

Research on the Health Design of Office Space in the Post-epidemic Era

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Abstract. In 2020, a global epidemic has had a huge impact on the world economic and social development. In the areas affected by the epidemic and the number of people increased by geometry, the social economy suffered great trauma. Restoring economic production and stabilizing social development became the top priority. On the premise of doing a good job in epidemic prevention and control work, various governments around the world have accelerated the resumption of work and production, gradually resumed the normalization of production and life, and promoted the sustained social and economic recovery. In this context, the office space design has a new context. Over the past few decades, the social attention to people has gradually increased, and more and more researchers have begun to pay attention to the health impact of the office space environment on workers. At the end of the 20th century, Birch (Burge) once mentioned the physical environment of office space on human physical and psychological effects, pathological building syndrome, etc. In the past few months, Novel Corona virus has changed the way and where people work, forcing flexible working methods. When adapting to a new normal, people will pay attention to the short-term or long-term development trend of the normal, which will affect the way we work in the post-epidemic era. The impact of this epidemic on the society is very profound. In the post-epidemic era, the design of office space needs to take into account the epidemic and the future, and respond to the new normal of the post-epidemic era in the office situation with strong adaptability.

Keywords: Post-epidemic Era; Office Space; Health Design.

1. Research Status of Healthy Buildings:

The development of society, the improvement of living standards and the current situation of environmental deterioration make people's pursuit of a healthy life more and more intense. The health performance of buildings has become an important criterion for building health, and the discussion of healthy buildings has once again aroused around the world. In fact, since the 1920s and 1980s, many countries have begun to pay attention to the health exploration of architecture, with the research focus being on residential buildings. The large-scale energy conservation measures caused by the energy crisis in the 1970s gradually appeared drawbacks, and the emergence of pathological building syndrome prompted people to have a deep understanding of the environment and health. In the 1990s, western countries explored the health of residential buildings. And the World Health Organization proposed the "15 standards for healthy houses", and proposed that healthy buildings should emphasize the physical, psychological and social health state of the residents in the buildings. Since then, health building practices: the United States has established the National Health Housing Center and developed a "Health Home" construction plan to guide housing construction; Canada has issued a "Super E" certification for health-demanding homes to encourage the practice of health buildings.

Japan has also repeatedly in health building discussion, the theoretical results published in new building magazine, in which he stressed that the health of buildings should include physical and spiritual aspects; later, the construction department issued the health house declaration, environmental symbiosis and established research institutions to explore and guide the relationship between building environment and human health.

After the 21st century, the green building concept got rapid development, a series of green evaluation criteria such as LEED, CASBEE of Japan, British BREEAM also promoted the comprehensive development of healthy buildings, its content emphasizes the coordination of the relationship between construction and the environment, also involves regulations to promote human health, such as building natural ventilation lighting, control of indoor pollutants control, etc. International seminars on health topics are also frequently held internationally to discuss the green

and healthy development of buildings, and the global attention to healthy buildings continues to grow. The release of WELL Building standards in 2014 represents the arrival of the Health 2.0 era, so it can be said that architecture has experienced the development process driven by shelter-comfort building-Health building-Green Building-Health 2.0 architecture.

Relatively speaking, the research on healthy architecture in China started relatively late. In 1993, Academician Wu Liangyong proposed the five systems of living environment, which is the development prototype of healthy living in China. In 1998, Niu Guangquan proposed the advanced view of healthy buildings including the built environment and user health in his journal paper. In 1999, the National Housing Engineering Center cooperated with multidisciplinary experts to carry out research on residential health. Now, China has also issued a series of standards and held an international forum on "China's Healthy Housing Theory and Practice". In recent years, China has also increased its policy support for healthy buildings, On October 25th, 2016, The State Council issued the Outline of the "Healthy China 2030" plan, proposing that by 2030, China's health indicators in healthy living, health services, health security, health environment and health industry have entered the strategic goals of high-income countries, In this policy context, In 2017, the Healthy Building Evaluation Standards came into being, It proves that China's exploration of architecture has achieved a major leap from building performance to the physical and mental health of the residents, more detailed index requirements, more extensive professional involvement, and more perceived, It is a milestone. China also held the first Healthy Building Conference in Beijing in March 2019, which proved that the academic research on healthy buildings in China has been being carried out.

2. Research Meaning:

Novel Corona virus is not the first global disease. The Spanish flu from 1918 to 1920 had stalled business in many U. S. cities. Office space carries the urgent need to restore social production and recover the economy. With the current epidemic situation coming up and down, the traditional office space is facing severe challenges. The disruptive impact of the epidemic on the change of production and life style is worth rethinking how the office space adapts to the new normal brought about by the epidemic.

Under the current social development situation, this research results have the following theoretical value and practical significance:

In the past period of time, China's economic and social production has suffered varying degrees of damage. When faced with a crisis, the vast majority of enterprises choose to close their offices and their employees to work online. With the outbreak steadily under control and offices reopening, governments and businesses need to rethink working space to ensure the health of employees. In the long run, this is an opportunity to rethink the office space and transform the future of the office space into a more flexible, more inclusive, more sustainable, and healthier one through the crisis. By addressing this global challenge comprehensively, we can shape a more resilient world.

Because of the outbreak, people have experienced the way of working from home. But when the dust settles, working from home will not be the choice for most people. Genre's 2020 US home office survey meme found that only 12 percent of people wanted to work from home full-time, while 55 percent said it became more difficult to work with others at home. After the outbreak, people will eventually return to their offices. Therefore, more and more people began to have a new thinking on the planning of office space, and enterprises have also begun to pay attention to the use of office space. The office is no longer just a simple place to accommodate employees, but also a comfortable and efficient place for employees from the physical, psychological and social aspects. The epidemic has brought public doubts about open space, and the work demand during the epidemic has brought the development and improvement of telecommuting technology, bringing greater freedom to the flexible design of office space. Based on this phenomenon, it is of great significance to study the healthy design strategy of office space to adapt in the post-epidemic era, and to enhance the spatial flexibility and adaptability of office space.

