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ORIGINAL PAPER

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THE IMPACT OF TRANSFORMATIONS OF THE SPACE OF TENEMENT HOUSES ON THE ARCHITECTURAL FORM OF THE BUILDING

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ABSTRACT

The study examined transformations of tenement houses carried out by development companies conducting their investments in the city of Warsaw. Tenement houses that were originally erected in the second half of the 19th century or at the beginning of the 20th century and were renovated in the last 20 years, i.e., since 2003, were examined. The research employed a combination of online resources, such as websites of development companies, architectural offices, and real estate marketplaces, to identify and gather information on renovated tenement houses. Additionally, site visits and interviews with representatives from architectural studios and development companies were conducted to supplement the collected data and gain further insights into the transformations carried out. The results of the study showed the existence of four main types of transformations that affect the architectural form of buildings: changing the function of the ground floor from residential to commercial, adaptation/reconstruction of attics for residential purposes, adding superstructures and transformations of courtyards. The impact of individual transformations on the architectural form of space is described. These changes have been illustrated with examples of Warsaw projects. The main conclusion from the conducted research is the fact that the activities of development companies that carry out their investments by renovating tenement buildings focus on increasing the area that can be sold to potential buyers.

Keywords: tenement house, modernisation, revitalisation, residential development, developer company

INTRODUCTION

With the passing of the next decades, urban, unbuilt building plots are becoming an increasingly scarce commodity. This problem is particularly visible in the largest Polish cities, especially in their city centres (Rudewicz, 2020). As a result, development companies that want to offer the purchase of housing premises located in attractive, downtown locations cannot base their activity on erecting buildings on previously undeveloped land, because there are practically no such plots in the city centres. Therefore, entities are looking for alternative solutions: demolition of existing buildings and building new ones, or transformation (modernisation, adaptation, renovation) of existing buildings.

In recent years, there has been an increase in the number of transformations of historic buildings carried out by development companies. Depending on the local conditions in each city, companies focus on different types of facilities. In Warsaw, due to the small number of post-industrial buildings that could be adapted, private entities focus on transforming residential buildings.

The aim of the article was to examine the most common space transformations introduced in tenement houses affecting their architectural form and what changes they cause. The spatial scope of the study covered the area of the capital city of Warsaw. The subjective scope includes tenement houses transformed by development companies, originally erected in the second half of the 19th century or at the

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beginning of the 20th century, and renovated in the last 20 years, i.e., since 2003.

The specified groups of transformations have been described and illustrated with examples of Warsaw implementations.

METHODS

To conduct the research, it was necessary to identify tenement houses renovated in the last 20 years and then obtain a complete set of information on the transformations carried out. Because the subject of the study was tenement houses whose transformations were initiated and carried out by private entities, no list or database is available indicating all such investments.

To identify the tenement houses being transformed and to obtain information on transformations, the following websites were used:

- development companies that specialise in the renovation of historical buildings (e.g., https://ipeco.pl, https://www.fenixgroup.pl, http://warsaw-attics.pl, https://magmillon.com),
- companies renovating historical buildings (e.g., http://www.medbud.pl, https://budizol.com.pl),
- architectural offices (e.g., http://marchwinski.com.pl, http://www.kulczynski.com),
- marketplaces (e.g., https://rynekprzedotny.pl, https://vilea.pl, https://lionsestate.pl).

The search for renovated tenement houses was also carried out using the Google Search engine, searching for results for terms such as tenement house, renovation, Warsaw, and revitalisation. The tenement houses found supplemented the list previously possessed by the author.

When examining the literature on the subject, the author did not find even a fragmentary list of renovated tenement houses, nor any holistic study describing the most typical transformations introduced by developers. The literature focuses on describing the history of individual buildings, the original architectural layout, or the analysis of individual decorative elements. The research by Jadwiga Roguska and Piotr Kilanowski should be indicated as particularly valuable in this field. Information on the transformation of individual buildings was sought by analysing the information contained on the websites of the previously mentioned entities. Photos presenting the condition of buildings before and after renovation and architectural plans and drawings were sought. To supplement the collected materials, all identified tenement houses in Warsaw were inspected. In addition, interviews were also conducted with representatives of architectural studios – studio owners and representatives of development companies – presidents of management boards and project managers. The interviews had only a supplementary function. The elements of the project were discussed, which were considered by individual persons as the most characteristic from their perspective. In total, five interviews were conducted. The information obtained allowed for a more detailed analysis of the indicated elements.

