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Water Tower Home transformation: bottom-up urban regeneration through a reality TV show

Diyu Liu[1], Lui Tam[2] and Yingchun Li[1*]

Abstract

The article examines Wutopia Lab's transformation of the Water Tower Home (*shuita zhijia*, also know as 'House on the House'), a top-floor unit of a residential building converted from a water tower located in a Bulinli *lilong* neighbourhood in Shanghai. In 2015, the top-floor unit was transformed into a three-bedroom apartment, which was featured in a popular reality TV show *Dream Home*. Using the concept of '*raumplan*' as the primary design strategy, the design deploys various heights and platforms to re-organise the internal space while largely maintaining the exterior appearance of the building. It deliberately avoided homogeneous visual control and accommodated the residents' complex functional requirements within a highly restricted space. The research scrutinises various actors' involvement during the production of the reality TV show and the transformation process. It highlights how the design team navigated the stakeholders' complex needs and the rigid yet ambiguous policy related to the regeneration of Shanghai's unofficial urban heritage. By reflecting upon the various formal and informal design practices in this structure and its eventual demolition, the article illustrates the dilemmas in bottom-up regeneration of the historic urban environment in contemporary China.

Keywords Unofficial urban heritage, Bottom-up, Urban regeneration, *Raumplan*, Wutopia Lab, Reality TV show

1 Introduction

The Water Tower Home (*shuita zhijia*, also know as 'House on the House') was located in the top-floor unit of a residential building that had been transformed from a water tower in the Bulinli *lilong*[1] neighbourhood in Shanghai's former French Concession (Fig. 1). Erected in the early 20th century, the water tower was adapted to residential purposes in the 1980s after its initial function was abandoned. In 2014–2015, Wutopia Lab's

[1] Literally translates to alleyway, *lilong* refers to the a community centred on a lane or several interconnected lanes which was the most prevalent residential type in Shanghai during the late 19th and early 20th centuries.

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*Correspondence:
Yingchun Li
lyc@tongji.edu.cn
[1] College of Architecture and Urban Planning, Tongji University, 1239 Siping Road, Shanghai 200092, China
[2] Welsh School of Architecture, Cardiff University, Bute Building, King Edward VII Avenue, Cardiff, Wales CF10 3NB, UK

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Fig. 1 The fabric of the Bulinli *lilong* neighbourhood and the water tower after renovation (Source: Wutopia Lab)

Fig. 2 South facade of the Bulinli water tower after transformation (Source: Wutopia Lab)

founding architect, Yu Ting, undertook a transformation project of its top-floor unit upon the invitation of a popular reality TV show *Dream Home* (*Mengxiang Gaizao Jia*)[2] (Fig. 2). Given the highly restricted and substandard living condition within the water tower, the Wutopia Lab project team adopted a '*raumplan*' design approach using various heights and platforms to create a more dignified home for the residents.

The design project was considered an astounding success by the public and greatly appreciated by the residents. However, as Bulinli was not an official urban heritage and thus not protected by the existing heritage conservation legislation and policies, the renovated Water Tower Home, along with the entire Bulinli neighbourhood, was demolished in 2016. The article examines the project's design process as featured in the reality TV show. It argues that the fate of the Water Tower Home calls for a recognition of bottom-up regeneration at the policy level to protect unofficial historic urban environments and the various historic buildings within them while improving living conditions.

2 *Dream Home* reality TV show and the transformation project

Inspired by the Japanese reality TV show produced by Asahi Broadcasting Corporation, *That's a Dramatic Change!*,[3] *Dream Home* was produced by Dragon Television based in Shanghai. In each episode, a home with a challenging spatial and living condition and peculiar function requirements was chosen for renovation. The reality TV show emphasised the drastic contrast before and after the transformation, which must be performed with limited funds and a tight schedule. The first season

[2] The reality TV show was produced by Dragon Television (*Dongfang Weishi*), a channel owned by the Shanghai Media Group.