3. Current Situation Analysis and Development Trend of Research at Home and Abroad:

The technological innovation and material development brought about by the industrial revolution promoted the emergence of new buildings, and the real modern office buildings also appeared during this period. Gropius's German Manufacturing Union Cologne Exhibition office building can be seen as a prototype of a modern office building design. Therefore, the developed countries in Europe and the United States have also started the exploration of office buildings, and their energy-saving technology, space theory, and building materials are in the leading position in the world. KPF, SOM, OMA and other famous foreign firms and Yang Jingwen, Norman Foster and other outstanding architects have left many office architectural design works around the world.

Office space is not only the embodiment of the functional needs of The Times and the level of technological development, but also an important way to highlight the social culture. The development of technology and the opening of ideas make foreign research start early, and its related theoretical books and practical results have promoted the development of modern office space in the world. Humanized, ecological and intelligent office concepts have been put forward successively, which has promoted the reform in the research and design process. Related theories such as (US) Barbara Curp (B. Crisp (IS) proposes the human needs of office space, Emphasize the expression of willingness of employees' wishes in office space; Daniel (Schoolmaster Daniel) "Future Office Space Design" discusses the technological development of office space innovation in the information age brought about by the development of science and technology, Changed the way people work and communicate, Therefore, creative and intelligent space has become the focus of office space research in this period; Frank Deey (Frank Duffy) "The emergence of intelligent Office Building" on the characteristics of intelligent office; Volker Hart Knopf) focuses on a comprehensive definition of intelligent office, That it is not just an application of high technology, We should also emphasize the construction of the psychological environment, Improve staff communication and innovation ability.

The research of modern office space in China started relatively late. Influenced by the advanced concepts and technologies of foreign office space, Chinese architects have also actively explored in the office mode, space form, intelligent furniture and other aspects. A variety of new office Spaces have also been practiced in China, and the public's acceptance of the new free and open office is gradually improved. However, we mostly use foreign research reference, have not yet formed their own mature and complete theoretical system, many works are introducing foreign office cases, such as "New Design Series: The latest Office Space Design" included the works of 38 foreign new designers. Our country is also to actively explore, issued a series of theoretical books such as housekeeper crystal, Zhang Chensheng deconstruction space, office space, bass publishing co., LTD., the modern office space, wu ning editor of the office space design and Ding Liang the office space design and other series of teaching materials, for the basic research of modern office space in China provides the theoretical basis. Published series of books and magazines, interpret excellent cases at home and abroad, such as "top office design" series, "since then fall in love with a happy office", "the latest office space design" and other picture information and drawing information for more intuitive analysis.

4. Healthy Design Strategy of Office Building Space Environment Adapted to the "Post-epidemic Era":

The COVID-19 epidemic has raised public doubts about open office space. During the virus epidemic period, the development, improvement and popularization of the telecommuting technology promoted by the work demand provide greater freedom for the flexible design of the office space environment. The flexibility of the space should cover the possibilities ranging from epidemic fluctuations to stable office use, while considering both openness and privacy, and providing employees with a more flexible environment and more diverse office possibilities. There is no doubt

that expanding personal space distance is an effective measure to prevent the spread of the virus in office space. Expanding the distance between workstations within spatial support can relax the working environment and maintain adequate social distancing. This may be difficult to do in some tight interior spaces, but given that some businesses implement staggered work and telecommuting, this will reduce office building occupancy and potentially expand the floor area allocated to each employee. Social distance can also be promoted through design, such as the concept of a "six-foot office". When distance expands, large circles and bold colors can be used on the carpet to prompt distance, making it easier to maintain social distancing in a limited qualitative design environment. Moreover, the increased distance also brings greater flexibility to changes in internal space. Flexible zoning of office space can quickly change the layout when the epidemic changes. The partition wall shall be light and portable fabric, furniture, etc. For example, several different spatial separation methods can be created by moving and folding partipartition in a horizontal or vertical mode. When risk levels rise, separate more small spaces in large spaces to reduce the possibility of contact, or meet the change in space utilization caused by diversified working patterns, or try using lighter, simpler, and more economical materials. For example, the OBB Group Austria headquarters is divided into different areas with 3600m² curtains, allowing greater free change and combination of indoor space, and providing sufficient flexibility to adapt to different stages of the epidemic; in addition, mobile furniture is not only used to separate space and maintain social distance, but also can quickly transform functions to various office needs, such as sliding tables, screens, display boards to isolate, divide and use space.

5. Conclusion

Open office work has represented advanced working methods over the past few decades, with a range of positive effects, including flexibility, cooperation and innovation. But in the era of the epidemic, the open space is obvious for the inability of the epidemic protection. In recent years, the disadvantages of open office space have also gradually emerged, including the lack of personal privacy, invisible and monitored sense, visual and auditory easy interference, etc. Therefore, the problems of open office space in the epidemic are worth paying attention to. In the post-epidemic era, the disadvantages of open office space should also be re-examined.

In the post-epidemic era, what we need to provide is a flexible working space. In normal work, office space with certain protection ability should be provided to meet normal office and communication activities. During the epidemic period, isolation space with high protection capability should be provided to adapt to the integration of online and offline working methods and improve the plasticity of the space. For office buildings, providing a safe and effective protection environment is needed at this stage, and will continue for some time to come. The care for people will be continuously explored along with the development of the society. The irreversible changes brought about by the epidemic require us to seek spatial adaptability and spatial flexibility in the midst of constant change.

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