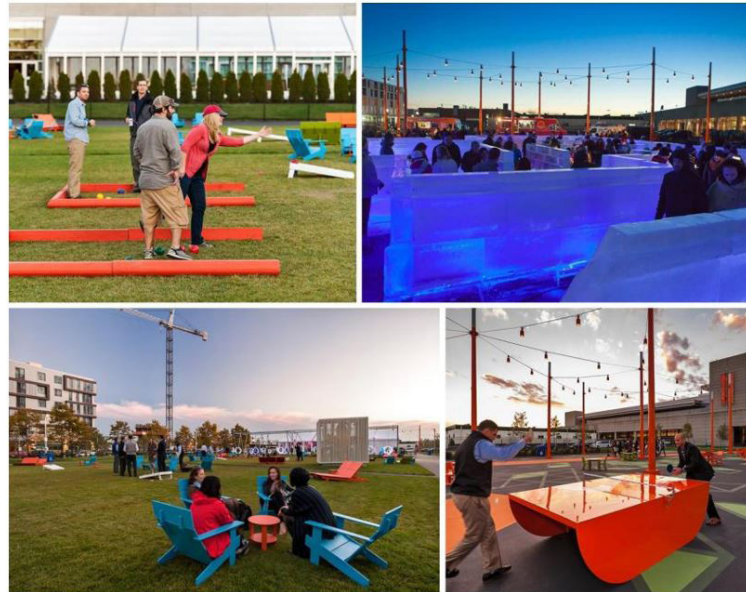


Fig. 6: Various events that can be held at the venue

landscape can not only generate ecological benefits on its own but also combine with other urban green spaces to form a connected green space network to exert ecosystem service benefits (Newman et al., 2017). Directly with the scholars of temporary landscape ecological studies, Aragon (2019) in Boston temporary landscape features High Tide study (Figure 8), found that by landscape plant visualization (Figure 9), the field precipitation change can improve the residents' attention to climate change, the sensitive degree of residents to improve the ecological environment.

Economic Function

At the same time, many plant environments are built for the growth of natural landscape conditions. The guide will gradually establish a new natural order by prioritizing temporary green plants in the landscape value. Gradually to restore the contaminated harbor area into a new community and then into the urban space development.

On the other hand, the temporary landscape's economic function is also reflected in solving the urban idle land problem. In the past few decades, parts of cities worldwide are abandoned



Fig.7: Fredericia C that guides natural reconstruction



Fig. 8: High Tide installation

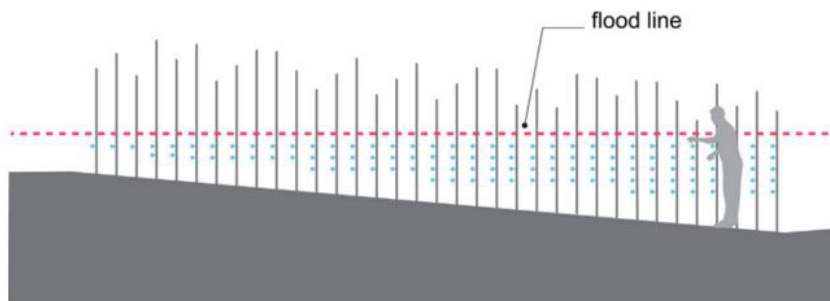


Fig. 9: Section drawing of High Tide showing site topography against future flood level

by suffered industrial decline, causing the decline of economic and aesthetic aspects of the (Waugh, 2011). abandoned land occupied a large proportion of the urban land, and temporary landscape through short-term idle land occupied the way for the city's structural transformation (Madanipour, 2017). at the same time, local city culture, and economy catalysis (Németh & Langhorst, 2014).

