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The life and death of windmills in central Poland: Between lost heritage and the heritage of memory
Windmills are one of the most complex human inventions of the pre-industrial era. Making use of wind energy to serve human needs was not only a miracle of architecture and technology: it produced silent witnesses of history – an important part of a rural landscape, local identity and folklore. Thanks to their multiple roles, windmills are useful research objects for scientists in various fields. In Poland the first written records of windmills date from the thirteenth century. Shortly after World War II there were still about 3300 such constructions (many of them still fully operational) despite losses in the war. Today there are around 250 windmills under legal protection (around 70 of which were moved to open-air museums). This figure illustrates the vulnerability and progressive disappearance of Poland's windmills. Despite the efforts made to protect this heritage, often the only remnants of such objects are the memories people living nearby. These memories join the present with the past, recall people and their work, and preserve the memory of an item. Windmills that have ceased to exist are still present in people's collective remembering as a sum of their subjective experiences and impressions. In this paper,

[1] The article is a result of the three projects entitled: "Memory of the stones. The origin, use and sacralisation of millstones set into the walls of Gothic churches in the South Baltic Lowlands" (grant no. 2019/35/B/HS3/03933), funded by the National Science Centre. Project leader: Dr Dariusz Brykała IGSO PAS; "The memory of stones. Origin, use and sacralization of millstones embedded in walls of Gothic churches within the Southern Baltic Lowlands" (grant no. 2019/35/B/HS3/03933), funded by the National Science Centre, Poland. Project leader: Dr Dariusz Brykała & "The Heritage of Frost Giants. From the Geomythologies to the Cultural Geomorphology of Erratic Boulders in the Young Glacial Area of Poland" (grant no. 2023/49/N/HS3/02181), funded by the National Science Centre, Poland. Project leader: Dr Robert Piotrowski

we decided to combine different approaches to the matter of heritage – both tangible and intangible. We argue for the importance of collecting recollections of ordinary people and interviews with eyewitnesses, as well as examples of institutional or private efforts made to protect windmills, to explain the equal value of both of these methods for preserving memories about the work and skills of millers – that is, the memory of a profession that was once a vital part of cultural identity.

Keywords: windmills, industrial herotage, heritage of memory, Poland

"It was such a decoration for
our village. I liked going there.
I don't know when it was
demolished [...] There was a road
with mulberries leading there.
A beautiful windmill". (F.a.85)

Introduction: Why is saving the memory of windmills so important?

The choice of windmills as a research angle was based on their special status and importance to local cultural heritage – both tangible and intangible – and in connection with their ongoing disintegration.[2] Windmills have been present in Poland since the thirteenth century. Like a number of other economic facilities, they have suffered the consequences of many tragic events resulting from the country's complicated history, to which they bore silent witness. A huge number of windmills were destroyed during the two world wars. The rapid loss of windmills in the twentieth century was also influenced by certain political changes that took place after the end of World War II, which had a negative impact on development of milling using windmills, as well as family enterprises engaged in grain milling. Therefore, the second half of the twentieth century was a period that saw the death not only of those who carried out this profession, but also of the objects themselves. Windmills are constructions with a relatively fragile structure, subject to atmospheric conditions and vulnerable to biological degradation of the building materials, simple vandalism, or wilful destruction by landowners. Only a small fraction of Poland's formerly vast milling heritage is under legal protection.[3] One form this protection takes is moving the object to an open-air museum[4]. In early 2020 there were 71 windmills under the protection of museums.[5] However, it often happens that even organised actions, when undertaken without understanding the uniqueness of this type of architecture, irreversibly destroy the original structure and turn it into a memory prosthesis – an architectural shell of no great value which primarily serves the function of entertainment or education. This frequently occurs in the case of private initiatives aimed at protecting windmills, but can also occur with poorly planned museum interventions.

Taking all these aspects into consideration, we decided that the narratives of eyewitnesses and people experiencing these places are an important form of preserving the memory of

[2] MOSAKOWSKI, Zachariasz, et al. Watermills and windmills as monuments in Poland – Protection of cultural heritage in situ and in open-air museums. In: *Muzeológia a kultúrne dedičstvo*, vol. 8, 2020, Is. 3, pp. 41–62; VECCO Marilena A definition of cultural heritage: From the tangible to the intangible. In: *Journal of Cultural Heritage*, vol. 11, 2010, No. 3, p. 323.

[3] Research conducted in 2019–2020 found 576 entries in the register for milling and milling-related facilities, 254 of which were related to windmills. In 1954 there were almost 3,300 such objects inventoried in Poland, illustrating the scale of disappearance of windmill heritage. MOSAKOWSKI et al., pp. 44, 52.

[4] ŚWIĘCH, Jan. Ochrona młynarstwa wiejskiego w polskich muzeach na wolnym powietrzu. Założenia i realizacja. In: A. Przybyła-Dumin, B. Grabny, P. Roszak-Kwiatek (eds). *Młynarstwo tradycyjne – wczoraj, dziś, jutro… Problemy zachowania ginącego dziedzictwa*. Chorzów: Muzeum "Górnośląski Park Etnograficzny w Chorzowie", 2017, p. 141.

[5] MOSAKOWSKI et al., Watermills and windmills… p. 54.

windmills and frequently the only source of knowledge about them. In this sense, intangible heritage can be considered a carrier of knowledge about tangible heritage. It is a repository of human memories which protects and transmits the memory of the past. Knowing that the posthumous existence of windmills that have been destroyed is closely intertwined with the lives of people who remember them, memories about them take on special value and significance. When those people die, it will mark the very end of the objects. Single extracted material memory carriers, such as millstones, which often appear in new functional contexts, are also of great value.[6]

This article is an attempt to capture multi-vector processes: the death of objects that are a part of Poland's cultural heritage; their functioning in residents' memory, and capturing the value of an object in order to maintain the memory of and read the past. Thus, the "voices" of both people and objects will be heard in this article.

Method

The first step was to conduct archival research.[7] This identified catalogue cards from the late-nineteenth/ early twentieth century pertaining to 150 windmills in the northwest Mazovia region. They were used to conduct a typological analysis of conservation and determine the specific types of windmills found in this area. Tactical maps of the Military Geographical

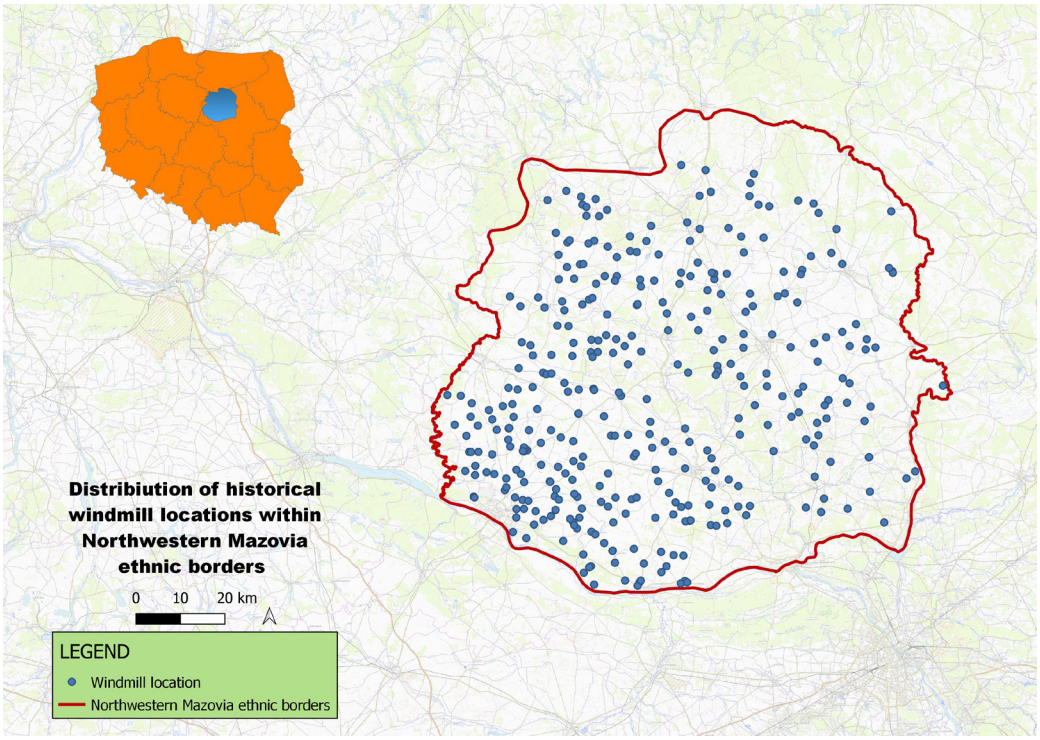

Fig. 1: *Map of windmills northwest Mazovian Region.*

[6] BRUMANN, Christoph. Cultural Heritage. In: J. D. Wright (ed.). *International Encyclopedia of the Social & Behavioral Sciences*, Second Edition. Vol. 5. Oxford: Elsevier Ltd., 2015, pp. 414–419.

[7] Urząd Ochrony Zabytków w Płocku, Urząd Ochrony Zabytków w Ciechanowie, Muzeum Wsi Mazowieckiej w Sierpcu.

Institute in Warsaw (WIG) were also examined;[8] they revealed 351 windmills that still existed in the 1920s and 1930s and enabled us to reconstruct their distribution in relation to rural and small-town settlements (see Fig. 1).

Ethnographic field research was conducted in 2018 and 2022. They resulted in 52 ethnographic interviews and a two-hour film recorded with the participation of a 95-year-old miller.[9] The research topics oscillated between people's memories about millers, an evaluation of their work, and the windmills themselves. Interviews were conducted both with relatives of millers and with people not directly related to miller families. Qualitative interviews were conducted in the form of a free conversation typical of an unstructured interview.[10] Thanks to this approach, the interlocutors did not feel embarrassed and could pay attention to issues that were important from their point of view and value the objects or the events related to them according to their own value system. In this way, the element of research exclusivism was minimised or even excluded.

This article uses the terms "phantom object", "reused object" and "memory prosthesis", the meanings of which require clarification. A *phantom object* refers to an object that does not exist or exists in a state of complete destruction, the memory of which has been preserved in local records – whether in social or individual memory or physical source materials. It generates narratives that can be inspired by empty places, remains of objects, photographs and maps. A *reused object* refers to the phenomenon of upcycling or cultural recycling and is associated with the conscious use of construction elements or parts of historical objects in a new typological and symbolic context. A *memory prosthesis* is somewhat analogous to a memory object;[11] it refers to objects that have replaced an original ones both at the level of part-to-whole, and in terms of the substitution that occurs at the level of the original–model relationship. This phenomenon may imply positive values – substitutive, memorative and mnemonic – as well as negative ones related to misleading the observer. An example of this are copies of objects in state and private open-air museums which have little value beyond simulacra

This article also forwards the metaphorical concept of "windmill death", reflecting the fact that in Polish milling culture the destruction of a windmill was described in this way – a great example of anthropomorphising of objects.

Birth and development of milling in Mazovia

Polish researchers' opinions are divided as to the number of windmills at the turn of the sixteenth and seventeenth centuries in Masovia.[12] The source materials clearly show that the

[8] http://igrek.amzp.pl/; BRYKAŁA, Dariusz, et al. Wykorzystanie energii wiatru i wody w okresie ostatnich 200 lat na obszarze województwa kujawsko-pomorskiego. In: *Prace Komisji Krajobrazu Kulturowego* 29, 2015, p. 12.

[9] PIOTROWSKI, Robert. *"Jednemu się zmiele, drugiemu się skrupi". Młynarze i młyny w pamięci zbiorowej mieszkańców pogranicza mazowiecko-dobrzyńskiego*. Toruń: Wydawnictwo Naukowe UMK, 2021.

[10] ESTERBERG, Kristin G. *Qualitative Methods in Social Research*. Boston: McGraw-Hill, 2002, pp. 89, 103–104; SKINNER, Jonathan. A Four-part Introduction to the Interview: Introducing the Interview; Society, Sociology and the Interview; Anthropology and the Interview; Anthropology and the Interview – Edited. In: *The Interview: An Ethnographic Approach*. J. Skinner (eds). London & New York: Routledge, 2020, pp. 10–11.

[11] KIRSCHENBLAT-GIMBLETT, Barbara. *Objects of Memory: Material Culture as Life Review*. In: E. Oring (ed.). *Folk Groups and Folklore Genres: A Reader*. Utah: State University Press, 1989, pp. 330–331.

[12] PIETRZAK, Janusz. *Nowożytne budownictwo przemysłowe w dobrach biskupich na Mazowszu*. Łódź: Katedra Archeologii Historycznej Instytutu Archeologii Uniwersytetu Łódzkiego, 2013, p. 185; PAWIŃSKI, Adolf. *Polska XVI wieku pod względem statystyczno-geograficznym*. Vol. 5. *Mazowsze*. Warszawa: Skład główny Gebethnera i Wolffa, 1895, p. 133.

nineteenth century was the heyday of milling with windmills.[13] According to statistical data from 1830, 663 millers were registered in the region then known as the Płock Voivodeship.[14] This number includes millers employing both wind and water, as well as those were working on boat mills.[15] Throughout the entire period of the Kingdom of Poland, i.e. between 1870 and 1914, windmills and watermills were the most popular type of mills. In 1876, out of a total of 5,991 milling plants, only 76 were steam mills,[16] the remaining group being wind, water and boat mills. Given northwest Mazovia was part of the Kingdom of Poland, these proportions can be applied to this region. In 1899 there were 167 watermills, 637 windmills and only one steam mill in the Płock Governorate.[17] Statistics from later years show changes in the percentage ratio between modern steam/electric mills and wind/watermills.[18]

The analysis of detailed maps of the Military Geographical Institute in Warsaw from the 1930s identified the locations of 351 windmills in the studied area. According to the data from 1939, there were over 70 windmills in the Płock district alone.[19] Taking into account the number of watermills (20) and motorised mills (17) operating in the Płock district at that time, the total number of mills was approximately 107.[20] Therefore, it can be estimated that there were approximately 100 watermills and windmills operating in the Płock district. The district included 821 towns, so there was one windmill for approximately every eight towns.

The oldest and most common type of windmill was the post mill. A post mill is built around a central vertical post around which the entire building rotates.[21] Post mills occur across

[13] BRYKAŁA, Dariusz; et al. Wykorzystanie energii wiatru i wody w okresie ostatnich 200 lat na obszarze województwa kujawsko-pomorskiego. In: *Prace Komisji Krajobrazu Kulturowego* 29, 2015, p. 10.

[14] RODECKI, Franciszek. *Obraz jeograficzno-statystyczny Królestwa Polskiego*. Warszawa: Drukarnia Gałęzowskiego i Kompanii, 1830, p. 5.

[15] *LUSTRACJA województwa mazowieckiego 1565, cz. I*. I. Gieysztor, A. Żaboklicka, (eds). Warszawa: PWN, 1967, p. 142; CHLEBOWSKI, Bronisław. *Słownik geograficzny Królestwa Polskiego i innych krajów słowiańskich*. Vol. 15, no. 1. Warszawa: Nakładem Władysława Walewskiego, 1900, p. 374; ŻEBROWSKI, Tadeusz. Stolica książąt mazowieckich i płockich (1138–1495). In: M. Kallas (ed.). *Dzieje Płocka*. Vol. 1. *Historia miasta do 1793 roku*. Płock: Towarzystwo Naukowe Płockie, 2000, p. 78; GAWARECKI, Wincenty, H. *Opis topograficzno-historyczny ziemi wyszogrodzkiey na teraz w obwodzie i województwie płockiém położonéy*. Warszawa: W Drukarni Zawadzkiego i Węckiego, 1823, p. 22; BRYKAŁA, Dariusz, et al. Traces of disappearing heritage: Upcycling of wooden vessels preserved in the vernacular architecture of a large river valley in Central Europe. In: *Rural History,* vol. 34, 2023, No. 2, pp. 243–261.

[16] PUŚ, Wiesław. *Przemysł Królestwa Polskiego w latach 1870 – 1914 Problemy struktury i koncentracji*. Łódź: Uniwersytet Łódzki, 1984, p. 220.

[17] *GUBERNIA PŁOCKA POD WZGLĘDEM GEOGRAFICZNO-STATYSTYCZNYM I ADMINISTRACYJNYM*. Kalendarz Informator Płocki na rok 1899. Płock: Drukiem K. Miecznikowskiego, 1899, p. 41.

[18] DZIK Antoni. *Młynarstwo w Polsce*. Warszawa: Nakładem Związku Młynarzy Polskich, 1928, p. 20; TURCZYNOWICZ Stanisław. Wyzyskanie sił natury w Polsce dla celów energetycznych. In: *Roczniki nauk rolniczych i leśnych* 33, 1934, p. 464; TURCZYNOWICZ Stanisław. Wiatraki w Polsce. In: *Sprawozdania i Prace Polskiego Komitetu Energetycznego* 8, 1934, p. 648.

[19] KURSKI, Ignacy, J. Opisanie powiatu płockiego, jego granice administracyjne, ukształtowanie, wody, klimat, rolnictwo i przemysł. In: I. J. Kurski (e.d). *Kalendarz informator Mazowsza Płockiego i ziem sąsiednich*. Płock: Wydawnictwo B-ci Detrychów w Płocku, 1939, p. 31.

[20] KURSKI, Ignacy, J. (1939), p. 31.

[21] STOKHUYZEN, Frederik. *Dutch Windmills*. Bussum: MW Books Ltd., 1962; LANGDON, John. *The "Engineers" of Mills in the Later Middle Ages*. London: Society for the Protection of Ancient Buildings, Wind & Watermill Section, 2007; LUCAS, Adam. *Wind, water, work: Ancient and Medieval Milling Technology*. Leiden-Boston: Brill Academic Publishers, 2011, p. 111; MOOG, Berthold. *Introduction to Molinology: History, Technique and Culture of Traditional Mills*. Binningen: The International Molinological Society, 2018, p. 74; PRARAT, Maciej. *Młyny wodne, wiatraki i kieraty w XIX i 1 połowie XX w. na terenie Pomorza (w granicach dawnych Prus Zachodnich). Technika i architektura*. Toruń: Wydawnictwo Naukowe UMK, 2023, p. 267.

Europe, though they differ according to region. The main structural elements of Polish post mills are similar to those used most commonly in Germany; however, certain technical elements represent independent solutions.[22]

The next most common type of windmill was the paltrock mill (sometimes spelled paltrok). A paltrock mill has a rotating construction which rests mainly on rollers, sometimes only supported by a small post.[23] This type of mill was invented in the Netherlands in the sixteenth century as a sawmill.[24] It should be noted that the grinding machines in Poland refer in their design, function and construction directly to those used in Germany in the nineteenth century.

