

Public Squares: The Importance of Seasonal Strategies

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Abstract

The public square is one of the most crucial elements in urban design. And seasonal measures play a very important role in the design of public squares in cities. This study summarises several aspects of seasonal design measures, including the specific timeliness of social events, the seasonal growth of the planting landscape in public squares, and sustainable design that is compatible with the seasonal climate. It also analyses the role of seasonal measures in the design of public squares by analysing seasonal design strategies in the renovation of Shanghai People's Square. It reminds urban designers of the importance of considering seasonal measures in their work.

Keywords

Urban design; Pubic square; Seasonal strategies.

1. Introduction

The public square is one of the most crucial elements in urban design. This is probably the most significant way to design a good environment for public buildings and commercial buildings in cities. A square or a plaza is an area surrounded by buildings and an area designed to maximize the display of the surrounding buildings. [1] Such as St. Mark's Square in Venice, St. Peter's Square in Rome, and the group of squares in Bath. In modern cities, squares play a very important role in the context of urban design, which can provide the space functions needed by the city. According to Moughtin [2], the most successful urban squares are those that maintain activity through a variety of uses in accordance with the surrounding environment. This essay will pay particular attention to the importance of seasonal strategies in public squares, the impact of seasonal measures on user activities at different times of the season and the effect on the urban environment. To further understand this, this essay analyzes the seasonal strategies of People's Square in Shanghai, China, a public square located in the heart of the city, and how its strategies affect activities of users.



Figure 1. The Old Market Square, Nottingham

2. Literature Review

2.1. Introduction

A successful public square cannot flourish on a single design or management strategy. Many different strategies contribute to the use of public square space from one season to the next. This literature review will be divided into three parts to elaborate seasonal strategies, including landscape, activity and environmental thermal comfort.

2.2. Activities - Social Interaction

The activities of the users of the square are specific, and it would be inappropriate to attempt to transfer a design concept that might be valid at a particular time or season to a completely different context. In many modern cities, for example, large office buildings or large shopping areas are left empty when their only activity is stopped, leaving large areas of the city inactive at night. Therefore, if the public square space is to be used effectively, it is important to pay attention to the activities of the users during each season or time.

Old Market Square (Figure 1 and Figure 2) in Nottingham is a good example. Nottingham Old Market Square is one of the largest public Spaces in the UK and is the historic heart of the city. In the past, residents did not use the square, especially its central area. But it has been redesigned to support lively and diverse activities that make up for this weakness. On special festivals, the square will be full of activities. In the summer, for example, the square holds a beach festival, where residents can bask in the sun, play in the water and have a cold drink. During the winter season, there is a Christmas market (Figure 3), with Ferris wheels or swings, and lots of interesting stalls. Trafalgar Square (Figure 4) in London is also such an excellent case. A variety of activities make it one of the centers of political and cultural activities for London citizens.



Figure 2. Old Market Square, Nottingham, 1928 [3]



Figure 3. Christmas market [4]

According to Paul Zucker, "Public squares are places that make communities social. A place where people meet, where they become civilized and humanized through contact and communication, the square provides a shelter and an island of safety from the dangers of traffic, and a place where people can regain safety and freedom in the busy urban traffic network." Thus, the space provided by the public square for the activities of residents is very important, and the planning of activities in conjunction with specific seasons is very important for the vitality of the public square.



Figure 4. Trafalgar Square

2.3. Landscape and Vegetation– Visual Attraction

Activities is important to the vitality of a square, as is its visual appeal [5]. The landscape of the square not only brings a beautiful environment, but also reflects the characteristics of the city and enhances the overall image of the city. In a broad sense, the landscape of the square can be regarded as the emotion expression of designers to the specific environment [6].