[3] *That's a Dramatic Change!* (Japanese name: 大改造!!劇的ビフォーアフター) was produced by Asahi Broadcasting and aired on TV Asahi. In 2002, the reality TV show was introduced into Taiwan by GoldSun TV under the name *Chaoji Quanneng Zhuzhai Gaizao Wang*.

aired in 2014 and the Water Tower Home was showcased in the first episode of the second season in 2015.

The production team of *Dream Home* and the residents of the Water Tower's top-floor unit were the clients for the project. Distinctive from ordinary transformation projects, the media production team played a substantial role in the design process. The use of mass media to initiate and promote architectural projects was an emerging phenomenon in China during the 2010s (Li and Zhi 2014), which rendered the architects or designers implementing the projects as the main characters in the reality TV show. Consequently, the mass media provided a significant channel for disseminating architectural discourse.

From the mass media's perspective, its requests were significant components of the renovation design briefs. This operational model was more favourable to the architects than the conventional ones, as the reality TV show focused on problem-solving designs where the architects could showcase the potential of architectural designs in confronting and improving challenging spatial organisations for everyday life. In this way, the reality TV show provided opportunities for a counter-narrative against the public's stereotypical impression that architects were simply 'makeup artists'.

On the other side, this model of architectural practice also presented considerable challenges. The spectacle effect of the TV show tended to exaggerate aspects of everyday life to create talking points. Consequently, the architectural and design solutions were required to be dramatically 'over the top'. Moreover, as in other reality TV shows, the architect, residents, and other participants, such as the residents' relatives and neighbours, all acted with a certain degree of performance required by the show's production team.

With such a novel operational model, the Wutopia Lab was tasked to answer some crucial questions in the transformation project: How can architects maximise the chance to realise their initiatives while balancing the requirements of all parties? How can architecture design tackle some of the trickiest spatial challenges? How can architects effectively convey their messages to an audience of various backgrounds to maximise the project's social impact?

3 Pre-renovation condition

The Water Tower Home's early history epitomised Shanghai's dramatic urban transformation from the 1940s to the 1980s. Historical records indicate that the Bulinli neighbourhood was built in 1928, but no record of the water tower's construction can be found (Shou 2017). Li (2015) hypothesises that the Bulinli water tower may have been built as a backup to provide a continuous water supply during Shanghai's 'Isolated Island' period (1937–1941),[4] but was never used.

In 1982, the Shanghai Municipal Bureau of Housing and Land Management (*Shanghai Shi Fangdiju*)[5] implemented the 'makeshift micro-addition' policy called '*Dada Fangfang*' to relieve the city's housing shortage, which allowed adding rooms and raising roofs to incorporate attics and kitchens in public housing units to increase their usable area. The construction team,[6] responsible for Bulinli's micro-addition, adapted the abandoned water tower into a residential building for its staff. Due to the limited space and peculiar structure within and around the water tower, this adaptation inserted a stairwell within the original structure, extending the building's volume southwards. The limited space within the tower was enlarged by adding four columns. In addition, overhanging spaces on the upper levels were used to increase the floor area of the living units. A sloped roof on the top level was probably added later by the residents (Figs. 3, and 4).

Even though the Bulinli residential water tower was a by-product of the 1980s' *Dada Fangfang* policy, it did not strictly align with the policy's requirement to restrict 'adaptations within the original dimensions and conditions'. Instead, the adaptation most likely resulted from numerous negotiations with surrounding neighbours. As the water tower was constructed adjacent to the *lilong* houses on its eastern and western sides, and the space between the tower and the houses to the north was also very narrow, the decision to extend it southwards and use overhanging spaces was primarily a response to the neighbours' misgivings (Li 2015).

The top unit of the residential water tower was chosen as the case for the *Dream Home* episode jointly due to the residents' application and the decision of the reality TV show's producers. It was believed that the towering height and eye-catching volume contrasted with the neighbouring *lilong* houses, its unusual form and

[4] Shanghai's 'Isolated Island' period refers to the time between 12th November 1937 when Shanghai fell into the hands of Japanese army during the Sino-Japanese War and 7th December 1941 when Japan began the Pacific War by attacking Pearl Harbour in Hawaii. Although the Japanese army occupied all the areas surrounding parts of the International Settlement and the French Concession during this period, which formed Shanghai's city centre, the Japanese army was not prepared to start a war with the Western powers and had not sent any soldiers into the city centre, which made it an 'isolated island'.

