

Revitalisation through culture on the example of Hamburg, Grudziądz and Bydgoszcz

Dagmara Chylińska, PhD

<https://orcid.org/0000-0003-2517-2856>

e-mail: dagmara.chylinska@uwr.edu.pl

Krzysztof Kołodziejczyk, PhD

<https://orcid.org/0000-0002-3262-311X>

e-mail: krzysztof.kolodziejczyk@uwr.edu.pl

University of Wrocław, pl. Uniwersytecki 1, 50–137 Wrocław, Poland

Abstract: In many places, warehouse buildings, especially historic ones, are the inner periphery of cities – difficult to adapt, lacking modern functions, going to rack and ruin, or being unused. Regarding that they often occupy large areas in attractive locations, such as on riverbanks or along former commercial tracts, they require the authorities or decision-makers to undertake revitalisation projects whose scale and degree of difficulty make them exceptional. The Speicherstadt in Hamburg is considered a model for urban revitalisation of historic granary complexes. Together with the construction of a modern residential district called HafenCity, it is an example of successful revitalisation of the architectural and urban fabric. It is also an attempt to transform the city's former inner periphery into a centre of creative activities. In this article, the authors focused on the revitalisation of lesser-known historical granary complexes – in Grudziądz and Bydgoszcz, Poland – which differ from the Hamburg complex not only in scale, but also in age. They posed questions about the universality of the solutions applied, especially those that postulated a new life for districts based on the development of functions supporting social and cultural activities. The paper was created using source analysis, case studies and field observations.

Keywords: revitalisation, urban periphery, granaries, Grudziądz, Bydgoszcz, Hamburg

Introduction

Historic warehouse buildings, especially warehouse complexes, pose a major conservation and urban planning challenge today, both for researchers and architects, and regardless of the country in which they are located [Lee, Na 2024; Palladini 2012; Roe, Rucker 1991; Schubert 2017; Vingelli 2018]. Huge in volume, designed to perform specific utility functions subservient to various economic activities primarily of the pre-industrial and industrial eras, they are in many respects incompatible with the requirements of modern times, becoming urban peripheries despite their central location. The aim of this article was to evaluate selected revitalisation strategies of historical granary complexes, whose common determinant is their riverside and central location in the urban fabric. The authors focused on two such urban-architectural complexes in Poland (Fig. 4): granaries on the Brda River in Bydgoszcz and granaries on the Vistula River in Grudziądz. They have been undergoing revitalisation processes involving both the material and social fabric of the city for several years. In the analysis, the authors considered the approach to the historical

landscape defining the identity of the place, as well as transformations within the functions performed, through which socio-cultural revitalisation can take place. The two granary complexes selected for research are among the best preserved and at the same time the most valuable in Poland due to their age and architecture [Dumnicki 1987]. However, apart from recent years, their high value has not necessarily resulted in comprehensive actions aimed at their renovation, adaptive reuse and enhancement. The authors confronted the measures applied in the two Polish examples with the case of Speicherstadt in Hamburg (Germany), often considered a model for the revitalisation of such urban spaces [Rembarz, Denga 2018]. The importance of the Hamburg granary complex is evidenced by its inclusion on the UNESCO World Heritage List. The complexes of historical granaries selected for analysis differ in spatial and volume scale, the time of construction and therefore the typical architecture, as well as the degree of protection adopted. It seems, however, that despite these differences, it is possible to identify common features of the actions undertaken in these complexes, key directions of the revitalisation, which can be used in the restoration and adaptation of other granary complexes or, more broadly, post-industrial facilities. The paper mainly used source analysis, case study analysis and field observations.

Revitalisation of the inner periphery

Resulting from political and economic changes in the second half of the 20th century, many urban areas shaped under the influence of traditional industries experienced dramatic degradation of both urbanistic-architectural and socio-cultural spaces [Zwegers 2022]. As a consequence many of these spaces transformed into urban inner peripheries regardless of their actual distance from the city centre [Oppido, Ragozino, Esposito De Vita 2023]. However, several decades since the beginning of these negative processes, a wide base of professional literature on the problems of revitalisation of post-industrial spaces has already emerged [e.g., Berkenbosch, Groote, Stoffelen 2022; Kuzior et al. 2021, 2022; Szromek, Herman, Naramski 2021; Xie 2006 – see also the literature cited there], and many such sites have lived to see new functions within more or less successful projects. The existing literature entails both descriptions of individual realisations (disused mines, factories, silos, industrial plants, etc.), sometimes of post-industrial complexes (workers' estates, factory

complexes, waterfronts), less often of entire post-industrial cities (e.g. Detroit, the famous “bankrupt city” [Doucet 2017]).

Transforming historical industrial sites into consumption places might be seen as a flexible response to the cultural demands of post-industrial society and a successful spatial, architectural, and socio-cultural revitalisation [Zhang. Ren 2025]. At the same time, Zhang and Ren [2025] noted that large-scale industrial heritage renewal projects relying on cultural tourism development are simply based on the transformation of post-industrial sites into tourist attractions [cf. Vukmirović, Nikolić 2024]. The most iconic, monumental, or symbolic industrial sites might play this role *in situ* (preserved and open to visitors) or be used for a variety of cultural activities (exhibition space, space for cultural events, and human creativity). Zhong et al. [2024] stated that there are seven strategy combinations for industrial heritage renewal, including artistic expression, landscape and space, humanistic connotation, industrial building, history and culture, architectural features, and construction skills. These combinations can finally enhance the locality and architectural originality. However, adopting a more practical approach to industrial heritage renewal, Lee and Na [2024] see it as a process in which the levels of maintenance of original functions and transformations of authentic space decide on the final result assessment.

Evans and Shaw [2004] distinguish three models that describe the relationship between revitalisation and culture. They are: 1) cultural-led regeneration, 2) cultural regeneration, and 3) culture and regeneration. They are explained by Konior [2021, p. 52], specifying the importance of pro-cultural activities and their effects at each stage of revitalisation. In the first model, culture is treated as the basis for all activities, a catalyst for the revitalisation process, its symbol, and greatest achievement (in the form of iconic, often large-scale revitalisation “flagship” projects [Thompson 2015]). In the second model, transitional, culture is integrated with revitalisation and development strategies for a given area and activities undertaken in the social, environmental, and economic spheres. In the third model, cultural issues do not appear in strategic programs determining the course of renewal processes but apply to smaller or more local activities. Interestingly, the first, seemingly most desirable model of revitalisation based on flagship projects, most often assessed positively in the architectural and urban sphere, does not fully work in the social sphere (especially on a micro-scale, concerning local communities [cf. Jagodzińska 2013]). Flagship investments perceived as prestigious are more often places of tourist consumption that attract visitors and do

not always result in an increase in the quality of life and participation in the culture by residents [Murzyn-Kupisz 2013]. The relationship between the physical restoration of post-industrial facilities and socio-cultural revitalisation still seems to pose problems for decision-makers.

As Konior [2021] wrote, public sector investments related to cultural heritage (including problematic post-industrial) may become catalysts for the revitalisation process, especially since public sector is often in a more stable financial situation (but not necessarily better) than private entities undertaking large-scale revitalisation projects. Not without significance are also greater possibilities of reaching for external funds (grants, EU funds) necessary to carry out comprehensive activities. To some extent, this is confirmed by Koj [2024]. According to the research among 70 analysed industrial heritage revitalisation projects in the Górnośląsko-Zagłębiowskie Metropolitan area (Poland), the second significant group among possible functional transformations was institutional use for cultural or social purposes (the most important being commercial use, e.g. retail facilities, office premises, restaurants, and car repair shops). Moreover, especially concerning warehouses, a continuation of the industrial/manufacturing function, but in a new version, is observed.

Although urban renewal processes (including post-industrial districts) are often strongly dependent on the scale of the complexes, as well as local spatial, legal, urbanistic or socio-political conditions, they are united by a peculiar duality. Urban revitalisation is nowadays seen not only as a rescue, renewal of historical architectural and urbanistic material, but also, as a consequence, the release of creative social energy beneficial to economic development [Denga, Rembasz 2018]. Social participation is a desirable phenomenon in revitalisation processes. The participation of local communities in the renewal of urban spaces provides a guarantee of approval for the actions taken and the sustainability of their effects [Lenartowicz 2008, 2010]. However, community participation in revitalisation processes is rarely spontaneous [Ślebodzka 2021]. More frequently, it takes the form of a response to top-down actions, initiatives within the framework of social policies implemented by cities.

Regarding urban revitalisation processes, the conservation and engineering-construction issues pertaining to them are expanded to include aspects related to the continued functioning of the objects undergoing renewal. This applies to social and economic space, especially considering phenomena such as gentrification, tourist gentrification, and touristification [Lees, Slater, Wyly 2008]. Their relationship with

revitalisation has shown to be significant and not always positive [Cieciółka, Maćkiewicz 2020; Drozda 2017; Gotham 2005; Sadat Nickayin et al. 2020].

Renovation of historical buildings of a storage nature – granaries or similar structures (collectors, grain silos) most often concerns rural areas, less often urban areas. This is primarily due to the distribution of such structures preserved to this day. In rural areas, buildings of this type, especially those of older provenance, are most often part of palace or manor farm complexes and are more easily subjected to adaptive reuse for residential and service functions, such as hotels [see: Byś 2022]. In the case of urban granaries and warehouses, the issue of restoration and change of function often arises in the context of the revitalisation of coastal or riverside waterfronts [Überseestadt Bremen 2003]. Museum or exhibition functions are most frequently proposed for this type of buildings (see the adaptation of a granary in Cracow for the Centre of European Culture ‘Europeum’ [Kulig, Hryniewicz 2021]; a carriage museum in an 18th-century granary in Galowice [Małachowicz 2014, p. 187]; the Granary of Art in Słupsk [Mazur 2020]), less often residential (see lofts in a granary in Gliwice [Malkowski 2010]) or tourist-service and recreational (the Granary Hotel in Wrocław or the Spichrz Hotel in Toruń; the word “spichlerz” or “spichrz” in Polish means granary).

Speicherstadt in Hamburg – a model revitalisation?

Located in northern Germany on the Elbe estuary, Hamburg is often pointed out as a model case for the revitalisation of granary complexes. It is a free city with the rights of the state, a port city for centuries associated with both deep-sea and inland – river trade [Kähler, Schürmann 2010]. In many ways, Hamburg is a champion in large-scale projects to revitalise historic urban districts, especially those that are “problematic” (for various reasons) and therefore constitute the so-called inner periphery [Rembarz, Denga 2018].

The city’s exceptional prosperity was ensured first by its participation in the Hanseatic League, and in modern times by industrialisation and the subsequent rapid development of international trade in the late 19th and early 20th centuries. The construction of a large warehouse complex on the Elbe River was, paradoxically, facilitated by Hamburg’s great fire in May 1842, which engulfed almost the entire city, giving rise to many projects that were modern for the time (such as the construction of a new city hall). During the fire, 1,729 houses and 102 granaries essential to the city’s

commercial and retail operations burned down [Anonymous 1930]. The reconstruction of large areas of the city also took place under the influence of fighting the cholera epidemic that hit Hamburg in 1892 [Stiftung Historische Museen Hamburg n.d.].