The least common design in Mazovia was the smock mill, in which the head and roof are rotatable and mounted on a wooden block.[25] This type of mill was also invented in the Netherlands in the sixteenth century. In Poland, it was most popular in the northern regions. As with paltrock mills, the Polish construction style was more similar to German designs. During the research, no tower windmills (with brick bases) were found in this area.

Based on information obtained from catalogue cards from the 1950s and 1960s, out of 150 windmills described, 100 were post mills, 14 were paltrock mills and two were smock mills. The remaining 34 windmills remain unidentified. However, on the basis of analysed photos it can be confidently stated that they were not smock mills. Therefore, all three basic types of windmills were present in the studied area.

Windmills were most often located a short distance from settlements or on their edge. Occasionally, they were located between villages. The smallest group were mills located in rural areas. In small towns they were usually built on the outskirts – in the border zone.[26] In summary, it can be concluded that in Mazovia region the most characteristic type of windmill was the simplest post mills.

The calculations above illustrate – in quantitative and qualitative terms – how important windmills were for the cultural landscape in the studied area between late nineteenth and first half of the twentieth century. The number of mills and their construction features – as well as the status of people associated with them – distinguished them from other rural facilities. They played an important utilitarian but also symbolic function in the village space.[27]

Death of windmills

A few windmills have survived to this day in northwest Masovia. These are single examples, and include those in Ługi, Drobin, Bodzanów, Zeńbok, Kosemin, Brzechów, Gradzanów Zbąski and Bielsko (Photo 1). However, in most cases, what remains of former windmills are only memories connecting the objects with the places:

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[22] TIJMAN, E. *Paltrock windmills in middle and eastern Europe*. In: F. Stüdtje, (ed.), *Transactions of the Seventh Symposium of Molinology*. Schleswig-Holstein, Hamburg: The International Molinological Society, 1994, pp. 373–391; ŚWIĘCH, Jan. *Tajemniczy świat wiatraków*. Łódź: Polskie Towarzystwo Ludoznawcze, 2005, p. 50.

[23] BICKER CAARTEN, Anton. *The early history of windmills in the Netherlands*. In: *Transactions of the 1 International Symposium of Molinology*, Portugal-Biblitheca Molinologica, 1965, p. 156.

[24] COUWENHOVEN, Ron. *1100 Zaanse Molens*. Zaandam: Stichting Uitgeverij Noord-Holland in samenwerking met Vereniging De Zaansche Molen, 2015.

[25] NOTEBAART, Jannis C. *Windmühlen. Der Stand der Forschung über das Vorkommen und den Ursprung*. Den Haag, Paris Mouton Verlag Den Haag, 1972, pp. 25–26.

[26] ZAYATS, Inna. The Historical Aspect of Windmills Architectural Forms Transformation. In *Procedia Engineering* 117, 2015, p. 689.

[27] YILMAZ, Meltem. Architectural identity and local community. In: *Ekistics* 73, 436/441, 2006, p. 140; ADAMCZEWSKI, Jerzy. *Młynarstwo magiczne*. Wrocław: Polskie Towarzystwo Ludoznawcze, 2005, p. 52.

Photo 1.

> When I was young, I used to sit on the stones that were left of the windmill. And you looked and you looked […] These stones were lying where the windmill used to be. (M.a.60)

> In Dębsko? There was no windmill in Dębsko. Unless it's for corn or something [...]
> For meal? Maybe for meal. But nothing like this one. One like this one was in Garków Stary. On the left side of Nadratowo as you drive. There you can see these logs, this pile, because it fell down two or three years ago. When you drive along, you can see a pile like this. (M.a.45)

This state of affairs was influenced by both World War II and the new political system in Poland after 1945. The post-war authorities did not support the development of private business activity. The effects of this policy also influenced the milling industry. Under communist rule, restrictions on milling work and excessive taxes led to these facilities no longer being used for their intended purpose, as it was no longer profitable. Analogies can be found in the process of extinguishing/liquidating watermills.[28] This trend had a direct impact, leading to frequent changes in the operational status of windmills and, eventually, their destruction. Useless windmills were frequently converted into warehouses, granaries and even barns. These changes had negative consequences for both structures and construction materials. Windmills designed to rotate around their own axis tilt on one side if not used in this way.[29] This destroys the load-bearing elements and other parts of their structure. Propellers left in one position became warped and damaged:

> As I recall, it was here. The wind was blowing it away – sometimes the boards, sometimes the propellers. There it was. I don't remember when it fell apart because I didn't live here for long. […] It was a symbol of Stobiecin, because there were no others like this one in the area. When I was a little kid, I liked to play there, but they chased us because something could fall on our heads, a beam or a board [...] My son lives there, his father used to have a grinder there, but it's an old story. (F.a.70–75)

Together with their functions, the importance of windmills in the local economy also changed. When not in use, paltrocks could slip off their rollers due to their own weight and one-sided tilting. Discontinuing use of windmills for their original function meant that they were no longer repaired, as this would have involved non-returnable investment. Therefore, farmers allowed the mills on their lands to be slowly destroyed. "It's lying there", one interviewee said, pointing to a pile of the remains of a wooden structure of a windmill (Photo 2).

[28] BRYKAŁA, Dariusz. Uwarunkowania przyrodnicze lokalizacji młynów wodnych w zlewni Skrwy. In: K. German, J. Balon (eds), *Przemiany środowiska przyrodniczego Polski a jego funkcjonowanie.* Kraków: Instytut Geografii i Gospodarki Przestrzennej Uniwersytetu Jagiellońskiego, 2001, p. 166.

[29] PRARAT, O potrzebie badań ciesielskich…, p. 99.

Photo 2.

When I came here, it was only working for a short time. Sixty years ago there was such a storm that the wings were torn off and they rotated and flew like that. They broke off and fell. And that was the end of the windmill.

Interviewer: Have there been any attempts to convert it into an electric mill?
No. Only a windmill. When the propellers broke, my father [father-in-law] didn't grind any more. The windmill stood empty and collapsed three years ago. It stood here for 170 years. (F.a. 83)

A few windmills were converted into electric mills:

It was probably wind- and electricity-powered. There was probably a turbine there and when it was running on wind it was charged, and when there was no wind they switched to electricity. Something like a substitute. (M.a.65)

As long as I remember, there were no propellers. It was converted to an electric one. (M.a.63)

There was also a windmill in Głużki. I know because that's where I come from. […] It was electric-powered and had rollers. They took it apart. The owner was killed by an electrical shock at the mill. She [the miller's wife] was still working afterwards. She had someone to help there, but it was hard. (M.a.ok.70)

Of the 150 objects described, 25 had been subjected to such modernisation.[30] This had consequences in the form of design changes. The most common procedure was to dismantle or shorten the propellers, which no longer fulfilled their original function (Photo 3). As a

Photo 3.

[30] Data based on materials collected at the Monument Protection Offices in Plock, Ciechanów and the Masovian Village Museum in Sierpc.

result, these windmills lost their original appearance. For safety reasons they were placed on a foundation. In several cases, including Drobin, Chrapoń, Warzyń Skóra, windmills were enlarged by adding new rooms, changing their volume, shape and proportions. The original shape of a windmill was covered with the new structures, sometimes made of brick. These actions did not protect the buildings from destruction, they just slowed down the process while significantly interfering with their original structure.

A great number of the windmills were dismantled in the 1980s and 1990s, as well as in the early twenty-first century. Every so often, their fate fulfilled itself, as it happened in the case of one of the windmills in Szreńsk: "There was another windmill, but a youth set it on fire and nothing remained of it" (M.a.70). The windmill in Rochnia, which was converted into an electric mill after a lightning strike in the 1960s, burned down due to a short circuit in 2015.[31]

The windmill stood where the house now stands on a high foundation. It's still Rochnia, but already in Liberadz, behind the sign. It was in use until the end. It burned down six to eight years ago. Probably from the electrics. (F.a.45)

Object of memory

Phantom objects generate memory narratives that can be inspired by empty places, ruins, photographs, maps, and objects. These substitutes stimulate memory to recreate experiences, events and memories that are vague and opaque:

> Where that bunch of lilacs is, behind those farm buildings. There was a wooden house there. And there was a windmill about a hundred steps behind it. A great one. It reached to the ground. It was the mill. (F.a.80)

Sometimes they evoke a sense of loss or nostalgia:[32]

> His family must have photos, because it is something for the younger generation, because there are no such windmills anymore. They certainly have souvenirs somewhere, because it was important. (M.a.63)

These memories are characterised by a subjectivity typical of individual, non-objectivised and metamorphic memory. They are subject to a constant process of forgetting and replaying

[31] "On Thursday, January 15, a historic mill in Rochnia (Szreńsk commune) burned down. The fire brigade carried out the operation for over 5 hours. Three houses near the mill were saved from burning down. The fire broke out around 6.45. Grain was stored in a historic wooden mill. Unfortunately, when the fire brigade arrived at the site, the fire had spread to practically the entire facility. The firefighters' task was to save the buildings located near the mill. Fire brigades from Rochnia, Szreńsk and Mława took part in the action. The owner himself tried to put out the fire first. Unfortunately, when the firefighters arrived, the mill was completely engulfed in fire – says Marek Augustynowicz, a spokesman for the District Headquarters of the State Fire Service in Mława. Losses were estimated at approximately 150,000 zloty. The mill and its equipment burned down. Four tons of grain and a grain silo burned down. The neighbouring buildings also suffered losses, mainly in the form of destroyed windows and gutters. A high-voltage line was also damaged. In addition to firefighters, on site there also appeared police officers and energy company employees. – The cause of the fire was probably an electrical short circuit – says Marek Augustynowicz. We managed to save three neighbouring residential buildings." Spłonął młyn i 4 tony zboża". In Kurier Mławski, 20 January 2015.

[32] TRIGG, Dylan. *The Memory of Place. A Phenomenology of the Uncanny*. Athens: Ohio University Press, 2012, p. 298. HILL, Lisa. Archaeologies and geographies of the post-industrial past: landscape, memory and the spectral. In: *Cultural Geographies* vol. 20, 2013, No. 3, pp. 379–396.

sequences and individual events.[33] Memories inspired by a conversation, a photograph, a point on a map are all sources of subjective information about objects and the people associated with them:

> The Germans dismantled it. People took everything from here and grandpa got angry and waved it off. I don't know, maybe because they thought he was German and reported him? I don't know. He didn't want to do anything here anymore and went to Nadolnik to the mill and worked there for many years. I helped him there many times when I was older. I mixed the grain with a wooden shovel. He was a good miller. (M.a.70)

> This windmill […] when I was lying awake at night, I liked to listen to it working. […] I remember my grandmother bringing flour from the windmill and baking rolls. I remember it well. (F.a.78)

One clear sign of lost windmills' existence is their foundations, typically made of stones and bricks held together with cement mortar. Bases built on a circular plan stand out from the landscape and, unlike the boulders that form the foundations of post mills, they can be unmistakably defined as the work of a man. However, these last physical relics of the region's economic past are being used in a brand new way. In Lutocin, one such space was adapted as a backyard fireplace (Photo 4). In the other case, the interior of the brick circle serves as a flower bed planted with birches. Interestingly, in Kobyla Łąka near Bieżuń, the remains of the construction post of a paltrock mill that strengthened and stabilised the building has been preserved.

Photo 4.

The situation is different with the foundation stones of post mills. These boulders, which were once an integral element of the windmill's structure with a high degree of technical complexity, return after the mill's "death" to their natural environment – to the untamed space of forgetting. As one informant recalled, "When you go there to pick mushrooms, you can see such large stones [remains of foundations] and such a semicircle" (M.a.57). In the case of boulders from the foundation, a so-called "functional inversion" or renaturalisation process occurs. However, the very moment of rejection – leaving foundation stones after the windmill has been dismantled – is a phenomenon that may be classified as "cultural expulsion". Geological objects that have never ceased to be objects, reassigned to the world of nature after serving as foundations, seem to return to their original purpose. This phenomenon applies primarily, or perhaps only, to loosely arranged erratic boulders from post mills. Often, they are the only material evidence of windmills that remains. Because they belong to the order of nature, they are unidentifiable to an outside observer as an object briefly incorporated into the cultural space. After the destruction of the object in the process of cultural expulsion, the erratic boulders that served as foundations (in the process of cultural inclusion) are returned to the space of nature, but remain a reference point for memories. They stimulate the mind to reminiscence

[33] NORA, Pierre. Between Memory and History: Les Lieux de Memoire. In: *Representation*. Special Issue: *Memory and Counter-Memory* 26, 1989, pp. 7–24.

Photo 5.

and, being a part of a local landscape, they can act as a clear code – a space of memory, albeit not for everyone but only for those who know how to read it (Photo 5).

Other material remains in the space include paved squares and access roads to windmills. These material testimonies are illegible without the situational/historical context, which is possible to obtain by referring to cartographic and photographic materials/sources or memories of residents/owners who remember the original purpose of these objects. Paved access roads still constitute problems in the development of these areas. Most often, sites with such remains are used for pastures.

> Here is a meadow, because you can't plough here. Only stones. Because there was an access road here and there were also stones under the windmill so that there would be no mud. (M.a.65)

> When you were digging in the garden, the stones of the windmill got in the way. There were so many of them that it was impossible to dig. This is where it stood. (F.a.55)

There are also examples of reusing materials and parts of the windmills in new functional contexts. To paraphrase Tim Ingold's words, we can say that objects are what they are until they become something else.[34] Material remains from demolition were often used on farms. There are identified cases of using post-demolition material to repair/reconstruct a residential building:

> The windmill no longer operated after the war. The house partially burned down due to lightning [...] The windmill was dismantled and the material was used to build a part of the house. The windmill stood on a post. This post was big. (M.a.96)

Window and floor woodwork was made from wooden elements of the windmill's construction. Everyday items were also made, such as tables and chairs: "They contained resin. So much of it that smoke was coming out. No woodworms. You could peel off such a layer (about 1 cm) and the wood was still healthy. We made a table and chairs from it" (M.a.40). These activities, bordering on recycling or upcycling, can be considered a manifestation of pragmatism resulting from economic constraints as well as awareness of the value of material obtained from demolished windmills.[35] It is worth noting that in Płock Mazovia similar projects were

[34] INGOLD, Tim. Toward an Ecology of Materials. In: *Annual Review of Anthropology* 41, 2012, p. 435.

[35] FRANGIPANE, Anna. From spolia to recycling: The reuse of traditional construction materials in built heritage and its role in sustainability today: A review. In R. Přikryl et al. (eds), *Geological Society London Special Publications* 416, 1. *Sustainable Use of Traditional Geomaterials in Construction Practice*, 2016, pp. 23–34; STRASSER Susan. Complications and Complexities: Reflections on Twentieth-Century European Recycling. In *Contemporary European History Special Issue vol.* 22, 2013, No. 3, pp. 517–518.

undertaken in relation to other wooden objects – both architectural and from shipbuilding.[36]

Alongside the wooden elements, individual devices and non-wooden parts of the structure were repurposed. During field research, we came across a peculiar use of rollers from the rotation mechanism of a paltrock windmill which were now being used as dumbbells by the miller's grandson. Such rollers were high value, so they were often repurposed. For example, some farms continued to use them to mill grain, building special buildings in which the rollers were operated electrically. These places served functions analogous to earlier windmills and served local farmers.

A different fate awaited the millstones. One of the most lasting material remains after the destruction of the windmill, providing evidence of its former existence, millstones basically became useless objects from a utilitarian point of view. However, they did not lose their material properties and symbolic connotations. By interacting with humans, they acquired new meanings and values[37] and appear in a new functional, symbolic and spatial contexts. For example, millstones from the windmill in Kobyla Łąka were used to make a table:

> The millstones are […] at home, in Bieżuń. I took them there myself. He made a table out of them. You can lean on it and it won't fall over. I left one as a souvenir. It is in the yard. (M.a.60)

Photo 6.

In Krysko, millstones were placed in front of one of the entrances to the primary school, serving an aesthetic and memorial function (Photo 6, lower part of the illustration). A similar idea was behind an exhibition of millstones on a former miller's farm in Czerwińsk on the Vistula River. In Kowalewo Skorupki there were plans afoot at the time of research to use them in a garden composition. Sometimes millstones are used to decorate home driveways (Photo 6). They are also used in the construction of roadside shrines. There is an example from Czerwińsk where a millstone and a quern-stone were a part of an artistic installation near a roadside cross. Unfortunately, in 2022 the millstone was stolen and now only the quern stone remains at the cross. A similar use of millstones

[36] POGODZIŃSKI, Pawel M. Reuse of boat structural elements in the wooden buildings along the Vistula River. In: *Journal of Heritage Conservation* 59, 2019, pp. 106–114; PIASECKI Aleksander, et al. Stodoła z Rębowa, gm. Wyszogród z II połowy XIX wieku jako przykład budownictwa z wtórnie wykorzystanych elementów szkutniczych. In: *Rocznik Muzeum wsi Mazowieckiej w Sierpcu* 8, 2017, pp. 85–93.

[37] GOSDEN, Chris and MARSHALL, Yvonne (1999). The Cultural Biography of Objects. In: *World Archaeology, vol.* 31, 1999, No. 2, pp. 169–170.

was recorded, among others, in the town of Chrosno in Kujawy (Photo 7).[38] Displaying millstones in new functional and symbolic contexts, often sacred, has a long tradition dating back to earlier eras.[39] It is worth mentioning the tradition of embedding them in the church walls. Examples of this type occur in Germany, Great Britain and Poland.[40] In Poland, most churches with millstones are located in Pomerania and northwest Mazovia. In the latter region, these include churches in Płońsk, Bodzanów, Krysk and Zakroczym (Photo 8). An interesting example of a semi-finished millstone built into the church wall from the presbytery side can be found in the church in Zagroba, built at the beginning of the twentieth century. In Czerwińsk, in front of the main entrance to the basilica, a small millstone forms part of the pavement. However, considering its location – the central point of the composition in the shape of an isosceles cross – this type of use may have a more profound symbolic meaning.[41] These specific ways of "exhibiting" millstones can be treated as attempts to construct a local, social and, finally, family "diachronic identity".[42] Cultivating memory through objects related to professions of the past constitutes the distinctiveness of a given family on the social and cultural level.[43] It is worth recalling that the mnemonic value of an item has archaic inclinations.[44] Although in many cases the reuse of millstones in new contexts can be explained primarily in terms of aesthetic, practical or nostalgic reasons, there are examples that prove the continuity of the symbolic dimension of these utilitarian objects.