[5] This is the previous name of the later Shanghai Municipal Bureau of Housing Security and Management (*Shanghai Shi Zhufang Baozhang he Fangwu Guanliju*), which was replaced by the Management Committee of Housing and Urban and Rural Development (*Zhufang he Chengxiang Jianshe Guanli Weiyuanhui*) in 2015.

[6] Such projects were usually implemented by a 'moderate repair unit' (*zhongxiudui*) under the district-level Housing and Land Management offices.

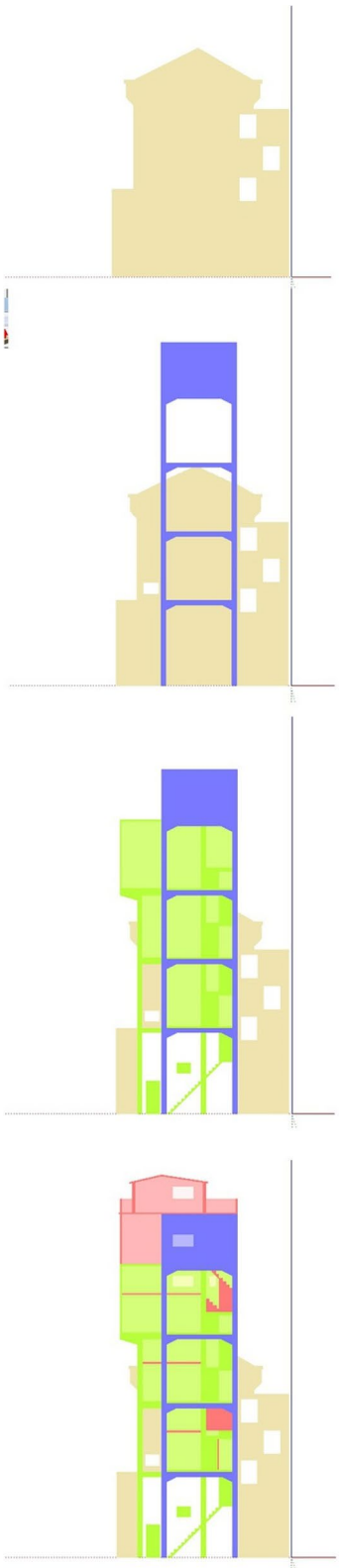

Fig.3 The transformation of the Bulinli water tower through history (Source: Li 2015)

Fig. 4 The interior space of the Bulinli water tower before the transformation (Source: Li 2015)

structure, and its peculiar space usage, could effectively capture the audience's imagination and meet the mass media's need for fast-paced popular entertainment in multiple ways.[7] Moreover, the challenging rearrangement of its living spaces was most likely critical to its selection for the show.

The architect had to confront both the legacy of continuous adaptations of the previous 30 years and the restrictions on the renovation of the structure put into place in 2014–2015. The policy presented great challenges in obtaining official permission for such a transformation project. Although the water tower's legitimacy as a residential unit was reaffirmed with Shanghai's housing reform measures enacted in the 1990s, the design was required to comply with various legislation and regulations applicable to new buildings for the project to receive planning permission. These regulations include the Shanghai Municipality's *Design Standard for Residential Buildings*, which regulates the size of apartments, the number of rooms, the window area, and even the width of the short side of the living room (Arcplus and SICBM 2014). It was almost impossible for spaces created under the extreme limitations of the *Dada Fangfang* measure to meet these standards. Without planning permission, the design was limited to the unit's private interior spaces. Even so, if the transformation project was reported and there was evidence of significant changes in the interior space, the property management office would still have the right to penalise the residents and require them to restore their homes to their original condition.