And the choice of landscape vegetation must be considered to create a good visual attraction. In the landscape design of the square, plants with their constantly growing and different shapes in different seasons form a variety of scenes in the square, making the shape of the urban landscape often take on a new look. However, the climatic characteristics of different seasons determine the limitations of planting landscape plants. For example, most broad-leaved trees have bare branches after losing their leaves in winter, which makes the winter landscape relatively monotonous and reduces the attraction of the square landscape [7].

Therefore, in landscape design, designers should consciously organize characteristic plants in different seasons to form a landscape with seasonal characteristics, so that all seasons have landscape attraction. For instance, in summer, when the solar radiation is strong, the shading provided by plants is very valuable for the residents who are active in the square, so a certain number of broad-leaved trees with large canopy must be selected in the landscape design. Some trees, such as Albizzia julibrissin, bloom in summer and, if used in the square, add color to the landscape while providing shade. In addition, in the summer, water that absorbs the same amount of solar radiation heats up more slowly than land, creating a cooler microclimate around the water. Therefore, water is a popular sight in summer. It was important to add a water landscape to the public square to increase the attraction of the square [8].

In general, creating the landscape of public squares according to the climate characteristics of different seasons can not only increase the visual attraction of the square, but also improve the microclimate of the square space, to make it more harmonious into the natural environment, more conducive to the needs of users, making it a more successful square. This is an indication of the importance of seasonal strategies.

2.4. Sustainable Design– Outdoor Thermal Comfort

In urban design, it is important to pay attention to the seasonal thermal comfort of urban outdoor places to improve the quality of life of urban residents. What attracts people in urban public spaces are well-designed spaces with a high stay value, and those public spaces contribute to livability of the city [9]. The living quality of urban public space depends on many factors, among which thermal comfort is an important one [10]. Public spaces that do not provide thermal comfort are often underutilized or even avoided.

The seasonal climatic conditions of a region, including atmospheric elements such as temperature, relative air humidity, rainfall and wind, are one of the main factors that determine the comfortable conditions of thermal environment. Rapid urbanization in recent decades has replaced a large number of plants with artificially constructed impervious surfaces [11]. These changes exacerbate heat discomfort and impair the quality of life of residents, such as the heat island effect (Figure 5). According to Sun's research [12], the heat island effect leads to increased climate and biological risks in urban environments, including heat stress and increased exposure to atmospheric pollutants. However, there is evidence that the heat island effect changes with the seasons throughout the year [13], because vegetation helps to reduce the summer temperature of the microclimate and can also increase the winter temperature of the microclimate by reducing the winter exposure. Therefore, if a large area of a public square is covered with artificial surfaces, it will lead to excessive microclimate temperature in the summer, which is obviously not conducive to mitigating the urban heat island effect. This seasonal strategy gives designers an important guide to balance vegetation and artificial surfaces.

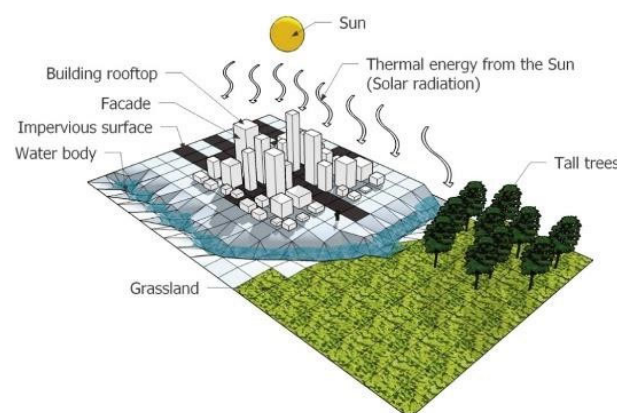


Figure 5. Conceptual UHI model [14]