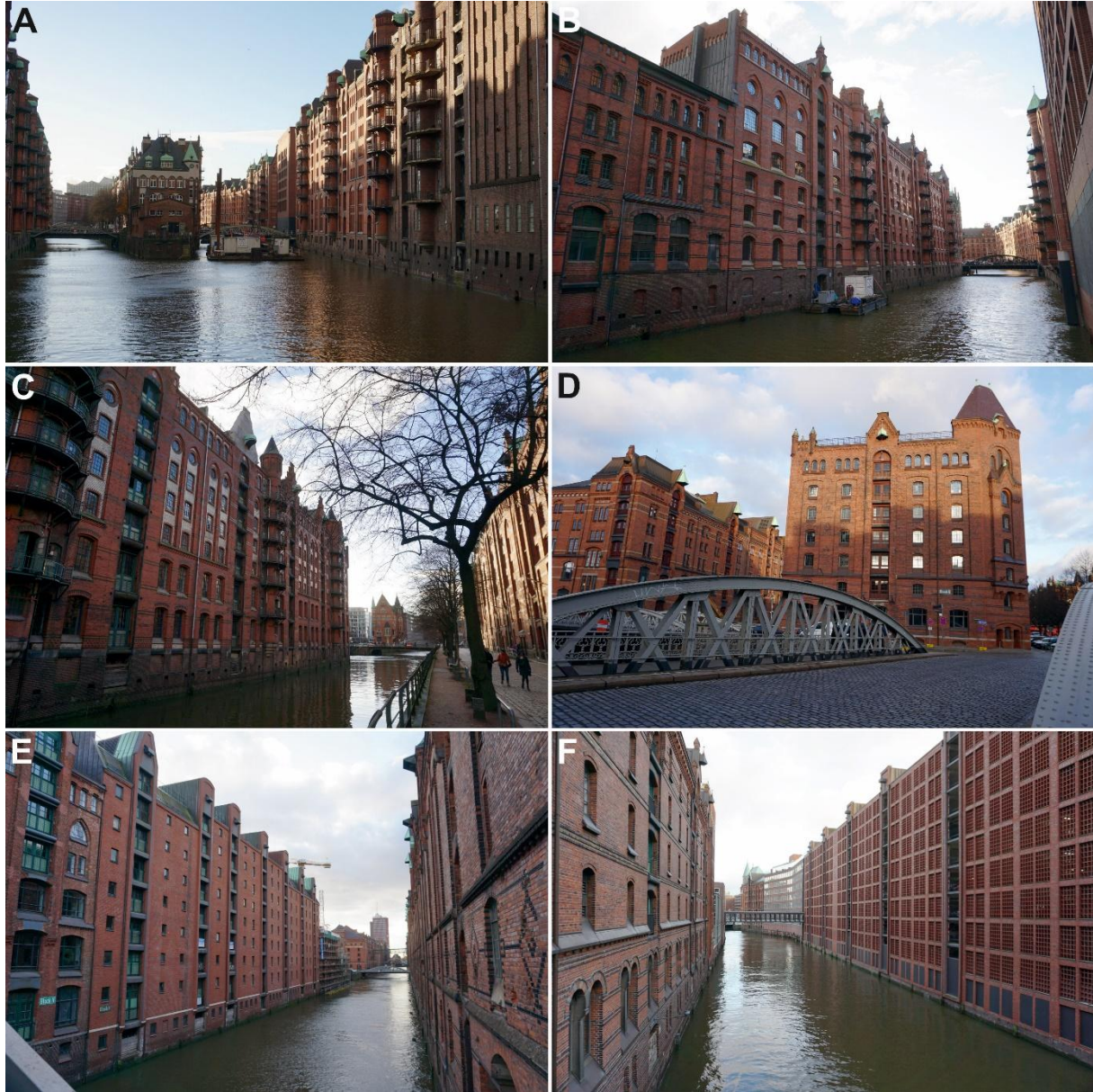


Fig. 1. Selected parts of Speicherstadt: A. The eastern part seen from the Poggenmühlen Bridge; in the middle, the Wasserschloss now housing a restaurant. B. Buildings along the Wandrahmsfleet Canal with the Wandbereiter Bridge in the background. C. Granaries along the Holländischbrookfleet Canal; the distinctive Türmchenhaus in the background; D. One of the district's typical bridges, the Neuerwegsbrücke. E. Modern office buildings relating to the appearance of granaries along the Brooksfleet Canal. F. Multi-storey parking lot over the Brooksfleet Canal
Photos by the authors (2023)

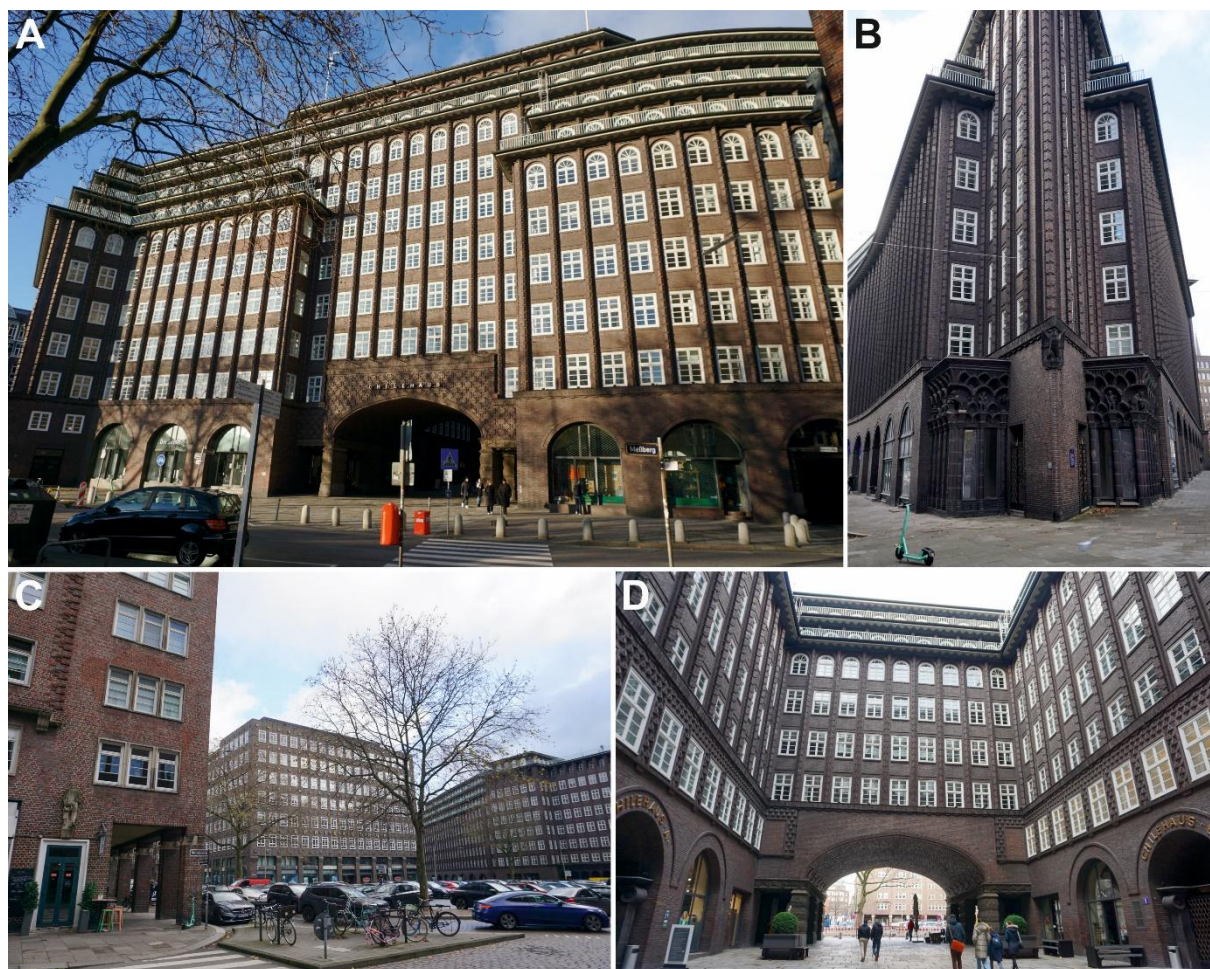


Fig. 2. Selected from the Kontorhausviertel buildings: A. The undulating facade of the Chilehaus seen from the south, facing the Elbe River. B. The most distinctive corner of the Chilehaus. C. The Sprinkenhof (centre) and Chilehaus (right) office buildings seen from Burchardplatz. D. The courtyard of the Chilehaus

Photos by the authors (2023)

The construction of the new warehouse complex (Speicherstadt), together with the adjacent office complex (Kontorhausviertel), took several decades and led to the creation of one of the largest port warehouse complexes in the world in the 20th century [Kähler, Schürmann 2010]. The core of the district – Speicherstadt (Fig. 1) – was built between 1885 and 1927, originally on a group of narrow islands in the Elbe River, on an area about 1.1 kilometres long. A total of 17 large (some sources report a larger number of blocks – 24) warehouse blocks were built in the Historicist style, in classic brick neo-Gothic architecture, modern in terms of functional and engineering solutions. They were used, among other things, to store products such as coffee, tea and cocoa. The complex is complemented by six auxiliary buildings and a network of streets, canals and bridges. In terms of its colour scheme and materials used,

Speicherstadt is in the tradition of the red brick Gothic style common in northern Germany.

The 19th-century granary district on the Elbe River is functionally and scenically most closely linked to the adjacent modernist office district, the Kontorhausviertel (Fig. 2). This is a densely developed area with eight mostly very large office complexes, built from the 1920s to the 1950s with port-related businesses in mind. There are a number of architecture-wise iconic early modernist office buildings here, including brick buildings with clinker facades, maintaining a unified aesthetic [Stiftung Historische Museen Hamburg n.d.]. From the beginning, the Kontorhausviertel served administrative and office functions for thriving businesses for which the location and appearance of the headquarters were not only of practical importance, but also of prestige (e.g., Chilehaus for entrepreneur Henry Barends Sloman). Most of the buildings were subordinated to the leading function, although by the late 1930s residential buildings also began to appear in the area (Steinstrasse), due to the fact that shortly after the Great Depression the demand for office space decreased.

Speicherstadt and Kontorhausviertel together cover a compact area of 26.08 hectares (so it is clearly larger than both Polish examples analysed in the paper) and have been on the UNESCO World Heritage List since 2015 (Decision: 39 COM 8B.26 [UNESCO 2015]). The basis for the entry was the preserved authenticity of the complex, its compact and conceptually coherent, unaltered character [Hero et al. n.d.]. The various components of the complex are also covered by the highest national form of protection, mainly since the 1980s.

During the 1943 carpet bombing of Hamburg, the western and central parts of the warehouse complex were hit hardest, and with them the bridges – destroyed (Kibbelsteg) or damaged (Brooksbrücke and Jungfernbrücke). It is estimated that about 50% of the buildings were destroyed. Reconstruction in the post-war period (until 1967, under the direction of Werner Kallmorgen) was mostly faithful to the originals (often using “recycled” material from other collapsed buildings in the city), only with some simplification or modernisation of the silhouette, which preserved the authenticity of the foundation and did not prevent it from being listed as a UNESCO World Heritage Site [UNESCO 2015]. In the end, 15 out of 17 large-scale urbanistic blocks were preserved. Completely destroyed buildings were also replaced by additions, often adapted to a new function at the site, namely the office function (brick facades were replaced by more glazed ones). Major changes affected the water

infrastructure and bridges which were rebuilt and adapted to the new conditions (geopolitical and economic) in which the city, the port and the river had to function in the second half of the 20th century. For the same reasons, barges, which were still used to transport goods until the 1980s, virtually disappeared from the Speicherstadt canals [Ministry of Urban Development and Environment 2012]. As a result of administrative changes at the end of the 20th century, new structures were added to Speicherstadt west of Kehrwiedersteg (Fig. 1E, F) and south of Am Sandtorkai and Brooktorkai Streets, which today form part of the buffer zone for the UNESCO World Heritage Site [Hero et al. n.d.].

Despite the WW2 destruction and subsequent transformations, both historic districts on the Elbe River continue their original functions – the Speicherstadt a warehouse, and the Kontorhausviertel an office and service area. They are still dominant or at least strongly present. This is certainly helped by the fact that both complexes were designed in the modern era, attaching importance to their maximum functionality while taking care of the quality and aesthetics of construction. As of 2012, some 96,000 of Speicherstadt's 300,000 m² of floor space were used as warehouses by various businesses, including those in the textile and fashion industries [Ministry of Urban Development and Environment 2012]. Since then, however, some of the well-known traditional companies have found new locations for their products, such as Hälssen & Lyon (a tea manufacturer). Others have emerged though, such as those trading in oriental carpets. While adapting to modern commercial and logistical conditions, however, a complete withdrawal of Speicherstadt's warehouse function is not desirable, as it gave the district its unique character. Nevertheless, new, diversified functions, usually service, are now also emerging in the granaries, including offices (in 2012, 81,000 m²), street-level stores and restaurants (in 2012, about 25,000 m²), and to a small extent a residential function. The latter has a limited role primarily due to flood risk, functional constraints (little natural daylight resulting from the width of the buildings) and due to complex's UNESCO listing [Ministry of Urban Development and Environment 2012].