Photo 7.

At this point, one may be tempted to say that the reuse of materials and objects from windmills bears the hallmarks of spolia, because the material and objects are used in the construction of functionally different buildings or their purpose is changed completely.[45] These objects can also be looked at from the perspective of "biographies of things" which have lost their original meaning and functions only to be reintroduced into cultural circulation in a different functional

[38] PIOTROWSKI, Robert. Wiatrak w narracjach wspomnieniowych. In: M. Prarat (ed.) *Wiatrak koźlak w Chrośnie z końca lat 60. XVIII w. Jego dzieje i problematyka konserwatorska*. Toruń: Muzeum Etnograficzne w Toruniu, 2022, pp. 26–27.

[39] WATTS, Susan R. *The life and death of querns. The deposition and use-contexts of querns in south-western England from the Neolithic to the iron age*. Southampton: HP, 2014, pp. 40–42; O'SULLIVAN Aidan. KENNY N. A matter of live and death? In: *Archaeology Ireland,* vol. 22, 2008, No. 4, p. 9.

[40] ŚWIĘCH, Jan. *Tajemniczy świat wiatraków*. Łódź: Polskie Towarzystwo Ludoznawcze, 2005, p. 148.

[41] WATTS, Susan. The Symbolism of Querns and Millstones. In: *AmS-Skrifter* 5, 2014, pp. 53–66; URBAŃCZYK, Przemysław. *Medieval Arctic Norway*. Warszawa: Polish Academy of Sciences, 1992, p. 101; BARANOWSKI, Bohdan. *Polskie młynarstwo*. Wrocław: Ossolineum, 1977, p. 119.

[42] HORN, Christian et al. Introduction. In: C. Horn, G. Wollentz, G. Di Maida, A. Haug (eds), *Places of Memory Spatialised practices of remembrance from prehistory to today*. Oxford: Archaeopress Publishing, 2020, p. 2.

[43] ASSMANN, Jan. Collective Memory and Cultural Identity. In: *New German Critique* 65, 1995, pp. 129–130.

[44] VANSINA, Jan. *Oral Tradition as History*. Wisconsin: The University of Wisconsin Press, 1985, pp. 44–45.

[45] KALAKOSKI, Iida, HUUHKA, Satu (2018). Spolia revisited and extended: The potential for contemporary architecture. In: *Journal of Material Culture,* vol. 23, 2018, No. 2, p. 193.

Photo 8.

context with a new purpose and, therefore, value.[46] At the same time, they still remain part of an economic object of enormous utilitarian and symbolic importance. Moreover, this process often creates a landscape of material representations of ideas about windmills and the status of their owners. In some situations, millstones can be considered a kind of mirror, reflecting people's ideas.[47]

Within two former mill farms there are replicas of the windmills that stood there years ago. One of them was constructed in 1999 by a miller from Czarnia Duża. He started working in his father's windmill in prewar Poland and was taught the trade by his father, who was himself the son of a miller. As an eleven-year-old boy, he helped with the lighter milling activities. Many years of work at the windmill, which he later inherited and which provided the main source of income and support for his family, left him with a great degree of sentiment about this trade. For a considerable period of time, the windmill was a significant place for the family. It literally and figuratively set the rhythm of everyday life. Therefore, after the windmill died, the miller decided to build a copy of it (Photo 9). This souvenir was intended to remind his grandchildren of the old windmill and an activity deeply rooted in family tradition.

> For the children and grandchildren to see what this windmill looks like. And some people came here to do something like that for them, too. They brought in craftsmen to copy it in their garden. And I say "Go and measure. Do. You won't do the same one, anyway. (M.a.95)

A second model – much smaller, but reflecting the proportions and type of a post-mill – was built by the miller's grandson. His grandfather came from a large family in which all the men – his father, grandfather and great-grandfather – ran windmills. When asked why he made this model and placed it in the place of the former windmill, the informant replied: "I don't know ... so that there would be a sort of a souvenir" (M.a.60). These examples of strong emotional relationships between the past and the present allow us to see the sometimes unconscious

[46] KOPYTOFF, Igor. The Culture Biography of Things. In: A. Appadurai (ed.) *The social life of things. Commodities in cultural perspectives*. Cambridge: Cambridge University of Press, 1986, p. 66.

[47] See: SCARPACI Joseph L. Material Culture and the Meaning of Objects. In: *Material Culture,* vol. 48, 2016, No. 1,*Special Issue: Consumer Goods*, p. 1.

Photo 9.

bond between an object and a person, where the object should be seen as the apotheosis of a former life and ethos. Such attempts to maintain memory can be called memory prosthesis with positive inclinations.

Potential of the memory heritage

Due to their volume and structure, windmills stand out from other rural facilities. One interviewee compared windmills to towers: "This windmill was like a tower with such wings" (F.a.85). For others, there were spaces for children's games and fantasies:

> We used to go there and chase each other. We scared each other that there was something ghoulish there. Because it's a building like that, so we told each other stories and got frightened. (F.a.40)

The interlocutors' statements mentioned the value of these objects for the local community and landscape:

> When the windmill was here, I didn't pay any attention to it. It was always there [...] But now it's gone, I feel sorry for it, because it's such an important building. When something disappears, only then you wonder. (M.a.70)

It is hard to disagree with the last statement. All that remains of many windmills are memories, old photos and sometimes traces of their existence in the landscape. These anthropogenic micro-changes in the geological structure – foundations, paved access roads, stone squares around the windmill – are a record of the memory of the landscape.[48] Both residents and researchers can rediscover these places and the memories associated with them.[49] The memory of windmills can be defined as a form of intangible cultural heritage. Years of inability to develop this form of milling as an industry and, ultimately, the lack of awareness of their value alongside insufficient funds to maintain and protect their wooden architecture, have cursed windmills. They have become a burden, something unwanted, even though they could still be an asset to local communities. Importantly, the informants were aware of this:

> It could be used in agritourism. Now it would be such a showcase, but back then people had no awareness. (M.a.80)

[48] BRIERLEY Gary, J. Landscape memory: the imprint of the past on contemporary landscape forms and processes. In: *Area*, vol. 42, 009, No. 1, p. 79.

[49] INGOLD Tim. The Temporality of the Landscape. In: *World Archaeology*, vol. 25, 1993, No. 2, pp. 152–153.

> I don't know who agreed to take it away from here. It was such a monument. I remember how they were dismantling it. (F.a.40)

A good example of positive action and building a local brand based on a historic windmill is the initiative taken by the inhabitants of a small village in Kujawy (Chrosno, Kuyavian-Pomeranian Voivodeship) aimed at protecting their eighteenth-century facility, which has served as an emblem of the village for years and generates interest from tourists. The windmill serves both a memorial function – recalling of the village's past – as well an emblematic function, defining the status of the inhabitants and generating awareness of the value of this type of architecture.[50] This project is an example of the process of changing the valuation of objects based on their social, historical and economic context. The memory of the past is shaped through the prism of the present, and memory and forgetting play a crucial role in this phenomenon.

The value of windmills is also appreciated by private investors. A smock mill from Niegocin was relocated to Prusim in 2012 where it serves as a restaurant.[51] A windmill from Niszczyce was moved to the town of Krzyczki Szumne near Nasielsk: "It was under protection and they took it [...] to Nasielsk or Pułtusk […], I think to Nasielsk, and it stands there" (M.a.50). It was adapted for the needs of a downhill zip line (Tyrolean), one of the main attractions of the resort.[52] In the Masovian Village Museum in Sierpc certain parts of the original structure and equipment of the windmill were made available to visitors after reconstruction.[53]

Windmills that have been adapted to a new functional context and subjected to cultural implementation can constitute a very important part of new heritage in a new place. The new spatial and functional context is the next stage in their history. Taking into account actual conditions, this is probably the only direction that would enable the protection of these objects, but it generates huge costs. One of the young heirs of a nineteenth-century windmill had an opinion on this:

> In the past, [there were windmills] in Garków, Liberadz, Szreńsk. The one in Szreńsk has already been sold. And now only this one remains. It could be a tourist attraction because people like to see such things, but renovation is too expensive. (M.a.30)

In Europe, the primary focus of research is on preserved and operational mills. The majority of publications are dedicated to the analysis of technical and construction solutions. This approach helps to preserve the generations-old tradition of building, repairing and operating these highly specific machines. Craftsmanship skills in this field have been inscribed on the UNESCO World Heritage List. The Netherlands was recognised in 2017 for the "craft of the miller operating windmills and watermills"[54] and in 2021, Iraq was recognised for the "traditional craft skills and arts of Al-Naoor".[55]

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[50] Compare: RYCHNOWA Lucie, et al. Open-air Museums: The Future of the Presentation of Spiritual and Architectural Heritage. In: *Muzeológia a kultúrne dedičstvo*, vol. 10, 2022, Is. 1, p. 9.

[51] https://www.olandia.pl/atrakcje/wiatrak

[52] http://www.nosselia.pl/galeria/

[53] https://my.matterport.com/show/?m=doYcnBP4tdb

[54] https://ich.unesco.org/en/RL/craft-of-the-miller-operating-windmills-and-watermills-01265

[55] https://ich.unesco.org/en/RL/traditional-craft-skills-and-arts-of-al-naoor-01694

In Poland, windmills are for the most part no longer preserved, and there are no longer individuals with the skills to operate them. Hence, the proposed anthropological approach is one attempt to preserve the intangible heritage associated with mills.

That is why the fragments of longer statements – subjectively verified memories – presented in this article are worth treating as a crucial part of the heritage of milling memory. They are testimony to the importance and value of these objects both for the cultural landscape and intangible memory heritage of local communities. In the future, this aspect also may need to be increasingly analysed in countries where there are still many mills and individuals proficient in their operation.

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Specifics of stylised shapes of Chinoiserie-style pavilions as the basis of their restoration

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Specifics of stylised shapes of chinoiserie-style pavilions as the basis of their restoration
This article analyses the phenomenon of Chinoiserie style in European architecture. The basic principles of Chinese landscape design and the role of pavilions in the natural environment are highlighted. The fundamental difference between European and Chinese pavilions is shown at different levels – from the structure of the park to the composition to individual details – and it is also shown that European Chinoiserie-style pavilions were a much simplified and averaged version of the Chinese ones.
The ambiguity of purpose and variety of functions inherent in ancient Chinese pavilions are lost in European ones, as the "Chinese-style" pavilion is intended for only one purpose – aesthetic entertainment. The appearance of the European pavilion, sometimes called a "tea pavilion", does not follow that of ancient Chinese tea ceremony pavilions. In addition, the European park pavilions cannot be compared to the most famous Chinese "landscape pavilions", as none of the former are located in such a majestic landscape with the possibility of viewing from a long distance.

Keywords: Chinese pavilion, Chinoiserie, stylised forms, restoration.

Introduction

Analysis of the phenomenon of the transformation of national Chinese cultural and artistic traditions into European architecture from the eighteenth to early twentieth century and proves the lack of shared identity of European oriental buildings and traditional ancient Chinese architecture. The Chinoiserie style, by its nature, was a creative European interpretation of Chinese motifs, differing significantly from the original examples. It would be more correct to say that it did not in fact embody original Chinese architectural and artistic traditions but

rather an image of China and the East in general, as held in the minds of Europeans who had never been there and knew nothing about the philosophical and religious foundations on which Chinese architecture and art are based, and therefore transferred to China images familiar to them from the Baroque and Rococo traditions.

Like artists and writers following Chinese traditions according to their own understanding, European and Russian architects were guided by European principles of aesthetics and beauty, without thinking about the philosophical and esoteric content of each form and element. The most common types of Chinese-inspired construction in Western Europe and the Russian Empire were "oriental" garden pavilions, gazebos and so-called "tea houses".

In order to analyse Chinoiserie-style objects in Europe, sources devoted to the general problems of historical and cultural heritage protection and preservation of the authentic historical environment were analysed.[1] In order to conduct a comparative analysis of Chinese and European pavilions, Chinese academic sources devoted to classifying pavilions by function and drawings of pavilions were studied. This facilitated a comparative analysis of compositional characteristics and morphology.[2] Since the "theatricality" of the Chinoiserie style can be largely explained by the transfer of stylised Chinese forms to a non-indigenous environment (namely, to that of an ordinary European park), publications on this issue and those detailing the features of Chinese pavilions in their "native" surroundings were examined.[3] An important aspect associated with Chinese and Chinoiserie-style pavilions is their preservation and restoration,

[1] SPIRIDON, Petronela, and SANDU, Ion. Museums in the life of public. In: *International Journal of Conservation Science*, vol. 7, 2016, No. 1, pp. 87–92; SPIRIDON, Petronela, SANDU, Ion, STRATULAT, Lacramioara. The conscious deterioration and degradation of the cultural heritage. In: *International Journal of Conservation Science*, vol. 8, 2017, No. 1, pp. 81–88; PETRUŠONIS, Vytautas. Symbolic potential of place and its modelling for management needs. In: *Landscape architecture and Art*, 13, 2018, (13), pp. 39–49; PUJIA, Laura. Cultural heritage and territory: Architectural tools for a sustainable conservation of cultural landscape. In: *International Journal of Conservation Science*, vol. 7, 2016, S. 1, pp. 213–218.

[2] LI, Qin. *Chinese pavilions*, Beijing 2019; PEIFANG, Sun. *The Chinese Classical-Style Pavilions beside West Lake*. In: *Art and Design Review*, vol. 11, 2023, No. 4; CHANG, Dan. Study on the Appearance and Shape Design of China Pavilion. In: *International Conference on Materials, Energy, Civil Engineering and Computer* (MATECC 2017), 2017, pp. 30-32); XINIAN, Fu. *Traditional Chinese Architecture,* 2017; KOHL, David. *Offshore Chinese Architecture: Insights on Five centuries of Overseas Chinese building practices,* 2018.

[3] IVASHKO, Yulia, KUZMENKO, Tetiana, SHUAN, Li, CHANG, Peng. The influence of the natural environment on the transformation of architectural style. In: *Landscape architecture and Art*, vol. 15, 2019, Iss.15, pp. 98-105; IVASHKO, Yulia, KUŚNIERZ-KRUPA, Dominika, CHANG, Peng. History of origin and development, compositional and morphological features of park pavilions in Ancient China. In: *Landscape architecture and Art*, vol. 15, 2019, No. 15, pp. 78–85; IVASHKO, Yulia, CHERNYSHEV, Denys, CHANG, Peng. Functional and figurative and compositional features of traditional Chinese pavilions. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, vol. 61, 2020, pp. 60–66; YU, Kongjian. The conflict between two civilisations of nature-based solutions. In: *Landscape Architecture Frontiers*, vol. 8, 2020, No. 3, pp. 4–9; JIANG, Jiayi, CHEN, Ming, ZHANG, Junhua. Analyses of elderly visitors' behaviors to community parks in Shanghai and the impact factors. In: *Landscape Architecture Frontiers*, vol. 8, 2020, No. 5, pp. 12–31;

especially given the large number of wooden structures.[4] The sources allowed the authors to compare European chinoiserie-style pavilions with traditional Chinese pavilions and define the differences between the irregular plan of the old Chinese garden with pavilions and European regular-plan gardens with "Chinese-style" pavilions.

Materials and methods

Historical analysis was used to highlight the historical factors influencing the development of pavilion architecture in China and Europe. Graphical and comparative analyses were used to determine features of the layout of Chinese gardens and European parks and to compare genuine Chinese and Chinoiserie-style pavilions.

Results and discussion

1. The location of pavilions in the natural environment

The philosophy of the private garden was formed in China over thousands of years: to create the impression of a space for solitude in the midst of nature and tranquillity. The Chinese garden was originally conceived as the embodiment of harmony and an ideal world (Figs. 1, 2). In European palace and estate parks, however, Chinese themes were just another element of exotic entertainment. The most common Chinoiserie-style architectural form in European parks are pagodas and pavilions. These are typically placed without understanding how they are placed in traditional Chinese landscape environments or the symbolic meaning with which they are imbued. Their design was based on models of Buddhist pagodas and garden towers and, most often, pictures on porcelain vases.

[4] ORLENKO, Mykola, IVASHKO, Yulia. The concept of art and works of art in the theory of art and in the restoration industry. In: *Art Inquiry. Recherches sur les arts*, XXI, 2019, pp. 171-190; ORLENKO, Mykola, DYOMIN, Mykola, IVASHKO, Yulia, DMYTRENKO, Andrii, CHANG, Peng. Rational and Aesthetic Principles of Form-Making in Traditional Chinese Architecture as the Basis of Restoration Activities. In: *International Journal of Conservation Science*, vol. 11, 2020, No. 2, pp. 499–512; ABBASI, Javad, SAMANIAN, Kouros, AFSHARPOR Maryam. Evaluation of polyvinyl butyral and zinc oxide nano-composite for consolidation of historical woods. In: *International Journal of Conservation Science*, vol. 8, 2017, No. 2, pp. 207–214; ALFIERI, Paula, GARCÍA, Renato, ROSATO, Vilma, CORREA Maria. Biodeterioration and biodegradation of wooden heritage: role of fungal succession. In: *International Journal of Conservation Science*, vol. 7, 2016, No. 3, pp. 607–614; AUSTIGARD, Mari, MATTSSON, Johan. Monitoring climate change related biodeterioration of protected historic buildings. In: *International Journal of Building Pathology and Adaptation*, vol. 38, 2020, No. 4, pp. 529–538; YANG, Ru-yuan, SUN, You-fu, ZHANG, Xiao-feng. Application and Progress of Reinforcement Technology for Chinese Ancient Buildings with Wood Structure. In: *Geotechnical and Geological Engineering*, vol. 38, 2020, No. 6, pp. 5695–5701; BLANCHETTE, Robert. A review of microbial deterioration found in archeological wood from different environments. In: *International Biodeterioration and Biodegradation*, vol. 46, 2000, pp. 189–204; CHIDICHIMO, Giuseppe, DALENA, Francesco, RIZZA, Antonio, BENEDUCI, Amerigo. Insect-Infested Wood Remediation by Microwave Heating and Its Effects on Wood Dehydration: A Case Study of Hylotrupes bajulus Larva. In: *Studies in Conservation*, vol. 63, 2018, Iss. 2, pp. 97–103; YUZHAKOV, Yury, BELKIN, Alexander. Construction strengthening in historical wooden cupolas restoration. In: *IOP Conference Series – Materials Science and Engineering*, No. 365, 2018, pp. 1853–1861; FRUNZIO, Giorgio, DI GENNARO, Luciana. Seismic structural upgrade of historical buildings through wooden deckings strengthening: The case of study of Palazzo Ducale in Parete, Italy. In: *Procedia Structural Integrity*, vol. 11, 2018, pp. 153–160; QIAO, Guanfeng, LI, Tieying, CHEN, Yohchia F. Assessment and retrofitting solutions for an historical wooden pavilion in China. In: *Construction and Building Materials*, No. 105, 2016, pp. 435–447; OLIVER-VILLANUEVA, Jose-Vicente, BENITEZ-TELLES, Julio E., VIVANCOS-RAMON, María Victoria, GRAFIA-SALES, José Vicente. Wood Consolidation Assessment By Fundamental Frequency Method In Cultural Heritage Preservation. In: *Wood Research*, vol. 57, 2012, Iss. 2, pp. 331–338.

