

The New Roles and Significance of Public Open Spaces in Cities in the Post-pandemic Era

Zhenghui Zhao *

College of Architecture, Xi'an University of Architecture and Technology, Xi'an, China

* Corresponding Author Email: zhaozhenghui@xauat.edu.cn

Abstract. The outbreak of the COVID-19 pandemic has caused many changes in society, and people's living habits and needs have also changed as a result. Traditional urban spaces are no longer able to meet people's demand for spatial openness today. However, public open spaces, as an important component of cities, have great potential in the post-pandemic era due to their combination of public and openness. Therefore, this article aims to study its new functions in cities in the post-pandemic era. By analysing previous research results and practical cases, this study explores the new roles and significance of public open spaces in neighbourhoods, public health, and commercial economy. Through research, it is found that in the post-pandemic era, public open spaces can serve as new social spaces in neighbourhoods, effectively alleviate the pressure in public health, and promote economic recovery and development in the commercial economy. These research findings not only indicate that public open spaces will play an important role in the post-pandemic era, but also enable people to learn how to utilize public open spaces more efficiently.

Keywords: Public open space; post-pandemic era; neighbourhood; public health; commercial economy.

1. Introduction

From ancient times to the present, public open spaces in cities have always been a hot topic in the fields of architecture and sociology. Builders and architects of various eras are exploring the relationship between cities and humans. Public open spaces are widely concerned because they are different from other spaces in the city. Compared to more private spaces such as residential and office buildings, as well as functional transportation spaces such as roads, public open spaces emphasize more on publicness and openness (publicness indicates that its users are all urban residents, while openness indicates that it is open to citizens all day long, and also indicates that it is connected to the natural environment). Therefore, they have greater significance for cities. However, with the development of urbanization, office buildings, apartments, and commercial centres have dominated the vast majority of urban land space, leaving residents with increasingly scarce public open spaces and forcing a change in their way of life (people spend almost all day indoors). Although architects have correspondingly set up many public spaces indoors (such as atriums), these places lack communication with the outside and nature (lack openness), so they are not ideal solutions, nor the type of urban spaces we want.

People are increasingly aware of the importance of public open spaces in cities, especially in the post-pandemic era. Whether they are used as venues for virus testing and vaccination during the COVID-19 pandemic, or as key objects of urban renewal in the post-pandemic era. The roles of public open spaces in cities will no longer be purely squares or parks, but comprehensive spaces with more social functions.

Although the naming of public open spaces in cities varies in different eras, research on them has been ongoing for a long time. As early as Le Corbusier discussed the importance of urban squares and greenery for cities in *the three human settlements* and *Urbanism*, he even proposed the idea of building 95% of the green area in the city centre [1, 2]. However, this is only a vision of future cities from a modernist perspective, lacking reflection on reality. Therefore, it has not been realized. In the second half of the 20th century, Jane Jacobs's discourse on the safety of streets and communities, as well as Yoshinobu Ashihara's discourse on the aesthetics of streets and urban greening, both provided

important references for urban construction in the 21st century [3, 4]. However, they only focused on the role of public open spaces in a certain part of the city, with a small research scope and overly one-sided conclusions, which cannot meet the needs of contemporary big cities.

Since the 21st century, research on public open spaces has never stopped. In *Urban open space in the 21st century*, Catherine Ward Thompson outlined the requirements for urban public space in the 21st century and discussed its relationship with sustainable development [5]. In *Compact spray: Exploring public open space and controls in urban density*, Alexander Stähle explores the possibilities of street networks and public open spaces in high-density cities [6]. The outbreak of the COVID-19 pandemic has prompted people to rethink public health. Public open spaces, as buffer zones in cities, have been given greater attention. In *Inclusive public open space for all: Spatial justice with health considerations*, Izzy Yi Jian et al. believe that public open space is one of the most important public health assets and a necessity in everyone's life [7]. In *how accessible are nearby open spaces? Control of public space and its management in contemporary cities*, Rajjan M. Chitrakar et al. believe that public spaces must be accessible to residents [8]. However, the scope of these studies is still relatively limited, without discussing the new role of public open spaces in the post-pandemic era and their new role in society from a more comprehensive perspective. Based on these studies, this article aims to discuss the new roles and significance of public open spaces in cities for neighbourhoods, public health, and commercial economy from the perspective of the post-pandemic era, and to rethink what kind of public open spaces are needed in cities.