4 The '*raumplan*' design approach

The architect deployed the following measures to navigate the stringent policy and potential conflicts with other residents in the water tower: (1) the transformation design shall not change the building's silhouettes; (2) all the necessary interior changes were roughly completed before the property management officers were alerted and came to inspect the work, which meant that the 'existing situation' seen during their inspection was similar to the new design layout; and (3) part of the project fund was used to repaint the entire exterior wall of the building, which benefited all the water tower residents (Yu 2015). In addition, on-site negotiations with stakeholders and adaptations to the design were crucial steps throughout the project.

The design was strictly limited by the total volume within the building's existing envelope. The design team used the existing conditions within the top-floor unit and the residents' 'wish list' as an entry point for their design. The 140-entry 'wish list' was synthesised from their various requests, many of which either determined or significantly influenced the overall layout.

The design also considered the top-floor unit's original structures. The lowest level on the north side used to be the water tank, while the south side was the extended structure from the 1980s transformation. The upper-level space was probably built later, which rested directly on the original water tank and the 1980s additions. The plan thus divided the limited volume of the unit into two blocks: the south block was occupied by fixed spaces such as the living room and the master bedroom with an attached balcony garden; while the north block consisted of service space such as the kitchen and toilets, flexible space used as the young couple's bedroom and the child's room, and vertical circulation space. Storage space was inserted wherever possible after the main function requirements were satisfied.

The spatial re-organisation approach used in the Water Tower Home design shared close ties with Adolf Loos' '*raumplan*' concept which initiated a three-dimensional way of thinking about a building to accommodate various needs with different height requirements (Risselada 1989). Five levels were installed within the unit (Figs.5, 6 and 7), including the entrance platform (Fig. 8), the living room and kitchen level, the young couple's bedroom (for the residents' son and daughter-in-law), the master bedroom and balcony, and the child's room (for the residents' granddaughter). The four lower levels were connected by staircases within the unit, while a ladder was installed to access the child's room from the landing that led to the young couple's bedroom .

This *raumplan* approach allowed each room to be designed independently, and 'actively avoided homogenous visual control and the so-called architectural logic' (Yu 2015). The distinctive interior design gave each room a unique character based on the family's needs—from the timber-panelled living room (Fig. 9) to the deep-blue ceiling, carpeted floor, and mural in the child's room (Fig. 10). These distinctive rooms were linked by staircases that provide a sense of coherence.

[7] In June 2010, Song Ge, a second-year PhD student at Tongji University, submitted an essay as part of a course project for the university's architectural anthropology course. Her essay was titled *Juzhu Jixian yu Chengshi Jiyi: Jinling Zhonglu 389 Nong Bulinli Shuita Zhuzhai Diaocha* [*Extreme inhabiting and urban memory: an investigation of the water tower residence in Bulinli, No. 389 Jinlingzhong Road*], which provided a detailed account of the Water Tower's use as a residential building. A Douban user, *Milu de Hutao*, published a blog post in May 2013 titled *Water Tower House* that further discussed the reasons for the 1970s transformation into housing. In August 2015, this blog post was edited and published on the WeChat Official Account of the *World Architecture* magazine (using the same English title but with a different Chinese title).