Sociocultural Function

The development of a temporary landscape not only enriches the landscape form but also serves as a new site for artistic creation (Gert & Frits, 2009), providing users with rich sensory experience and enhancing the local recreation value. More importantly, it has a beneficial impact on residents' lives. Residents are organized to participate in temporary events (construction section, etc.) (Figure 10), so as to promote the formation of neighborhood relations and activate urban space (Bowring & Swaffield, 2013), thus promoting the development of the whole society and culture. Moreover, the construction of a temporary landscape is closely related to the physical exercise of residents. Physical inactivity has become a global trend (Kohl et al., 2012), with about a quarter

of the world's population fails to meet the United Nations recommended targets for physical activity (Sallis et al., 2016). Studies have shown that provide convenience for residents' travel activity space, is an effective strategy to promote the development of physical exercise (Sallis & Glanz, 2009). For this reason, Salvo et al., (2017) use and sports of Pop-Up Park in Los Altos, California, USA Research on the activity model, and through statistical analysis, it was found that compared with traditional permanent parks, the construction of temporary parks can effectively enhance the community activities and social cohesion of the city center and play a role in promoting residents' sports.

Research Progress of Temporary Landscape in China

China's temporary landscape research started late, introducing the temporary foreign landscape's development vein directly as the "successor." Besides, with the frequent exchange of international information, many foreign research fields of the temporary landscape have been introduced into China rapidly. That can be generally divided into theory and practice research of temporary landscape and comprehensive function research of temporary landscape.



Fig. 10: "Forest of Imagination" contemporary arts event in Bath by Grant Associates

Research on Theory and Practice of Temporary Landscape

Theoretical Research

Most of the theoretical research on the temporary landscape in China is based on analyzing urban events. Zhang (2008) preliminarily summarized the temporary landscape's functions and characteristics by combing the garden exhibition landscape and introducing the mechanism of its fixed, semi-fixed, and mobile elements. Zhang (2011) elaborated on the origin and influence of the temporary landscape and summarized a temporary landscape's design characteristics against the sports events' background. In the study of temporary landscape types, Han et al. (2014) proposed a classification method of temporary festival celebration landscape, temporary sports grand event landscape, and temporary expo landscape according to the different types of events accompanied by the temporary

landscape. However, Cao (2019) analyzed the construction form of temporary landscape and then divided the temporary landscape into three types: proactive temporary landscape adapted to contemporary times, a systematic temporary landscape dominated by large-scale events, and temporary landscape with organizational effectiveness (Figure 11).

Practice Research

Domestic practical research on temporary landscape mainly focuses on three aspects:

1) Temporary landscape research is based on urban and rural events. The temporary domestic landscape is mostly built in the context of urban and rural events. Wang (2013) analyzed the Shanghai World Expo landscape and pointed out the development and transformation direction of temporary landscape in the "post-Expo" era. Yan & Zhang (2014) found that temporary landscape construction in commercial events

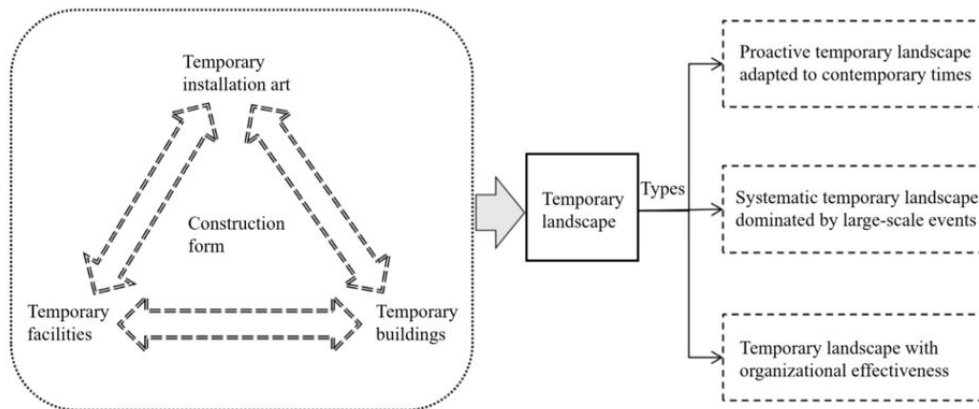


Fig. 11: Temporary landscape construction forms and types

not only promoted commercial value but also contributed to the display of landscape art value. By Dong (2019), associate professor of Tongji University, design the project "pastoral experiment" with a temporary site structure combined with the rice harvest season (Figure 12). by the designer, college teachers, and students and rural residents, the material, the surrounding farmers, rice growers to participate in building diversified activities, and on this basis was proposed based on specific farming, farming, agriculture section of temporary rural landscape design principles(Figure 13). The project not only provides a meeting place to serve different communities but also creates learning opportunities for both local community members and professionals.