2. What Are Public Open Spaces

2.1. The History of the Development of Public Open Spaces

Whether it's the square in front of the office building, the courtyard between buildings, or the park, public open spaces have already spread throughout cities and are integrated into our daily lives. However, to better study the roles of public open spaces in today's society, it is important to understand their development history.

The concept of public open spaces can be traced back to the ancient Greek period [9]. Thanks to the democratic politics of ancient Athens, there was a square called Agora in the city at that time, where citizens gathered to discuss political matters. During the ancient Roman period, Agora gradually evolved into a Forum and added commercial functions, becoming a commercial centre in the city at that time [10]. It can be seen from this that the initial public open space was generated by democratic politics and served as a place for people to participate in politics and exercise their rights at that time. The public open spaces had strong political significance.

During the middle Ages, social thought was controlled by the church. A large number of churches have been built and occupy the centre of the city. Therefore, the main public open space at that time was the affiliated square in front of the church [9]. These spaces have a very limited function, serving only as places for religious ceremonies and parades, rather than places for citizens to freely move around.

During the Renaissance, emerging ideas broke the monopoly of the church and social dominance was restored to citizens. Meanwhile, due to the needs of democratic regimes, the outdoor plaza enclosed by the city hall has become the main public open space. This kind of space was not only the centre of the city at that time, but also a symbol of the public spirit of that era [9]. This significant change signifies that public open spaces have truly gained publicness and become a part of urban life, but still lack openness to all classes.

After the Enlightenment Movement, modern public open spaces were further developed. During this period, public open spaces paid more attention to tolerance for differences and dialogue between different classes. They were no longer privileges of a certain class, but shared spaces among different classes [9].

It is through this series of developments that public open spaces in cities have gained diverse forms and functions. They not only serve various classes and groups in society, but are essential to social

life and its various activities. The development history of public open spaces reflects not only the progress of urban space, but also the progress of society.

2.2. Characteristics of Public Open Spaces

Nowadays, although public open spaces vary in size and function, their characteristics are consistent.

Firstly, the greatest characteristic of public open spaces is their public nature. Unlike private spaces, these spaces are provided for everyone to use, regardless of class or gender. Therefore, in such spaces, people can engage in open and equal activities. Due to the existence of different and complex groups in this space, activities are often diverse. But inevitably, there are connections and interactions between individuals. So, in public spaces, people can seek self-identity through differences or create spiritual resonance with others [11].

Secondly, it is openness. This openness is not exclusive to certain individuals or groups, but is open to everyone. It's not like shopping malls that are open for a certain period of time, but rather open to the public all day long. Under such circumstances, open spaces make cities more inclusive and provide more possibilities for people's activities [12]. Openness also means openness to nature. The indoor space is extended to the outside, allowing people to interact with nature even in the city. Due to the dual characteristics of public and openness, public open spaces have always played important roles in cities. From ancient squares for political purposes to inclusive spaces serving everyone today. Public open spaces have witnessed the development and progress of human civilization.

3. The New Role and Significance of Public Open Spaces in Neighbourhoods

3.1. A New Social Space

Since the outbreak of the COVID-19 pandemic, almost everyone has experienced days of lockdown. One of the reasons for the lockdown is that high-density urban environments can exacerbate the spread of viruses. However, not everyone can get used to a life of lockdown. In this situation, people not only lose economic income, but also social skills. Research has shown that long-term lockdowns have led to an increasing number of people becoming distant from social interactions and worrying about social interactions. Therefore, in the post-pandemic era, one of people's greatest needs is high-level social activities [13]. In this context, the significance of public open spaces in a neighbourhood is obvious.

From the perspective of architects, the design of urban spaces should not only follow people's living habits, but also intervene in their habits in some form, allowing people to develop a better way of life. During the COVID-19 pandemic, in some low-density residential areas, residents spontaneously transformed urban spaces such as streets and parking lots that originally had no social functions into social spaces, and conducted new social activities in these spaces [14]. In the post-pandemic era, people are also more eager to socialize in outdoor spaces that are naturally connected (especially residents living in high-density cities). Therefore, building more public open spaces in cities can not only meet the needs of the masses, but also promote public open spaces to become a new type of social space, providing residents with more social opportunities and ways to connect.