In 2024, 300,000 m² of the available 450,000 m² of total usable granary space were leased [HHLA 2024]. Tourism infrastructure is present in the form of hotels (AMERON Hamburg Hotel Speicherstadt). Speicherstadt is also expanding its cultural offer, housing a number of museums (located in the former warehouses), mostly related to the industrial history of the district and the city: Speicherstadtmuseum

(Museum of the Speicherstadt), Spicy's Gewürzmuseum (Spice Museum), Deutsches Zollmuseum (German Customs Museum), Hamburg Dungeon, Hamburg Dialoghaus (Dialogue in the Dark), Miniaturwunderland (Miniature Toy Train Wonderland), Kaffeemuseum Burg. Until 2011 there was also a private The Afghan Museum. Large and easily adaptable storage space of warehouses has also been used for the needs of some institutions, e.g. Hamburgisches Architekturarchiv since 1984. By hosting events, Speicherstadt is becoming one of the city's creative spaces [Ministry of Urban Development and Environment 2012].

Maintaining Speicherstadt's historical qualities and authenticity is undoubtedly related to its simple ownership structure. This is because the buildings are overwhelmingly owned by the Hamburg Port and Logistics Company (Deutsch: *Hamburger Hafen und Logistik*, HHLA). To date, transformations of the substance of the historic district have taken place after consultation with the Hamburg Department for Heritage Preservation. Analogous measures have been taken regarding the technical infrastructure of the waterway, primarily the bridges (based on the principles contained in the guide "Maintenance and Repair Program for the Bridges of the Speicherstadt"). The transformation of architectural substance is clear to observers through the use of distinctive materials. Many interiors of the warehouse complexes have been strengthened and modernised.

In preparation for the Speicherstadt and Kontorhausviertel complex's application for UNESCO World Heritage status, the city adopted a number of pieces of legislation aimed at protecting the historic architectural and urbanistic design qualities as well as the industrial landscape, including "The Ordinance on the Design of the Speicherstadt" (Deutsch: *Verordnung zur Gestaltung der Speicherstadt*), dated August 5th, 2008, which contains regulations on the design of facades and roofs, building technology, advertising spaces, the use of vending machines and the design of outdoor spaces within the historic district [Hero et al. n.d.]. At the time, a concept for further development and revitalisation was developed for Speicherstadt, envisioning the transformation of the area into a socially vital downtown district, a kind of bridge between the city's past (the historic city centre in the north) and the present represented by the newly built HafenCity (in the south). The task of the authorities, architects and urban planners was to focus on many daily activities of residents and tourists related to the various traditional and contemporary functions of the renovated and modernised granaries. Due to its central and prestigious location, Speicherstadt

was seen as a place for creative activities related to arts, culture and entrepreneurship, and partly as a new downtown residential area (after the implementation of the plan to build a flood protection system). The plans also took into account issues of public transportation, limited parking, pedestrian and bicycle traffic, while preserving the most important traces of the district's original purpose, including the stone material of historic floors, roadways and sidewalks [Ministry of Urban Development and Environment 2012].

The task of revitalising the historic port districts along the Elbe River also includes the area adjacent to Speicherstadt to the south, the so-called HafenCity (Fig. 3). Located outside the boundaries of the UNESCO World Heritage Site and comprising a total of 157 hectares (including 127 hectares of land) with an industrial and port past, the area has been earmarked for an audacious housing project involving the creation of some 7,500 homes for 15,000 residents (construction of new buildings, adaptation of existing ones). The project's origins date back to 1997, and the first residents moved into their apartments in 2005 [Kähler, Schürmann 2010]. The project is being developed mainly with private funds, with a smaller amount of public funds raised from the sale of lots in the district (about 3:1 ratio). Given that Hamburg's port districts, including Speicherstadt and Kontorhausviertel, are densely built-up with little recreational green space, HafenCity is designed with numerous open and publicly accessible green areas (plazas, parks, promenades) covering almost 1/4 of the district's area. In addition to the residential function, HafenCity is also expected to realise office, cultural (including Elbphilharmonie Concert Hall and the International Maritime Museum), educational (including HafenCity University, Kühne Logistics University, Medical School Hamburg), and tourism and recreational functions [HafenCity 2021]. HafenCity's most famous project is the conversion of the late 1960s "Kaispeicher A" warehouse into a new philharmonic hall, the Elbphilharmonie Concert Hall, now also housing a hotel, restaurants and luxury apartments [Heuer, Runde 2021]. The building has become a new architectural icon of the city and a symbol of the revival of its port districts. The multifunctionality of Hamburg's new (HafenCity) and old (Speicherstadt, Kontorhausviertel) riverfront districts has helped to create a new "downtown" of the city [León, Sapa 2020].

An example of the development of creative spaces in Speicherstadt is the SPACE project, which aims to support companies, start-ups and freelancers to collaborate, organise events and workshops, and promote knowledge transfer and cooperation

between the content and creative technology industries. SPACE is a project of the city-owned company Hamburg Kreativ Gesellschaft mbH, supported by the Department of Culture and Media of the City of Hamburg and the European Regional Development Fund. One of the historic granaries has been set up as an attractively arranged workspace available for free to all, provided they are engaged in creative content and technologies. Various events and conferences on the subject are also held there [SPACE n.d.].



Fig. 3. HafenCity in Hamburg: A. View along the former Sandtorkai harbour to the west, with the Elbphilharmonie building in the background. B. Sandtorkai seen to the east. C. Am Kaiserkai wharf with the two historic cranes still standing. D. The modern buildings of HafenCity against the background of the brick granaries of Speicherstadt
Photos by the authors (2023)

Summing up, revitalisation of the Hamburg warehouse complex, both in the context of protecting the historical, architectural and urban heritage and the city's socio-cultural space, seems to be a model example based on the three “pillars of success”. They accordingly are:

1. maximum maintenance of the original storage function, which is responsible for the character of the district and ensures its current and future economic functioning conditions;

2. the revitalisation process being entirely subordinated to the vision defined clearly through the application and then the district's entry on the UNESCO World Heritage List (in terms of main goals, pace, tools of their implementation, and results);
3. creating nodes of human activity both inside (tourist attractions, socio-cultural institutions, internal and open creative spaces) and in the immediate surroundings of the district (Old Town, HafenCity). This seems to be a direction that can counteract the problems related to the revitalisation of post-industrial heritage mentioned above (the often negative relationship between the physical restoration of such facilities and socio-cultural revitalisation [cf. Konior 2021; Murzyn-Kupisz 2013]).

Materials and methods

The analysis of revitalisation processes was carried out for two granary complexes in Poland: in Bydgoszcz and Grudziądz (Fig. 4). They share some similarities, but there are also some differences between them. The sites are united by their original purpose (warehouses), riverside location, and uniqueness confirmed by various levels of national protection. All districts also experience adaptation challenges related to a greater or lesser loss of their original function. The considerable difference lies in the completeness of the historic district's urban plan and the preservation of architectural structures, especially in terms of Bydgoszcz. However, this case supports the analyses of revitalisation issues regarding the challenges of historic urban landscape reconstruction. Both Polish case studies were conducted concerning the Hamburg case as an urban revitalisation model.

Given the main goals of the work, the following elements were analysed each time:

- the conditions for the establishment and development of the granary complex,
- possible transformations of the complex during the implementation of the original function,
- the causes and course of withdrawal of the assumed function from the complex,
- the scale of possible degradation of facilities after the original function is withdrawn,
- renovation and adaptation of the complex or parts of it (assumptions, concepts, course),

- the current function(s) of the complex or parts of it.



Fig. 4. Location of the analysed granary complexes

Source: authors' own research

The list was developed by the authors using indications from the literature. The choice of the factors that might influence the final revitalisation assessment results from the opinion that “the protection of entire cultural landscapes should therefore be the dominant postulate in industrial heritage management” [Konior 2021, p. 40, translated from Polish by the authors]. Regarding that, the authors focused mostly on the external, visual transformations of the particular district that impacted its integrity and authenticity as well as functional continuity or change. Addressing historical substance, the authors' starting point for research was based on primary conservation principles, especially the principle of maximum respect for the original fabric of a monument and all of its values (material and intangible) and the principle of minimum necessary interference (refraining from unnecessary works) [cf. Rouba 2016]. The focus on actions that impacted the social sphere as factors of a successful revitalisation process comes from the view described by Konior [2021, p. 46, translated from Polish

by the authors]: “Revitalisation that only contributes to changes in the spatial aspect, not the socio-economic one, cannot be considered as such, it is rather just a repair or renovation.”

The basis for the study was an analysis of the scientific literature on the subject, conceptual and planning documents, and reports on ongoing projects. Each time, the municipal authorities (departments responsible for spatial development, heritage protection and culture) and the managers of individual sites were asked to provide relevant documents and information. The return of responses was unfortunately not always satisfactory. Many documents were obtained from Internet resources. The information obtained was subjected to source analysis, with particular emphasis on the development of cultural functions in post-industrial heritage sites. An important supplement was field research in Bydgoszcz, Grudziądz and, for comparison, Hamburg (Fig. 4), aimed at determining the contemporary functions of the complexes and their individual parts, identifying model solutions and possible problems. All studies were conducted in 2023–2024.

Case areas

Grudziądz, located in northern Poland on the right bank of the Vistula River, developed as a port town due to its convenient topographical location (on a high escarpment above the river), between other important centres of water trade (both sea and river), namely Toruń and Gdańsk [Gierszewski 1982]. Possessing a complex of large granaries by the river since the 14th century, it served as a storage and transit centre in river trade [Fijałkowska 2012]. The granaries of Grudziądz are the oldest among those analysed in this article. They form a powerful urbanistic composition, at the same time constituting an integral part of the city’s fortifications on the Vistula side (Fig. 5). The defensive function forced a different than usual location of the granaries in relation to the river – the gable position was replaced by a longitudinal, ridge position, with the roofs melding into a single block [Dumnicki 1987]. The outer walls of the granaries on the Vistula side were reinforced with buttresses, and communication with the port was provided by the so-called Water Gate (Polish: *Brama Wodna*). At the turn of the 16th century, several decades after the incorporation of Royal Prussia into the Kingdom of Poland, Grudziądz became, together with Toruń, the largest centre of trade and grain turnover in the Chełmno and Lubawa lands. Later on, when the Vistula River moved away from the escarpment, the granaries were

converted into residential houses (19th and 20th centuries, nos 19, 21, 23, 25, 27, 29, 31, 37, 55 Spichrzowa Street – Fig. 6 [Fijałkowska 2012]) or fell into disrepair. Granaries in Grudziądz were rebuilt from war damage in 1946–1966, and conservation works on buildings in poor condition were also carried out in the 1970s and 1980s [Fijałkowska 2012]. There are 19 granaries and one tenement built on the foundation of a granary (preserved cellars) in the Register of Cultural Property [NID 2024] in the Spichrzowa Street.