2) Research on space construction of temporary landscape. Although there are some problems in the early stage of temporary landscape construction in China, such as lack of interaction and imperfect follow-up utilization(Li, 2017), the research on its space construction is also improving step by step. Based on foreign research results, some scholars briefly summarized the primary connotation and development process of temporary landscape space construction and proposed the method of temporary space construction with the help of topography, landforms, plants, and flowers (Li, 2018). Zhu et al. (2019) in the practice of children's activity space design. Through the use of puzzles, links, stacks, and deconstructive ideas combined with the concept of temporary landscape, the space design strategy of "intervention, regeneration, development, and green" is summarized, which will become a temporary space full of fun, communication, and play for children in site design.

3) Research on temporary landscape materials and technology applications. With society's development, temporary landscape design is closely related to advanced technology and new materials. In the temporary landscape design of the sales department of Suzhou Vanke Real Estate Project "Park,"

Zhang & Tang (2017) first used computer simulation and 3D printing and other technical means to build temporary children's entertainment facilities at the initial stage of the design. Yu et al. (2019) calculated the demand for the Hebei Garden Expo's temporary service facilities by using the method of measuring the number of service facilities based on the time difference, which provided specific reference significance for constructing the garden display landscape facilities. In the aspect of temporary landscape materials, precast concrete can be processed differently, which provides the material choice for temporary landscape facilities. Also, in the campus exhibition space design, Associate professor Dai et al. (2018) of Tongji University tried to use traditional Chinese wooden construction technology to construct a wooden construction landscape device. That can provide exhibitions, experiments, and activities, expanding the regeneration of traditional mortise and tenon joint technology in the temporary landscape.

Study on The Comprehensive Function of Temporary Landscape

The research on the comprehensive function of temporary landscape in China has only appeared in recent years. The research is relatively weak, but it also covers ecology, economy, culture, and society.

Ecological Function

Domestic research on the ecological significance of temporary landscape has gradually shifted from early costing(Ma, 2008)and maintenance management to ecological benefit research. Through the study of small and medium-sized green patches in Beijing, Lin (2016) found that the construction of temporary green patches could play a useful role in cooling and humidifying, thus effectively alleviating the urban heat island effect. Shi & Liu (2018), on the background of sponge city construction, preliminarily explored surface runoff relief



Fig. 12: Pastoral experiment "Rice field maze" site

Table 3: Comparison of temporary landscape studies

| Research perspectives | | Study on temporary landscape abroad | Study of Temporary Landscape in China | |
|---|---------------------------------|--|---|---|
| Theoretical research | Type research | Planing and Reactive | | |
| | | Event-based, Interim and Incremental | Temporary landscape based on festivals, sporting events and fairs | |
| | | 1) landscapes focusing on creating meaning by adding events to the site 2) landscapes based on location conversion 3) landscapes with the public as the main body and provoking thinking | 1) proactive temporary landscape adapted to contemporary times 2) systematic temporary landscape dominated by large-scale events 3) temporary landscape with organizational effectiveness | |
| | Mechanism research | Composed by fixed, semi-fixed and mobile elements | It is constructed by temporary buildings, temporary facilities and temporary installation art | |
| | | 1) Promote the interaction between people and environmental space 2) Promote social interaction between people in the community | | |
| | | It operates through the interaction between people, the environment and the arts | | |
| | Design research | The art discipline is involved in methods of temporary landscape shaping | Based on specific farming time, farming, farming festival temporary rural landscape design principles | |
| | | The method of designing temporary landscape with frame mode is proposed | Temporary Spaces are created with the help of topography and plants | |
| | | In the field of urban construction, urban space to be built is occupied | The space design strategy of "intervention, regeneration, transformation and green" | |
| | | Temporary landscape plays a guiding role in public health landscape design | Can use new technologies and materials (3D printing, computer simulation, precast concrete, mortise and tenon joints) | |
| Practice research | Ecological | Temporary landscape can be used for brownfield restoration | | |
| | | Relieve the urban heat island effect | Low cost and easy to maintain | |
| | | Improve urban microclimate | Cooling and humidification | |
| | | Restoration of ecological environment | Mitigation of surface runoff | |
| | | Form a green space network, increase landscape connectivity | Promote water circulation | |
| | | To sensitize the population to climate change | | |
| | Comprehensive function research | Economic | Increase land value | Expand business models to attract tourists to spend money |
| | | | Improve the chances of land being invested in construction | Generate ecosystem service value |
| | | | As a temporary display landscape, attracting crowds and driving economic growth | |
| | | | To solve the problem of urban idle land and pave the way for urban transformation | |
| | | Socioculture | Rich landscape forms | Provide a new space for learning and communication |
| | | | To provide a new stage for artistic creation | Provide a new venue for traditional culture |
| | | | Attract residents to participate and activate the urban space | Revitalize the Community |
| | | | Provide convenient travel space and promote physical exercise | Solve the problem of vacant land in cities |
| | | | To strengthen the vitality of communities and social cohesion in urban centres | |
| Promote the formation of neighborhood relationships | | | | |