RESULTS

Roguska states that "Before the First World War, as a result of the influence of architectural and spatial mechanisms, economic factors and building regulations, a type of urban tenement house of the late 19th and early 20th centuries was formed in Warsaw, with an inner courtyard – well adapted to compact development [own transl.]." (Roguska, 2003, p. 65). The tenement house is an object rarely defined by researchers. The definitions formulated by scientists emphasise the spatial aspects of a tenement house: "a two-storey, brick town house, compactly developed, separated in terms of space and ownership and co-creating, together with the plot, the layout of a traditional urban block and street [own transl.]" (Sołtysik, 2004, p. 32) or "every multi-family, multi-storey house with a predominantly residential function, which may potentially meet the urban planning conditions of the definition (it can be encased in such a way that it forms a fragment of a building block with a front street façade and a rear courtyard façade invisible from the street) [own transl.]." (Łupienko, 2015, p. 31). These three presented definitions constitute a complete set of definitions by researchers of Polish tenement houses.

In the conducted research, a tenement house is a multi-storey residential or residential and service building with a characteristic periphery of the plot, which is or may be an element of a compact quarter development.

As a result of the query, 43 tenement houses were identified that met the study's criteria. After analysing their transformations, four main groups were identified that caused changes in the architectural form of tenement houses: changing the function of the ground floors of buildings from residential to commercial, adapting the attic for residential purposes, adding a superstructure, and transform the courtyard space. Simplified test results are presented in Table 1.

Based on the analysis of changes made in the tenement houses listed in Table 1 and literature research, the characteristics of individual transformations are presented further, including the presentation of their genesis, a description of the impact of a given transformation on the space of the tenement house and a description of related solutions. Each transformation is illustrated with an example from Warsaw.

Changing the function of the ground floors of the buildings from residential to service

Tenement houses are usually located in attractive shopping areas. The growing demand for commercial premises in downtown city districts makes adapting the space of a building adjacent to the public space of a street a natural solution (Wojtas, 1992). Such transformations were already carried out in the interwar period, in the 1930s (Ginwiłł-Piotrowski, 1931; Minorski, 1970), and they intensified in the 1980s and 1990s due to the development of private business. Changing the function of the ground floor from residential to service allows for the intensification of the street's public life by attracting new users to its space. In particularly attractive locations, the service function (commercial spaces) is also introduced on the 1st floor (Fig. 1).

The original layout of the building and subsequent transformations have a direct impact on the architectural solutions used and the scope of work necessary to carry out the work. Depending on the existing layout of the building's façade and whether commercial or residential premises were originally located on the ground floor, various transformations of the building's façade may be necessary. For buildings where the ground floor originally served service functions (Fig. 2), and the façade was not transformed in later years, the changes will have the smallest scope, focusing on the interiors. At the turn of the 19th and 20th centuries, on the main shopping streets, some shops occupied not only the ground floor but also the first floor. During the period of the Polish People's Republic, the original windows of service premises were sometimes bricked

Fig. 1. Tenement house at Małachowskiego Square in Warsaw – the state before (a) and after renovation, which included shop windows installation on the 1st floor (b)

Source: [a]Hochtief (2011); [b]photo by Alicja Kozarzewska 2023.