Fig. 5. The role of granaries in the landscape of Grudziądz: A. View of the row of granaries located between the historic city centre and Vistula's riverbank from the Klimek tower on the Castle Hill; B. and C. Views of the northern part of the complex from the Vistula riverbank; the plastered tower of the town hall with its baroque cupola and the brick tower of St. Nicholas Basilica tower over the granaries. D. The southern part of the complex with the Water Gate (Polish: *Brama Wodna*)
Photos by the authors (2024)

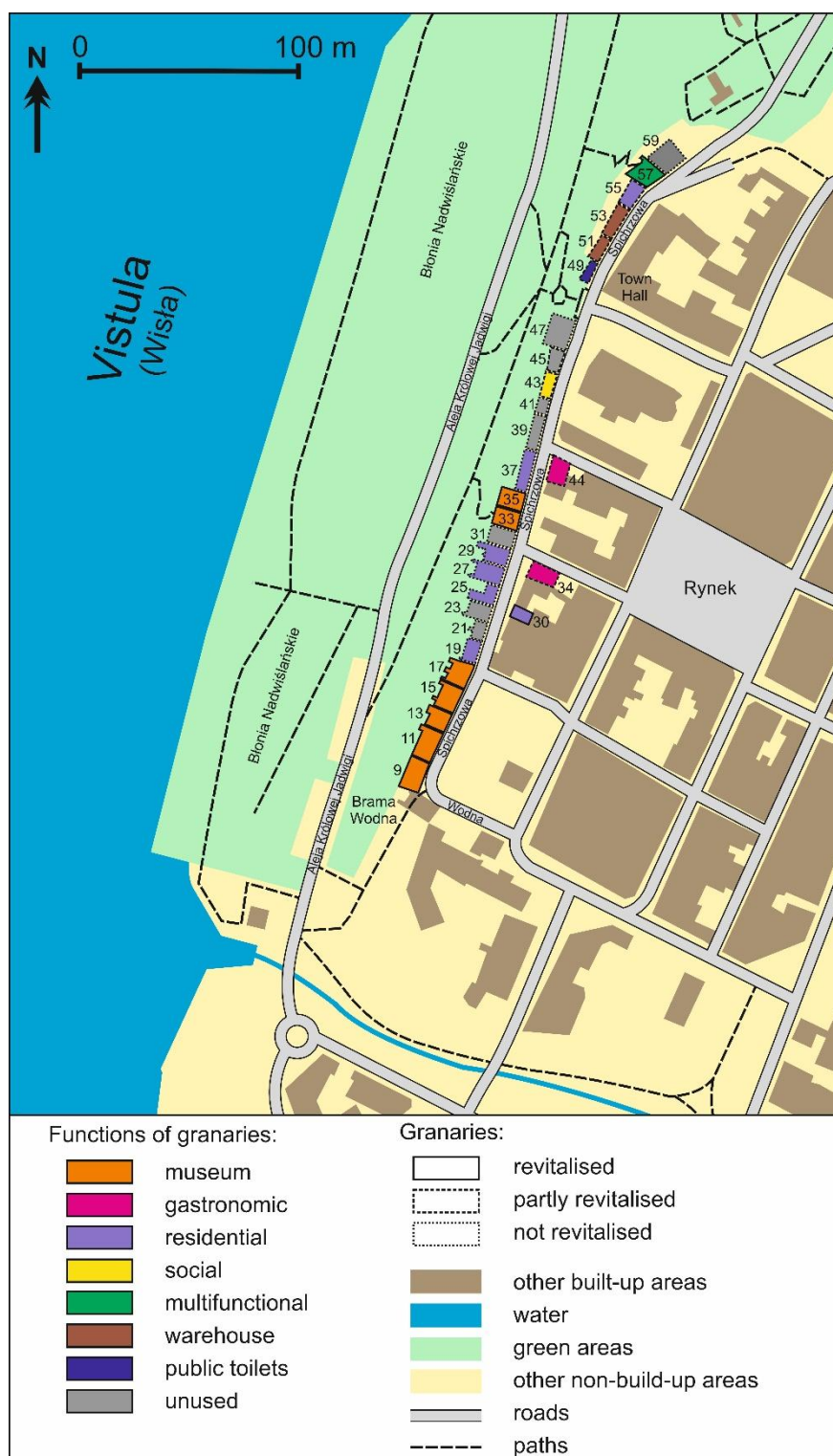


Fig. 6. Granary complex in Grudziadz. Numbers on the map correspond to the numbering of buildings and numbers used in the article
 Source: authors' own research

Currently, the number of existing granaries in the complex by the Vistula River is 26 [Majewski 2023]. Such a large number is due to the division of the plots into smaller ones (more granaries are also located further in the city centre; Fig. 6). Three of them

are Gothic, the others later, all of them brick, mostly unplastered. In addition to their ridge position, Grudziądz granaries are characterised by asymmetry – due to their foundation on a high slope, they have a different number of above-ground storeys: 2–3 on the side of Spichrzowa Street (i.e. city centre) and 5–6 by the Vistula River. From the side of the river, the granaries form one monumental mass, about 25 metres high. The only element dividing the composition are the buttresses. The elevations on the Vistula side are devoid of ornamentation, as they would be invisible from the surface of the Vistula or the other bank of the river [Dumnicki 1987]. The interiors of some of the buildings have retained their storage character and original carpentry structures in the form of beamed ceilings supported by columns [NID n.d.]. Grudziądz granaries, together with the panorama from the Vistula River (Fig. 5B, C, D), have been recognised as a Monument of History [Decree of the President of the Republic of Poland dated November 22nd, 2017].

The historical centre of Grudziądz (the Śródmieście district), including the former warehouse area, suffer from many problems of social, economic, environmental, spatial-functional, and technical nature, e.g. recently as many as 80.2 unemployed per 1,000 inhabitants (the city's average being 40.1). Indicators of the number of social assistance clients (128.4 per 1,000 people, compared to 40.7 for the entire city), as well as the total amount of benefits per 1,000 inhabitants in the Śródmieście are three times higher than the average value of both indicators for the entire city. The number of people benefiting from social assistance constitutes nearly 50% of the total number for the entire city [*Gminny Program...*, 2024]. The whole city is characterised by progressive depopulation and low social activity of its population.

Bydgoszcz is a city about 70 kilometres southwest of Grudziądz, located mostly in the valley of the Brda River, a tributary of the Vistula, and on the left bank of the latter. The Brda has been an important river transportation route for centuries, first of regional importance, connecting Eastern Pomerania with Kuyavia [Gierszewski 1982], and now part of the Oder-Vistula national waterway, the E70 international waterway and the Bydgoszcz Canal. Since the 15th century, the city has participated in the supra-regional grain trade, having a water connection with the seaport of Gdansk. The city's strong position in inland river trade increased in 1774 with the construction of the Bydgoszcz Canal connecting the basins of the Vistula and Oder rivers [Nadolska 2014]. As a result of wars and fires, Bydgoszcz's oldest granaries from the Old Polish period have not survived. Before 1945, there were only five transit granaries (in compact

groups) at the Brda southern waterfront (Grodzka Street), built in the late 18th and 19th centuries using half-timbered technology [Nadolska 2014]. Two of them burned down in 1960. Those that still exist today (letter A in Fig. 7) are dated 1794–1797 (no.7 Grodzka Street, so-called “Dutch”), 1793 (no.9 Grodzka Street) and 1794–1800 (no.11 Grodzka Street). The buildings are characterised by a wooden frame, transom-and-beam construction, with brick and plastered infill. Their gable walls enter into the body of the roof and there are brick cellars with barrel vaults [Nadolska 2014]. Before Second World War, the buildings underwent conservation treatment, impregnating the wooden structures. Also, the bricks between them were plastered and whitewashed [Zimna-Kawecka 2007]. On the other bank of the Brda River, at no.13 Stary Port Street, a freestanding granary with a wooden frame structure filled with bricks, unplastered and built in 1830–1840, has also survived (letter B in Fig. 7). Unfortunately, a large complex of three-winged half-timbered granaries in a bend of the Brda River on Marszałek Ferdynand Koch Street, used as military warehouses and destroyed in January 1945, did not survive. An opera house was built in its place in the 1970s [Nadolska 2014]. Other granaries that do not exist today were located at no.5 Grodzka Street, and in the vicinity of Solny Square and the mBank building.

In addition to the historic buildings of the Brda southbank, the most interesting part of the Old Town (Polish: *Stare Miasto*) in Bydgoszcz, also with industrial and warehouse functions, is the Mill Island (Polish: *Wyspa Młyńska*). Located to the west of Grodzka Street, it is distinguished by the architectural dominance of a brick industrial complex of the Rother’s Mills (Polish: *Młyny Rothera*) and the contrasting black-and-white body of the so-called White Granary (Polish: *Biały Spichlerz*; letter C in Fig. 7). The latter is a half-timbered building erected in the late 18th century (no.2 Mennica Street, 1789–1799) on a 15th-century Gothic brick basement. It served its original purpose until 1974. Rother’s Mills, which date back to 1842, consist of a mill, two adjacent granaries: a grain and a flour granary (designations F2 and F1 in Fig. 7, respectively), a boiler house and bathrooms. The structure of storage buildings, although large-scale, corresponds to others of the kind on Mill Island and in the Old Town. The walls of frame construction, strengthened with bracing at the corners, are filled with bricks, while the roofs covering the buildings are gabled with eaves. The western elevation features bay windows. The main element of the complex, the actual mill, is a solid red brick building with cement-lime mortar, unplastered, on a granite foundation, and on the river side (western elevation) on a high stone plinth

[Sochaczewski 2014]. There are two more granaries on Mill Island: a half-timbered one at no.1 Mennica Street, dating from 1835 (letter E in Fig. 7), and a former Camphaus Mill, the so-called Red Granary (Polish: *Czerwony Spichlerz*) from 1861 at no.8 Mennica Street (letter D in Fig. 7) [NID 2024].

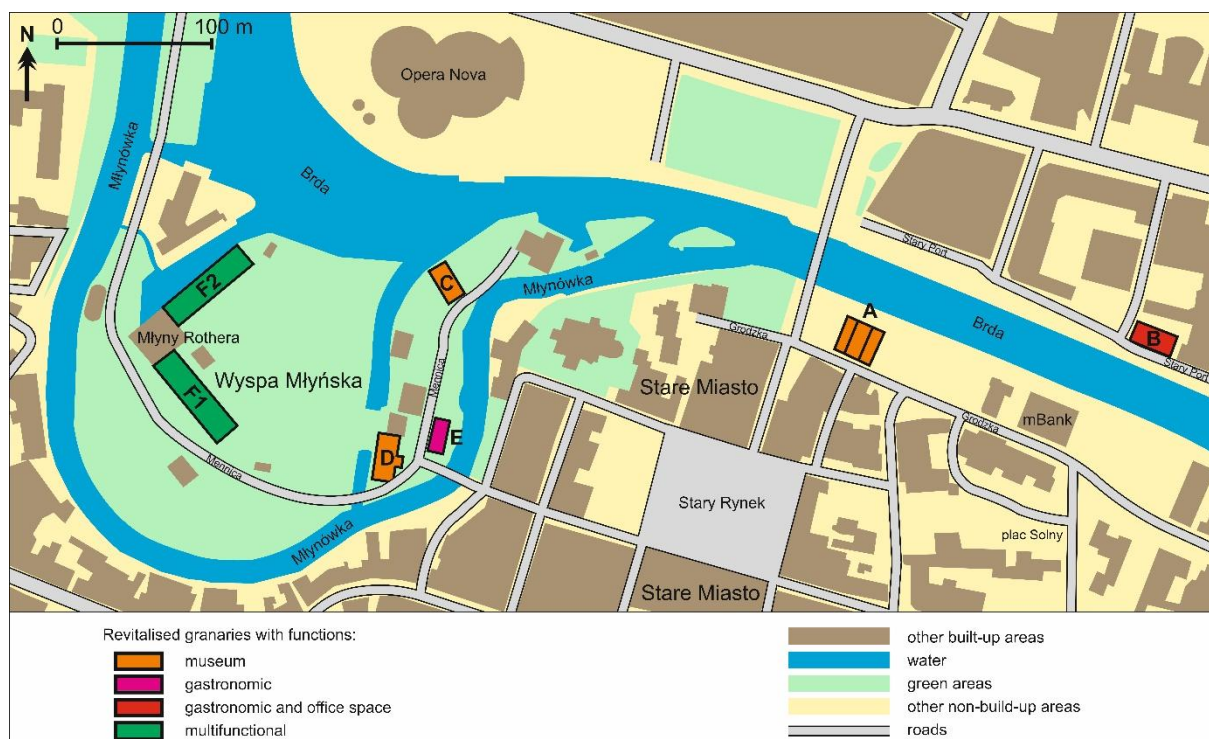


Fig. 7. Bydgoszcz city centre with preserved granaries: A. granaries on the southern bank of the Brda River at Grodzka Street, B. granary at Stary Port Street, C. White Granary (Polish: *Biały Spichlerz*), D. Red Granary (Polish: *Czerwony Spichlerz*), E. granary at no.1 Mennica Street, F. granaries in the Rother's Mills complex

Source: author's own research

Due to the turbulent history of the monuments and losses in the original architectural and urbanistic fabric of the city, the granaries in Bydgoszcz on the Brda River do not form a compact complex, unambiguous in terms of the functions they performed in the past and at present (Fig. 7). They constitute, so to speak, “islands” among other waterfront developments. All the mentioned buildings are listed in the Register of Cultural Property [NID 2024]. The Old Town, including the granaries on the Brda River, and the Mill Island are included in the boundaries of the cultural park. This is a form of protection for monuments located in the most representative points of the city. Its purpose is to improve the aesthetics and orderliness of urban space, referring, among other things, to the ways in which renovations are carried out, the materials used or the placement of advertisements on buildings [Art. 7 item 3 of the Law on the Protection of Monuments].