Fig. 1: *Chinese pavilion in Yu Yuan private garden in Shanghai.* Photo by Justyna Kobylarczyk, 2017.

Fig. 2: *Sculpture of sacral lion and pavilion in the Imperial Garden of the Forbidden City, Beijing.* Photo by Michał Krupa, 2017.

The first difference between European parks and Chinese gardens is the number of Chinese pavilions: most European parks have a single pavilion that does not affect the perception of the park's overall composition, whereas Chinese sources mention a significant number of pavilions that emphasise the beauty of an outstanding landscape.

For comparison, three Chinese gardens were selected: the garden in the ensemble of the Forbidden City (Gugong), the garden of Yuan Ming Yuan, and the private gardens of Suzhou – Zhuōzhèng Yuán (The Humble Administrator's Garden) and Liú Yuán (Lingering Garden). The selected European landscape parks with Chinoiserie-style buildings were Sanssouci Park in Potsdam, Germany; Tsarskoe Selo (Monarch's Park) near St Petersburg, Russia; Oleksandriia

Park in Bila Tserkva, Ukraine; and Sofiivka Park in Uman, Ukraine. All of these parks are in the estates of aristocrats.

Imperial Chinese gardens outside the Forbidden City have a picturesque irregular layout. The Suzhou gardens were a model for landscaping both private and imperial gardens (Figs. 3, 4).

Fig. 3: *The Pavilion Whoever Enters the Pavilion Becomes a Buddha in Liú Yuán Garden.* Watercolour by Peng Chang, 2020.

Fig. 4: *The Mid-Pond Pavilion of the Shī Zǐ Lán Garden (The Lion Grove Garden).* Watercolour by Peng Chang, 2020.

In European countries and the Russian Empire, examples of "Chinese" constructions are found in large palace complexes with parks and aristocratic estates. In these settings, "Chinese" pavilions were placed in regular parks and existed alongside other Baroque or classical-style buildings.

It is possible that the tradition of giving pavilions and small forms poetic names came from China (see, for example, the "Flying Waterfall Pavilion" in Fig. 5). However, the parks of European monarchs did not embody the landscape techniques characteristic of China's imperial gardens, and bodies of water in Europe do not hold the philosophical connotations with which they are associated in China. In addition, the location of European gazebos in the natural environment was never subject to the strict requirements of feng shui or north–south orientation, unlike their Chinese counterparts.

Fig. 5: *The Flying Waterfall Pavilion in Shī Zǐ Lín Garden (The Lion Grove Garden).* Watercolour by Peng Chang, 2020.

While one might argue that Chinese imperial gardens and European royal parks of the Baroque and Classical eras have certain features in common, the difference between royal parks and ordinary Chinese private gardens is very noticeable. The dissimilarity in layout is noticeable when comparing Zhuōzhèng Yuán Garden in Suzhou and Sanssouci Park in Potsdam.

In Zhuōzhèng Yuán, the importance of north–south and west–east axes fixed by pavilions is clearly apparent. The design of the Zhuōzhèng Yuán Garden is irregular, with no long-distance straight perspectives or straight paths; there is no pronounced centre to provide a focus of the main paths; and the design focuses on maximising the naturalness of the outlines of mountains, landscaping and water bodies.

By contrast, Sanssouci Park has a regular layout, with distant straight perspectives and straight paths leading to pronounced centres – palace buildings, on which the main paths are oriented. The direction of the axes has nothing to do with feng shui. Despite the presence of secondary curvilinear paths among the greenery, the park does not look "natural" in the way a private Chinese garden aspires to.

Differences can also be observed in the design of the pavilions in Zhuōzhèng Yuán Garden and the "Chinese Pavilion" in Sanssouci Garden. In Sanssouci's "Chinese Pavilion", the rules governing the location of pavilions are not applied. Stylised Chinese forms, proposed with the participation of Emperor Frederick III himself, were transferred to the structure of this regular Baroque-era palace park. The main difference is that the architect engaged in luxurious detailing of the building, rather than copying Chinese features in creating Chinese landscape paintings around it. As a result, the pavilion stands right in the middle of a round area, surrounded by lawns that are themselves bordered by deciduous thickets.

Another difference is the consonance of pavilion's outline, decoration and colours with the surrounding landscape. In Sanssouci Park, the pavilion provides a luxurious accent among the monotonous greens of the trees, maximally emphasised by the splendour of its gilded elements, the luxury of the decor, and the high contrast between the light roof, gold paint and the dark green of surrounding foliage.

Thus, the roles of the landscape and the pavilion are reversed: in European designs, the pavilion dominates a landscape which is mainly ignored – whereas in China, the pavilion serves to accentuate the landscape and draw attention to its features.

The second typical example is Tsarskoe Selo park near St Petersburg. This park also has a regular design which does not disguise the arrangement of secondary curved paths. Even

objects that are labelled "Chinese" ("Chinese gazebo", "Chinese village", "Chinese theatre") are placed within a regular structure.

Despite Europeans' fascination with Chinese landscape design, they failed to embody it on European ground. The following differences can be observed:

1) Despite the existence of a main north–south axis along which the main pavilions are oriented, with their the main facades to the south, Chinese gardens have an asymmetrical layout and are irregular, aiming to get as close as possible to the natural landscape without human intervention. Contrastingly, European royal gardens of the seventeenth and eighteenth centuries had a regular, usually symmetrical layout with the main axes oriented towards the palace.

2) In Chinese gardens the aim is to achieve maximum naturalness; the architecture of small forms tries to "hide", to subordinate these constructions to their environment. In European gardens, nature is subordinated to architecture by the dominating scale of the main buildings and straight pathways with sculptures and fountains.

3) A Chinese garden embodies the principles of variability and infinity of space. The garden itself consists of a set of scattered landscape segments which cannot be viewed from a distance. The framing of landscape paintings by trees, used like screens, creates the impression of an endless labyrinth of space. By contrast, in a European palace park, the entire garden as a whole is subordinated to one plan, and it could be viewed from a distance to visually expand the space. Chinese gardens are seen as natural, changeable and spontaneous, like everything in nature. European gardens are intended to embody the perfection of human work, created for human comfort; in them, nature is to the will of humanity.

4) Chinese and European gardens take different approaches to the location of buildings within their design plan. In the Chinese garden there is a clearly defined approach for placing a particular type of pavilion in a particular landscape scene, with accordingly defined functions. The composition of the garden is based on the laws of landscape painting, with rules connecting genre and landscape scenes. On flat, open areas one finds pavilions for various activities; on the tops of hills and near water one might find pavilions on poles intended for contemplating the landscape; on the edge of a lake one might place a modest pavilion where at night one could sit and observe the moon's reflection in the water. In European gardens, no clear rules were applied when it came to locating pavilions in specific environments; their placement was random.

5) The Chinese garden "completes heavenly nature" – it reveals and emphasises the beauty of natural elements – while the European garden expresses the idea of man-made improvements to nature. One of the most important features of a Chinese garden is the presence of stones and a lake, which have a symbolic meaning associated with the symbol of the Mountain of the Immortals and the Lake of Eternity. Artificial waterfalls and ponds are designed with asymmetry for maximum naturalness. The ideal landscape in a Chinese garden is complemented by a light pavilion, open on all sides, from which one can contemplate the landscape. By contrast, in the European garden it is not common to place stone waterfalls topped with a gazebo, and water features tend to have a pronounced, often symmetrical shape. In the era under consideration, European water features commonly took the form of single fountains or cascades of fountains with sculptures.

Artistic image, types of planning solutions, specific shapes, decorative finishing and polychromy

European "Chinese-style" buildings are represented by single palace buildings and, more often, "tea houses" and gazebos, sometimes in combination with small bridges. Despite the purpose of such buildings, they generally inherited only the basic well-recognised elements of Chinese architecture, such as concave roofs with swept-up corners, images of dragons, red pillars and so on. As a rule, most European pavilions stand on a lawn and are isolated from the general space of the park by trees. Similarly, the role of Chinese "water" pavilions is actually significantly reduced in European parks. For example, the location of the "Chinese pavilion" in Oleksandriia Park in Bila Tserkva (Fig. 6) cannot be compared with China's water pavilions on rivers, lakes or even on the artificial lakes of Suzhou Gardens.

Religious pavilions and entrance pavilion–gates are not found in European aristocratic parks. The variety of figurative means and possible silhouettes and roof types of pavilions is also narrower in Chinoiserie-style pavilions in Europe, compared to the broad range of Chinese constructions.

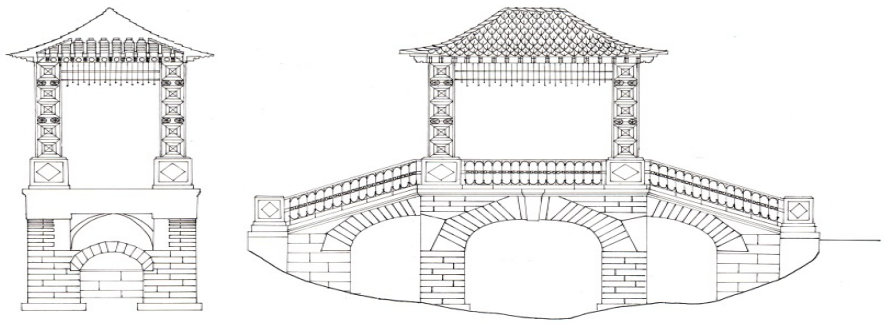

Fig. 6: *Chinese bridge with a gazebo in Oleksandriia Park in Bila Tserkva (cross-section and façade).* Drawings by Peng Chang, 2020.

Small architectural forms "in Chinese style" are the main elements of Chinoiserie-style parks, as their designers imitated Chinese architecture rather than landscape techniques. Pagodas and pavilions with multi-tiered curved roofs were taken as a model, mainly based on images on vases sketched by travellers. At the same time, no one thought about the suitability of placing such a "pagoda" in the garden or park.

Chinoiserie-style pavilions were built in wood, metal or stone, decorated with gilding for the impression of luxury. Sometimes they were individual buildings, in other cases entire complexes called a "Chinese Village".

Even where the owners tried to maximise the authenticity of the park's pavilions, they did not replicate Chinese models. One of the earliest examples of a Chinoiserie pavilion was built in Stowe Park in England in 1738, modelled on Chinese-type pavilions on the water.

By the middle of the eighteenth century, the fashion for Chinoiserie-style pavilions in landscape design had spread to English landscape gardens which were developing at that time, as a counterweight to French gardens. A "Chinese" pavilion or pagoda was built in almost every large-scale park in that period.

An illustrative example is the "Chinese pavilion" in Sanssouci Park, which was built before the German fashion for such things spread to English gardens. This was the impetus for a new hobby, which in some cases became absurd, as with the "Chinese village" in Kassel – which was actually a dairy farm, with a pagoda, a cowshed and barns "in the Chinese style", with milkmaids playing the role of Chinese women.

The pavilion in Sanssouci Park in the 1770s influenced the garden of Count Ludwig von Bentheim in Westphalia, which had a pagoda and artificial landscape elements such as rocks, hills and islands. The "Chinese Pavilion" in Sanssouci Park is located within the characteristic layout of a Baroque-era royal park. Its appearance is not related to the natural environment; on the contrary, it contrasts with the green splendour of gilding and the luxury of exotic decor. The pavilion has a non-standard design with a combination of curvilinear open and closed parts. The appearance is typical of the Baroque style: light green walls with semicircular and oval windows, gilded decor and grey-blue roof.

However, sometimes attempts were made not only to place a "Chinese gazebo" among the greenery, but also to somehow embody some features of Chinese landscape design. Such attempts can be seen in the cases of the "Chinese gazebos" in Tsarskoe Selo and Oleksandriia. The "one in Tsarskoe Selo was originally intended to embody basic features of a Chinese garden such as mountains, water and greenery through an artificial hill and an artificial pond. However, these elements were embodied in European traditions, without the orientation of the main north–south axis, and without the landscape paintings that are present in Chinese gardens which follow certain rules arrangement ("one lake, three mountains", "landscape borrowing", "garden in the garden", etc.). The "Chinese gazebo" in Oleksandriia Park stands on a bridge and is an allusion to ancient type of Chinese pavilion on a bridge.

In some cases the designs of European "Chinese gazebos" were similar to simple Chinese designs; in other cases not. As mentioned above, Sanssouci's "Chinese gazebo", with its alternation of open and closed curved parts, is radically different from the original. Tsarskoe Selo's gazebo consists of three volumes of different size and height; the one in Oleksandriia Park is square; and the one in Sofiivka Park is faceted.

Visually, the gazebos in Tsarskoe Selo, Sofiivka Park and Oleksandriia Park are simpler and smaller than the Chinese models, where a sense of massiveness is created by the considerable height and the high roof. At the same time, the pavilion in Sanssouci appears bigger and overly decorated compared to Chinese models.

There is a discrepancy in colour: European gazebos are more polychrome, accentuated more brightly than typical (non-imperial) pavilions of China. For example, the gazebo in Tsarskoe Selo has a red roof, a blue roof and walls, and yellow and white details. The wooden "Chinese gazebo" in Sofiivka Park is open, with bright red wooden pillars, a golden roof, white cornices and blue ornaments on the eaves, but the roof does not have a pronounced curved silhouette to go with the decor. In the "Chinese gazebo" in Oleksandriia Park, the load-bearing structures are made of metal; the outlines of the roof are even less similar to Chinese roofs, in that there are no such features as active dynamic roofs or wooden pillars; it also has restrained colours.

Traditionally in China, the visual originality of the pavilion was primarily achieved through the dynamic outline of the silhouette (even in polychrome imperial pavilions) and the perfection of the proportions. In European gazebos, on the contrary, the silhouette is simplified. This can be clearly seen in the gazebo in Sofiivka Park, which has bright red wooden pillars and a golden roof (in China these colours are only typical for the most important imperial pavilions), with white cornices and blue ornamentation of the eaves, but without the traditional sign of Chinese architecture – the sweeping concave roof with decorations, the characteristic fine carvings and paintings on the facades and interiors, symbolic figures, and white fences around.

In the gazebo in Oleksandriia Park, the roof is a monochrome red, there is no specific polychromy, and nor are there paintings, ceramics, or other decorative elements. Two bronze figures of a Chinese man and a Chinese woman are placed in front of the stairs to the bridge.

In Chinoiserie-style gazebos, Chinese decor tends to be simplified or modified in line with local aesthetics. For example, the luxurious gilded sculptural ornaments of the pavilion in Sanssouci are related to Baroque-era sculptures and contain no sign of Chinese traditions. Stylised images of dragons on the corners of the roof are used in the Chinese Gazebo in Tsarskoe Selo.

The Chinese Garden is one of the most interesting landscape elements in Łazienki Królewskie (Fig.7) – a historical garden of 76 ha area with a number of valuable architectural and sculptural elements, located in the centre of Warsaw and founded in the eighteenth century by Stanisław August Poniatowski. In addition to architectural structures, the site includes four gardens: Royal, Romantic, Modernist and Chinese.[5]

The idea of establishing a Chinese Garden in Łazienki Królewskie was initiated by King Stanisław August Poniatowski (1732–1798). The garden is located in the northern part of the complex, in the part of the former Zwierzyniec, near Agrikola Street. It was designed according to the patterns used in the eighteenth-century residence of Prince Gong of the Qing Dynasty, on the shores of Lake Qianhai near the northwest border of the Forbidden City. It was conceived during the aftermath of the fashion for Chinoiserie, in that it is a reference to Chinese culture through art, design and architecture promoted by the king. This is evidenced by, for example, the establishment of a "Chinese" road lined with chestnut trees.[6] A Chinese bridge, discovered by archaeologists in 2012, was also erected around the same time.

The Chinese Garden in Łazienki Królewskiehas has a naturalistic character and contains a pavilion and a gazebo. Winding paths lead to these buildings, which also connect the garden with the park. The garden was designed by Edward Bartman and Paweł Bartman. Their work on the design concept was supported by Chinese architects from the Prince Gong Museum in Beijing. The garden opened in 2014.

When analysing the Chinese Garden, attention should be paid to both architectural elements and the plants that grow there. The architectural elements are a wonderful pavilion and an openwork Chinese gazebo connected by a stone bridge. The roofs of the pavilion and gazebo are covered with hand-glazed tiles made in China. Traditional Chinese lanterns, located near the pavilion and the bridge, act as indicators of small-scale architecture. It is also worth paying attention to the sculptural elements in the form of two lions, symbolically placed at the entrance to the

[5] MAJDECKI, Longin. Łazienki. Przemiany układu przestrzennego założenia ogrodowego. In: *Rejestr ogrodów polskich*, vol. 7, 1969; TATARKIEWICZ, Władysław. *Łazienki królewskie i ich osobliwości*, Warszawa 1987.

[6] JANICKA, Magdalena. Układ przestrzenny Łazienek Królewskich w Warszawie jako przykład założenia krajobrazowego na skalę krajową. In: *Teka Kom. Arch. Urb. Stud. Krajobr.*, vol. 7, 2011, Iss.1, pp. 132-143.

Fig. 7: *View of a fragment of the Chinese Garden in Łazienki Królewskie.* Photo by Michał Krupa, 2019.

garden. The plants in the garden were also selected in such a way as to create the right mood and resemble traditional Chinese gardens known from Beijing, Shanghai or other cities.[7]

Comparative analysis of traditional Chinese architecture and European architectural Chinoiserie

Eighteenth- to early twentieth-century "Chinese" buildings in Europe and the Russian Empire were usually small in size and mainly served as garden pavilions or gazebos. European Chinoiserie-style buildings generally inherited only the basic cognitive elements of Chinese architecture, such as curved roofs, images of dragons or red pillars.