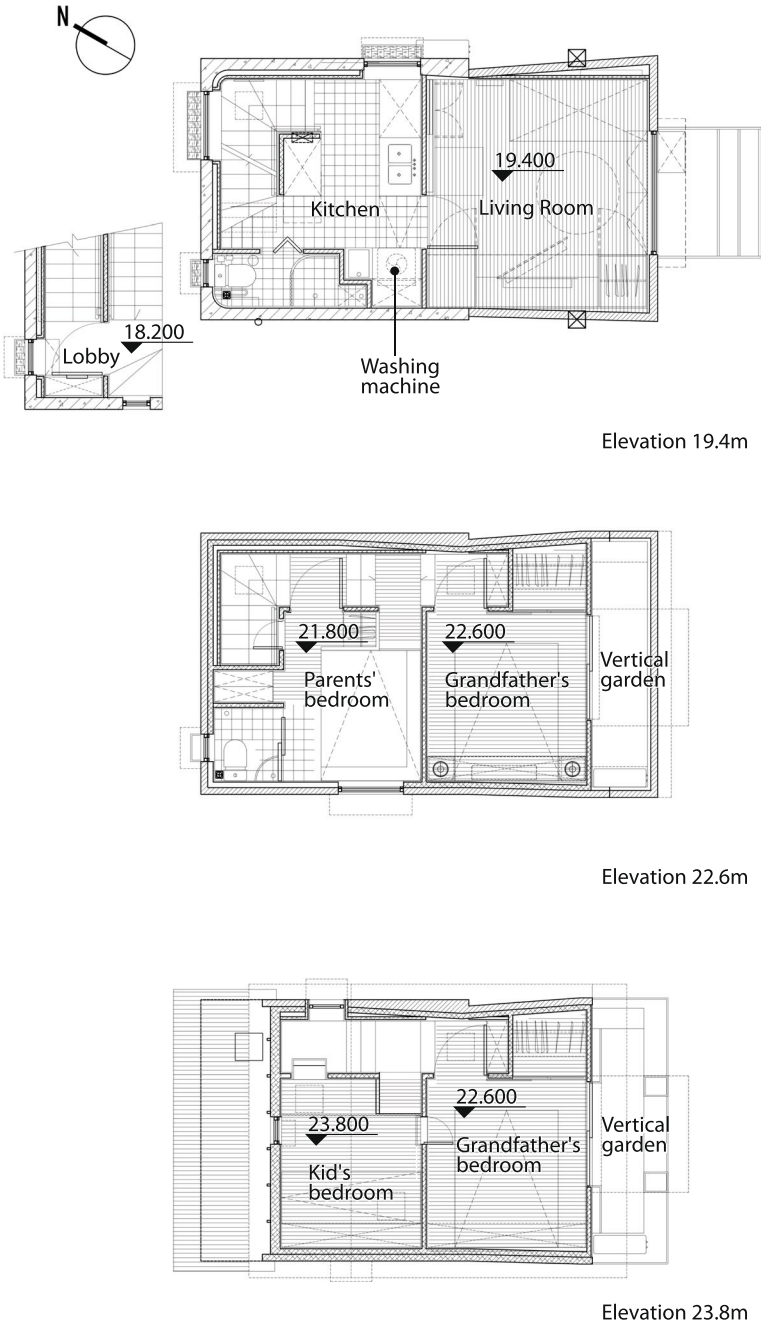

Fig. 5 The plan of the Water Tower Home transformation design (Source: Wutopia Lab)

From the living room and kitchen level above, artificial maple leaves were used to fully cover the wall along the stairs, creating a stark contrast with the rest of the Water Tower Home (Fig. 11). According to the architect, when illuminated by daylight through the skylight, the staircase with the maple-leaf wall resembled old Shanghai's familiar narrow but lively alleyways. The doors connecting the young couple's bedroom, the master bedroom, and the child's room, and a bay window in the child's room that allowed the child to peek into the stairwell punctuated the stairwell's opposite wall. They blurred the separation between the interior and the exterior. Another window connected the child's room with the master bedroom to ensure that the child was promptly attended to when care

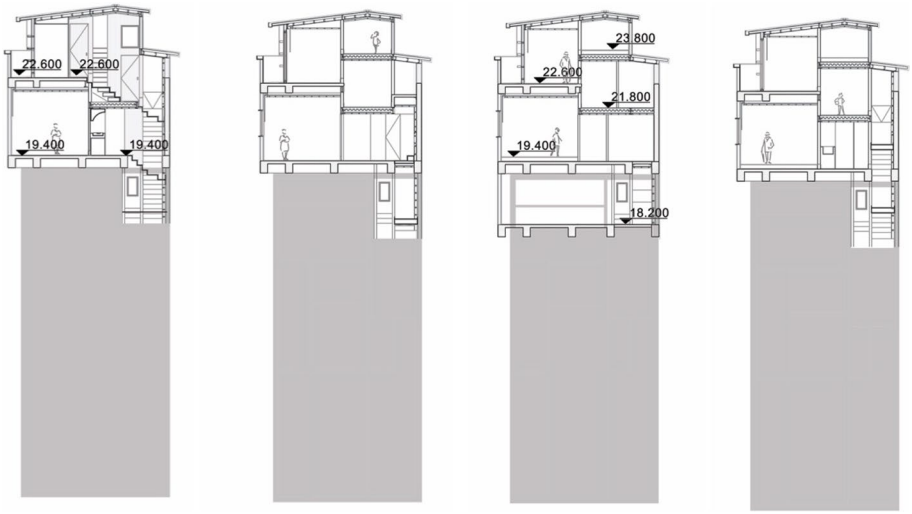

Fig. 6 Cross-sections of the Water Tower Home transformation design (Source: Wutopia Lab)

