

The Social and Cultural Impacts of Engineering Demolition

-- Reflections based on "Short-Lived Buildings"

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Abstract

This paper first examines the social and cultural impacts of engineering demolition across five dimensions: waste pollution from construction debris, dust pollution affecting air quality and health, noise pollution disrupting daily life, safety hazards like accidents and social instability, and loss of cultural value through heritage erosion. It then details the demolition reasons of 20 "short-lived buildings" (demolished before half their designed lifespan) via cases, explores these buildings' social effects and root causes, and concludes with targeted reflections and countermeasures.

Keywords

Engineering Demolition; Impacts; Short-Lived Buildings.

1. Introduction

Against the backdrop of rapid urbanization, housing in China has gradually become saturated, and the demolition, reconstruction, and renovation of old residential communities have attracted public attention. The proposal that "all buildings over 20 years old should be demolished" has sparked intense debate^[1]. Since 2007, urban buildings have been frequently demolished by blasting, and most buildings are demolished in the early or middle stages of their designed service life, resulting in the loss of building value and waste of social resources, which has attracted domestic and international attention. For instance, the Guangzhou Tianhe City West Tower (built in 1994), the Teaching Building of Zhejiang University's Hubin Campus (built in 1993, with a service life of only 13 years), and the Qingdao Railway Building (built in 1991, existing for only 15 years) have all been demolished. The average lifespan of buildings in China is "rarely 50 years, commonly 30 years", which is less than 60% of the minimum service life specified in national standards^[2]. Behind the successful blasting of a building lies a "short life history" of that structure. The social and cultural impacts and consequences of "short-lived buildings" cannot be ignored. This paper first analyzes the adverse social and cultural impacts of engineering demolition through literature research, then combines literature, newspaper, and online investigations to explore the demolition benefits, causes, and countermeasures of 20 well-known domestic "short-lived buildings" that have aroused strong public reactions.

2. Social and Cultural Impacts of Engineering Demolition

2.1. Waste Pollution

Statistics show that construction and demolition waste currently accounts for 30-60% of the total urban solid waste worldwide^[3]. Untreated landfilling and open-air stacking have caused multiple problems: first, they occupy land and pollute soil. Harmful substances in waste leachate alter soil composition, with some heavy metals reaching moderate pollution levels, reducing soil productivity and making it difficult to restore; second, they pollute water

resources. Leachate contains acids, alkalis, heavy metals, and organic toxins, threatening the safety of drinking water; third, they affect air quality. Decomposing waste produces harmful gases, and incineration releases carcinogens, causing secondary pollution.

2.2. Dust Pollution

Dust is one of the important sources of urban haze, contributing approximately 10% to atmospheric PM₁₀, and up to over 30% to PM_{2.5} in severe pollution cases^[4]. Building demolition is a significant source of urban dust. A large amount of dust surrounds the demolished buildings, which can turn into airborne dust when the wind speed reaches a certain level. Airborne dust particles contain various carcinogens, which enter the human body through the respiratory tract and accumulate. Long-term exposure to high concentrations of airborne dust can induce respiratory diseases, cardiovascular and cerebrovascular diseases, neurological diseases, and other illnesses, directly threatening lifespan. For example, pneumoconiosis is a widespread and severe disease caused by the accumulation of large amounts of dust in the lungs. Statistics show that in Beijing, nearly 4,000 premature deaths each year may be related to long-term dust exposure, and approximately 20% of those who die from dust exposure have lung cancer as the cause^[5].

2.3. Noise Pollution

Noise pollution is one of the world's four major environmental problems. Noise not only causes damage to the human auditory system but also affects residents' sleep quality, levels of depression and anxiety, as well as their sense of happiness and self-assessed mental health^[6]. Against the backdrop of "demolishing all that should be demolished and renovating all that should be renovated", a large number of engineering demolitions have caused more severe noise pollution. Especially in densely populated urban areas, noise pollution from building demolition and renovation has seriously affected the lives of surrounding people, leading to increasingly intense conflicts and constant disputes between the public and construction units. Therefore, effectively controlling noise pollution and creating a quiet and comfortable environment for the public has become particularly important.