Table 1. Transformations of Warsaw tenement houses affecting the form of space

Tenement house address	Construction period	Development investment completion date	Residential to retail change of the ground floors	Attic adaptation/ /reconstruction for residential purposes	Superstructure	Yard space transformations
Wilcza 22	late 19th cent.	2008	–	–	+	+
Mokotowska 40	late 19th cent.	2014	–	–	+	+
Hoża 50	late 19th cent.	2015	–	–	+	+
Poznańska 13	late 19th cent.	2015	–	–	+	+
Brzeska 18	late 19th cent.	2017	–	+	–	+
Środkowa 13	late 19th cent.	2017	–	–	+	+
Targowa 76	late 19th cent.	2017	–	+	–	+
Kępna 15	late 19th cent.	2018	–	–	–	+
Kopernika 15	late 19th cent.	2018	+	–	–	+
Koszykowa 47/49a	late 19th cent.	2018	+	–	+	+
Targowa 21	late 19th cent.	2018	–	–	+	+
Hoża 42	late 19th cent.	2019	–	–	+	+
Jagiellońska 36	late 19th cent.	2019	–	–	+	+
Foksal 13/15	late 19th cent.	2020	+	–	–	+
Wilcza 19	late 19th cent.	2020	+	–	+	+
Złota 83	late 19th cent.	2022	–	+	–	+
Rakowiecka 41	early 20th cent.	2005	–	–	+	+
Rakowiecka 41a	early 20th cent.	2011	–	–	+	+
Dobra 11	early 20th cent.	2012	–	–	–	+
Okólnik 11, 11a	early 20th cent.	2014	–	+	–	+
Poznańska 11	early 20th cent.	2014	–	–	+	+
Targowa 43	early 20th cent.	2014	–	–	–	+
Poznańska 16	early 20th cent.	2015	–	–	–	+
Tamka 45	early 20th cent.	2015	–	–	–	+
Wilcza 14b	early 20th cent.	2015	–	–	–	+
Okrąg 2	early 20th cent.	2016	–	–	+	+
Waliców 17	early 20th cent.	2016	–	–	–	+
Wiejska 11	early 20th cent.	2016	+	–	+	+
Górnośląska 7a	early 20th cent.	2017	–	+	–	+
Ludna 9	early 20– cent.	2017	–	–	+	+
Ogrodowa 65	early 20th cent.	2017	+	–	+	+
Św. Barbary 4	early 20th cent.	2017	+	+	–	+
Jagiellońska 22	early 20th cent.	2018	–	–	–	+
Jagiellońska 27	early 20th cent.	2018	+	+	–	+
Mokotowska 45	early 20th cent.	2018	–	+	–	+
Mokotowska 52	early 20th cent.	2018	–	–	+	+
Noakowskiego 16	early 20th cent.	2018	–	–	–	+
Nowogrodzka 6a	early 20th cent.	2018	+	–	–	+
Okrzei 26	early 20th cent.	2018	–	–	+	+
Mokotowska 57	early 20th cent.	2019	–	–	–	+
Gagarina 33	early 20th cent.	2020	–	–	–	+
Łomżyńska 26	early 20th cent.	2021	–	–	+	+
Wilcza 60	early 20th cent.	2022	–	–	–	–
			The number of tenement houses given space transformation was recorded			
			9	8	20	42

Source: own work.

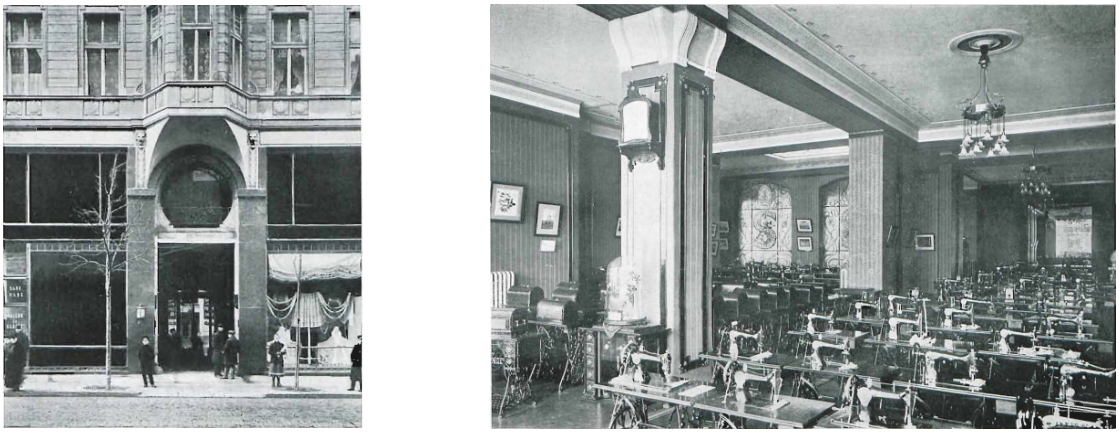

Fig. 2. The ground floor of a tenement house at Marszałkowska 137 (architect Dawid Lande) and the interior of the shop

Source: *Przegląd Techniczny* (1906), *44* (1), (tabl. XIX).

up, and residential premises were introduced in place of service premises. The new elements of the façade in the ground floor zone created in this way may differ in style from the character of the original façade. When re-adapting these premises, it will be necessary to design new façade solutions on the ground floor. The introduction of new elements on the façade will also be necessary if there was originally a dwelling on the ground floor (Fig. 3).

Possible changes to the façade include, among others: designing the entrance to the service premises, changing the dimensions of window openings, and features necessary for the operation of the service premises, e.g., a signboard. Any interference with the façade should not disturb its original composition. The need to maintain the original layout or adapt the new layout to the aesthetics of the façade on the upper floors is a significant spatial limitation: it does not always allow for adjusting the entrance to the needs of disabled people and does not always allow for a good exposure of the premises' services from the street.