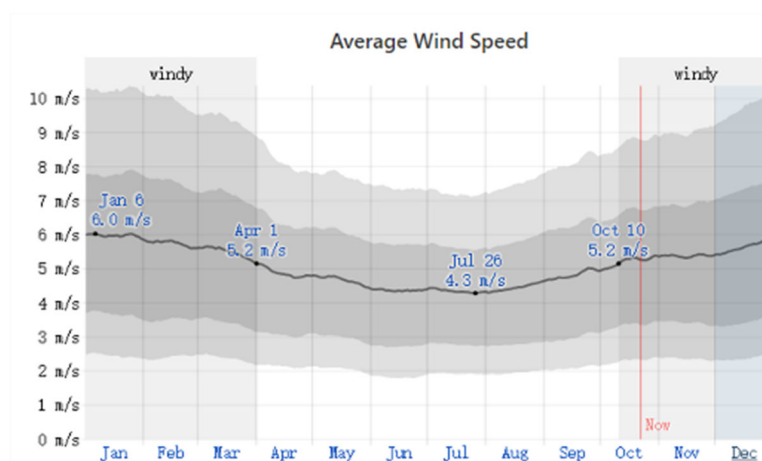


Figure 6. Wind speed data in Nottingham [15]

In addition, if a public square is to meet the requirements of acceptable human thermal comfort in winter, attention must be paid to the microclimate temperature not too low, otherwise the square will give residents a cold feeling, which will reduce its attraction to residents. Take Nottingham for example, the average wind speed (Figure 6) in Nottingham in winter is at a very high level. In such an opening space as a public square, if there is no wind shelter, the microclimate temperature of the square will soon decrease [16], which is not conducive to the thermal comfort requirements of human body.

To sum up, in the design of a sustainable public square aimed at meeting the thermal comfort requirements of human body, to achieve year-round effectiveness, all design approaches must consider the effects of seasons.

3. Case Study

3.1. Introduction

Shanghai People's Square, the political, economic, cultural, tourism center and transportation hub of Shanghai, is also one of the most important landmark buildings in Shanghai. People's Square was built by colonists in the 19th century as a horse-racing hall for gambling and enjoyment. After liberation (1954), the mayor decided to transform the racecourse hall into People's Square (Figure 7). In 2008, the city government decided to redesign the People's Square.

After the renovation (Figure 8), the area of the square reached 140,000 square meters. To the north of the square is the seat of the Shanghai Municipal Government, to the northwest is the Shanghai Grand Theatre, to the northeast is the Shanghai Urban Planning Exhibition Hall, and to the south is the Shanghai Museum. A 17-meter-wide green belt is set on both sides of the square, with a total green area of 80,000 square meters.

This part of this essay is to analyze the People's Square according to the viewpoints in the literature review above.



Figure 7. People's Square, 1995 [17]



Figure 8. People's Square, 2008 [18]

3.2. Activities – Social Interaction

Before the renovation, People's Square was modeled after the basic layout of Tian'anmen Square, and its main function and activities of residents were political gatherings without seasonal requirements. After the renovation project started, the square was given more cultural,

leisure, people-oriented concepts. The needs of city residents for seasonal activities are also taken into consideration.

In contrast to the National Mall in front of the White House and the Capitol in Washington DC, the surrounding buildings are exquisite and there is a large lawn in the middle. However, such a large green space is off-limits for people to enter and use, so social activities will not occur.

In order to make the People's Square a successful and attractive public square, the residents' seasonal activities within the space were first considered. For example, Chinese people like to gather in the square to do square dancing in summer (Figure 9). The People's Square provides some flat and unshaded space for residents to use. Before and after the Lunar New Year (Figure 10), residents will celebrate the New Year in the square, and many traditional markets are held here, including selling Spring Festival couplets, fireworks and crackers. In addition, during Valentine's Day in the spring, many young residents will carry out activities to find suitable partners.



Figure 9. Square dancing in summer [19]



Figure 10. Lunar New Year Celebrations in the Square [20]

These varied seasonal activities have transformed People's Square from a sleepy and unused space into the cultural center of Shanghai today. With such rich activity content, people of different levels have a sense of spiritual identity and desire to participate, so the People's Square shows vigorous vitality and becomes the source of the vitality of the city. In this respect, the proper use of seasonal activities has made People's Square a successful urban space.