2.4. Safety Hazards

Safety is the top priority in demolition projects, especially for the blasting demolition of high-rise buildings. Due to incomplete regulations and arbitrary management, blasting accidents occur frequently. Building collapses may damage surrounding structures, increasing safety risks^[7]. In addition, irregularities such as violent demolition threaten lives and property safety. Studies have shown that there is a positive correlation between community demolition and criminal incidents^[8]. Engineering demolition is not only about the buildings themselves but also affects social stability. The safety management issues during building demolition should arouse great attention from society and relevant government departments.

2.5. Loss of Cultural Value

Old buildings are carriers of traditional culture, bearing historical memories and collective emotions. In the process of urbanization, the demolition of a large number of historical buildings has led to the destruction of material cultural heritage, the disruption of cultural memory, the collapse of community networks, and the loss of cultural identity. Urban renewal that primarily relies on demolition and reconstruction is overly dependent on market-oriented operations, resulting in the destruction or damage of a large number of characteristic relics and sites with humanistic value and collective memories, which continuously and divide the cultural heritage of cities. Despite the increasingly serious phenomenon of large-scale demolition and construction, the loss of such cultural value has not attracted social attention.

3. Current Situation of "Short-Lived Buildings"

3.1. Overview of the Research

This paper defines "short-lived buildings" as those that are manually demolished or damaged before reaching half of their designed service life, excluding buildings destroyed by force majeure such as natural disasters. The study collected 20 cases of short-lived buildings from across the country (see Table 1), mainly involving residential buildings and public buildings.

Data in Table 1 and Table 2 indicate that the actual service life of civil buildings is concentrated in 11-15 years. Among them, the proportion of publicly funded buildings is relatively high, and the phenomenon of short-lived buildings is more prominent. "Short-lived buildings" are a common phenomenon in economically developed cities in China, existing not only in coastal developed urban areas but also in relatively economically developed cities in inland underdeveloped regions. Meanwhile, the concentrated timing of blasting demolitions suggests that a considerable number of economically developed cities have entered a stage of large-scale urban renewal.

3.2. Reasons for the Demolition of "Short-Lived Buildings"

The causes for the demolition of the 20 cases involve multiple aspects such as economic benefits, functionality, planning, and design. The pursuit of economic benefits, improvement of urban image, and functional upgrading are the primary causes, accounting for nearly 35%. Planning factors account for 10%, problems in the investment process account for 15%, while design defects and construction quality directly related to the buildings themselves account for only about 15%. It can be seen that nearly 90% of the reasons for buildings being "short-lived" are unrelated to the buildings themselves, with conceptual and institutional factors playing a dominant role. The root cause lies in the fact that China's urban planning lags behind urban development. Planning departments, in pursuit of land use efficiency and urban image enhancement, ignore the objective reality of urban development and carry out large-scale demolition and construction [9].

Table 1. Survey of 20 Well-known Domestic "Short-Lived Buildings" with Significant Impact

Building Name	Year of Completion	Year of Demolition	Relevant Information	City	Reason for Demolition
Vienna Forest Park Apartment	2005	2005	18 floors, 20,000 square meters	Hefei	Straightening reconstruction of partial road sections
Nantong Railway Station	2004	2006	4,400 square meters	Jiangsu	Construction of new main station building
Yuxi Convention and Exhibition Center	2000	2005	16 floors, 16,000 square meters	Chongqing	Construction of a five-star hotel
Municipal Public Security Bureau Command Center Office Building	2000	2005	11 floors, 16,000 square meters	Hohhot	Construction of Golden Eagle International CBD Center
Former Wuning Town Government Office Building	1998	2004	Main building: 19 floors, partial 21 floors	Dongyang, Zhejiang	Construction of commercial and residential buildings
Wulihe Stadium	1998	2007	Renovation investment: 250 million yuan	Shenyang	Construction of venue for Olympic Games