Another applied solution is to merge the space of the ground floor and the first floor to obtain a high interior (an example is the transformation of Hausmann's tenement house in Paris, designed by MVRDV). A less popular solution, due to its large interference in the existing structure, is the extension of the ground floor towards the courtyard and giving it the form of an arcade (Wojtas, 1992; Fiuk, 2000). Other functional arrangements are also possible, adapted to the function introduced inside.

Fig. 3. The ground floor of a tenement house at Nowowiejska 19 in Warsaw (architect Stefan Szyller) – ground floor with a residential function

Source: *Przegląd Techniczny* (1906), *44* (1), (tabl. XXXIX).

The described conditions and the necessary transformations resulting from them can be simplified in Figure 4.

Adaptation of the attic for housing purposes

Due to the bombing of Warsaw during World War II, most of the roofs of the tenement houses were destroyed. The enormity of the damage was documented during flights over the city immediately after the war. Thanks to the photographs taken before the war, in 1935, it is possible to compare the condition of buildings before and after the war (Fig. 5).

The upper storeys of the buildings were also often damaged. Depending on the damage to a given building and the works undertaken later, different transformations of the upper parts of the building are possible. Possible solutions are shown in the diagram (Fig. 6).

Adaptation of attics is a solution – used both by communes conducting extensive revitalisation activities, private investors carrying out transformations of the entire building, as well as by housing communities transforming only the attic from the entire space of the building. Adaptation of the attic allows for obtaining a new residential space in prestigious locations, where there are no more free building plots.

The possibility of adapting the attic for residential purposes largely depends on the permissible interference in the structure and geometry of the roof and the requirement to preserve the original structural and finishing elements. Most often, the conditions for introducing a new utility function to the space of the attic are maintaining the current height of the crowning cornice in relation to the street level and the existing slope of the visible roof slope (it is possible to change the shape of the roof, e.g., viewpoint). The building where the newly built fragment of the roof has been moved back so that it is not visible from the street is a tenement house at Łomżyńska 26 in Warsaw (Bojarowicz & Żaboklicki, 2016; Fig. 7).

Due to the adjustment of the height of the attic to the new function, it will be necessary to increase the height of this storey – changing the geometry of the roof is the basic action. The sectional lowering of the ceiling of the storey below from the side of the

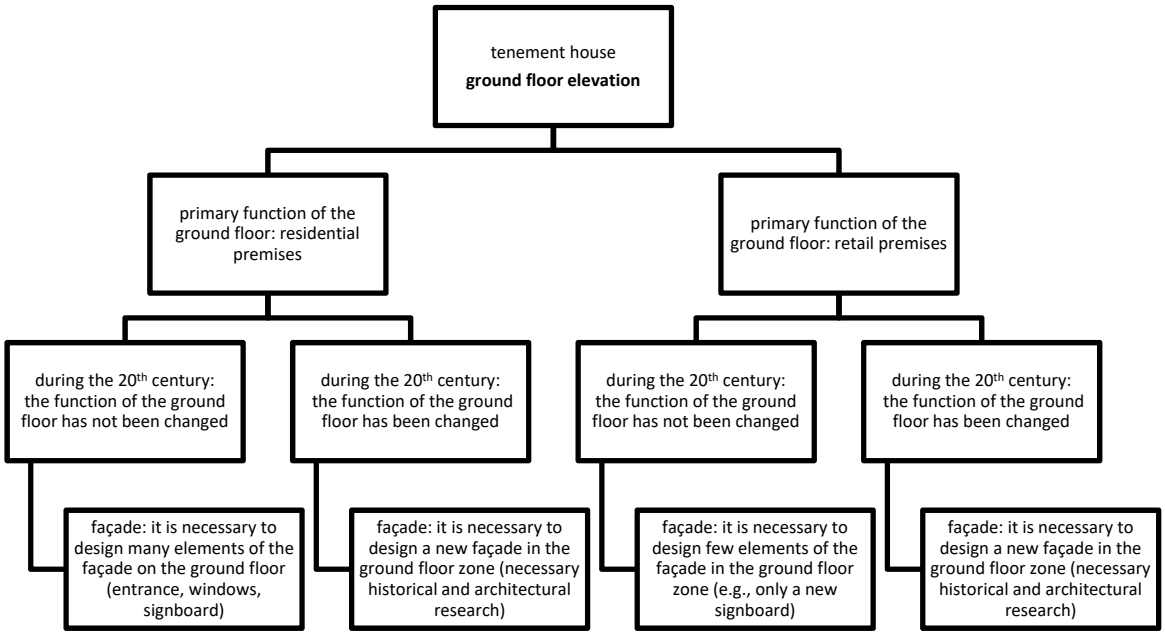

Fig. 4. Scheme of building transformations – ground floor of a tenement house

Source: own work.