The Mill Island and the downtown of Brda waterfront, where the granary buildings are located, was legally designated in 2016 as one of degraded areas and city revitalisation areas (Bocianowo – Śródmieście – Stare Miasto, Okole, Wilczak – Jary). The basis for such an assessment of the area in 2015, apart from the degraded housing and technical infrastructure, were numerous social problems: progressive depopulation, poverty, including the phenomenon of poverty inheritance, professional inactivity, weak social ties, and low social activity [Urząd Miasta Bydgoszczy 2022].

Results: revitalisation of granary districts – strategies and directions

Grudziądz

Second World War brought great damage to Grudziądz's historic fabric. Some of the granaries were burned while roof trusses and elevations required repairs. Most of the conservation work maintained the pre-war functions of individual buildings, namely storage or residential. In the 1960s, the largest works were carried out on the granaries at no.9 Spichrzowa Street (considered the most valuable in the complex) and nos 11, 13, 15, 17, mainly for museum purposes (museum headquarters, exhibition and storage purposes; Fig. 6, 8A). Exterior interventions included the construction of dormers in the roofs to provide light to the interiors. Other work was carried out in the interiors of the granaries in order to adapt them for contemporary exhibition and tourist functions (including replacing wooden ceilings with Ackerman ceilings, new staircases, freight elevators, cloakrooms, sanitary facilities, etc. [Fijałkowska 2020]). As a result, the interior layout and disposition were significantly transformed. In 2022, the granaries at nos 33–35 Spichrzowa Street, which were renovated in 2020–2021, were also allocated for museum purposes (Flis. Museum of Vistula Trade; Polish: *Flis. Muzeum Handlu Wiślanego*; Fig. 9). On the side of the Vistula River, the museum was equipped with a metal footbridge that allows visitors to descend to the Vistula boulevards (Fig. 9D).

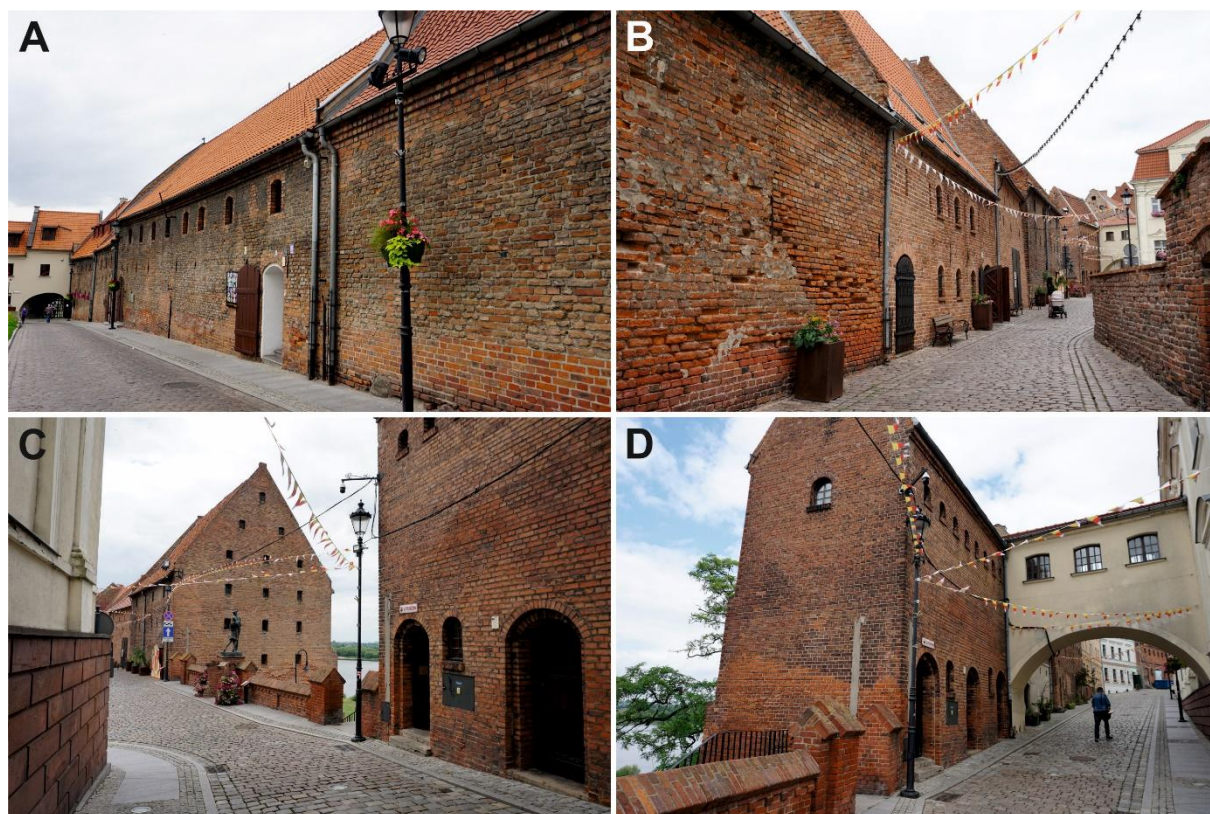


Fig. 8. Selected granaries of Grudziądz seen from Spichrzowa Street: A. Water Gate (deep left) and granaries at nos 9–17 Spichrzowa Street, now housing a museum. B. Granaries at nos 41–47 Spichrzowa Street. C. Granaries at no.47 (left) and no.49 (right) Spichrzowa Street, along with the passage leading to the Vistula riverbank. D. The northern part of Spichrzowa Street (from no.49); visible covered passage connecting the granary at no.51 with the town hall
 Photos by the authors (2024)

Thus, the revitalisation of the Grudziądz granaries to date has a clear focus on museum and socio-cultural functions, with the continued coexistence of residential functions of some of the private-owned buildings (some, however, remain abandoned and fall into disrepair; Fig. 6). Revitalisation efforts in the Grudziądz granary complex are hindered by the complex ownership situation of the buildings, which belong to both private owners (10 buildings), the Grudziądz municipality (17 buildings), and the Municipal Property Management Company (Polish: *Miejskie Przedsiębiorstwo Gospodarki Nieruchomościami*, MPGN, a company established to manage the municipality's housing stock; 2 buildings). Seven municipal granaries are used by museum institutions. In the long term, Grudziądz municipal authorities declare a simplification of the ownership structure and a desire to eliminate the residential function from the entire complex [Grudziądz. Portal Miejski 2018a].



Fig. 9. Flis. Museum of Vistula Trade: A. Entrance from Spichrzowa Street. B. Excerpt from an exhibition depicting the use of Grudziądz granaries. C. Excerpt from the exhibition relating to transportation on the Vistula. D. Granaries housing the museum, seen from the Vistula River, with a metal footbridge allowing descent to the Vistula boulevards
Photos by the authors (2024)

In 2018, the city announced a competition for an architectural and urbanistic design concept for Grudziądz granaries along with a section of Spichrzowa Street and Królowa Jadwiga Avenue. Two works were awarded: one by Magdalena Ptach in cooperation with the Grudziądz firm Concept Group Architects, and another one by a group of architects from Łódź (Kamil Kowalski, Łukasz Wawrzyniak, Maciej Filipowicz and Bartosz Lisicki) [Grudziądz. Portal Miejski 2018b]. The authors of the latter considered insufficient traffic-generating and visitor-attracting functions as the reason behind the unused potential of the Vistula River granary complex in Grudziądz. Sadly, none of the concepts presented are being implemented, and renovations of granaries are being carried out on the basis of individual projects, which may hinder the stylistic unification of the complex.

Despite all that, it seems that the city of Grudziądz has learned from its own analyses and proposed concepts, taking measures to revitalise not only the architectural fabric of the Vistula River granary complex, but also its social space. In addition to adaptation for museum purposes, new cultural functions are consistently

introduced into the granaries, aimed at the social revitalisation of the Old Town in Grudziądz. The latest activity in this regard is carrying out a comprehensive renovation of the building at no.57 Spichrzowa Street and transforming its function from residential (a tenement house under the management of the City Council) into social and cultural. Construction works (DEMIURG studio, 2021–2023) led to the restoration of the classicist facade lost by the building due to alterations in the 2nd half of the 20th century. Inside, conference rooms, a social café and workshop spaces were created to meet the needs of the Social Activation Centre (CAS) located here. The centre was created to conduct activities that enable social activation of residents, integration of various social groups and direct involvement of residents in the process of social change associated with revitalisation [Centrum Aktywizacji Społecznej 2023]. The Centre makes the space of the Granary 57 (Polish: *Spichlerz 57*) available to NGOs free of charge, for the implementation of tasks consistent with its mission. The facility is connected to the Vistula Riverwalk by a staircase, while all storeys of the former granary are accessible through a modern elevator. The renovation and adaptation of the facility was possible thanks to funds from the European Union (7.6 million out of a total of about PLN 9 million). The CAS at Granary 57 is one of the priority tasks included (and implemented) in the Local Revitalisation Program of the City of Grudziądz for 2017–2023. Social goals are also fulfilled by the object at no.45 Spichrzowa Street (Fig. 8B), mainly as an exhibition space for local artists. The object itself is in need of renovation, it is only secured, with the upper floor illuminated by skylight windows. The Granary Fair, held in June, is also part of the social goals, and is meant to refer to the city's trade traditions and merchant past. It takes place mainly on Spichrzowa Street, in selected granaries and on the city's riverbanks.

As mentioned above, the residential function of the Vistula River granary complex is slowly being phased out, mainly due to the poor technical condition of some of the structures and the high expected cost of repair and renovation work. Importantly, such use of the granaries is of a secondary nature, not everywhere and not always in line with the structural conditions of buildings that once combined economic and defensive functions. However, the city is actively seeking opportunities to create an attractive space for social and individual activity for residents and tourists. One of them is the planned transfer of ownership of the granaries at nos 21–23 Spichrzowa Street, which require costly renovation, to the Marshal's Office of the Kuyavian-Pomeranian Region. In exchange, renovation could take place and the headquarters of

several institutions subordinate to the Marshal could be located there [Rada Miejska Grudziądz 2023a].

Further coherent and comprehensive rehabilitation activities are enabled by including the granary complex in the “degraded area and revitalisation area of the City of Grudziądz” [Rada Miejska Grudziądz 2023a]. This step enables seeking financial support for revitalisation projects from EU sources, among others (so far, revitalisation projects have been supported with funds from the European Regional Development Fund). The Grudziądz municipality is actively pursuing a policy of acquiring more granaries from private owners and the MPGN – through the purchase or exchange of real estate, such as the granaries at nos 31 and 43 Spichrzowa Street that were acquired in 2023. The former is currently unoccupied and is planned to be renovated on the basis of already existing documentation, provided that external funds are obtained. For the other one (Fig. 8B), the plan is to prepare construction documentation for the Museum Education Centre [Grudziądz. Portal Miejski 2024]. In the case of the privately-owned granary at no.29 Spichrzowa Street, managed by MPGN, a legal regulation process is underway to acquire the property by the city. Then, too, renovation is planned based on existing documentation. A similar procedure will probably take place in the case of the privately owned granary at no.55 Spichrzowa Street. MPGN still owns the granary at no.30 Spichrzowa Street, which has already been renovated, as well as the granary at no.34 Spichrzowa Street, which is to become the property of the city (renovation is planned after obtaining external funds). In undertaking the aforementioned actions, the Grudziądz municipality is pursuing a strategy of consolidating functions – properties adjacent to those already performing museum or socio-cultural functions are acquired first. In a sense, some of Grudziądz’s granaries are returning to their storage functions, providing shelter not for grain, but for works of art and memorabilia of the local and regional past.