Compared to traditional enclosed spaces. On the one hand, public open spaces can alleviate the psychological anxiety caused by the lockdown during the pandemic, allowing people to socialize more relaxed. On the other hand, in future similar public health crises, more public open spaces can allow people to enjoy a certain social life while maintaining a safe distance [15].

4. The New Roles and Significance of Public Open Spaces in Public Health

4.1. Public Open Spaces and Physiological Health

The outbreak of the COVID-19 pandemic has made everyone realize that traditional enclosed spaces can no longer meet today's public health needs. During the pandemic, opening windows for ventilation has become the only means for people to cope with public health crises in public places. However, people quickly realized that population density is an important factor in virus transmission [16]. Adding atriums in buildings or public open spaces in cities are two effective ways to reduce crowd density.

Indoor spaces are relatively enclosed, making it difficult for air to circulate. When the density of human flow increases, it is easy to aid the spread of viruses. Adding an atrium to a building can effectively reduce the density of crowds, but indoor air is still difficult to circulate, as shown in Figure 1 below. Therefore, this method cannot achieve the goal of preventing the spread of the virus, and may even increase the risk of infection [17].

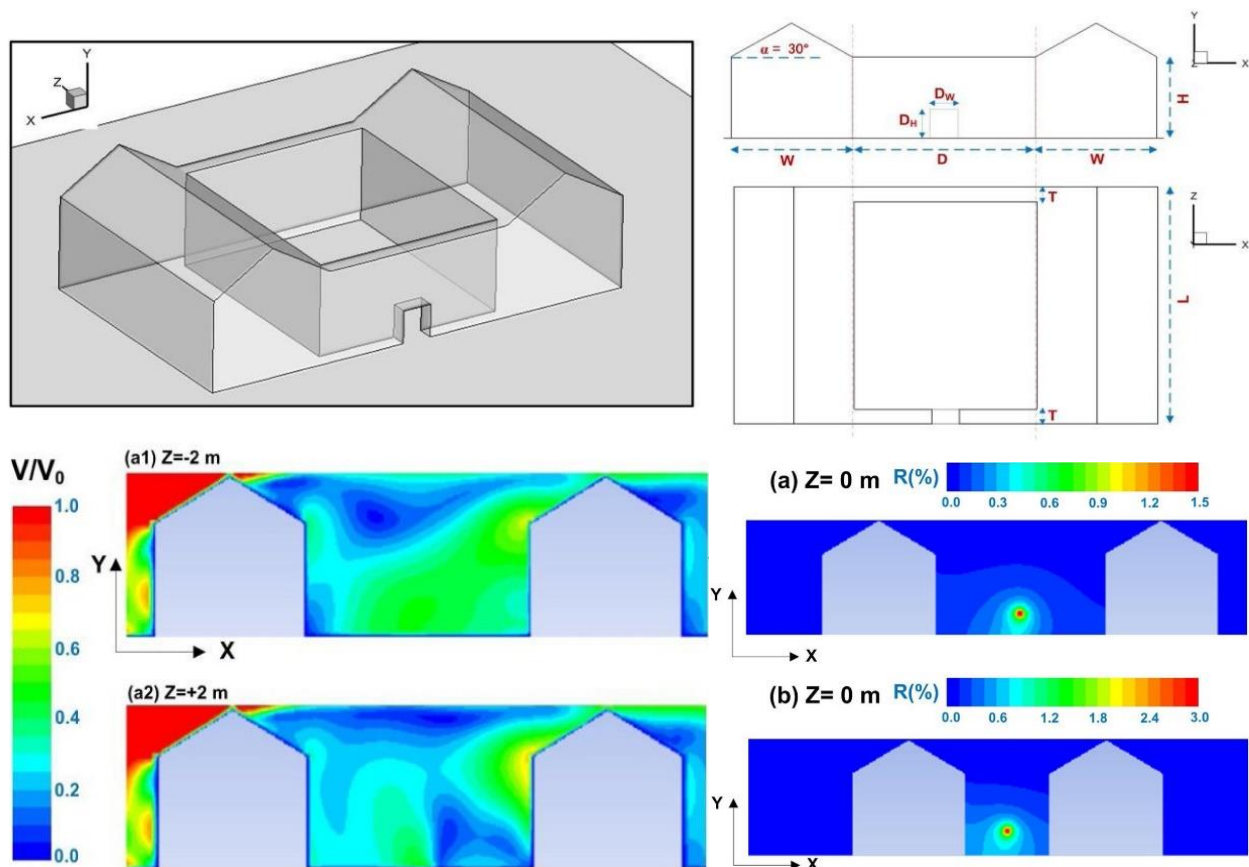


Fig 1. Virus concentration in the atrium (windy on the left, no wind on the right) [17].