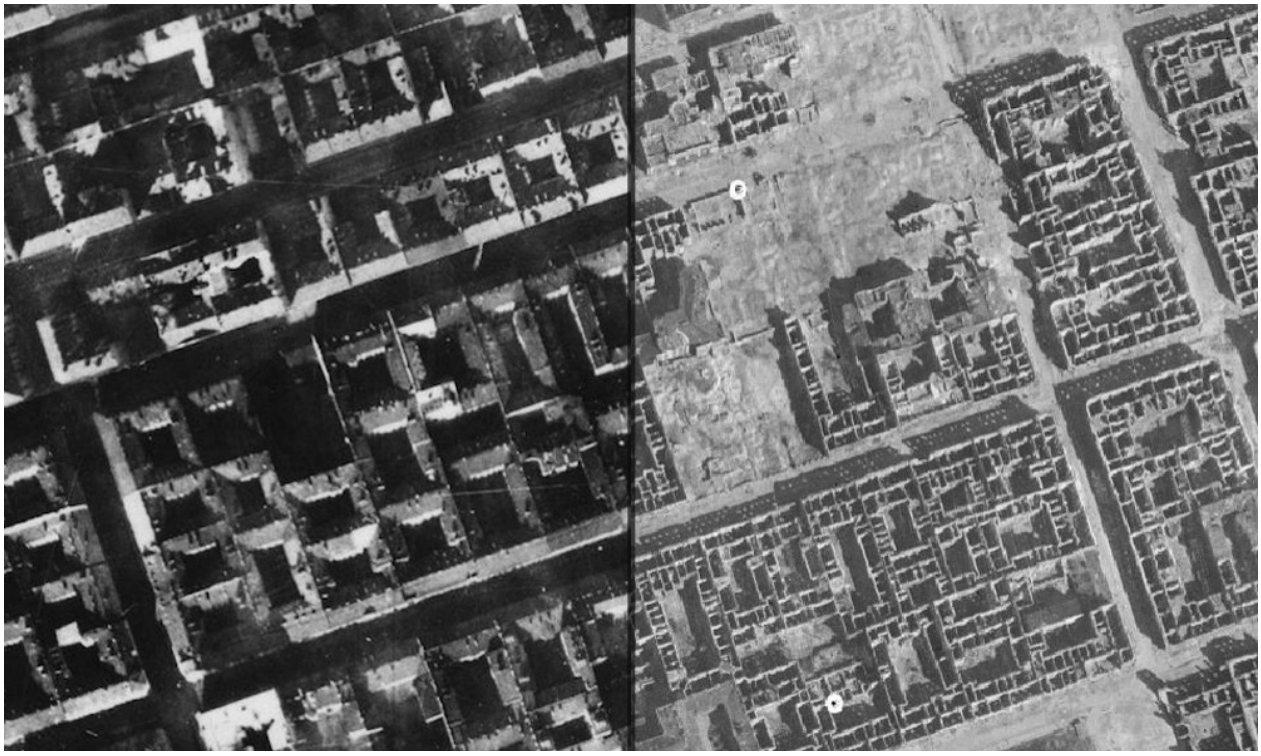

Fig. 5. Destruction of roofs in Warsaw during World War II – vicinity of the city centre

Source: Mapa.um.warszawa.pl (2022).