For the sustainable functioning of the granary complex in Grudziądz, their Vistula-side location is of considerable importance (Fig. 5). They form a picturesque panorama from the river, which today is a widely recognised and unique sign of the city. At the same time, the floodplains and overflow terraces of the Vistula valley, the so-called “Błonia Nadwiślańskie”, stretching at the foot of the granaries, are attractive recreational areas for the historic centre of the city, where dense housing limits the residents’ opportunities for daily rest and regeneration. The rehabilitation efforts in this space are aimed at enabling vertical communication between the elevated slab of

the Old Town and the Błonia Nadwiślańskie, as well as equipping the latter with recreational facilities that take into account the risks arising from the proximity of the river (high river levels in summer and winter, floods) and the need to preserve scenic qualities without obscuring the historic panorama. New connections between the city centre and the riverbanks relative to the two existing ones (the Water Gate and the stairs between granaries nos 47 and 49, near the town hall; Figs. 5D, 8C) have been created at the Flis Museum of Vistula Trade (temporarily inaccessible; Fig. 9D) and Granary 57, but they are open only to visitors to these facilities and during their operating hours, hence their role for the local community is limited. At this stage (with the current level of accessibility) it is difficult to say that the new connections improve the quality of life of residents and the tourist attractiveness of the area. If they were more widely available, they could contribute to an increase in the number of visitors to both the Flis Museum and Granary 57. The panorama of the historic Vistula River granaries as they are today is a unique tourist asset and a key element of the city's tourist image, which must be adequately protected.

Bydgoszcz

Revitalisation activities around the Bydgoszcz granaries on the Brda River accelerated at the end of the 1990s, in line with the tasks included in numerous strategic documents related to the renovation of degraded and dysfunctional parts of the city, better use of its riverside location and the advantages of the Bydgoszcz Water Junction (including the "Program for Restoring the Brda River to the City" from 2000, "Development Strategy of the City of Bydgoszcz till 2015," another "Development Strategy of the City of Bydgoszcz till 2030," the program "Revitalisation of the cultural and natural resources of Mill Island and its immediate surroundings 2004–2012," "Local Revitalisation Program for the city of Bydgoszcz" from 2005, "Local Revitalisation Program for the city of Bydgoszcz for 2007–2015," "Revitalisation and Development Program for the Bydgoszcz Water Junction" from 2006 [see Konior 2021, p. 139–144]).

All of Bydgoszcz's preserved granaries on the Brda River and Mill Island now serve a variety of social and service functions, including tourism and recreation (Table 1). Having lost their original functions of storage and trade, the oldest buildings with the smallest capacity have been converted into museums (which was in line with the 1960s and 1970s plans to create a "museum island" based on Mill Island, similar to the

Berlin Museuminsel [Konior 2021]). While the characteristic original appearance of the facades and the shape of the blocks were preserved (Fig. 10), the interiors were rebuilt and modernised to varying degrees (except for the Red Granary, to which a glass extension was added (Fig. 10D)). However, the original structural elements of the interiors (ceiling beams, wooden wall framing, columns supporting the ceilings) were generally kept visible. The White Granary (letter C in Fig. 7; Fig. 10C), which underwent renovation in 2006–2008 thanks to support from Iceland, Liechtenstein and Norway through a grant from the European Economic Area Financial Mechanism, has retained its original interior layout to the greatest extent. The work was aimed at adapting it to be a museum. As part of the same project, the Red Granary (letter D in Fig. 7; Fig. 10D, E) was revitalised. This was one of the stages of a complex task called “Revitalisation of the cultural and natural resources of Mill Island and its immediate surroundings,” included in the strategic documents of Bydgoszcz, aimed at granting new functions to Mill Island. In place of the burned granaries on the southern bank of the Brda River there is now a parking lot, rather negatively affecting the perception of the preserved granaries right next to it (letter A in Fig. 7; Fig. 10A, B). With few exceptions, the granaries of Bydgoszcz have never served a residential function in their history, and it seems that this is not envisioned for them in the future either.

Table 1. Contemporary functions of granaries on the Brda River and within the Mill Island in Bydgoszcz

Granary	Function
7, 9, 11 Grodzka Str. (Fig. 7, letter A)	Since 1964, the headquarters of the Leon Wyczółkowski District Museum in Bydgoszcz (MOB), the administration of the museum, permanent and temporary exhibitions [Department of History (Workshop for the History of Bydgoszcz and the Region, Laboratory of General History, Laboratory of Historical Photography, Workshop for Ethnography) and the Department of Art (Gallery of Graphics and Drawing, Music Studio)].
13 Stary Port Str. (Fig. 7, letter B)	Until the mid-1990s, military warehouses, commercial activities. Currently “Bohemian Port” restaurant and offices of commercial entities.
1 Mennica Str. (Fig. 7, letter E)	Originally a warehouse for bagged products, after the Second World War it served as a residential building, until the 1990s as a catering and retail establishment. Currently a restaurant called “The Mill Inn” (Polish: <i>Karczma Młyńska</i>).
2 Mennica Str. (White Granary – Biały Spichlerz) (Fig. 7, letter C)	After 1945, the building became the property of the State Treasury, leased to the State Grain Works until 1974. In 1979 it passed into use of the MOB, and in 1997 it became MOB’s property. Currently Archaeology Department of the Leon Wyczółkowski District Museum in Bydgoszcz.
8 Mennica Str. (Red Granary – Czerwony Spichlerz) (Fig. 7, letter D)	After 1945, the building became the property of the State Treasury, leased to the State Grain Works until 1974. In 1979 it passed into use of the MOB, and in 1997 it became MOB’s property. Currently Modern Art Gallery and Art Department of the Leon Wyczółkowski District Museum in Bydgoszcz.

Granary	Function
Rother's Mills complex (Fig. 7, marks F1 and F2)	After Second World War, storage function, from 1948–1992 State Grain Works, since 1992 privately owned, in 2013 repurchased by the City of Bydgoszcz. Currently Science and Culture Centre (Polish: <i>Centrum Nauki i Kultury</i>), viewpoint. Since 2021 Nowe Miejsce Café in the grain granary, and Mały Domek ice cream shop and Woda bakery in former bathrooms and boiler room.

Source: authors' own research based on: Nadolska 2024; Muzeum Okręgowe Bydgoszcz n.d. and field research

The biggest revitalisation challenge after the privatisation of the early 1990s was the Rother's Mills complex (Fig. 11). The buildings of the establishment, including the grain and flour granaries (F1 and F2 in Fig. 7), were subjected by the private owner to transformations aimed at turning it into a hotel – the interiors of the mill were completely stripped of ceilings, and the window and door woodwork was removed. However, further work was abandoned, and the complex, despite its entry in the Registry of Cultural Property, gradually fell into disrepair. The grain and flour granaries have been preserved in better condition, and thanks to assembly marks it is known that almost the entire structure of the granaries consists of original elements [Sochaczewski 2014]. The city's intervention towards the deteriorating complex included a 2013 buyout of the premise, its preservation and inventory, followed by renovation and restoration work that cost 95 million PLN (the city contributed about 60 million) [Młyny Rothera 2024]. As a result, a new creative space in Bydgoszcz was created in 2021, namely the Science and Culture Centre (Polish: *Centrum Nauki i Kultury*), which is a local government cultural institution, where visitors can enjoy the permanent exhibitions “Knots” (the history of the city's relationship with water, opened in 2022) and “Mill-Machine” (2023), take part in a variety of cultural and educational workshops or events, and admire the panorama of the city from the viewpoint created on the roof. Inside the brick mill, the restoration of the original interior divisions was abandoned in favour of an open space stretching from the foundation to the roof, with storeys symbolically marked by steel beams that form the building's internal skeleton (Fig. 11F). In the granaries, however, the original divisions were generally preserved. The surroundings of the Rother's Mills serve a recreational function for residents and tourists. The green space around is complemented by terraces and a fountain (Fig. 11C, D). The centre implements projects subsidised, among others, by the Operational Program “Infrastructure and Environment”, the

Regional Operational Program of the Kuyavian-Pomeranian Region and the Integrated Territorial Investments [Centrum Nauki i Kultury Młyny Rothera 2023].

Due to the fact that not all of the granaries of the Old Town and Mill Island have survived to the present day, and the existing ones do not constitute compact complexes and the dominant type of development on the Brda River today, a number of measures have been taken in recent decades to restore to the landscape the memory of the city's Vistula grain trade. One of them was the construction of contemporary buildings (the headquarters of mBank) on Grodzka Street, in the vicinity of the original 18th-century granaries, in a simplified way referring to them in terms of their characteristic silhouette, material (brick cladding) and colour (red), but surpassing them in scale (Fig. 10A) [Raczyńska-Mąkowska 2000]. Ordering of the space of the Mill Island and the city centre was also of great importance. However, it only marginally covered the region of the Brda southern riverbank, as a result of which the spaces associated with the granaries did not obtain a uniform style. Thanks not only to the renovation of the buildings, but also to the development of the areas around them and the arrangement of greenery, currently Mill Island is a much more attractive area than the granary complex on Grodzka Street (along with the mBank building). This is reflected in the residents' choices of leisure space and the directions of tourists.

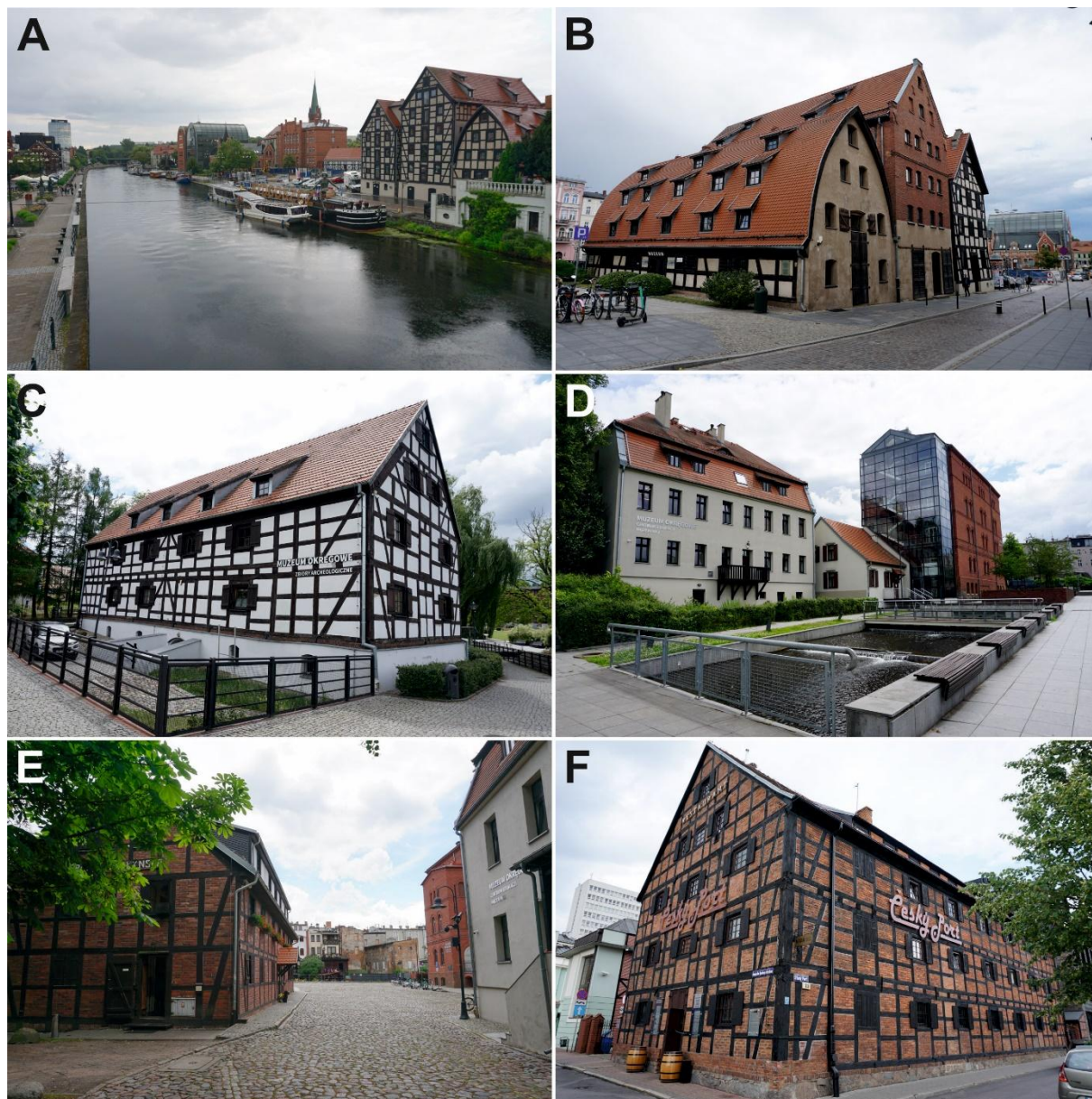


Fig. 10. Preserved granaries in Bydgoszcz: A. Granaries on the southern bank of the Brda River, now a museum; in the background, the granary-styled contemporary headquarters of mBank. B. Granaries on the southern bank of the Brda River from Grodzka Street. C. The White Granary seen from the north, facing Brda. D. The Red Granary with an added glass staircase; in the foreground a water installation referring to the mill canal. E. Granary at no.1 Mennica Street, now a restaurant (left) and the Red Granary (at the back, on the right). F. Granary on Stary Port Street seen from the east, facing the Brda River