RESULTS AND DISCUSSION

By systematically reviewing the planning and design, comprehensive benefits, and theoretical research of temporary landscapes (Table 3), it can be found that the overall research performance of China and other regions are quite different. China's research on temporary landscape types and operational mechanisms is still in the exploratory stage. There are certain similarities in temporary landscape planning and design and comprehensive benefits research, but other areas are comprehensive and in-depth.

Research Differences

The research differences between China and other countries on temporary landscapes are mainly reflected in:

1) China's internal theoretical research is insufficient. The international research on the typology, composition, and operation mechanism of temporary landscapes is in-depth, focusing on the micro-level analysis of the landscape; in contrast, the theoretical research on temporary landscapes in China mostly summarizes foreign research and the typology of temporary landscapes. The research is mostly limited to the internal classification of temporary landscapes in response to urban events. Most of the research on the composition and operating mechanism of temporary landscapes is similar and lacks in-depth thinking.

2) Planning and design research is relatively limited. International design researches range from design methods of temporary landscapes to research in application fields, focusing on the impact of urban residents and space. In contrast, Chinese research is mostly limited to temporary landscapes built in response to urban events, and the types are relatively single. The design method is also limited to a specific type of landscape, and the related literature mostly introduces the primary level of the project.

3) There is a significant gap in the research on the comprehensive benefits of the landscape. Studies in other regions of the world have shown simultaneous progress in ecology, economy, culture, and society, combining qualitative and quantitative methods. Among them, researches on ecological benefits, activating urban space, and handling idle land are prominent, although Chinese studies also cover four aspects. However, most of them are qualitative analysis and introduction, and there is a lack of quantitative research on ecological benefits.

CONCLUSION

From the perspective of global research on temporary landscapes, in the future, the theory and practice of temporary landscapes will mainly have the following research hotspots and development trends:

1) Research on interrelationship and mechanism of the temporary landscape.

In recent years, the urban transformation has become the

central theme of the renewal and transformation of urban stock space. A Temporary landscape can reshape senior communities' spatial vitality. Under this background, the research on the interaction between the community and the temporary landscape will help understand the temporary landscape's effect on the community's renewal. The mechanism of action is to tap the creativity in daily life, thereby making it a means of urban renewal. A thorough study of its mechanism is conducive to adjusting and optimizing the spatial layout of the temporary landscape and the realization of more open and Shared participatory community construction goals.

2) Research on temporary landscape ecological management strategies based on ecosystem services.

In recent years, the urban natural ecosystem's gradual restoration has become an important goal during the urban construction period. In-depth research on temporary landscape ecological governance strategies based on ecosystem services can not only achieve the guiding role of ecological governance but also help maximize the value of ecosystem services.

3) A more systematic and diversified theoretical study of temporary landscapes.

Generally speaking, the temporary landscape study is relatively limited and straightforward, and the subject span is relatively single. It is urgent to strengthen theoretical innovation continuously. Therefore, in the face of world cities' future development, we should continue to learn from and apply the theories and methods of sociology, architecture, ecology, art, and other related disciplines. While attaching importance to empirical research, strengthen the research on the theoretical framework of temporary landscapes from different perspectives of various disciplines, and pay attention to the research of the mechanism behind temporary landscapes' operation.

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