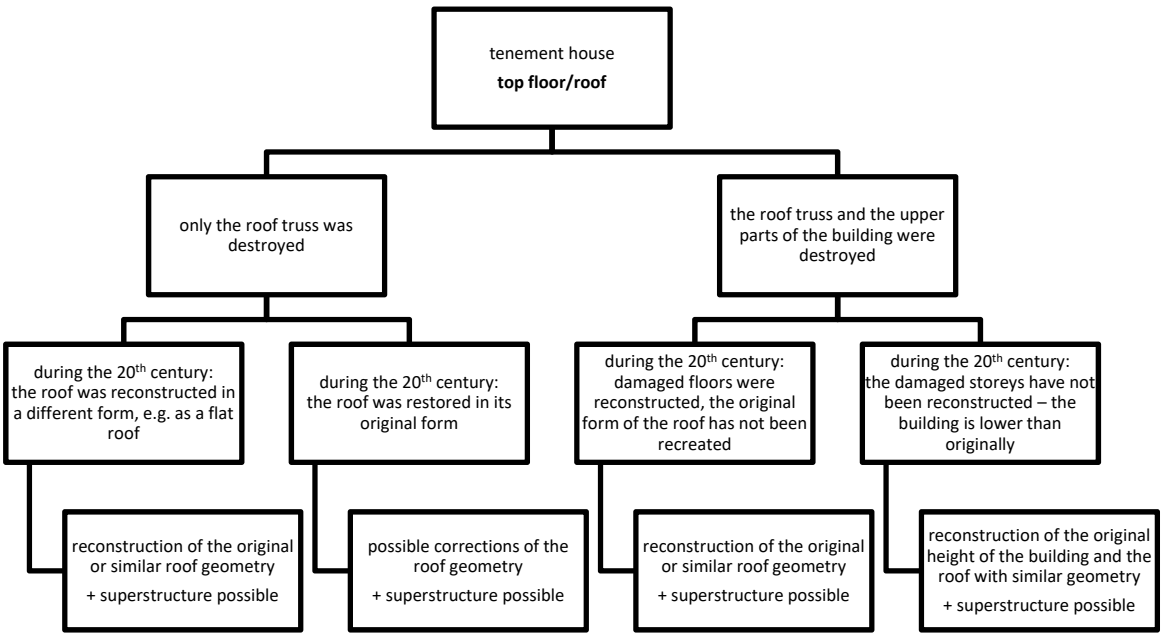

Fig. 6. Scheme of building transformations – tenement house roof

Source: own work.

Fig. 7. Tenement house at Łomżyńska 26 in Warsaw – roof geometry before modernisation (a) and after modernisation (reconstruction project: architect Janusz Marchwiński). The shape of the roof, and the withdrawal of the window line, resulted from the street's visual analysis

Source: Marchwiński (2023a, 2023b).

courtyard will also allow increasing the height of the storey.

The basic issue related to the adaptation of attics is the necessary recomposition of the façade resulting from the need to widen or introduce new window openings (Fiuk, 2000; Bizio, 2002; Kilanowski, 2020). Introducing new windows (usually roof windows, knee windows or dormers) can disturb the harmony of the façade, as well as the dominant character of the cornice or roof. The spacing of new glazing will usually be related to the layout of the windows of the tenement house. Modification or addition of new windows on the front side may be limited due to the need to maintain the integrity of the façade – it is usually possible to introduce larger glazing from the courtyard side.

Importantly, Polish law does not regulate in any way what types of windows should be used. Local laws, such as local zoning plans, very rarely refer to the possible types of windows, but usually indicate the type of roof that can be used.

Superstructure

Adaptation of the attic is often associated with the addition of a new storey. The superstructure has identical conditions as the described adaptation of the attic for residential purposes. Due to the very large interference with the original substance, the superstructure should be carried out with particular care, and the superstructure of historical objects will not always be possible (Pełczyński & Tomkowicz, 2016). Superstructures that would disturb the original proportions of the building or dominate over the historical tissue should be avoided. They cause changes on two levels: the building and the urban interior. The aggressively extended building loses its original proportions. For many observers without architectural education, it is not possible to recognise what it might have looked like before the reconstruction. In addition, new loads on the structure often lead to the need to replace it, which in turn leads to irretrievable loss of part of the original substance. On the other hand, the urban interior, of which a given building is a frame, is also transformed. Its proportions and character change – it is possible to lose the perception of space as historical.

A particularly characteristic example in Warsaw of the domination of historical buildings by a modern superstructure is the transformation of a tenement house at Marszałkowska 30 (Fig. 8).