Municipal Association for Science and Technology Building	1997	2001	9 floors, over 4,000 square meters	Chongqing	Construction of Three Gorges Museum
Bank of China Tower	1997	2004	22 floors, 15,000 square meters	Wenzhou	Severe quality disqualification
Longhua Building Residential Building	1996	2007	11 floors, 11,000 square meters	Wuhan	Reconstruction of Snake Mountain ecological system
Main Building of Sun Island International Tourism City	1995	2006	10 floors, nearly 20,000 square meters	Harbin	Unused due to funding issues
Tianhe West Road West Tower	1994	2007	4 above-ground floors and 2 underground floors	Guangzhou	Idle and outdated design standards
No.3 Experimental Building of Zhejiang University Hubin Campus	1993	2007	22 floors, 21,100 square meters	Hangzhou	Space-for-funds scheme
Former Shanghai Fisheries Building Hotel	1992	2006	9 floors, over 8,000 square meters	Shanghai	Construction of commercial and residential buildings
Jinheng Building	1992	2005	5 floors	Baotou	Uncompleted; planned construction of a new hospital
Railway Building	1991	2007	24 floors	Qingdao	Construction of new railway station
Tianyuan Hotel	1991	2004	17 floors, 15,000 square meters	Zhengzhou	Construction of indoor three-dimensional commercial street
Old Building of China Sports Museum	1990	Decommissioned	7,200 square meters	Beijing	Unreasonable building structure design
4 Buildings of Hanyang Zhenhua Apartment	1990	2006	24,000 square meters	Wuhan	Construction of Yuehu Avenue
7 Buildings in Yubei No.2 Village	1990	2004	8 floors, 46,000 square meters	Chongqing	Promoting the construction of Guanyin Bridge business district
Former Main Teaching Building of Zhengzhou Institute of Economic Management	1989	2005	12 floors, 12,000 square meters	Zhengzhou	Construction of a new multi-functional integrated building

Table 2. Proportion of Actual Service Life of Short-Lived Buildings

Service Life (Years)	0~5	6~10	11~15	16~20
Proportion (%)	30	15	40	15

4. Causes of "Short-Lived Buildings"

A survey by the Social Survey Center of China Youth Daily on online governance shows that 85.8% of respondents live in cities with "short-lived buildings", more than half are dissatisfied with urban planning, and less than 10% are satisfied. The main causes are as follows:

(1) "Short-Sighted" View of Political Achievements Spawning "Short-Lived Buildings"

Government-led urban planning tends to be arbitrary due to concentrated power. The "short-sighted" view of political achievements results in planning lacking long-term vision and scientificity, leading to a cycle of building, modifying, and rebuilding projects. Although demolition and construction may benefit individual officials' political achievements, they cause enormous losses of social wealth. Studies have shown that the social cost per unit demolition area of short-lived buildings is 62% higher than that of similar surrounding buildings^[10].

(2) Short-Sighted Culture Spawning "Short-Lived Buildings"

When investment, construction, and economic development become the mainstream social ideology, the problem of "short-lived buildings" is overlooked. Society's focus on immediate interests traps buildings in a cycle of construction, renovation, demolition, and reconstruction, ignoring their long-term value.

(3) Planning System Spawning "Short-Lived Buildings"

Inadequate departmental coordination and limited professionalism lead to unscientific planning. Concentrated power and lack of supervision easily breed corruption. The phenomenon of "each new leader introducing a new plan" has become common; in pursuit of "image projects", previous achievements are demolished and redundant construction is carried out, disregarding cultural inheritance and exacerbating the problem of "short-lived buildings".

5. Discussion and Conclusion

The rapid advancement of urbanization has led to a surge in demolition activities, with the resulting problems becoming increasingly prominent, especially in terms of profound impacts on society and culture. It is worth in-depth consideration how to achieve green and safe demolition, and how to prevent "short-lived buildings" from exacerbating these adverse effects. China is still in a stage of rapid urbanization, with more people moving to cities and towns. If the model of large-scale demolition and construction continues, it will not only intensify resource waste but also hinder the urbanization process and trigger more conflicts.

The previous analysis indicates that the root cause of "short-lived buildings" lies in the mindset of urban managers: regarding urban construction as a political achievement and pursuing GDP through demolition and construction means sacrificing long-term sustainable development for short-term interests. If managers and builders can adopt a long-term perspective and formulate scientific and reasonable plans and designs, a large number of "short-lived buildings" would not emerge. Therefore, how to avoid the short-term nature and arbitrariness of urban planning characterized by "each new term of leadership bringing a new plan", reduce large-scale demolition and construction, and ensure that planning truly possesses scientificity, rigidity, and long-term vision is a crucial issue that needs urgent resolution.

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