We can identify the following most characteristic features of Chinese pavilions of various status and function:

1) *location, proportional and metro-rhythmic construction*: subordination to a clear orientation (north–south), scale in accordance with the status of the object and the natural environment, modularity, proportionality and metro-rhythmic regularities, defined by structural elements

2) *materials*: wooden structures, ceramics, stone, painting; use of expensive wood, inlay, silver in imperial pavilions;

3) *layout, design of space and shape*: footprint might be square, rectangular, faceted, round or paired with two identical geometric shapes; open space on wooden pillars, space partially or completely closed by walls with windows, tiered sloping or concave roofs; high-status pavilions may have ceramic figures on the roof ridges;

4) *facade colours*: mostly restrained, except for pavilions for the emperor and members of his family and important temple or memorial pavilions; in these the roof would be yellow (for the emperor's pavilions), green (for the emperor's son), blue, terracotta red, grey or brown. Under-cornice planes dim or with a predominance of blue ornamentation; red, yellow–green and white inserts; bright red pillars, white fence around the pavilion;

5) *symbolic images*: common symbols include dragons, the good beginning "Yang", the Chinese nation, water, the emperor, cranes (symbolising success and good manners), lions (symbolising the power of authority; turtles (an ancient symbol of the world) and unicorns (a symbol of worldly wisdom and endurance).

[7] Ibidem; WERNER, Barbara. Ogród Łazienek Królewskich. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation,* vol. 53, 2018, pp. 1, 138.

The gazebos Oleksandriia and Sofiivka parks (Fig. 8) and Tsarskoe Selo do not take feng shui or the matter of appropriate orientation into account, despite their quotation of Chinese architectural themes. Compared to the original source of inspiration, roof shapes and decor are greatly simplified and the outlines of the roofs are not Chinese at all. The Chinese sense of proportional construction is not retained and the silhouettes are less dynamic.

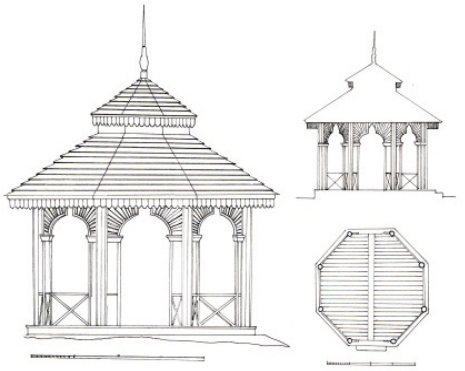

Fig. 8: *Chinese gazebo in Sofiivka Park in Uman (facade, section, footprint).*
Drawings by Peng Chang, 2020.

Thus, despite the common name "Chinese gazebo", the constructions actually built were pseudo-Chinese pavilions in which the Chinese traditional building shapes were changed, the shape of the roof was simplified, proportions and articulations were changed, and the decor was devoid of symbolic meaning. This allows us to conclude that European "Chinese" gazebos are not really an exact reproduction of Chinese motifs but rather represent a free interpretation of this style in the compositional construction, shapes, materials and decor.

Modern designers and landscape architects who design Chinese-style pavilions and gardens often make the same mistake as Chinoiserie-style artists of the past, who also over-simplified Chinese forms and transferred Chinese architecture ad verbatim to an unusual environment without a radical transformation of the environment.

Thus, there are three possible types of stylisation. The first is exact repetition, taking into account all the features of the original and trying to achieve maximum similarity. The second is a simplified imitation of the original embodying only certain features. The third is a creative rethinking of the original, producing an innovative work which at the same time creates analogies with the original one.

From the point of view of the aesthetic value of architecture and artworks, the most original option is the third, when the author does not try to literally or simply reproduce what once existed but creates something of their own which belongs to both past and present.

However, in the cases examined here of Chinese traditions imitated in Europe and the Russian Empire, there were no attempts to creatively rethink or at least reliably embody Chinese traditions, but rather a simplified way of imitating the original.

Conclusions

Chinoiserie-style pavilions were erected in the parks of European monarchs and aristocrats and generally did not take into account the traditions of Chinese landscape design in terms of the arrangement of landscape paintings and the subordination of architecture to the natural environment. Even when the architects tried to embody certain Chinese features in constructions for Chinese gardens (as in Tsarskoe Selo), they approached the design from the standpoint of a European. As a result, the natural environment around such pavilions does not give the impression of China.

A comparison of European parks with Chinese gardens shows that European recreations are more similar to the imperial gardens in terms of the scale of plots and the regularity of paths oriented to the pavilions.

In Western Europe and the Russian Empire, Chinese influences were marked by a certain specificity, as they were superimposed on local architectural and artistic traditions. It is a well-known phenomenon that the further a style or stylistic direction is transferred from the centre of its origin, the more regional layers it acquires. Although several dozen "Chinese" pavilions were constructed, they did not become widespread and gradually came to naught. Existing pavilions can be reduced to two main groups:

– pavilions that give a false idea of Chinese architectural traditions (such as the "Chinese Pavilion" in Sanssouci, Pilnitzburg Palace, the "Chinese Gazebo" in Oleksandriia Park and the second Chinese pavilion in Drottingholm (Fig. 9) and,

– pavilions that represent a simplified version of Chinese architectural traditions (such as the "Dragon Pagoda" in Sanssouci, the "Chinese Pavilion" in Pilnitz Palace, the "Chinese Pavilion" in Tsarskoe Selo (Fig. 9) and the "Chinese Pavilion" in Sofiivka Park).

Fig. 9: *The second Chinese pavilion in Drottingholm.* Drawings by Peng Chang, 2020.

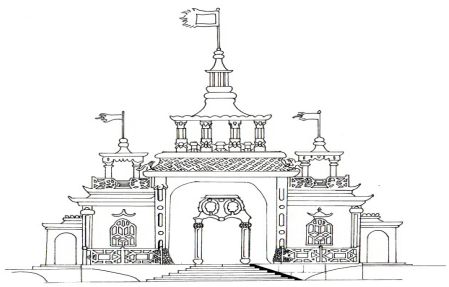

Fig. 10: *"Chinese Pavilion" in Tsarskoe Selo.* Drawings by Peng Chang, 2020.

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Adaptation of the architectural and infrastructural post-industrial heritage of underground mines for museum functions in southern Poland

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Adaptation of the architectural and infrastructural post-industrial heritage of underground mines for museum functions in southern Poland

This article addresses the problem of developing disused underground mines for museum purposes in cities and towns in southern Poland. Following the reduction in mining activities and the collapse and liquidation of many industrial plants in the region – developments related to both the global situation and the political transformation of the late twentieth century – many localities lost their previous economic basis for development. One of the strategies often used in such situations is revitalisation through culture. Establishing museums in underground mines, which in southern Poland have a history dating back to the eighteenth century, has gained popularity in recent decades. The authenticity of the preserved architectural and infrastructural heritage helps to preserve the identity of the regions by displaying the mementos and achievements of past generations in an appropriate manner. Most of the sites discussed in the paper, three of which are on the UNESCO World Heritage List, use this method of display, enriching the facility's programme with other elements. There is also a strategy to transform these post-industrial resources to a much greater extent and adapt them to modern functions using contemporary architectural solutions, while preserving the most valuable elements of their architectural and infrastructural heritage.

Keywords: post-industrial architectural heritage, post-industrial infrastructural heritage, architectural adaptation, museums in mines, southern Poland

Introduction

Museums and other architectural and urban complexes associated with high culture are today among the most important elements in the functional structure of European cities. In modern times –that is, since the turn of the nineteenth century – the edifices and complexes housing museums and other cultural institutions have become symbols of cities, on a par with the most important sacred buildings or seats of secular and clerical authorities.[1] Today they continue to build the city's brand, alongside prestigious educational and business institutions. Many of them are located in historic buildings, including those adapted for exhibition purposes in castles, palaces, mansions, places of worship and administrative buildings, as well as post-industrial infrastructure.[2] In terms of urban form, they can co-create representative public spaces. The industrial revolution led to an unprecedented expansion of the urban fabric in the nineteenth and twentieth centuries, both in the industrial basins of Europe and around the world. These observations apply equally to cities in the southern, intensely industrialised part of Poland. Geopolitical changes at the turn of the twenty-first century resulted in the decline or reduction of industry in Europe and the relocation of production to other regions of the globe. Spatial and functional conflicts contributing to the increasing inconvenience of industrial neighbourhoods within the urban fabric were among the many reasons for relocating industrial plants on a local, national and global level.[3] These changes affected Poland, as well as other post-communist countries of Central and Eastern Europe, particularly strongly in the 1990s and the first decade of the twenty-first century. They were felt most strongly in large cities and regions where industry played a leading role and was the engine of development during the communist era, such as Łódź, Szczecin, the cities of the Upper Silesia and Zagłębie Metropolis, and the Tricity.[4]

Many architectural and infrastructural complexes and facilities where industrial activity was once carried out have been preserved in both the centres and peripheries of cities and towns of southern Poland. They offer material testimony to the identity of the place and the socio-economic basis for the existence or development of a given centre, as well as the

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[4] GASIDŁO Krzysztof. Kierunki przekształceń przestrzeni przemysł, vol. 269, 2010, Politechnika Śląska, CYSEK-PAWLAK Monika Maria. Mixed use and diversity as a New Urbanism principle guiding the renewal of post-industrial districts. Case Studies of Paris Rive Gauche and the New Centre of Lodz. In: *Urban Development Issues*, 2018, vol. 57, pp. 53–62, SZPAKOWSKA-LORANC Ernestyna, MATUSIK Agnieszka. Łódź- Towards a resilient city. In: *Cities*, vol. 107, 2020, 102936, pp. 1–14, WDOWIARZ-BILSKA Matylda. Tradition and contemporaneity of an industrial city in the restored Fuzja block. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2021, No. 65, pp. 95–104.

entire multinational and multicultural region. Most of the mines discussed here date from the last two centuries, but some older buildings and architectural–infrastructural structures can be found. The concept of cultural heritage has been theorised, defined, redefined, negotiated and renegotiated by a large number of theorists and practitioners from various disciplines, including the newly developed field of heritage studies or critical heritage studies.[5] Industrial heritage adds to the material historical record, which consists of architectural objects accumulated over the ages.[6] Industrial heritage documents a certain stage in the development of architectural and urban planning thought and also, thanks to partially preserved equipment, in the development of technology. This makes industrial heritage extremely valuable and worth preserving.[7] Many such entities have been recognised as monuments.[8]

The concept of a monument, formed in the nineteenth century, refers to a unique work of art or architecture classified as "traditional". This concept was relevant in Poland for almost the entire twentieth century, until the 1980s.[9] It was only then – on the wave of the postmodern intellectual and stylistic currents which began to break through to the broader consciousness of artists and experts (including, above all, to conservation circles) – that interest developed in all elements related to the past and how they shape the identity of places. In addition to tangible elements–objects, such as works of art, intangible heritage (such as names, functions and views) were also recognised as monuments. Monuments ceased to be perceived as single elements but rather as fragments of a larger whole (a collection, a complex, an urban establishment or a landscape). On this basis, it was recognised that a monument belonging to the world of material culture does not have to be an architectural work, and can be "only" a building or infrastructure object.

In the communist system, which promoted the primacy of industry over other areas of the economy, and which was in the 1980s in decline in Poland, this was a concept that was both innovative and obvious. Perhaps that is why it was fairly well received by both policymakers and the public. The country had, for many decades, supported various museums promoting technological achievements – most notably the Museum of Technology and Industry in Warsaw, founded in 1950 in the Palace of Culture and Science (renamed the Museum of Technology in Warsaw in 2017[10]) – as well as various memorial chambers and small local museums in industrial plants. With the cessation of production and the collapse of many of them, associated with the political changes of the early 1990s, the opportunity and need arose to exhibit post-industrial heritage and to make available and commemorate important architectural objects

[5] BITUŠÍKOVÁ Alexandra. Cultural heritage as a means of heritage tourism development. In: *Muzeológia a kultúrne dedičstvo*, vol. 9, 2021, Is. 1, pp. 81–95.

[6] GYURKOVICH Mateusz. Role of Culture....

[7] GYURKOVICH Mateusz. Selected examples of the transformation of post-industrial complexes. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2019, No. 57, pp. 142–157, ORLENKO Mykola, IVASHKO Yulia, KOBYLARCZYK Justyna, KUSNIERZ-KRUPA Dominika. Ways of revitalization with the restoration of historical industrial facilities in large cities. The experience of Ukraine and Poland. In: *International Journal of Conservation Science*, vol. 11, 2020, Iss. 2, pp. 433–450, OLEŚ Dominika, ZYCH Olga. 100 lat industrialnej katedry- Elektrocieplownia Szombierki w Bytomiu. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2021, No. 65, pp. 134–146.

8 KADŁUCZKA Andrzej. *Ochrona dziedzictwa architektury i urbanistyki. Doktryny, teoria, praktyka*, Kraków: Wydawnictwo Politechniki Krakowskiej, 2018, p. 318.

[9] SZMYGIN Boguslaw. *Kształtowanie koncepcji zabytku i doktryny konserwatorskiej w Polsce w XX wieku*. Wydawnictwo Uczelniane, Politechnika Lubelska, 2000, p. 308.

[10] https://nmt.waw.pl, accessed 1.05.2023.

and infrastructure that for many decades co-shaped the identity of cities.[11] The post-transition period saw the number of new museums dedicated to industrial production and technology – such as the Museum of Engineering and Technology in Krakow in 1998 – expand significantly in 2020–23.[12] As in the case of open-air museums, in which an attempt is made to preserve the memory of the history and traditions of the countryside, galleries or museums are being set up in an increasing number of industrial sites in cities by state and local government institutions, as well as by private investors[13] . All activities concerning historic buildings or revitalised post-industrial areas in southern Poland discussed in this article, although often inspired by good practices from other European countries, take place on the basis of applicable national and local laws (e.g., spatial development plans of various scales). [14]

Objectives and research methods

The purpose of this study is to present underground mines in cities and towns in southern Poland where, due to the reduction in mining (Wieliczka, Bochnia) or its complete cessation (Katowice, Walbrzych, Zabrze, Tarnowskie Gory), museums and tourist routes have been established in old mines. This trend, which is also present elsewhere in Europe,[15] is becoming increasingly noticeable in Poland. The area which is now southern Poland (Lower Silesia, Upper Silesia and Zagłębie Metropolis, and the Małopolska regions) belonged to various states over the centuries, including the Grand Duchy of Moravia, the Kingdom of Poland, the Kingdom of Bohemia, the Kingdom of Prussia and the Austro-Hungarian Empire and, after World War I, the Republic of Poland and Germany. Boundaries and influences have changed here relatively frequently, making the area typical of Central Europe. For reasons of narrative coherence, it was decided to examine cases of mines, located on the Polish side of the 1945 border, in which sections have been adapted for museum purposes. Some of the featured sites are on the prestigious Route of Monuments of Technology, the only tourist route from Central Europe

[11] KACZMAREK Sylwia. Post-Industrial Areas in Modern Cities. In: *Bulletin of Geography (Socio-Economic Series)*, 2003, No. 2, pp. 39–46, KACZMAREK Sylwia. *Rewitalizacja terenów poprzemysłowych. Nowy wymiar w rozwoju miast*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego, 2001, p. 141, FRANTA Anna. The Role of the Restructuring of Post-Industrial Areas in the Creation of New Kinds of Metropolitan Public Spaces – The Stimulating Function of Regulations. In: *Technical Transactions- Series Architecture*, 2007, No. 1-A, Y. 104, pp. 35–43, GYURKOVICH Jacek. Recipe for a New Life in Post-Industrial Areas. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2022, No. 69., pp. 64–71.

[12] WDOWIARZ-BILSKA Matylda. Tramway Depot Complex Restoration and Shaping the Public Space along Sw. Wawrzyńca Street in Cracow. Selected Fragments. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2022, nr 71, pp. 94–106.

[13] JUZWA Nina, ŚWIERZAWSKI Jakub (2021). Myśli- Marzenia- Miejsca. Architektura polska w innowacyjnej współczesności, Warszawa: Narodowy Instytut Architektury i Urbanistyki. GYURKOVICH Jacek. Recipe for a New Life in Post-Industrial Areas. In: *Wiadomości Konserwatorskie – Journal of Heritage Conservation*, 2022, No. 69, pp. 4–71.

[14] Ustawa z dn. 3 lipca 2003 roku o ochronie zabytków i opiece nad zabytkami z późniejszymi zmianami; tekst jednolity Dz. U. z 2022 r., poz. 840 (Heritage Protection and Preservation Act of 3 July 2003, as amended; codified text, Dz. U. 2022, item 840), Ustawa z dn.9 października 2015 roku o rewitalizacji z późniejszymi zmianami; tekst jednolity Dz.U. z 2020 r., poz.802, 1086 (Revitalisation Act of 9 October 2015, as amended; codified text Dz.U. 2020, item 802, 1086).

[15] LANGER Piotr. Casus Silesia Superior. Current state and course of development of underground mines in Upper Silesia. In: *Przestrzeń - Urbanistyka - Architektura*: PUA, 2021, No. 2, pp. 52–72.

that is part of the prestigious European Route of Industrial Heritage,[16] and three are on the UNESCO World Heritage List (Wieliczka, Bochnia, Tarnowskie Góry[17]), as they extremally important for humanity as testimonies to the development of civilisation.

Establishing museums in disused mine sites is a way of preserving the region's industrial heritage and protecting industrial symbols in the landscape that have become a strong part of the region's identity. The reasons for mine closures are manifold: from depletion of the deposit, to unprofitability, to highly dangerous mining conditions. The value of the example in Lower Silesia lies in the development of differentiated functional–exposure concepts for each site, which can be considered as individual institutions. In turn, the number of similar institutions in one region of the Upper Silesian and Zagłębie Metropolitan Area also makes it possible to treat them as an ensemble of museums which, despite having a similar theme and source, do not compete with but rather complement each other, offering visitors a variety of experiences.

The research methods, based on literature studies and in situ research, include a comparative analysis of selected examples of underground mines adapted as museums. The basic criteria for selection were: their location in southern Poland (examples from Silesia, Lesser Poland and Lower Silesia provinces were ultimately selected); the presence of historic objects related to the former mining industry (both underground and above ground) that have been adapted or expanded in the last 30 years; and the number of tourists and, based on this, the importance of the object (museum) for the city and/or region.