However, public open spaces, due to their unique characteristics, can ensure air circulation and renewal while maintaining lower population density. In this way, the spread of the virus is greatly weakened. Meanwhile, many public open spaces serve as transitional zones between indoor space and nature, providing better protection for those working indoors.

4.2. Public Open Spaces and Mental Health

In the post-pandemic era, public open spaces are considered one of the most important public health assets and a necessity in everyone's life. Because it not only benefits people's physical health, but also contributes to their mental health [7]. Research has shown that after the peak period of the COVID-19 pandemic outbreak, people's sense of happiness and self-rated health will become better due to entering public open spaces [15].

This is because, compared to traditional urban spaces, public open spaces can provide people with more opportunities for socializing, sports activities, and relaxation, thereby alleviating people's psychological pressure. Meanwhile, studies have shown that the closer people are to public open spaces, the easier it is for them to take advantage of them [15]. Therefore, public open spaces in cities should be more common. Perhaps their scale is small, but they can provide people with enormous emotional value.

Public open spaces can not only slow down the spread of viruses during the pandemic, but also effectively alleviate the tension caused by lockdowns. It is not only a precious public resource in the post-pandemic era, but also provides new ideas for future public health protection.

5. The New Roles and Significance of Public Open Space in Commercial Economy

5.1. Providing A New Business Model for The City

After the COVID-19 pandemic, the global economy fell into a downturn, and many businesses were on the brink of bankruptcy. In order to restore the economy and provide more business opportunities, many countries have begun to develop street vendor economies. However, street vendors are difficult to manage due to their strong mobility. Also, because street vendors often gather in densely populated areas, if they are not properly controlled, they will disrupt traffic and cause inconvenience [18].

However, as an independent area in the city, public open spaces have both large open spaces and high pedestrian density. If public open spaces are combined with the street vendor economy, the above problems can be well solved. OōEli Art Park in Hangzhou, China, is a good example (Figure 2). As an atypical commercial complex, OōEli Art Park is surrounded by 17 individual buildings. The central square is used to operate street stalls. The existence of street vendors extends the indoor commercial space to the outdoor, not only expanding the original commercial space, but also providing vitality for the street vendor economy. On weekends, the square will hold a market event. Here, some cheap and unique small items will be sold. Therefore, it can not only attract young people to come and consume, but also perfectly solve the issues of space management in the street vendor economy.



Fig 2. OōEli Art Park [19].

In the post-pandemic era, this kind of urban public open space serves as a city park, allowing people to gather and stroll. It also provides new business models for cities to promote economic recovery and development.

5.2. Meeting The Needs of Different Consumer Groups

A survey has shown that regardless of wealth, people prefer to spend money and window-shop in wealthier and more upscale environments [20]. However, traditional high-end shopping malls often carefully cultivate their images and do not include cheap brands on the premises. This leaves less fortunate people with no chance to shop and enjoy the high-end shopping malls. These shopping malls are ultimately exclusive in nature. As a result, a commercial complex often cannot replace public spaces and simultaneously meet the needs of different groups, leading to social stratification and fragmentation. The overall sense of happiness in society will decrease.

Public open spaces, on the other hand, are open and inclusive [12]. Therefore, brands and vendors with different price points can be well placed in public open spaces. In this way, various classes in a society can enjoy and conduct business in the same space. Here, everyone can showcase themselves and gain recognition [5]. Unlike traditional commercial spaces, public open spaces place greater emphasis on caring for different individuals. Therefore, different individuals can find satisfaction in it without feeling abandoned by society. The overall sense of happiness in society will also increase as a result.