3.3. Landscape and Vegetation – Visual Attraction

Seasonal strategies have also been considered in the design of People's Square, in creating the visual appeal of the square through landscape design.

Shanghai is located in the subtropical region, where the climatic conditions are suitable for the growth of most plants. After the renovation, the green area of the square has been increased from 20% to 75%, creating an "urban forest" atmosphere in the landscape. The relaxed and pleasant landscape atmosphere brought by the high greening rate also attracts a large number of residents to come to relax and use the public square.



Figure 11. Landscape in People's Square[21]

The main functional space of the square is close to the surrounding main roads, so the landscape inside the square (Figure 11) is dominated by lawns, flowers and shrubs. The visual effect is open and clear, and the landscape changes are rich throughout the year. Evergreen trees 40-60 meters wide will be set on the surrounding main roads (Figure 12) to form a green barrier. In the summer, a large continuous canopy of trees forms the skyline of square, attracting users to this area.



Figure 12. Trees along the main road [22]

On the main axis connecting the municipal building and the museum, a large green space of 62 X 62 meters is planted with different flowers that bloom according to the season. In this way, with the change of the four seasons, the color of the main green space also changes, providing users with a variety of visual effects, making the landscape of the whole square more colourful. In other green Spaces, some seats, sports equipment and other facilities are equipped with deciduous trees, which not only guide users to use them, but also protect them from solar radiation in summer. In winter, when the leaves of the trees fall, people can enjoy the sunshine while using these facilities. At the same time, some water landscapes are set in the square to attract residents to escape the heat in summer.

In general, these reasonable seasonal plants landscape configurations also enhance the attraction of People's Square to residents.

3.4. Sustainable Design – Outdoor Thermal Comfort

As a large public space in the center of the city, People's Square also makes a great contribution to the regulation of the city's seasonal microclimate. In People's Square before 2008, about four-fifths of the area was covered by artificial hard paving. As a result, in summer, the rainy season in Shanghai, the rainwater cannot quickly penetrate into the underground, causing serious urban waterlogging disasters. In addition, the large area of space without vegetation cover also creates a significant heat island effect in the hot summer. According to meteorological records, the average temperature in the People's Square area in summer is significantly higher than the average temperature in Shanghai.

After the renovation of People's Square, the green area has been quadrupled, and the square, which did not have the function of seasonal climate regulation, has been transformed into the "green lung of the city". Meteorological records show that after the renovation of the square, the area around the square experienced less flooding during the rainy season, and the temperature of the microclimate was significantly lower than the average temperature of the urban area. Residents prefer to come to People's Square to cool off in the summer.

Meanwhile, the new People's Square features a glass roof for the subway transfer hall below (Figure 13), with tall trees planted around the glass outcrops. In this way, the light condition of the subway transfer hall is improved, and the interior of the hall is not overheated in the summer due to the shade of the trees. In winter, when the leaves fall, sunlight enters the hall to help heat the interior. In the public activity area, some sunken spaces are designed in the square, so that in the cold winter, the wind speed in the sunken space drops a lot because of the shielding of the wall, and the thermal comfort of the human body in these areas will also be within a relatively comfortable range.



Figure 13. Subway transfer hall[23]

Through the study of seasonal climate characteristics, the design of People's Square adopts some of the above seasonal strategies to keep the thermal comfort of human body within an acceptable range throughout the year.

4. Conclusion

In conclusion, the literature review explains the importance of seasonal strategies for public squares through three specific reasons. A variety of seasonal activities, a seasonally appropriate landscape design and a sustainable design based on seasonal climate characteristics are required to combine to create a successful plaza space.

Ashihara, Y. mentioned in the book, *Exterior design in architecture*, "space design can guide the behavior of users", so a good city square need not only spontaneous activities of residents to stimulate the vitality of the square space, reasonable seasonal strategy used in the design can also make the square become more attractive, more successful urban space.