Harmonisation of the existing façade with the added volume is possible by withdrawing the new storeys, their contrasting aesthetics or continuing the style of the tenement house façade while simplifying and transforming it (Fig. 9).

a b

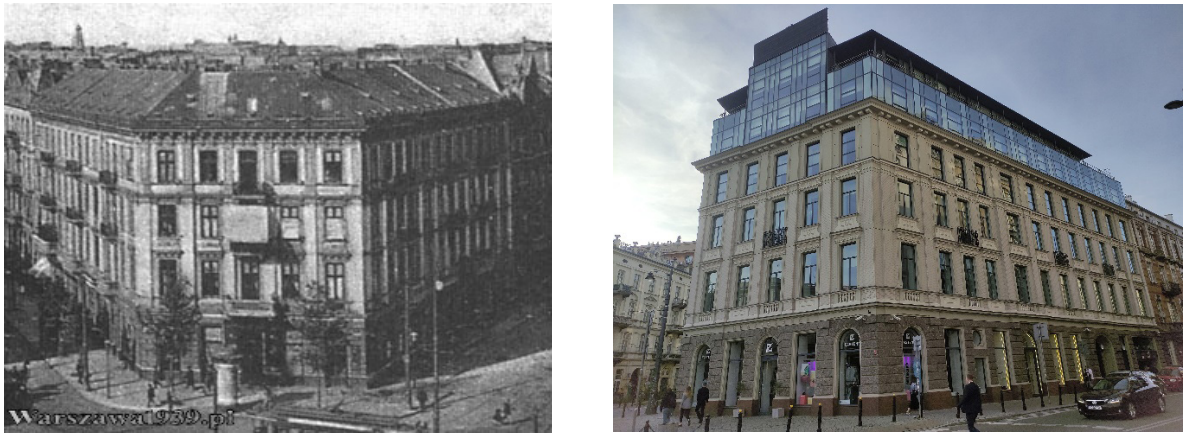

Fig. 8. Tenement house at Marszałkowska 30 in Warsaw: historical form in 1910 (a) and after reconstruction in 2023 (b)

Source: [a]Kasprzycki (1999, p. 136); [b]photo by Alicja Kozarzewska 2023.

Fig. 9. The front elevation of the superstructured tenement house at Wilcza 19 in Warsaw in 2023. The façade in the strip of the top floor is stylistically different

Source: photo by Alicja Kozarzewska 2023.

Fig. 10. Renovated courtyard at Wilcza 22 in Warsaw in 2023. The courtyard has been tidied up, and a decorative floor has been introduced to emphasise the shape of the interior, small architectural objects and plants

Source: RealCo (n.d.).

Transformation of the yard space

The most common transformation of the yard space is to organise it by laying a new floor, introducing greenery (Bogdanowski, 1982; Fig. 10) or creating a playground. Spatial changes to the courtyard are limited due to its dimensions and original development. Arranging a playground will usually not be possible in tenement houses with one yard. Playgrounds are usually introduced in large revitalisation investments, where the entire quarter is transformed.

For the sake of consistency, the advantages and disadvantages of the four presented transformations are presented in Table 2.

Table 2. Advantages and disadvantages of particular types of transformations

Transformation type	Advantages	Disadvantages
Residential to retail function change of the ground floors	– Acquisition of new commercial space. – If, in the post-war period, the layout of the façade in the ground floor zone was changed, it is possible to restore the original form.	– The final effect of changing the function, the appearance of the ground floor strip on the façade, depends on the skills of the architect. – The original layout of the façade does not always allow the entrance to be adapted to the needs of disabled people. – The original layout of the façade does not always allow for a good exposure of the premises' services from the street.
Attic adaptation or reconstruction for residential purposes	– Creation of new living spaces.	– The obtained functional layouts of new apartments may be ineffective.
Superstructure	– Creation of new living spaces.	– It is possible to disturb the original appearance of the building. – Changing the proportions of the urban interior. – Significant interference with the building substance, often irreversible.
Yard space transformation	– Improvement of the aesthetics of the yard.	– Due to the small area of the yard, it is often not possible to implement elements of small architecture and playgrounds.

Source: own work.

DISCUSSION

The most frequent transformations of tenement houses described in the article, affecting their form, are a response to the changing expectations of potential buyers of apartments and the need to adapt new investments to market trends. The adaptation of the ground floors of tenement houses for service purposes and the adaptation of the attics for residential purposes contribute to the revitalisation of historic buildings, create new usable spaces and contribute to the revival of public life in the city centre. This is important for preserving cultural heritage and at the same time, adapting it to contemporary social and economic needs.

The transformations analysed in the study directly impact the architectural form of tenement houses. The adaptation of the ground floor and the introduction of commercial spaces contribute to the revitalisation of urban street landscapes and the activation of public spaces. Alterations to the attic space provide additional housing units, meeting the need for housing in densely populated urban areas. Vertical superstructures and transformations of courtyards create opportunities to expand the usable area and improve the overall functionality of the buildings.