6. Summary

Through the above research, it can be found that public open spaces play new roles in the post-pandemic era. In the neighbourhood, they serve as new social spaces. Unlike early indoor enclosed social spaces, people can engage in more accessible and equal social activities in more open and natural environments. In public health, they greatly help people's physical and psychological recovery in the post-pandemic era. People can relax their emotions while exercising. In the commercial economy, they can provide new business models to meet the needs of different consumer groups, which can not only make urban space more inclusive, but also promote economic recovery in the post-pandemic era. The conclusions obtained in this study can expand people's understanding of public open spaces. Especially in the post-pandemic era, it can enable people to utilize public open spaces in cities better and gain a more blissful urban living experience. However, this study only explores the significance of public open spaces in cities from three perspectives: neighbourhoods, public health, and commercial economy. These three perspectives cannot cover all aspects of urban research. Therefore, this study still has certain limitations. In the future, people can further explore the significance of public open spaces for other aspects of cities in the post-pandemic era based on this research.

References

- [1] Le Corbusier. *The three human settlements*. Beijing: China Architecture & Building Press, 2009.
- [2] Le Corbusier. *Urbanism*. Beijing: China Architecture & Building Press, 2009.
- [3] Jacobs J. *The death and life of great American cities*. Nanjing: Yilin Press, 2020.
- [4] Ashihara Y. *The aesthetic townscape*. Nanjing: Jiangsu Phoenix Literature and Art Publishing Ltd, 2017
- [5] Thompson C W. Urban open space in the 21st century. *Landscape and Urban Planning*, 2002, 60(2): 59-72.
- [6] Ståhle A. *Compact sprawl: Exploring public open space and contradictions in urban density*. Stockholm: KTH, 2008.
- [7] Jian Izzy Yi, Chan Edwin H.W., Xu Yang, et al. Inclusive public open space for all: Spatial justice with health considerations. *Habitat International*, 2021, 118: 102457.
- [8] Chitrakar R M., Baker D C., Guaralda M. How accessible are neighbourhood open spaces? Control of public space and its management in contemporary cities. *Cities*, 2022, 131: 103948.
- [9] Fu Qinghua, Huang Chunxiao. Research on the evolution of publicity of public open space in Chinese and Western cities. *Chinese & Overseas Architecture*, 2024(02): 123-128.

- [10] Xiao Han. How did public buildings and monuments contribute to the evolution of Agora to Forum during the early Roman period in Athens? *Journal of Architectural Research and Development*, 2021, 5(4): 1-8.
- [11] Jiang Min, Nakajima N, Lu Feng. Theoretical research on the publicness of public space and the construction of an analytical framework. *Urban Planning International*, 2022: 1-14.
- [12] Han Tao. Open building, open community, open city: a study of the relationships between the city and buildings in Europe. *Community Design*, 2016(04): 66-71.
- [13] Williams S N, Armitage C J, Tampe T, et al. Public perceptions and experiences of social distancing and social isolation during the COVID-19 pandemic: a UK-based focus group study. *BMJ Open*, 2020, 10: e039334.
- [14] Mehta V. The new proxemics: COVID-19, social distancing, and sociable space. *Journal of Urban Design*, 2020, 25(6): 669-674.
- [15] Poortinga W, Bird N, Hallingberg B, et al. The role of perceived public and private green space in subjective health and wellbeing during and after the first peak of the COVID-19 outbreak. *Landscape and Urban Planning*, 2021, 211: 104092.
- [16] Coşkun H, Yıldırım N, Gündüz S. The spread of COVID-19 virus through population density and wind in Turkey cities. *Science of the Total Environment*, 2021, 751: 141663.
- [17] Leng Jiawei, Wang Qi, Liu Ke. Sustainable design of courtyard environment: From the perspectives of airborne diseases control and human health. *Sustainable Cities and Society*, 2020, 62: 102405.
- [18] Song Shangcong. Street stall economy in China in the post-COVID-19 era: Dilemmas and regulatory suggestions. *Research in Globalization*, 2020, 2: 100030.
- [19] Goa. OōEli Art Park / Renzo Piano Building Workshop. January 06, 2021. Retrieved on April 15, 2024. Retrieved from: <https://www.archdaily.com/954260/ooeli-renzo-piano-building-workshop>.
- [20] Wang Donggen, Schwanen T, Mao Zidan. Does exposure to richer and poorer neighbourhoods influence wellbeing? *Cities*, 2019, 95: 102408.