Developing a functional and exhibition programme for presentations of industrial heritage is crucial for the success of the institution. A retrospective look at newly established museums from a historical perspective shows that they have increased significantly in number in late twentieth century and early twenty-first century, increasing by more than 1,400 museums per year.[18] This fact confronts museums with new challenges, such as competitiveness and courting audiences. One important factor is the need to respond to the needs of audiences, who, with the development of museums, have evolved from visitors admitted to observe conventional museum-repository collections[19] to users who expect personalised messages and participation. These expectations are also linked to the comfort and quality of service spaces.[20] The targeting of programming and presentation activities must take into account that museum visitors are not a monolithic group – they have widely different needs and interests.[21] At the same time, Graham Black emphasises that the museum experience is shared by the individual but can be shared with a family or group, pointing to the need to look for collections that offer varied modes of transmission and participation, for example, for different age groups. In parallel, there is an evolution in the paradigm for choosing to visit a museum – from communing with art and knowledge to a form of leisure and recreation.

One of the museum's missions is to arrange exhibitions and displays, and for many visitors this is the essence of what a museum does; when using them, they are unaware of the

[16] The route, visited by hundreds of thousands of tourists each year, features 42 sites in 26 cities and towns in the Silesian province. Their history is linked not only to coal and silver mining but also to power engineering, railroads, communications, brewing and other industries that have shaped the existence of cities and towns in the region over centuries. The network is part of the European Route of Industrial Heritage (ERIH); https://zabytkitechniki.pl– accessed 20 March 2023.

[17] https://whc.unesco.org/en/list/ – accessed 20 March 2023.

[18] POMIAN Krzysztof . *Muzeum. Historia światowa: Od skarbca do muzeum* (T. 1). Gdańsk: Słowo/obraz terytoria, 2023.

[19] FOLGA-JANUSZEWSKA Dorota. *Muzeum: Fenomeny i problemy*. Kraków: Universitas, 2015, p. 160.

[20] BLACK Graham. *Transforming Museums in the Twenty-first Century*,.London: Routledge, 2012, p. 288.

[21] FALK John H. *Identity and The Museum Visitor Experience*, New York: Routledge, 2009, p. 302.

institution's other activities. "It is through exhibitions that the museum represents, analyses, compares, simulates and builds specific forms of discourse, the main objective of which is to narrate to society the stories of the world and the stories of humankind." [22]

By relying on the authenticity of museum exhibits and being a reliable source of knowledge, museums, through exhibitions, shape public awareness of a particular field of science or technology more effectively than other forms of mass communication[23] and, unlike them, can interact with the viewer using multiple senses.[24] Exhibitions today are seen as a form of communication between the sender – that is, the creators and organisers of the exhibition – and the receiver, the visitor, the medium of the message being the elements of the exhibition. In contrast to the historical approach, we now know that it is not enough to gather and make a collection available to the public; it is necessary to ask ourselves whether, in a given environment and form of presentation, the assumed purpose of the message is clear and comprehensible to the viewer. Treating an exhibition in this way shifts the emphasis and focuses not only on the content of the exhibition, but also on the effect, that is, the cognitive effect of the viewer. The way in which an exhibition's message is encoded should take into account the needs and expectations of the viewer. John Falk and Lynn Dierking's researched identified seven motivations of visitors[25] through which it is possible to build a more personalised message. The focus on experience and cognitive effect has significantly changed the approach to museum exhibitions. The presence of a museum exhibit is not the only form of communication: it has become possible to present values, ideas and phenomena that are not recorded in material form but can be represented in the exhibition, which means the exhibition can be treated as a combination of semantic (meaning) and semiotic (sign) play. An exhibit in such cases can have two functions: to represent what it is or to act as a symbol.[26]

The consequence is the possibility of a museum without a collection or a collection with negligible display properties. The transmission of heritage knowledge can be based on narrative or participation in a process, for example, walking an original route, doing an activity or visiting an exhibition whose constituent elements have been produced to present a particular message (such as in the museums in mines discussed below and their expositions presenting the history of the industry in situ).

On the role of the exhibition, as Teresa Scheiner writes, "It is our task to unveil what is hidden, explain what is hermetic, remind what is forgotten; toss a little more light over material and immaterial objects to sharpen all their angles, enabling societies to see them and, through them, recognise themselves".[27]

Defining the exhibition as a message places the viewer in the role of subject; the message is dedicated to them, and they interpret the exhibits, symbols and representations. Postmodern ideas posit the primacy of interpretation by the viewer over the resources and presentation of the museum.[28] New challenges, such as the need to target the viewer, define contemporary

[22] SCHEINER Teresa. *The Exhibion as Presentation of Reality* (https://drive.google.com/drive/folders/1y5ifh_Bf8m-Bg7DfERQpYC25EpeDMHPSA). *Museology and Presentation – original or virtual?* 2002 (33).

[23] DOLÁK Jan. Teoretická východiska muzejní prezentace (Theoretical Foundations of Museum Communication). In: *Muzeológia a kultúrne dedičstvo*, vol. 1, 2013, Is. 1, pp. 21–38.

[24] SCHEINER. The Exhibion....

[25] FALK John H., DIERKING Lynn D. *The Museum Experience Revisited*, New York: Routledge, 2016, p. 416,

[26] DOLÁK. Teoretická...

[27] SCHEINER. The Exhibition...

[28] BEDFORD Leslie. *The Art of Museum Exhibitions: How Story and Imagination Create Aesthetic Experiences*. London: Routledge Taylor & Francis Group, 2014, p. 168.

priorities in exhibition design, encompassing the historical perspective, the comfort of the viewer, the quality of the space in which perception takes place and the means of guidance through the exhibition. Exhibitions' spatial design has been an ongoing field of research and, above all, is the core experience of practitioners and theorists. Such professionals refer strongly to the spatial conditions of the exhibition and its quality in terms of the perception of the exhibits. The relationship of spatial place and the building of synergies between an exhibition or exhibitions in the case of former mining facilities belongs to the special case of adaptation of architectural objects. In industrial infrastructure, pragmatism and subordination to production processes dominate: the human being is in a specific place where work is done. The new function is to create exhibition spaces and link them into a layout through which visitors can be guided – and into which the concept of one or more separate exhibitions can be inserted. The mines, their infrastructure and their equipment are themselves already exhibits, and the concept of guiding visitors through them is the first exhibition scenario. According to Jean Davallon, an exhibition is a complex semiotic process played out in space.[29] Daniel Koch compares the movement of the viewer in the exhibition space to choreography and dance, noting the variability of rhythm and gesture, and sees a relationship between the content and dynamics of movement.[30] Graham Black's research, mentioned above, found that comfort and accessibility are important determinants of a positive audience experience,[31] but it can also be a distinctive feature of a place.

The Oldest Salt Mines in Poland – UNESCO Heritage Site

The historic salt mines in Wieliczka and Bochnia are Poland's oldest post-industrial sites on the UNESCO List, having been listed in 1978. The tradition of salt extraction and mining in the region dates back 3,500 years. However, the emergence of the salt mines towns of Bochnia and Wieliczka is associated only with the arrival in Poland, in the first half of the thirteenth century, of the Hungarian princess Kinga, wife of the Prince of Krakow and Sandomierz, Boleslaw the Chaste. She brought with her qualified miners, initiating the modernisation of previous mining methods. The mines became part of Krakow's saltworks and the main source of income for the princes of Krakow (who, from 1320, were the kings of Poland). The towns of Wieliczka (15 km from Krakow) and Bochnia (50 km from Krakow) were founded around them. They obtained numerous privileges and developed prosperously, both in the Middle Ages and in more modern times. After Poland regained its independence in 1918, the mines became state institutions, thriving to this day. This makes them the oldest underground salt mines still operating in Europe. In Wieliczka, due to damage to the town caused by mining, problems with water filling the mine, substantial depletion of the deposit, and greater economic benefits of tourism compared to mining, salt is currently obtained only by evaporating brine. The Bochnia deposit, on the other hand, is still being exploited, although extraction has, since 1990, been limited to cosmetic and medicinal salt. Despite this, due to the unique microclimate in the underground parts of the mine, sanatoriums have been operating there for many decades (in Bochnia since the 1980s), accepting patients both on an outpatient basis and for longer periods up to several days.

[29] DAVALLON Jean. *L'exposition à l'oeuvre: Stratégies de communication et médiation symbolique* (Kindle Edition). Paris: L'Harmattan-A, 2000, p. 384.
[30] KOCH Daniel. Narrative, dramaturgy, and spatial choreography. In: J. Peponis (ed.). *Museum Configurations* (1st edition) London: Routledge, 2023, pp. 120–159.
[31] BLACK Graham. *Transforming Museums in the Twenty-first Century*. London: Routledge, 2012, p. 288.

The biggest attraction of both towns, however, are the museums which operate in the mines' underground areas. These exploit underground corridors and chambers which had been decorated by miners over the centuries. As well as mining shafts, they include richly carved chapels (the most prominent being St Kinga Chapel in Wieliczka, which still performs liturgical functions) and underground halls carved from salt. Wieliczka Salt Mine was inscribed on UNESCO's World Heritage List in 1978, and in 2013 the entry was extended to include Bochnia mine. The description on UNESCO's website reads:

The Wieliczka and Bochnia Royal Salt Mines illustrate the historic stages of the development of mining techniques in Europe from the 13th to the 20th centuries: both mines have hundreds of kilometres of galleries with works of art, underground chapels and statues sculpted in the salt, making a fascinating pilgrimage into the past.[32]

During more than 700 years of mining, 26 shafts have been broken into the mine's nine levels and more than 9 million m^3 of post-mining voids have been excavated, stretching far beyond the city limits.

The first underground tourist route in the mine in Wieliczka was established as early as the turn of the eighteenth and nineteenth centuries, over time its course was expanded and modified, and numerous attractions for tourists were organised (underground horse railroad, demonstrations of downhill miners on ropes, etc.). At present, it includes about 3.5 km of underground passages, including 20 chambers and several underground brine lakes created as a result of mining (the aforementioned sanatorium was built around others). The tourist and sanatorium part meets all modern requirements for safety and accessibility, in line with the tenets of "barrier-free architecture." In addition to the aforementioned works of art created from salt, the museum displays historical mining tools and equipment, as well as architectural elements – wooden structures protecting the excavation, stairs, galleries and balconies. The museum also organises temporary exhibitions and numerous artistic and scientific events-concerts, theatre and opera performances, conferences and fairs. Everything takes place at depths ranging from 64 m to 135 m below ground level (levels I–III). The historic above-ground buildings of the mine associated with the entrances to the Danilowicz shaft and Regis shaft, located in the centre of the town, play a communicative role, but also to a limited extent: educational and exhibition.

Several years ago, a "mining route" was also made available in the Wieliczka mine, intended for visitors looking for a slightly more "extreme" experience. The route, which is 1.9 km long, is demanding and reaches a depth of 101 m, and takes about 3 hours to complete, similar to the much longer tourist route. Visitors, move under the guidance of guides and, like the miners, in dark corridors lighting their way only with lamps-headlamps. During the tour, tourists (no younger than 10 years old) and in good physical condition are introduced to the secrets of working underground. In total, museum exhibitions in the Wieliczka mine are visited by about 1.5 million tourists a year. Outside the museum exhibits is the Crystal Grottoes nature reserve, which contains exceptionally large halite crystals. In the 19th century, specimens from the reserve found their way into the collections of the world's leading museums, where they are still kept today (for example, at the Natural History Museum in Vienna) [33].

At the Bochnia Salt Mine, the oldest galleries and chambers were entered in the register of historical monuments in 1981, following which the tourist route and the sanatorium section

[32] https://whc.unesco.org/en/list/32 accessed 20 March 2023.
[33] https://www.kopalnia.pl – accessed 10 April 2023.

were gradually opened to the public. Currently, the underground museum in Bochnia mine[34] includes exhibitions in corridors and chambers – similar to those in Wieliczka – decorated with salt sculptures. Attractions include a ride on the mine's underground train and rowing in wooden boats on the underground brine lake (the rafting route is about 120m). Although smaller and less well known than Wieliczka, visited by only about 200,000 tourists a year, the mine museum is still Bochnia's biggest attraction. The underground part of the mine museum consists of the Campi and Sutoris shafts with adjacent buildings, and the underground route is equipped with multimedia elements.

Museums in the underground mines of Upper Silesia

The Upper Silesian and Zagłębie Metropolitan Area (GZM)[35] is a place of particular importance for the development of industry in Poland. The mining industry, like perhaps no other, degrades space, violates the stability of land, and contributes to the contamination of soil, air and water. In almost the entire area of the GZM, it was mines and, later, factories for processing extracted minerals (steelworks, coking plants, power plants, etc.) that determined the case for establishing and maintaining cities. At the same time, these industries contributed to increasing degradation of the environment – both natural and urban.

Mining damage is commonplace in this area of Poland. Today, due to the aforementioned global economic processes, the post-industrial heritage that was once the pride and livelihood of Upper Silesian cities is deteriorating. Mines and plants have closed because they can no longer withstand competition from Asian giants. Intra-EU economic and environmental policies are also among the reasons for this situation. Undertaking revitalisation activities on all levels – social, economic, environmental and urban – is therefore a necessity in many Polish cities, especially in the GZM area. One method of protecting post-industrial heritage whose previous use has been lost due to economic transformations is to give such sites a new function.[36] Not surprisingly, most museums in former industrial sites in southern Poland have been established in Upper Silesia.

Queen Luiza Adit and Guido mine

One of the oldest towns there is Zabrze. Its history dates back to the turn of the thirteenth and fourteenth centuries, when the local estates passed from the hands of the Duchess of Kalisz to the Bishop of Wroclaw. Coal, however, was not discovered here until the late eighteenth century, and it is from that time that the town began to develop faster. The oldest mine in the city was the Queen Luiza Mine (Zabrze Mine during the Polish People's Republic), founded in 1791.[37] It gave rise to other mines and smelters in the region.[38]

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[34] https://kopalnia-bochnia.pl – accessed 10 April 2023.

[35] Górnośląsko-Zagłębiowska Metropolia (GZM) consists of Upper Silesia and Zagłębie Metropolitan Area. It was established by decree of the Council of Ministers of the Republic of Poland on 1 July 2017, on the basis of the relevant law; it includes 41 cities and municipalities from the area of the Upper Silesian conurbation and the Dąbrowa Basin; further municipalities declared their intention to join the Metropolis; www.gzmetropolia.pl, accessed August 2021.

[36] WAGNER TOMASZ. Wybrane przykłady adaptacji obiektów poprzemysłowych na terenie Górnego Śląska. In: *Bogactwo dziedzictwa przemysłowego jako wyzwanie i atrakcyjny produkt dla turystyki i rekreacji. II Konferencja międzynarodowa.* Katowice: Górnośląska Wyższa Szkoła Handlowa im. Wojciecha Korfantego, 2005, 249–256.

[37] www.zabrze.aplus.pl/zabrze_przemysl_zabrza_kopalnia_zabrze.html - accessed August 2018.

[38] www.sztolnialuiza.pl/index.php/historia- accessed August 2018.

Luiza Adit can be considered unique due to its long history and numerous awards (it was the only museum in Poland to reach the finals of the European Museum of the Year Award in 2023. Luiza Adit offers tourists the longest underground water route in Poland. The route is about a kilometre long and runs directly under the centre of Zabrze.

The Main Key Hereditary Adit was created in 1799, and the Queen Luiza adit opened in 1863. Tourists can choose between several underground routes, divided by age groups (children as young as four are welcome) and thematic scope (including the water route).

Attractions include authentic pits and a depiction of coal mining methods from 200 years ago, an underground water dock with a movable wooden crane, a unique walkway carved entirely in coal, and modern working mining machinery.

The establishment of Guido Mine dates back to 1855. It was named after its founder, Prince Guido Henckel von Donnersmarck (1830–1916). Initially, the mine was intended to supply the neighbouring Donnersmarck flourmill with coal. After the seams were exhausted, the mine was used to dewater other mines. In 1967, Experimental Coal Mine "M-300" was established to test new mining equipment and machinery; very little mining took place there. In 1982, on level 170, Guido Mining Open-Air Museum was created, entered in the register of monuments and opened to the public. It has been possible to visit the underground parts of Guido Mine since 2007. Three tour routes on different levels are offered. In 2013, the oldest part of Luiza Mine, the Queen Luiza Adit, and Guido Historic Coal Mine, came together to form Zabrze Coal Mining Museum, the largest cultural and tourist institution in the city.

Thanks to EU grants, the museum, like other cultural institutions in the country, is developing and modernising. It is creating new, visitor-friendly cultural spaces in place of degraded, often dangerous, abandoned complexes of former mining buildings; showcasing the rich heritage of Silesia. Activities currently underway include, first and foremost, decongestion of Queen Luiza Adit and revitalisation of the underground workings of Guido mine. Thanks to these activities, attractive tourist and cultural facilities will soon be operating, including the Mechanical Workshop, the Pump Hall and the Compressor Chamber at Guido mine, as well as the Main Key Heritage Adit running under the city, which is the longest object of its kind in Europe and a pearl in the trail of monuments of technology.[39] The underground water channel running through the adit was opened to tourists on 14 September 2018. This interesting post-industrial heritage is now receiving increasing attention from tourists.

The entrance area to both attractions is located on the site of the former mine, so the manner of land use and the appearance of the buildings have remained similar to what they were in the past. In front of the entrance to the Luiza Adit, a public space, 'Park 12c', has been created, along with attractive forms of small architecture.

Silver mine in Tarnowskie Góry

Tarnowskie Góry is a city on the northern edge of the Upper Silesian Industrial District, part of the GZM; it was founded in the late sixteenth century to support the silver ore mining industry that was developing in the area. Legend has it that the first lump of silver was dug up in his field by a peasant named Rybka in 1490. The mine is one of two underground workings of Royal Frederick Mine, founded in 1784, where zinc and silver were mined. After

[39] POCISK-DOBROWOLSKI Jerzy. Rewitalizacja Głównej Kluczowej Sztolni Dziedzicznej jako próba stworzenia nowych punktów odniesienia w przestrzeni miejskiej Zabrza w nawiązaniu do odmiennej niż w sąsiednich miastach historii rozwoju tego ośrodka miejskiego. In: JUZWA Nina et al. (eds.) *Odnowa Krajobrazu Miejskiego: Między miastem a nie-miastem*. ULAR 5, Gliwice Politechnika Śląska, 2010 pp. 371–386.

the underground workings were developed and surface facilities built, the mine museum was opened to the public in 1976.[40] The reconstructed workings of the historic mine date back to the seventeenth and nineteenth centuries. One of the biggest attractions is a boat ride along a 270 m route. The route runs between two marinas located at the Luck of God and Viper shafts. The underground areas of the historic mine and the Black Trout Adit have been declared a historical monument. Since July 2017, it has been inscribed on the UNESCO World Heritage List,[41] where it is the only site from the province of Silesia. It is also a listed site on the Monuments of Technology Route.