Photos by the authors (2024)

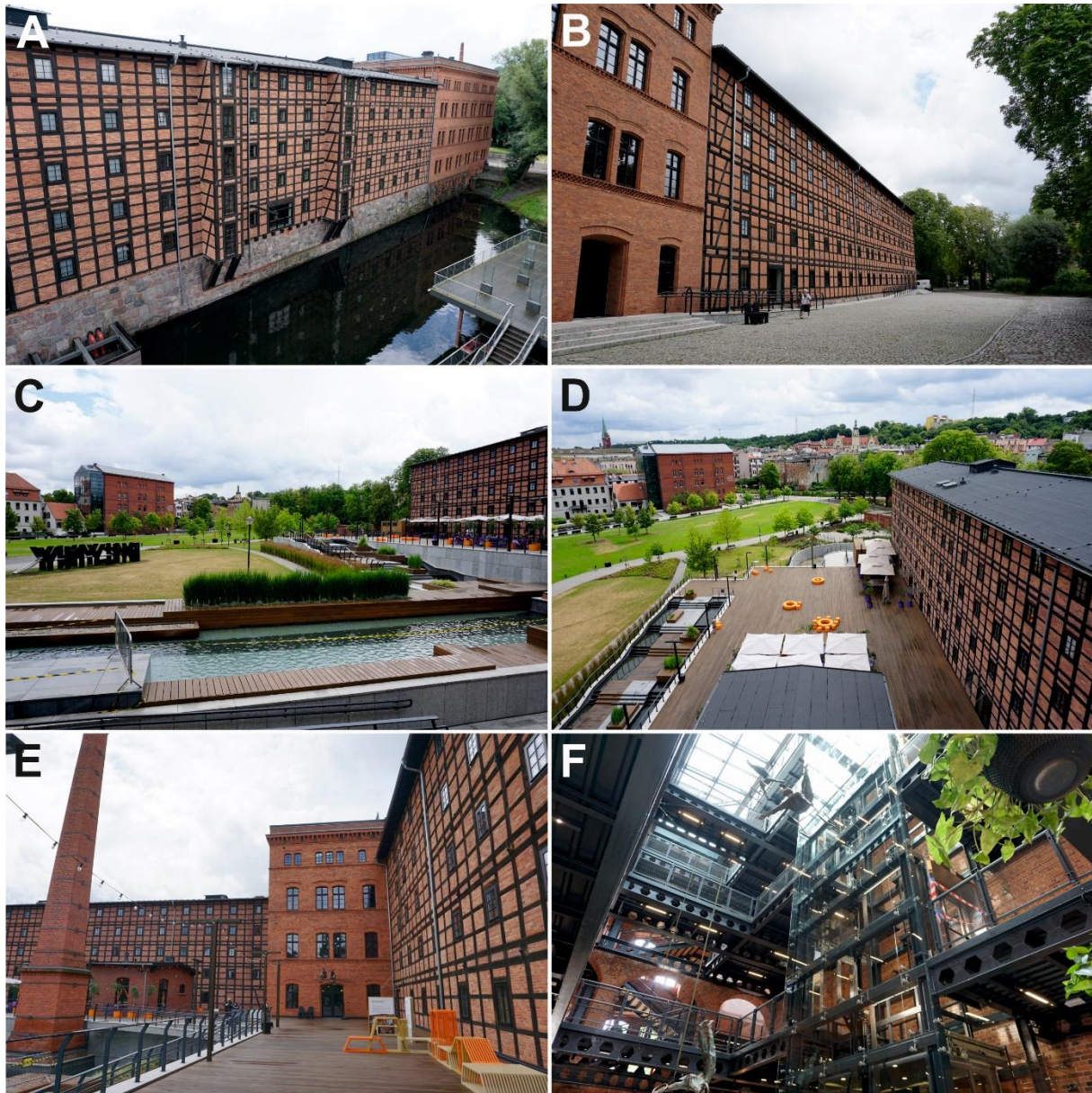


Fig. 11. The revitalised Rother's Mills complex: A. The grain granary (a half-timbered structure filled with bricks) and the mill itself (solid brick on the right) as seen from the Marina Hotel on neighbouring Tamka Island. B. The mill (left) and flour granary as seen from the access road, from the southwest. C. Terraces, water installations and arranged greenery in the courtyard of the Rother's Mills; Red Granary in the background. D. The courtyard of the Rother's Mills with a food and beverage establishment viewed from the viewpoint on the mill's roof. E. Rother's Mills seen from the courtyard (from left): flour granary, mill and grain granary. F. The interior of the former mill with contemporary steel and glass construction in place of earlier, unpreserved divisions

Photos by the authors (2024)

Discussion

The revitalisation of granaries in Grudziądz, Bydgoszcz and Hamburg seems to be heading in a similar direction, although it took place under different legal and ownership conditions (Tables 2 and 3). It concerned buildings that had been erected as storage facilities, but different in terms of urbanistic-architectural scale, time of

construction, and therefore to some extent different in adaptability to modern functions. In the analysed complexes, certain common strategies and directions of revitalisation can be observed, which are introduced with different intensity (Table 4). On the largest scale, discussed activities are noticeable in Hamburg, although in some (few) cases they are more advanced in the analysed Polish cases.

Table 2. Transformation of historic granaries in Grudziądz and Bydgoszcz after 1989

Starting point
1. Complex ownership situation. 2. Unsuccessful privatisation (Rother's Mills in Bydgoszcz and selected granaries-tenement houses in Grudziądz). 3. Poor technical conditions and limited functional capabilities (mainly Grudziądz granaries, partly Rother's Mills). 4. Great diversity of functions – museum functions, residential functions (to a greater extent in Grudziądz than in Bydgoszcz), storage and office functions, service functions, unused buildings falling into disrepair.
Actions
1. Protection, diversified in nature and degree (Registry of Cultural Property, Monument of History of the Republic of Poland, cultural park). 2. Arrangement of the ownership situation. 3. Acquisition of EU and national funds for revitalisation within programs in the field of regional development, social development and protection of cultural heritage. 4. Activation of local communities by supporting artistic, educational, integrative and inclusive initiatives.
Effects
1. Partial renovation of historic architectural substance and revitalisation of urban space. 2. Transformation (incomplete) into a multifunctional area, but with a changed structure: - withdrawal of residential and warehouse functions in favour of socio-cultural functions (mainly museums and initiating social and creative activities), tourism and recreation, and administrative and office functions; - storage function is also maintained, although invisible on the outside – mainly museum warehouses, a museum is also a kind of “warehouse” of cultural goods.

Source: author's own research

Table 3. Transformations around the Speicherstadt and Kontorhausviertel districts in the 21st century

Starting point
1. Relatively simple ownership situation. 2. Continuation of original functions with decreasing importance of traditional functions related to the waterway. 3. Limited functional possibilities for transformation, especially with regard to the residential function due to the nature of the structures and the lack of adequate flood protection for the district. 4. Largely mono-functional (warehouse and office) area with a small share of other functions: services, residential, cultural (museums).
Actions
1. Pre-application activities for the UNESCO World Heritage List: inventory of the resource, diagnosis of the condition, development directions, final result. 2. Adoption of local legislation enabling the protection of the historic resource under conditions of functional transformation and revitalisation.

- Linking Hamburg's historic warehouse districts to the HafenCity project. - Acquisition of EU and municipal funds for projects related to the creative sector (e.g., project SPACE by municipal company Hamburg Kreativ Gesellschaft mbH and nextMedia.Hamburg supported by the City of Hamburg's Department of Culture and Media as well as the European Regional Development Fund).
Effects
- Entering the UNESCO World Heritage List. - Revitalisation of historic architectural substance and urban space. - Transformation into a multifunctional area, with a changed structure: - preservation of warehouse and office functions supplemented to a greater extent than before by service, socio-cultural (including museum), tourist and recreational and residential functions; - development of creative sector activities.

Source: author's own research

Table 4. Various directions and forms of revitalisation of granary complexes in the context of the analysed examples

Strategy adopted	Implementation of a given strategy in individual granary complexes		
	Hamburg	Grudziądz	Bydgoszcz
Renovation of historic substance	3	1	2
Emphasis on treating the complex as a whole	3	3	1
Creation of a unified development strategy and revitalisation principles	3	1	1
Unification of the ownership structure	3	2	2
Linking revitalisation activities with the surroundings	3	1	1
Maintaining the warehouse function	3	1 (museum warehouses)	1 (museum warehouses)
Adaptation to the needs of museums	2	2	3
Adaptation to other cultural functions	2	1	2
Development of the creative sector	2	0	0
Adaptation to the needs of local government institutions and administration	1	1	0
Introduction of new residential functions	1 (after creating flood protection system)	0 (old residential function exist)	0
Introducing functions that integrate the local community	2	1	1
Introduction of top-down social strategies	3	3	3
Introduction of bottom-up social strategies	2	1	0
Aestheticization of space	1	1	2

Explanation of given notes: 0 – the process does not occur, 1 – the process occurs to a small extent, is in the initial phase or is planned, 2 – the process is introduced to a noticeable extent, 3 – the process occurs on a large scale, is common in a given complex.

Source: author's own research

The discussed cases of revitalisation of granary complexes are part of the broader issue of revitalisation of post-industrial facilities [Konior, Pokojaska 2020; Sun, Chen

2021; Rautenberg 2012]. There are many possibilities of adapting a rehabilitated facility [Adams, De Sousa, Tiesdell 2010]. One can try to introduce there, among others, the following functions: office, residential, cultural, tourist (including hotel), recreational, service, catering, medical or parking. Of course, their selection depends on a number of internal conditions (the nature of the revitalised facility and possibilities of adaptation), as well as external (location, functions in the surroundings, funds). This is clearly visible in the analysed examples, where technical conditions (lack of appropriate flood protection, considerable width of the building and lack of daylight) limit the possibilities of developing the residential function in Speicherstadt, while for historical reasons (shortage of residential space in the 19th and early 20th centuries) it appeared quite commonly in granaries in Grudziądz, but is currently limited (living conditions not fitting contemporary needs, difficulty of adaptation). In the case of post-industrial buildings, it seems that their adaptation to the residential and cultural function dominates [Chen, Judd, Hawken 2016; Ferilli et al. 2017]. The unusual characteristics of such buildings (large spaces, remains of devices and transmission networks, unusual window layouts, which can be many or, on the contrary, few) constitute a great potential for the adaptation to the seats of museums, art galleries and other cultural institutions. This can also be seen in the examples analysed (all three cities), with the most spectacular being the Elbphilharmonie Concert Hall [Heuer, Runde 2021].

Speicherstadt's ease of management and revitalisation is due to its very simple ownership structure. The two Polish cities analysed are also aiming for such a simple structure, with the municipal authorities becoming direct owners, rather than a company established by them (neither achieving such a condition yet). The unification of the ownership structure began earlier in Bydgoszcz but has gained momentum in Grudziądz in recent years. However, the problem in the former city is that the granaries do not form a compact complex and are interspersed with buildings with other functions and different ownership (Fig. 7). Thus, it is not possible to create a stylistically uniform area encompassing all granaries, which in turn is potentially achievable in Grudziądz.