Introducing modifications to the substance of tenement houses, in addition to the described advantages, also has disadvantages.

In particular, it should be noted that due to the destruction of buildings that took place during and after World War II, Warsaw's historical buildings are not subject to uniform protection. Whether a building is subject to any protection at all depends on the degree of its preservation. Many tenement houses are not subject to any protection, and their reconstruction, in terms of legal restrictions, is as simple as any other building. Some tenement houses are protected only by the provisions of local law – local spatial development plans, but this protection is often limited to the need to submit a construction project for inspection by the monument conservator, who may but does not have to, make comments. Only a few tenement houses are subject to full conservation protection – entry in the register of monuments.

The described legal situation means that sometimes significant interference in the original building substance is possible, resulting in irreversible loss of its original character. This happens, e.g., when replacing structural elements.

Another example of the negative impact of transformations carried out by development companies is the change of the original dimensions of the building, e.g., through a significant superstructure. This changes the pre-existing proportions of the building, making it impossible for a person with no architectural background to read the original proportions of the building.

It should also be pointed out that by changing the height of the building, the character of the public space and the proportions of the urban interior change. Changing the proportions of the urban interior should be analysed separately, but architects often overlook this element.

CONCLUSIONS

The study examined the transformations of tenement houses carried out by development companies in the city of Warsaw. The research focused on tenement houses originally built in the late 19th century or early 20th century, which were renovated in the past 20 years. The results of the study identified four main types of transformations that affect the architectural form of the buildings: changing the ground floor function from residential to commercial, adapting or reconstructing attics for residential purposes, adding superstructures, and transforming courtyards.

The findings revealed that changing the function of the ground floor to commercial use was a common transformation, particularly in attractive shopping areas. This transformation not only allowed for the revitalisation of the street's public life but also attracted new users to the area. In some cases, commercial functions were also introduced on the first floor.

The adaptation of attics for residential purposes was another significant transformation observed. This utilisation of previously unused space provided new residential units and contributed to the densification of urban areas. Superstructures, such as additional floors or extensions, were also implemented to expand the building's capacity and accommodate more residents.

Transformations of courtyards were identified as a means to improve the overall quality and functionality of the space. These transformations aimed to create attractive communal areas for residents.

The main conclusion from the conducted research is the fact that the activities of development companies that carry out their investments by renovating tenement buildings focus on increasing the area that can be sold to potential buyers.

Overall, the study highlighted the diverse ways in which transformations impact the architectural form of tenement houses. By understanding the factors influencing the decision-making process and the outcomes of these transformations, urban planners, architects and decision-makers can make informed decisions to shape the future development of cities and ensure the preservation of their cultural heritage.

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WPŁYW PRZEKSZTAŁCEŃ PRZESTRZENI KAMIENIC NA FORMĘ ARCHITEKTONICZNĄ BUDYNKU

STRESZCZENIE

Przedmiotem analiz były przekształcenia kamienic przeprowadzone przez firmy deweloperskie realizujące inwestycje na terenie miasta Warszawy. Badano obiekty, które wzniesiono w pierwszej połowie XIX wieku lub na początku XX wieku, a zostały odnowione w ciągu ostatnich dwudziestu lat, tj. od 2003 roku. W badaniu wykorzystano zasoby stron internetowych firm deweloperskich, biur architektonicznych i agencji nieruchomości w celu zidentyfikowania i zgromadzenia informacji o odnowionych kamienicach. Dodatkowo w celu uzyskania pełniejszego obrazu przekształceń przeprowadzono wizje terenowe i wywiady z przedstawicielami pracowni architektonicznych i firm deweloperskich. Wyniki badania wykazały istnienie czterech głównych typów przekształceń, które mają wpływ na formę architektoniczną budynków: zmiana funkcji parteru z mieszkalnej na usługową, adaptacja/przebudowa poddaszy na cele mieszkalne, nadbudowy oraz przekształcenia przestrzeni dziedzińców. Wpływ poszczególnych przekształceń na formę architektoniczną przestrzeni scharakteryzowano na przykładzie kilku warszawskich realizacji. Firmy deweloperskich realizujące inwestycje renowacji kamienic skupiają się na zwiększeniu ich powierzchni użytkowej w celu maksymalizacji zysku ze sprzedaży – to główny wniosek płynący z przeprowadzonych badań.

Słowa kluczowe: kamienica, modernizacja, rewitalizacja, zabudowa mieszkaniowa, firma deweloperska