The underground tourist route connects three former mining shafts – "Angel," "Viper" and "God's Luck"– and resembles a triangle in shape. On the tour you can see the mining faces carved in the rock, transport galleries and chambers created at the turn of the nineteenth century. On the premises of the mine one can also find a cinema, a conference room, a restaurant, souvenir and mineral stores, and the Open-air Museum of Steam Machines. It should be noted that it was in the local mine that the oldest steam engine on Polish soil operated.

The spaces made available for visiting are not particularly attractive compared to the others described in this article, due to their small size. However, the imaginative use of these underground spaces is noteworthy: the museum organises unusual events, such as winter swimming, which takes place in the water section. The mine received a Gold Certificate from the Polish Tourism Organisation for 2019.

New Silesian Museum in the former "Katowice" coal mine

A completely different approach to former mining heritage was applied when creating the Cultural Zone in the revitalised area of the "Katowice" Coal Mine in the centre of Katowice. One of the oldest in the region, this mine operated from 1823 to 1999; until 1936 it operated under the name "Ferdinand"). One of the elements implemented as a series of monumental – and, unfortunately, not entirely well coordinated – cultural objects,[42] it became the new headquarters of the Silesian Museum.

The Cultural Zone in Katowice is located on the axis of the market square and historic Korfantego Street, right next to the modern symbol of the city, "Spodek" entertainment and sports hall,[43] which, together with the Super Unit and the Silesian Insurgents Monument, marks the centre of the late modern city.[44] The spectacular blocks of the International Congress Centre,[45] the headquarters of the National Polish Radio Symphony Orchestra,[46] "Spodek" hall

[40] KUREK-OBROCKA AGATA. Nowe oblicze Górnego Śląska w świetle procesów rewitalizacyjnych. In: *Przedsiębiorczość – Edukacja* [Entrepreneurship – Education], 14, 2018, 109–124.

[41] https://whc.unesco.org/document/155704 accessed 3 May 0223.

[42] GYURKOVICH Mateusz (2019a). Polskie przestrzenie..., p. 295.

[43] Spodek (designed by M. Gintowt, M. Krasicki, J. Hryniewiecki 1960–1971) for decades hosted the most important cultural, sports and congress events on a regional and sometimes even national scale; Silesian Insurgents Monument (designed by W. Zablocki and G. Zemla 1967–68); Super Unit (designed by W. Król 1967–72).

[44] SYSKA Anna. *Spodek w Zenicie. Przewodnik po architekturze lat 1945–1989 w województwie śląskim*. Warszawa: Narodowy Instytut Architektury i Urbanistyki, 2020, p. 104–121, JUZWA Nina, ŚWIERZAWSKI Jakub. *Myśli- Marzenia- Miejsca. Architektura polska w innowacyjnej współczesności*. Warszawa: Narodowy Instytut Architektury i Urbanistyki, 2021, p. 13–131).

[45] Designed by JEMS Architekci; the ICC was commissioned in 2015 and the completed facility subsequently won numerous awards and honours; www.jems.pl, accessed January 2019.

[46] Designed by Konior Studio – Tomasz Konior with team (competition 2008; design 2009–2012; realization 2012–2014); the building received dozens of industry awards, including a nomination for the L. Mies van der Rohe European Architecture Award for 2015; www.koniorstudio.pl, accessed May 2018.

(built more than half a century ago in front of the mine) and the more subdued volumes complementing this composition of questionable urban planning, were created as a result of separate projects, selected in architectural competitions, and do not form a coherent whole. The aforementioned implementations covered only part of the former mine site.[47]

The new Silesian Museum[48] was realised inside a former mine, thanks to which it has also become an element of the aforementioned Route of Monuments of Technology. Above the surface, the historic former mining buildings (engine room, clothing warehouse, carpentry shop and main bath) have been adapted to new functions and the light, insubstantial glass cuboid blocks house functions complementary to the museum's programme – namely, a restaurant and a children's museum dedicated to the literary works of Alfred Szklarski. The iron winding tower that sits above the mine shaft has been turned into a viewing platform. Several historic aboveground structures (including the water tower) and areas further from the main street are still unused, waiting their turn. Some of the glass cuboids house offices and conservation studios, while others serve only as skylights. The main volume of the exhibition part of the New Silesian Museum – 6,000 m^2 of exhibition space – is entirely underground, using the space of the former mine galleries and chambers. A huge three-story parking lot is also located underground.[49]

Unlike the previously presented examples, due to the state of preservation of the pit, the architects decided not to expose the original underground elements of the former mine. The underground building is an entirely new multi-story modernist structure, illuminated by overhead light coming in through numerous skylights, which was dug deep into the existing mine galleries. It symbolises the city's transformation from a mining centre to a modern metropolis. Thanks to this procedure, the area on the surface, freed from yet another monumental volume, largely serves as a public space – a kind of urban park, with the aforementioned brick buildings of the former industrial plant and the glass cubicles that house the necessary new functions. The museum primarily presents a rich collection of art, and only a small part of the exhibition is devoted to former life in Katowice and the history of the mine inside which it is located.[50]

An example from Lower Silesia: the Old Mine Science and Art Centre in Walbrzych

More than 30 years after the fall of communism, the social, costs of the political transformation of the late twentieth century can still be felt in many cities in Poland. They are also reflected in the contemporary urban form of these centres. Situated in the Central Sudetes, just 20 km from the Czech border, Walbrzych, like most of the cities that lost their status as provincial capitals as a result of the 1999 administrative reform, is a shrinking city. With the cessation, after more than four centuries, of coal mining and the closure of the mines, the economic basis for the city's development has collapsed. In such centres, it is much more difficult than in metropolises to create and implement revitalisation programmes, and at the same time they are much more necessary. The city has managed to revitalise the two main old

[47] ZUZIAK Zbigniew K., GRZYBOWSKI Andrzej (eds.). *Centra miast metropolitalnych w Polsce. Urbanistyka a polityka przestrzenna*, Katowice: Wydawnictwo Wyższej Szkoły Technicznej w Katowicach, 2018, pp. 9–30, 109–118.

[48] Designed by Riegler Riewe Architekten (competition 2007; design from 2007; implementation 2010–2012) The museum opened in January 2015. The complex also received a nomination for the Mies van der Rohe Prize for 2015 (and was among the final 40 objects) www.rieglerriewe.pl, accessed July 2018.

[49] GYURKOVICH Mateusz. Polskie przestrzenie..., p. 82–87,115–124.

[50] https://muzeumslaskie.pl, accessed 2 May 2023.

town squares – Market Square and Magistracy Square – and small sections of streets within the historic old town structure.

One popular revitalisation strategy[51] is to use unwanted post-industrial architectural and urban heritage for cultural and educational institutions. Several cultural institutions have been operating in Walbrzych for many years, and one of the best-preserved aristocratic residences in Lower Silesia, Castle Książ, which generates huge tourist traffic,[52] is also located within its borders. Walbrzych City Council decided in 1999 to establish a new branch of the city museum, transferring the grounds of the former Julia mine and the historic buildings erected on them to the newly established institution free of charge. The site is adjacent to the southwest of the city centre. The documented history of the mine dates back to 1770. Along with the changing turns of the fate of the city and the region, it underwent numerous transformations; for almost the entire communist period it operated as Kopalnia Węgla Kamiennego (KWK) Thorez, changing its name to Julia in 1993.

It was not until 2008 that the city authorities developed a concept to revitalise the former Julia coal mine, transforming it into Stara Kopalnia Multicultural Park. This decision was related, among other things, to the need to obtain external funds – including EU funds.[53] Among the tasks listed in the Local Revitalisation Plan of Walbrzych for 2008–2015[54] relating to the area of the mine, four points are worth noting: adaptation of the former Julia coal mine for cultural purposes; adaptation of the former Julia coal mine facilities for the Sudecka Philharmonic; construction of a tourism and recreation base; and creation of an entertainment and catering complex on the site of the former mine.

Not all of these investments have been completed – the Sudecka Philharmonic is still based in the city centre and has not moved to a new facility.

The project to revitalise the former mine area includes four hectares of land, 16 historic buildings with equipment, an underground tourist route in the eighteenth-century "Fox Adit"[55] and the creation of new facilities. It was developed by Nizio Design International. The revitalisation projects developed by this studio

concern both "hard" activities involving the transformation of space, and "soft" activities aimed at activating local communities. They concern objects, areas of cities, the shape and functions of which do not meet expectations and requirements arising from changing conditions and social needs. Studies, analyses and projects created in the course of them serve to strengthen the potential of places, competitiveness and attractiveness for investors and tourists.[56]

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[51] ZUZIAK Zbigniew K. *Strategie rewitalizacji przestrzeni śródmiejskiej*. Kraków: Wydawnictwo Politechniki Krakowskiej, 1998.

[52] www.ksiaz.walbrzych.pl, accessed July 2018; research in situ August 2018.

[53] LISOWSKA Agnieszka. Stara Kopalnia Centrum Nauki i Sztuki w Wałbrzychu – przykład rewitalizacji obiektów poprzemysłowych na cele kulturowe. In: *Turystyka Kulturowa*, 2016, No. 4, pp. 6–20, ŻABSKI Łukasz. Źródła finansowania rewitalizacji obiektów pokopalnianych na przykładzie Parku Wielokulturowego „Stara Kopalnia" w Walbrzychu. In: Trzepacz P., Warchalska-Troll A. (eds.). *Rewitalizacja miast: teoria, narzędzia, doświadczenia*. Kraków: IRM, 2017.

[54] www.gospodarka.um.walbrzych.pl/sites/default/files/lokalny_program_rewitalizacji_walbrzycha_2008–2015.pdf, accessed May 2018.

[55] PIĄTEK Eufrozyna. *Historia kopalni węgla kamiennego "Julia" [Fuchs, Biały Kamień, Thorez]* – www.boehm-chronik.com/bergbau/julia.pdf (accessed July 2018 and on 3 October 2022).

[56] https://nizio.com.pl, accessed May 2018.

The revitalised area of the Julia Mine covers a similar area to the Culture Zone in Katowicewhich, given Walbrzych's much smaller size, makes this a relatively more significant intervention on the scale of the city. The observation tower within the complex, as with the one in Katowice's Culture Zone, encompasses views both of the site itself and panoramas of the city against the backdrop of the surrounding mountains. The difference, apart from the scale, also lies in the fact that the Old Mine Science and Art Centre is an overall revitalisation project, created by a single studio, and not the result of successive international competitions for individual blocks.[57]

In terms of programming, the Old Mine Science and Art Centre offers a wide range of attractions aimed at various age and social groups. Each building is dedicated to different areas, including those related to the identity of the place, the city and the region. The Old Mine[58] houses the Museum of Industry and Technology; the Ceramics Centre; an amphitheatre; the Walbrzych Cultural Centre with rooms for dance, art and science workshops; a contemporary art gallery; a conference centre; and studios-workshops for artists and craftsmen, as well as guest rooms. The meticulously restored historic buildings have been elegantly combined with the consistent minimalist aesthetic of the new volumes, necessary for the functioning of an ensemble with such a complex programme. The public spaces of the complex, equipped with greenery and minimalist urban furniture, as well as exposed former mine equipment and sculptures, allude to an industrial aesthetic.[59] The underground tourist route illustrating the history of coal mining is very popular. The Old Mine was recognised by the Polish Tourist Organisation as one of Poland's best "tourist products", winning a Gold Certificate in 2022.[60]

Discussion and conclusions

The present study collected basic data and information on the case studies. Photographs are summarised in figures 1 and 2. The data are collected in Table 1. The analysis of outdoor spaces suggests a division of these sites into two types: 1) spaces that have already been completely renovated and transformed and have a distinctly touristic character and 2) spaces that still have the original authentic character of a place of work rather than of recreation or leisure. From an analysis of interior spaces, exhibition spaces and touring spaces, it can be concluded that most of these spaces are very similar and have common features, namely, visible structural elements of an industrial nature. The exception is the Silesian Museum, which is mostly housed in new contemporary buildings.

[57] GYURKOVICH. Polskie przestrzenie...
[58] www.starakopalnia.pl, accessed May 2023.
[59] Ibidem p. 173–174.
[60] www.starakopalnia.pl, accessed May 2023.

Fig. 1: *Photographs of the cases studied – views from the outside:* a) Salt mine in Bochnia; b) Salt mine in Wieliczka, Regis shaft; c) old mine in Wałbrzych; d) Silesian Museum (old mine KWK Katowice); e) Adit queen Luiza, Zabrze; f) Coal mine Guido, Zabrze; g) Silver mine, Tarnowskie Góry. [61]

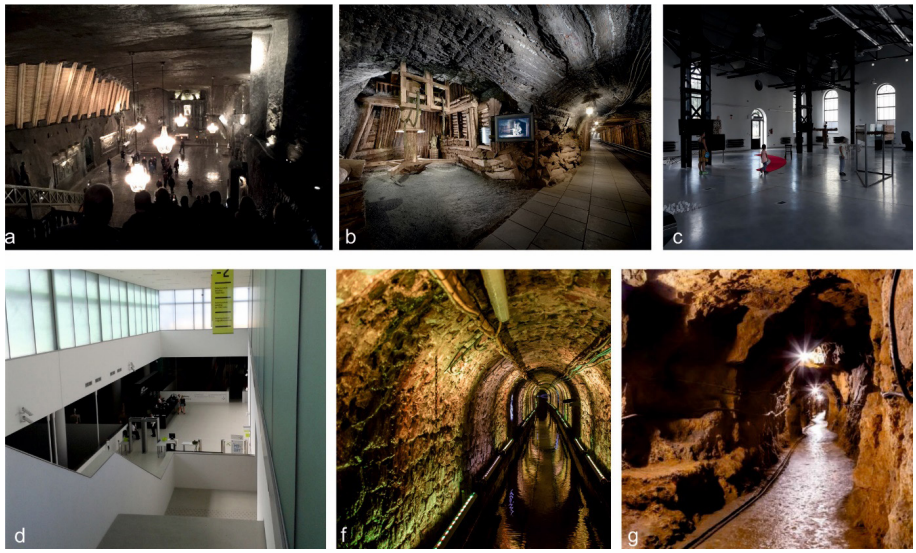

Fig. 2: *Photographs of the studied cases – views inside*: a) Wieliczka Salt Mine; b) Salt mine in Bochnia; c) Old mine in Wałbrzych; c) Silesian Museum (old mine KWK Katowice); d) Adit queen Luiza, Zabrze; e) Silver mine, Tarnowskie Góry.[62]

[61] https://kopalnia-bochnia.pl/galeria/pokaz/20 accessed 8 May 2023 Photo: Anna Dudzic, Mateusz Gyurkovich, Klaumich49 lic. CC BY-SA 4.0 wikipedia.org accessed 8 May 2023, Barbara Uherek-Bradecka, Sir Iwan lic. CC BY-SA 3.0 wikipedia.org accessed 8 May 2023.

[62] Photograph: Mateusz Gyurkovich, Szlak Tajemniczych Podziemi, Dolnośląska Organizacja Turystyczna, www.dot.org.pl, Mateusz Gyurkovich, https://podziemia.pl/ accessed 8 May 2023, https://www.zabytkitechniki.pl/ accessed 8 May 2023.

Table 1: *Selected information and parameters describing the studied cases of museums in mines.*

Mine name	**Years of operation as a mine**	**Date of establishment of the museum**	**Length (area/ volume/) of tourist route/ depth**	**Number of tourists (depending on the data: in general or annually)**	**Underground exhibition**	**Overground exhibition**	**Unusual events**
Salt mine Wieliczka	13th – 20th c.	17th c.	Tourist route: 3.5 km depth (64–135 m) Miners' route: 1.9 km; depth to 101 m	Ca. 1.5 million	+	+/-	concerts, theatre and opera performances, congresses, fairs, sports events; occasional events, e.g. weddings, banquets
Salt mine in Bochnia	1248–1990	since 1980	No data	Ca. 200,000	+	+/-	concerts, sport events; special events
Old mine in Walbrzych	1770–1999	2016	No data	Ca. 150,000 (2021) Ca.250,000 (2022)	+	+	concerts, workshops and trainings, sport events, special events
Silesian Museum (former KWK Katowice)	1823–1999	2015	25,000 m^2 (including underground exhibition on 2 levels – 6000 m^2)	Ca. 250,000 per year	+	+	Workshops, training, special events
Queen Luiza adit + Guido coalmine, Zabrze	1859–1982 (Guido) 1799 – 1998 (Luiza)	1981	1100 m, water route 900m	Guido 80,000 (2019) average 100,000 per year	+	+	Workshops, training, special events, weddings
Silver mine, Tarnowskie Góry	Since 1526	1953	1740 m, 270 m water route, depth 40 m	120,000 (2022)	+	+/- minimal	Boat tours, winter swim-ming

+ the feature exists;+/- the feature exists, but it is small, not significant in the scale of the entire exposition.

Quantitative data characterising selected cases are compared in Table 1; however, these figures do not give any information about quality. Salt mines have a different character from coal mines. Characteristically, the large halls with sculptures are much larger and more visually appealing compared to the spaces in former mining museums. Although all the museums have an exhibition, the nature of the exhibits varies and in some cases only elements related to mining technology are displayed, while typical museum exhibitions are most often dominated by art-related exhibits. The austere nature of the exhibitions is part of the creation of a distinct

brand of revitalised underground mines. Therefore, attempts to compare the expositions in underground museums do not give clear results.

Visitors' interactions with the exhibitions can be understood in an analogous way: in the Guido mine or silver mine in Tarnowskie Góry, some elements of the exhibition are movable, demonstrating how some of the mining machinery worked. Both museums are noteworthy for the unusual events that are organised in the museum spaces: concerts, museum nights, special events such as weddings and banquets, and unusual recreational events, boat rafting, winter swimming competitions and other underground sports events. These events and abovementioned movable expositions clearly indicate the differences between these institutions and typical museums, which do not organise such events.

Bondarenko refers to A. Tortika and M. Tortika's idea of two concepts of formation of a museum exposition: 1) the object of the exhibition is the main focus and all other aspects are organised so as not to interfere and 2) the use of scenic and artistic means in the creation of the exhibition.[63] The examples presented show that, in the case of museums created in mines, the issue of exhibition is a complementary element to the main content, which is the museum itself. In exceptional cases, it is possible to speak of the absence of an exhibition in the traditional sense, with only the display of elements of authentic post-industrial heritage.