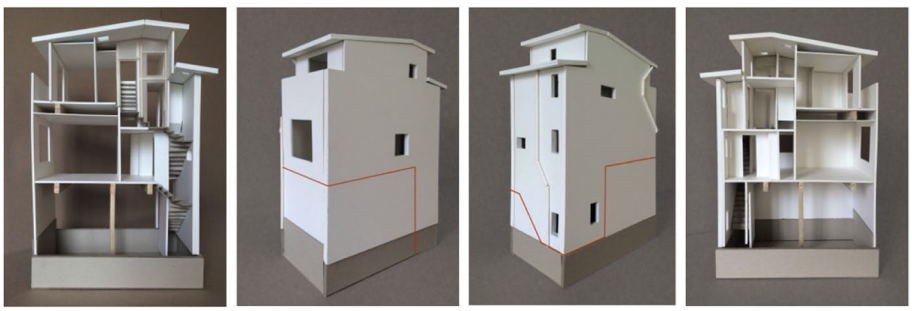

Fig. 7 The work-in-progress model of the Water Tower Home transformation design (Source: Wutopia Lab)

was needed. Yu (2015) described this as 'more like a miniature but comprehensive world, and it is more than an interior architectural space in the usual sense'. Except for the living room, the volume of the other rooms was just large enough to allow basic activities. The unit's limited space necessitated these tight arrangements, which, on the other hand, encouraged movement within the unit. In addition, the complexity of the spatial designs provided opportunities to diversify the family's behaviours and activities.

Restricted by the Water Tower Home's external envelope and internal space, the design renovated only the top-floor unit's exterior wall, balcony, and roof, including a re-organisation of the roof's drainage system and repainting the entire building's outer walls. A more elaborate design could be observed on the interior of the balcony and the attic's facade, which were in more intimate interactions with the residents (Fig. 12).

The balcony looked towards a collage of traditional Shanghai *lilong* houses, the old workers' villages, and the modern high-rises that have gradually dominated Shanghai's skyline since the 1990s (Fig. 13). The various historical urban layers parallels the fusion of various compartments in the Water Tower Home, both of which resulted from their continuous modifications and extensions over several decades. Although different in scale and dimensions, they were somehow interconnected.

5 Concluding remarks: dilemmas for bottom-up regeneration of the unofficial urban heritage

The Water Tower Home, together with the entire Bulinli *lilong* neighbourhood, was eventually demolished in 2016. Except for a few districts officially listed for heritage protection, most historic environments in China are unlikely to escape this fate. Either explicitly or implicitly, the project and, indeed, the entire *Dream*

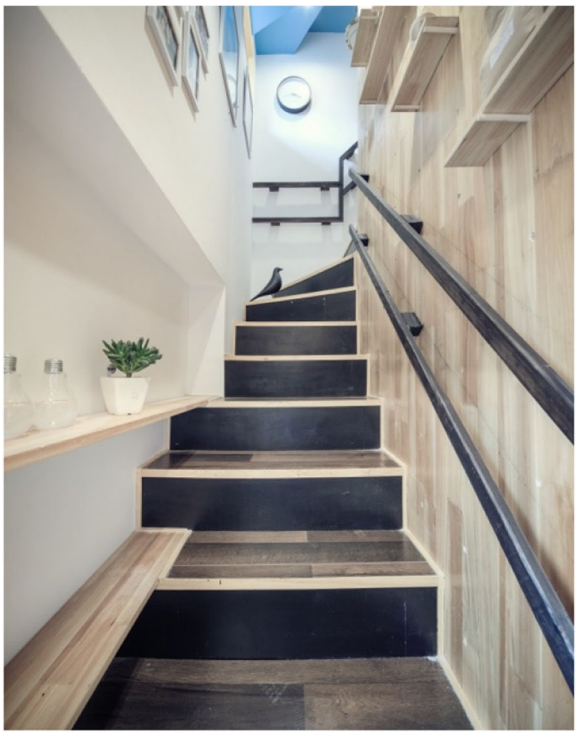

Fig. 8 The entrance to the Water Tower Home (Source: Wutopia Lab)