The renovation design of People's Square in Shanghai has brought new life to the previously nearly abandoned urban space, making it a public square suitable for different seasonal activities. This is a good example of how this space can provide a perfect experience for its users, regardless of the season, which proves the importance of the proper use of seasonal strategies in the public square.

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References

- [1] M. Webb: The city square: a historical evolution (Whitney Library Of Design, USA 1990)
- [2] J. C. Moughtin: Urban design: street and square (Architectural Press, UK 2003)
- [3] Information on: <http://www.nottshistory.org.uk/monographs/nottinghammarketplace/marketplace1.htm>
- [4] Information on: <https://www.nottinghampost.com/whats-on/whats-on-news/nottinghams-christmas-market-ice-rink-764256>
- [5] T. Farrell: Terry Farrell : Urban design (Academy Editions, UK 1993)
- [6] J. A. Flannery and K. E. M. Smith: Urban landscape design (Kempen, Germany 2008)
- [7] E. Andersson: Urban Landscapes and Sustainable Cities, Ecology and Society, Vol. 11 (2006) No.1, p.34.
- [8] J. Hitchmough and J. Woudstra: The ecology of exotic herbaceous perennials grown in managed, native grassy vegetation in urban landscapes, Landscape and Urban Planning, Vol. 45 (1999) No. 2–3, p. 107–121.
- [9] M. A. Hajer, A. Reijndorp, A. May, and Els Brinkman: In search of new public domain : analysis and strategy (Nai Publishers, Netherlands 2001)
- [10] I. Eliasson, I. Knez, U. Westerberg, S. Thorsson, and F. Lindberg: Climate and behaviour in a Nordic city, Landscape and Urban Planning, Vol. 82 (2007) No. 1–2, p. 72–84.
- [11] P. P.-Y. Wong, P.-C. Lai, C.-T. Low, S. Chen, and M. Hart: The impact of environmental and human factors on urban heat and microclimate variability, Building and Environment, Vol. 95 (2016) No.1, p. 199–208.
- [12] S. Sun et al.: Evaluating the impact of urban green space and landscape design parameters on thermal comfort in hot summer by numerical simulation, Building and Environment, Vol. 123 (2017) No.1, p. 277–288.
- [13] C. Rinner and M. Hussain: Toronto's Urban Heat Island—Exploring the Relationship between Land Use and Surface Temperature, Remote Sensing, Vol. 3 (2011) No. 6, p. 1251–1265.
- [14] B. Chun and J.-M. Guldmann: Impact of greening on the urban heat island: Seasonal variations and mitigation strategies, Computers, Environment and Urban Systems, Vol. 71 (2018) No. 1, p. 165–176.
- [15] Information on: <https://weatherspark.com/y/41783/Average-Weather-in-Nottingham-United-Kingdom-Year-Round>
- [16] P. Zucker: Town and Square : from the Agora to the Village Green (Mit Press, UK 1973)
- [17] Information on: <https://rmh.pdnews.cn/Pc/ArtInfoApi/article?id=11747949>
- [18] Information on: <https://rmh.pdnews.cn/Pc/ArtInfoApi/article?id=11747949>
- [19] Information on: <https://you.ctrip.com/travels/bole922/1947366.html>
- [20] Information on: http://dl.wenming.cn/08/201702/t20170206_4403895.htm
- [21] Information on: <https://baike.baidu.com/pic/%E4%B8%8A%E6%B5%B7%E4%BA%BA%E6%B0%91%E5%B9%BF%E5%9C%BA/3859538/1/b999a9014c086e061a3d03130d087bf40bd1cbd4?fr=lemma&ct=single#aid=10011000000&pic=4d086e061d950a7b99e3ff8e08d162d9f3d3c9a2>
- [22] Information on: <http://tianqi.moji.com/liveview/picture/76704954>
- [23] Information on: <http://guidebook.youtx.com/Info/309342/>