It seems that in the model represented by Polish cities, the re-centralisation of ownership – due to the scale of granary complexes, the loss of original functions and the difficulty of finding new ones, as well as the in many respects “problematic” nature of industrial heritage [cf. Zwegers 2022] – was a necessary measure for the start of

effective and comprehensive revitalisation processes. This is all the more important because the revitalisation processes had to touch not only the architectural and urban space, but also the social space [Lenartowicz 2008], the revitalisation of which is not the task of the private sector. This can be seen most clearly in the example of Grudziądz, where the low standard of living in neglected tenement houses created from converted granaries fostered the creation of zones of urban exclusion, leading to further degradation not only of the architectural fabric (vacant buildings), but also of the social fabric. Unfortunately, the adopted revitalisation strategies and implemented projects are not always preceded by appropriate research into social problems and needs. A large part of the decisions is made arbitrarily by the city authorities.

Taking ownership of the granaries by the cities of Grudziądz and Bydgoszcz has made it possible to better promote the granary complexes, but above all to effectively raise funds for the renovation of deteriorating buildings and their transformation into centres of local activity or tourist attractions. In the long run, however, it confronts them with the problem of taking on the costs of maintaining the buildings and operating the socio-cultural institutions they house. Since both in Bydgoszcz and Grudziądz the described transformations that affected the granary complexes took place relatively recently, it is difficult to predict to what extent they will cope with this task. Attempts to ensure a stable financial situation can be seen in the transformation of the Rother's Mills in Bydgoszcz (Fig. 11) into a local government cultural institution, the financing of which is to be ensured by subject and purpose-specific subsidies received from the organiser and other local government units, from the state budget, as well as, among others, revenues generated from economic activities (e.g., organisation of events, exhibitions, workshops, training, courses and conferences, publishing activities, tourist services) or the lease and rental of assets [Rada Miasta Bydgoszcz 2022]. This is a direction that is typical of Speicherstadt, where warehouse space continues to be let, and the Hamburg Port and Logistics Company, which manages the complex, also leases space for offices, services, the creative sector or various other activities. The diversification of financing sources for the revitalisation of the granary complex is less noticeable in Grudziądz.

However, the unification of ownership of the analysed complexes raises a certain danger, namely functional monotony. One owner often has specific views on the purpose of a particular type of building. In both Grudziądz and Bydgoszcz, the functional changes implemented in recent years most often assume designation for

museums, and to a lesser extent for social functions (the latter represented by two granaries in Grudziądz and the Rother's Mills in Bydgoszcz which, however, serve mainly a museum role). In Hamburg, the variety of functions is greater, as there is still quite a lot of use of granaries for storage, in addition to office, hotel, residential or cultural (including, of course, museums), and various creative activities. This is certainly due, among other things, to the much larger area of the Hamburg complex, but definitely also to the vision of its development. The Grudziądz complex in particular has the potential for other functions to appear, such as hotel and catering, which, however, must be linked to the development of the tourist functions of the entire city.

Considering the residential function realised in former granaries, its abandonment in the case of the Grudziądz facilities should be seen more as the result of unfavourable circumstances than a deliberate action. The granaries that are currently or formerly inhabited are buildings that have been rebuilt in the past, often only partially adapted to serve residential functions. Although the Vistula riverside location with a sweeping panorama of the Vistula valley and almost direct access to green recreational areas on the river (Fig. 5) could be an undoubted advantage for those wishing to live in this part of the city, the costs of regenerating and modernising the heavily decapitated buildings would not find economic justification with the city authorities and would exceed the capacity of private owners. Thus, there are no signs of gentrification in the mentioned area because there is no offer in the form of attractive (economically and socially profitable) housing for renovation and living. The phenomena of tourist gentrification and touristification [Cieciółka, Maćkiewicz 2020; Gotham 2005; Sadat Nickayin et al. 2020] is also not present here, taking into account the relatively lower attractiveness of the city for tourists compared to nearby Gdańsk, Toruń, and Bydgoszcz, and the actions of the city authorities in revitalisation processes aimed more at the needs of residents than tourists.

In the case of Hamburg, the development of the residential function in Speicherstadt is an added value rather than a necessity; the city has better prospects here than in Grudziądz or Bydgoszcz. New apartments in a revitalised historic district, often unconventional and executed to a high standard, could raise concerns about gentrification (in general or tourism). In this case, however, there is no question of social change, since the residential function is born in Speicherstadt in place of other utilitarian functions.

In some cases, post-industrial heritage is aestheticized. It is restored and preserved as a witness to history. Such objects can serve as a background for various events, such as concerts, or serve as museums of technology or industry, e.g. U4 – Blast Furnace Park in France [Konior, Pokojaska 2020; Lenartowicz, Ostreęga 2012], which is consistent with the assumptions of industrial tourism [Hospers 2002; Jonsen-Verbeke 1999; Kuzior et al. 2021; Murphy, Boyle 2006]. However, it seems that without giving them some permanent, new function, it will be difficult to effectively restore them to the urban fabric [Landorf 2009]. In the case of the three described granary complexes, the aestheticization processes are limited in scope, the largest in the case of Mill Island in Bydgoszcz, and the smallest in Hamburg, where the authorities are trying to preserve the industrial character of the district, which is helped by the fact that the granaries are still used to some extent as storage space.

In the case of the granary districts in Bydgoszcz and Grudziądz, the revitalisation process is based mostly on top-down strategies. It is difficult here to speak of grassroots activities aimed at revitalising the immediate vicinity, mainly due to the fact that the residential function is absent or dispersed (Bydgoszcz) or withdrawn (Grudziądz), hence no strong relationships have been created between local residents and the place. Nevertheless, there are some signs of concern for the appearance, functioning and future of the granary districts on the part of the residents of the city (not necessarily the district), represented mainly by specific groups – urban activists and creative circles. In Grudziądz, such a grassroots initiative is the creation of the so-called One Window Gallery (Polish *Galeria Jednego Okna*), located on the wall of one of the granaries (Spichrzowa 29). On the initiative of the society called “Stowarzyszenie JO – Stowarzyszenie Pozytywnych Mieszkańców”, works by local artists are placed in a stylised “window frame” as a form of inviting art to the public space.

The inclusion of Hamburg’s Speicherstadt and Kontorhausviertel districts on the UNESCO World Heritage List confirms not so much the uniqueness and authenticity of their assumptions (which they undoubtedly possess [Hero et al. n.d.; UNESCO 2015]) but is an expression of the successful lobbying and consistency of the city authorities in implementing an ambitious strategy for the revitalisation and long-term development of the inner urban periphery. Submitting the application to UNESCO forced the city authorities to create a kind of “road map” establishing a chronology of actions necessary to create mechanisms for protecting the values of historic districts in the process of their functional transformation and rehabilitation. This

comprehensiveness of activities and the definition of a vision for historic granary districts was lacking until recently in Grudziądz and Bydgoszcz. In recent years, however, a certain change for the better can be seen in this regard, although in neither city is revitalisation carried out based on any comprehensive strategy. Undoubtedly, a better starting point for the revitalisation of the granary district in Hamburg was the fact that they are newer (buildings modern for their time and adapted to modern utility requirements did not require as much interference as the older 18th-century granaries of Grudziądz or Bydgoszcz), as well as a simpler ownership structure.

The implementation of the HafenCity project in parallel with the revitalisation of Speicherstadt and Kontorhausviertel could have positive as well as negative impact for them. The historic neighbourhoods in the vicinity of HafenCity symbolically connect the old with the new, the past with the future [Kähler, Schürmann 2010; Hampel 2004]. At the same time, they remain somewhat in the shadow of the new district famous for its bold realisations (including the Elbphilharmonie [Heuer, Runde 2021]), shaping the contemporary image of the riverbank quarters unrelated to their history and tradition [Pokojska 2017]. There is also a danger that HafenCity will “suck out” creative and socio-cultural activities that could take root in Speicherstadt, given the lack of functional restrictions imposed by the UNESCO Committee or the need to preserve the historic character of the district.

Granary complexes in Grudziądz and Bydgoszcz seem to have no competition within these cities, being basically the main attractions (the granaries themselves or the museums housed therein). This makes it all the more important to thoughtfully revitalise them, which on the one hand will create a product attractive to tourists, and on the other hand create a relationship between this space and the local community [Fusco Girard, Nijkamp 2009; Gehl 2010; Lenartowicz 2008]. The surroundings of granaries in both cities contain a lot of greenery (Mill Island and parts of the Brda waterfront in Bydgoszcz, Błonia Nadwiślańskie in Grudziądz), which can be of great importance for people living in the strict centre with compact buildings. Thus, revitalisation should take into account the needs of both residents and tourists [Kuzior et al. 2021; Sun, Chen 2021], while, of course, meeting preservation requirements. Despite the importance of the granaries for the cultural landscape of both cities, it is difficult to notice the connections between their revitalisation and the surroundings. Urban interventions in the rest of the city are not related to the historical warehouses.

Referring to the models of the relationship between revitalisation and culture, it should be stated that in the case of all three cities, the actions taken by them are closest to the “cultural regeneration” model [Evans, Shaw 2004; Konior 2021], where the renewal processes are dispersed, covering many spaces and activities, thus avoiding a kind of “trap” of flagship investments. Despite the various nature of revitalisation activities in Hamburg and in both Polish cities, it should be recognised that they fit into the assumption of the Nizhny Tagil Charter for the Industrial Heritage [TICCIH 2003], especially in the context of industrial heritage values. However, there is a much greater emphasis on tangible heritage and less on intangible heritage, including processes and records of lives of people associated with this heritage.

Conclusions

Granary complexes in Bydgoszcz and Grudziądz seem to confirm the advantage of a unified ownership structure and central management of the urban resource according to accepted assumptions at least in the first stages of the revitalisation process. Supporting centres of local activity, cultural, educational institutions or creative activities (at various scales, both institutional and private) or locating them in areas undergoing revitalisation may become the beginning of true urban renewal, not only in the architectural-urbanistic dimension [cf. Pieczka, Wowrzeczka 2021]. The revitalisation of Hamburg’s granary district can serve as a good example primarily because of its coordinated, consistent and coherent revitalisation strategy, partially dictated by the requirements of the UNESCO application, but giving the revitalisation processes a clear pace and direction. In the case of Bydgoszcz and Grudziądz, such consistency in action has been evident for a relatively short time.

It is difficult to compare the described cases of revitalisation of the studied Polish granary districts with the case of Hamburg mainly due to the different scale and different capabilities of the cities in terms of economic and to some extent political capital. However, the similarities of the revitalisation efforts are clearly visible. They support the renewal of problematic spaces in the direction of locating new socio-cultural functions there (useful for residents and tourists) rather than housing. In the case of Hamburg, the economic basis for the continued functioning of the district is certainly stronger, mainly through the maintenance of warehouse functions and the development of office and other creative functions. This cannot be clearly defined in

the case of Grudziądz and Bydgoszcz yet due to the ongoing initial stages of revitalisation.

Both Polish examples show that the rehabilitation of post-industrial facilities is dominated by the form of revitalisation through culture (using such facilities as seats of museums and other cultural institutions). The example of Speicherstadt in Hamburg, but also other post-industrial facilities, shows that this is the right direction, although not necessarily sufficient to effectively and permanently inscribe such an inner periphery into the urban fabric. Diversification of functions is important, with particular emphasis on social functions, which aims to integrate the local community and counteract social exclusion, and at the same time attract residents of other parts of the city to a given place (by creating an attractive space, for example for recreation). Such activities in the analysed Polish granary complexes are taking place, but still too slowly and on a too small scale. An interesting direction, present to an increasing extent in Speicherstadt, are creative industries, which have not been present at all in the granary complexes in Grudziądz and Bydgoszcz so far. Speicherstadt also shows how important it is to plan comprehensively, covering not individual buildings but entire complexes of buildings and their surroundings.

The studies conducted by the authors represent an external perspective, focused mostly on the visual effects of revitalisation activities. The views of the recipients of these actions (local communities, neighbourhoods, and the cities' residents) remain unrecognised which opens future research fields. What makes the final assessment of revitalisation of warehouse districts in both Polish cities difficult is the fact that the whole process is in progress.

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