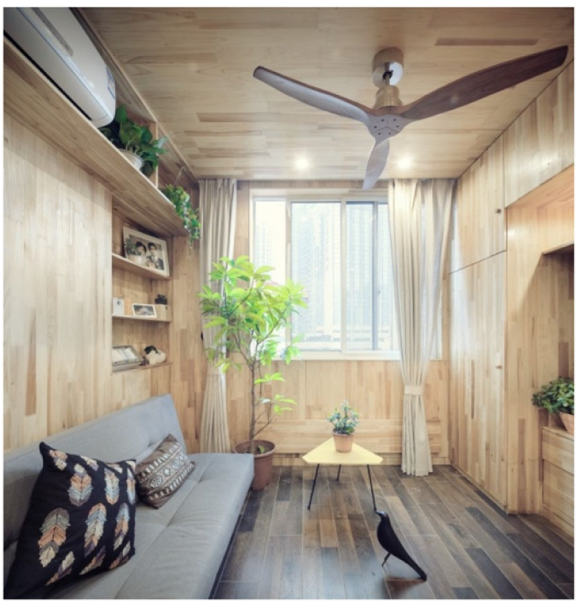

Fig. 9 The living room fully decorated with timber panels (Source: Wutopia Lab)

Home series revealed China's current policy dilemma regarding housing regeneration in unofficial urban heritage conservation.

The Water Tower Home's informal nature, a legacy of its history, makes it impossible to receive proper legal protection from the municipal authorities. On the one hand, China's current *Code for Urban Residential District Planning and Design* (SBQTS and MoHURD 2002) and other local codes and regulations (including the aforementioned Shanghai Municipality's *Design Standard for Residential Buildings*) were all created for large-scale and newly built housing. It is nearly impossible to regenerate buildings that were adapted over decades to meet these standards and regulations. Therefore, despite the transformation being instrumental in substantially improving the living conditions of the Water Tower Home's residents, there was no pathway to obtain legal permission by going through the formal application process.

On the other hand, the conflicts between the neighbours and the residents of the renovated dwellings were ubiquitous in the *Dream Home* reality TV show and became topics of heated public debates, which further weakened the legitimacy of such projects. Whereas in the Japanese reality TV show, *That's a Dramatic Change!*, Japan's legislation and policies clearly support residents' self-construction projects, and there is sufficient legislative clarity regarding property rights and policy restrictions. Therefore, there was rarely any disruption due to conflicts with neighbours or relatives in these Japanese projects.

In effect, the current legislation in China was designed for a real estate development model characterised by wholesale demolition and vast reconstruction, leaving limited space for the bottom-up regeneration of old housing. In recent decades, slum clearance has been made the most cost-effective choice for urban development. Legislation and regulations are all based on this model, which eventually became almost the only legal model for housing production. The legislation and regulations not only make it illegal for urban residents to build their own homes but also place self-renovated old structures, such as the Water Tower Home, at risk of sweeping demolition. It can lead to a complete waste of the resources that went into bottom-up housing improvement. Therefore, many residents who anticipate demolition choose to install poor-quality temporary structures to increase their leverage for a bargain on compensation, which further deteriorates their already challenging living environment.

As China's urban renewal gradually slows down, such a demolition and reconstruction model will not be feasible for improving urban living conditions, especially in historic neighbourhoods. This research reveals that legalising bottom-up housing regeneration can provide an alternative to the above model. Whether listed for heritage protection or not, the fabric of the historic

Fig. 10 The dream-like child's room (Source: Wutopia Lab)

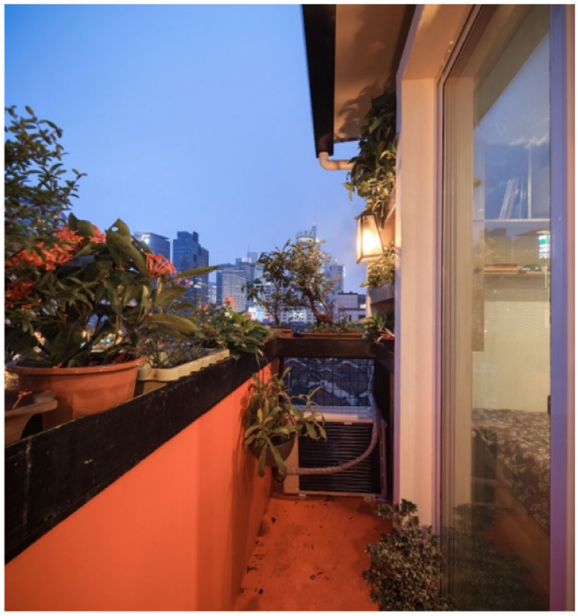

Fig. 12 The interior of the balcony (Source: Wutopia Lab)

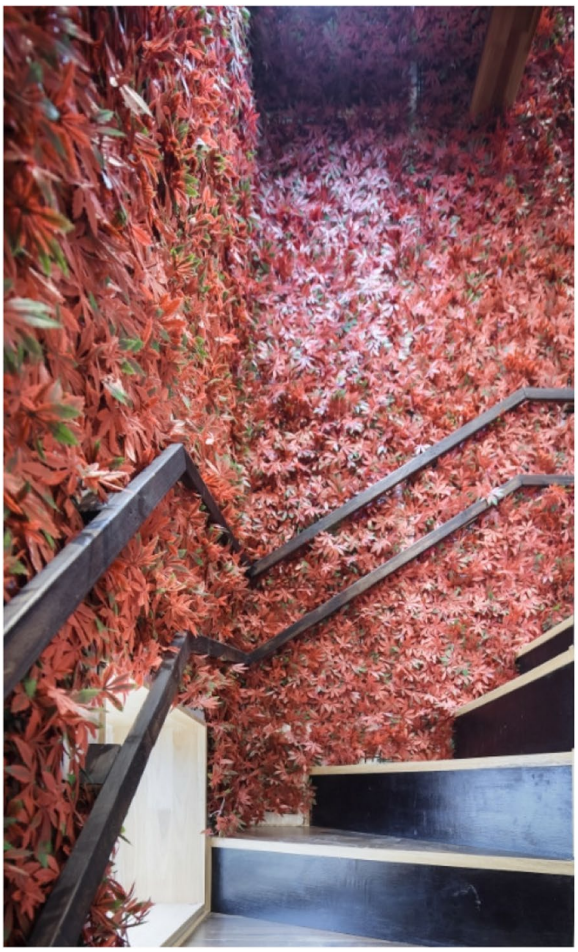

Fig. 11 Artificial maple leaves used to fully cover the wall along the stairs (Source: Wutopia Lab)

Fig. 13 The relationship between the Water Tower Home and its urban environment (Source: Wutopia Lab)

urban environment is what makes cities unique, while newly built communities lack the diversity of spatial forms and the complexity of everyday life seen in historic neighbourhoods (Tong and Huang 2012). Beyond the limited list of historic residential buildings, it is urgent to include adaptive regeneration for the vast landscape of China's historic environments in the revision of legislation, standards, and rules. The *Dream Home* reality TV show not only inspires the specific projects it promoted but also reveals the benefits of regenerating historic residential buildings and neighbourhoods as China confronts the need for a new urban development model.

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Authors' contributions
Diyu Liu conducted the research and drafted the initial article. Lui Tam proofread the manuscript and re-organised the abstract, introduction and conclusion parts of the article. Yingchun Li revised the primary structure and arguments of the article. All author(s) read and approved the final manuscript.

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