Gawęda et al. state that the adaptation of post-industrial buildings for display purposes in connection with the historical values of the "site" can increase the significance of revitalisation.[64] It seems that the authenticity that results from a given location and function of a mine is an element that raises the rank of museums in mines to exceptional. Justifications for such conclusions include the museums' unusual morphology and the way they are visited, as well as their rich history, which remains original through the way they are displayed. Authenticity and integrity form a major component of the cultural values of any heritage resource, not just those objects pretending to be inscribed on the World Heritage List. It is enough to relate the "highest universal value" to another – non-global – area of comparison, making it a value of uniqueness specific to, for example, a municipality, region, province or country.[65] In the case of revitalised mines, authenticity can be identified on several levels: architectural (with original design), infrastructural (by the exposed original engineering solutions) and technological (by the fact that the underground museums can be visited safely).

In the case of museums in mines, the buffer zone that Affelt[66] mentions takes on a new meaning – it is not on the surface, but it is felt because the tour takes place underground; travelling from the entrance to the tour point is necessary. This is usually accompanied by instruction related to underground behaviour and a change in environmental conditions

[63] BONDARENKO Iryna, BONDARENKO Bohdan, GONCHAR Olena. Expositional design of the Audi museum in Ingolstadt: Representation of the brand's characteristics in automobile industry history In: *Muzeológia a kultúrne dedičstvo*, 2020, vol. 8, Is. 1, pp. 19–30.

[64] GAWĘDA Przemysław, WAGNER Tomasz, WRÓBLEWSKI Sebastian, PEŘINKOVÁ Martina. Industrial heritage and art. Contemporary adaptations of post-industrial architecture in the selected areas of Upper Silesia and Dąbrowa Coal Basin. In: *Architectus*, 2023, 4(76). DOI: 10.37190/arc230405.

[65] AFFELT Waldemar. Dziedzictwo Techniki Jako Cząstka Kultury Część I. W nurcie rozwoju zrównoważonego. The Heritage of Technology as a Part of Culture Part I. Within Current Sustainable Development. In: *Ochrona Zabytków,* 2008, No. 4, pp. 60–84.

[66] AFFELT Waldemar. O różnorodności form wyrazu kulturowego technofaktów i ich znaczeniu. In: Bogusław Szmygin (red.), *Ochrona wartości w procesie adaptacji zabytków*. Warszawa – Lublin: PKN ICOMOS, 2015. Online: http://bc.pollub.pl/dlibra/docmetadata?id=12729.

(pressure, temperature, humidity). Therefore, it should be concluded that the entrance areas of underground museums have a much greater impact on visitors than traditional museums.

The process of making underground mines available for exhibition purposes, although increasingly popular in Western European countries as well as Poland, is certainly not an easy task in terms of technical and architectural–construction aspects. The examples presented here of revitalised mines that have been made available to tourists are considered outstanding in comparison with other museums in Poland, and even perhaps in comparison to similar facilities in Europe. The main argument for this is their unique character, directly linked to the heritage, tradition and culture of the region.

This is confirmed by data on visiting tourists, who are important to the development of establishments and have an impact on the development of cities. The authenticity of the cases in question is emphasised by the local culture and identity of the region. It is particularly noticeable in Silesia, where most of the museum guides are former miners whose upbringing, traditions and way of life can be described as "Silesian". This translates into language, among other things: during a guided tour at the Guido or Luiza mines, tourists have a chance to listen to the Silesian dialect and learn the history and culture associated with mining, which was the foundation of the region's development. It seems that further research into such sites and identification of their unique features may provide answers on how to exhibit and promote them in the future, which may be a challenge in the era of digitisation and mass access to resources.

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The Destruction of Cultural Property of the Muslim Community during the War in Bosnia and Herzegovina

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The Destruction of Cultural Property of the Muslim Community during the War in Bosnia and Herzegovina
The purpose of this work is to present the process of the destruction of cultural property of the Muslim community during the warfare conducted on the territory of Bosnia and Herzegovina (BiH) in 1992–1995. The work is based on historical and press sources in Serbian, Bosnian and Croatian. Field research conducted in 2000 and 2022 to obtain information on the number of demolished and restored mosques in BiH also makes an important contribution. In addition, in-depth interviews were conducted with Slovak soldiers who served in NATO IFOR operations, as well as with representatives of international institutions. Research results indicate that during the war in BiH (1992–1995) the Muslim community suffered the greatest losses of cultural property. 614 mosques were destroyed. Serbian armed troops carried out most of the damage, while Croatian armed troops did less. After the war, no individual was held responsible for the destruction of cultural property. The case of BiH shows that international law still does not protect religious sites.

Keywords: war, threat, law of war, cultural assets, religious communities, conflict

Introduction

In recent years, we have been experiencing Russia's brutal policy towards Ukraine. Among the targets of Russian attacks are cultural heritage – monuments, museums and shrines. The Ukrainian authorities are collecting information on the destruction of cultural property on an ongoing basis. The collected data can be used as evidence in trials before the International Court of Justice in The Hague or a special tribunal that may be set up to hold the Russians accountable for crimes committed in Ukraine. Ukraine's institutions maintain an official register of damage to cultural property through an interactive platform, where anyone can report the destruction of a monument, either seen and documented in person or published online. Currently, the list includes 243 objects. Among them are a very large number of religious sites, such as the

Dormition of the Mother of God Cathedral in Kharkov, which was severely damaged during the Russian invasion of Ukraine in 2022. Russian shelling also destroyed the buildings of the Holy Mountain Lavra in the Donetsk region.[1]

The destruction of cultural property by the Russian Federation is not a new phenomenon. During the 1992–1995 war in Bosnia and Herzegovina, it militarily supported Serbian troops, who carried out the destruction of many historical sites, architectural monuments, museums and other cultural objects associated with the Muslim community. The situation was particularly dire during the siege of Sarajevo, where monuments such as the National Library in Sarajevo were destroyed by artillery fire. This destruction of cultural heritage in Bosnia and Herzegovina was a tragic result of the war and led to a huge historical and cultural loss for the region.[2]

After the end of the war, many efforts were made to rebuild and protect those cultural objects affected. However, the Bosnian authorities were not able to undertake the effort to rebuild and reconstruct cultural property on their own. In particular, countries such as Turkey, Saudi Arabia and even Iran played a key role in this process. However, this reconstruction has led to many social tensions and political disputes. Despite these difficulties, the process of reconstruction and the renovation of mosques in Bosnia and Herzegovina was completed in 2023. The last three major Ottoman mosques that were destroyed during the war – Arnaudija in Banja Luka, Kizlaragina in Mrkonjić Grad (both located in northwestern Bosnia) and Sinanbegova in Čajniče (in eastern Bosnia), all originally built in the sixteenth century, have been rebuilt and put into public use.[3]

Aim

The purpose of this work is to present the process of the destruction of cultural property of the Muslim community during the warfare conducted on the territory of Bosnia and Herzegovina (BiH) in 1992–1995. In this context, the authors will present the steps that were taken by Serbian armed forces to destroy Muslim heritage in the country. Authors will analyse the causes and consequences of such policies. In addition, the damages suffered by the Muslim community during the war will be presented. However, this article does not address the problem of the destruction of the heritage of other religious groups and does not describe the process

[1] *Zniszczone dobra kultury na Ukrainie*, accessed August 1, 2023, https://www.gov.pl/web/kultura/zniszczone-dobra-kultury-na-ukrainie; *Rosjanie ostrzelali monastyr w pobliżu Swietogorska*, accessed August 1, 2023, https://www.rp.pl/konflikty-zbrojne/art36434931-rosjanie-ostrzelali-monastyr-w-poblizu-swietogorska.

[2] For more on the role of states in defending cultural heritage see: WIŚNIEWSKI, Bernard. Doświadczenia z zakresu przygotowań obronnych wybranych państw. In: *Kultura Bezpieczeństwa. Nauka – Praktyka – Refleksje*, 2013, pp. 11–27; WIŚNIEWSKI, Bernard, LUBIEWSKI, Paweł. Ochrona dóbr kultury współczesnej jako działanie w sferze ochrony dziedzictwa kulturowego. In: *Racjonalizacja zarządzania jednolitymi formacjami umundurowanymi odpowiedzialnymi za bezpieczeństwo wewnętrzne*, 2017, Tom 2, Szczytno; DWORZECKI, Jacek, NOWICKA, Izabela, URBANEK, Andrzej, KWIATKOWSKI, Adam. Protection of national heritage in the light of the applicable law and the actions provided in this area by police in Poland. In: *Muzeológia a kultúrne dedičstvo*, vol. 8, 2020, Is. 4, pp. 177–198.

[3] COGNEE, Robin. Mosque Geopolitics in Bosnia and Herzegovina. In: *GIGA Focus Middle East*, no. 3, 2023, https://www.giga-hamburg.de/en/publications/giga-focus/mosque-geopolitics-in-bosnia-and-herzegovina; Erdogan's Sarajevo Visit May Affect Bosniak Leadership Race, accessed August 1, 2023, https://balkaninsight.com/2019/07/08/erdogans-sarajevo-visit-may-effect-bosniak-leadership-race/.
GANGLOFF, Sylvie. The Weight of Islam in the Turkish Foreign Policy in the Balkans. In: *Turkish Review of Balkan Studies*, 5, 2001, pp. 91–102; ÖKTEM, Kerem. *New Islamic Actors after the Wahhabi Intermezzo: Turkey's Return to the Muslim Balkans*. Oxford: European Studies Center, 2010; ÖZTÜRK, Ahmet Erdi Transformation of the Turkish Diyanet both at Home and Abroad: Three Stages. In: *European Journal of Turkish Studies (EJTS)*, 2018, p. 27.

of reconstruction of the Muslim heritage after the war; addressing these issues in a separate study would, though, be highly desirable.

The year 1992 is the opening caesura of this work, and it marked a turning point in the socio-political life of Bosnian Muslims. It was then that the declaration of an independent BiH took place, and the civil war began as a result. The end date of the work, on the other hand, is 2023, when the completion of the reconstruction of the country's mosques took place.

Methodology

During the research, expert interviews were conducted with, among others, soldiers of the Armed Forces of the Slovak Republic who served in NATO IFOR and NATO SFOR operations, as well as representatives of international institutions responsible for foreign policy and international security. Thanks to them, it was possible to determine the extent of the destruction and the amount of damage done to religious sites. In addition, the witness testimonies made it possible to establish the reasons for the actions taken by Serbian armed forces in BiH. Additionally, the authors conducted a study tour in 2000 in Sarajevo and another in 2023 in Banja Luka, during which a number of interviews were conducted with religious leaders and local government officials, including representatives of Bosnian Muslims in BiH. Other researchers were also consulted during a study visit to Dubrovnik and Zagreb in 2020. During these visits it was possible to trace the work on the reconstruction of religious sites in BiH. An in-depth analysis of source documents in Croatian, Serbian and Bosnian collected at the Adil Zulfikarpašić Institute in Sarajevo and the National Library in Zagreb was also used. Due to the lack of access to some source materials, newspaper articles from 1990–2022 (in the press of religious groups) play a large role in the work. Reports of international organisations, such as the agencies of the Organisation for Security and Cooperation in Europe, and reports of the International Crisis Group also play an important role in the research.

Literature Review

The problem of the preservation and restoration of cultural heritage is very widely discussed in the world literature. It dominates, first of all, in studies of the countries that suffered the greatest destruction during World War II. These include scholarly works devoted to the destruction in Poland (the example of Warsaw, which suffered massive destruction during the Warsaw Uprising in 1944), Germany (the example of Hamburg and Dresden, which suffered massive bombing), Great Britain (the example of Coventry, which suffered heavy bombing in 1940) or Russia (the example of Leningrad, which suffered huge human and material losses).[4]

After the end of the war in BiH, the topic of the destruction of cultural property also became the specialty of many contemporary researchers from the Balkan Peninsula. However, it seems to have taken on a completely different character. One has the impression that in Bosnian literature it has become an element of the nation's martyrdom. In their studies, Bosnian writers repeatedly discuss the role of Serbs and Croats in the so-called *urbicid*. Similar publications are also published by the Islamic Community in BiH (*Rijaset Islamske Zajednice BiH*). The purpose of commemorating the destroyed mosques was to establish a "Day of Mosques" to commemorate the demolition of the Ferhadija Mosque and all other mosques demolished on the territory of Bosnia and Herzegovina on May 7, 1993. On this day, the Bosnian public recalls these tragic events during sermons in all the mosques in BiH. This attitude, however, should not come as a

[4] DWORZECKI, NOWICKA, URBANEK, KWIATKOWSKI. Protection of national heritage...

surprise. The losses of Bosnian Muslims were the highest, with an estimated 97,000 or 110,000 to as many as 200,000 people killed (of which 65% were Bosniaks, 25% Serbs, 8% Croats, and 2% other.[5] Nevertheless, some of the information presented by Bosnian researchers may be far from the truth. An example is the description of the events concerning the activities of the Muslim community during Communist Yugoslavia. It is often referred to as the "dark ages" in the history of Bosnian Muslims; however, it was essentially a period of development for the Muslim community.

However, not all works are so emotional. Among the most valuable studies used in the article are source materials published by the Muslim community in communist Yugoslavia – *Glasnik vrhovnog islamskog starjesinstva u SFRJ*. This journal contains rich source materials on the religious activities of Bosnian Muslims. In addition, materials collected by the authors in Sarajevo, in the archives of the Adil Zulfikarpašić Bosnian Institute, were helpful in writing the work. Nevertheless, many documents depicting the activities of this institution were destroyed during the war. It is also worth noting that this paper uses archival videos collected by the Bosnian army, which have been published on YouTube. They present evidence regarding the destruction of cultural property during the war.

The Background of the Problem

The devastation of cultural property in the Balkans has a very long history. After the Ottomans took over these lands, many Orthodox and other churches were destroyed or renamed mosques. At the same time, the Ottoman influence led to a flourishing of Muslim architecture. An example is Sarajevo, founded by the Ottomans (the name comes from the Turkish word *saray* meaning palace), built by Isa-beg Ishakovic in 1457. The city itself, as well as subsequent districts (*mahallè*), were built around mosques. In a little more than a century of Sarajevo's existence, the number of mosques in it came to exceed 100. The famous Ottoman writer Evlij Čelebi, traveling in Bosnia in 1660, noted that in Sarajevo there were 177 mosques and about 17,000 houses.[6]

With the slow collapse of the Ottoman Empire in the nineteenth century, there was a process of the eradication of Islamic heritage in the Balkans. Newly formed states such as Serbia sought to erase the Ottoman heritage from their lands. In Belgrade, for example, there were some 273 mosques in the seventeenth century. The city under Ottoman rule was one of the largest cosmopolitan cities in Europe. It was home to a mixed population, including Turks, Serbs, Greeks, Jews and Romany. However, at the beginning of the nineteenth century, the situation changed drastically. In the newly created Serbian Principality, the authorities wanted to expel the followers of the Quran (Turks, as well as Slavic Muslims) and destroy the cultural

[5] NILSEN, Kjell. *102.000 drept i Bosnia*, accessed August 1, 2023, https://www.nrk.no/urix/102.000-drept-i-bosnia-1.585120.

[6] *What the famous Evliya Çelebi wrote about Sarajevo?* accessed August 1, 2023, https://sarajevotimes.com/what-the-famous-evliya-celebi-wrote-about-sarajevo/; HADŽIJAHIĆ, Muhamed (1974). *Od tradicije do identiteta*, Sarajevo. *Investicije Turske na Balkanu: Između statistike i percepcije*, accessed August 1, 2023, https://balkanp.aljazeera.net/news/economy/2021/9/28/izmedju-statistike-i-percepcije-investicije-i-trgovinska-razmjena-turske-i-balkana; ANDREJEVIĆ, Andrei. Islamska monumentalna umetnost XVI veka u Jugoslaviji. In: *Glasnik Rijaseta Islamske zajednice u SFRJ*. br. 1, Sarajevo, 1985, pp. 102–105.

heritage that was a symbol of the empire. As a result, by the end of the nineteenth century, only one Bajrakli mosque remained.[7]

One of the few areas where the Muslim heritage remained almost untouched was BiH. In 1878, under the terms of the Berlin Congress, it came under the occupation of the Austro-Hungarian monarchy.[8] From the very beginning of its rule in these lands, the Austro-Hungarian administration set itself the goal of gaining an ally among local Muslims. One means in the implementation of this policy was to provide them with suitable conditions for expressing their religious distinctiveness. Thus, they proceeded to rebuild destroyed mosques (including the rebuilding of the Careva mosque in Sarajevo in 1890, where the Bosnian Janissaries, Begas and Ajans had elected Zmaj as their leader) and Muslim graves, and to construct new, mostly secular buildings, while preserving the Ottoman-Turkish spirit (including the seat of the city government, the so-called Vijećnica, the Askenazy synagogue and the well-known Sebilj fountain in Sarajevo). The main executors of this new trend in architecture were the Czech Karlo Paržik and Austrian Alexander Wittek.[9]

Cultural Assets of the Muslim Community in the Kingdom of SHS (Kingdom of Yugoslavia) and the Independent State of Croatia (NDH)

In 1918, the lands of BiH came under the control of the Kingdom of Serbs, Croats and Slovenes. Although the king of the state was a Serb, he tried to maintain an open and pragmatic attitude, seeking a modus vivendi between Serbian and Croatian national aspirations. Religious communities were treated quite equally, and the Yugoslav authorities did not force Muslims to resettle. Despite this, several mosques were demolished between 1918 and 1930 and rebuilt for other purposes. According to some contemporary calculations, 23 mosques were demolished from 1919 to 1940.[10]

During World War II, the territory of BiH came under the control of the fascist Croatian state NDH. From then, Croatian authorities treated Bosnian Muslims as part of the Croatian nation. They supported their activities and protected their cultural heritage. NDA leader Ante Pavelić even decided to build a mosque in Zagreb.[11]

Cultural Assets of the Muslim Community in Communist Yugoslavia

After World War II, the communist authorities in Yugoslavia decided to punish the crimes of the fascist regime. Many Catholic and Muslim clerics were arrested and murdered. Six

[7] KARCIĆ, Fikret. *Primjena* šerijatskog prava u Jugoslavenskim zemljama nakon prestanka Turske vlasti pa do 1918. In: Islamska misao, br. 84, Sarajevo, 1985, p. 13; BAKIC-HAYDEN, Milica. *Empires Are Us: Identifying with Differences*, Pittsburgh, 2000; HADZIOSMANOVIĆ, Hasan. Vezirov saraj u Beogradu (1573–1827). In: *Glasnik vrhovnog islamskog starješinstva u SFRJ*, br. Sarajevo, 1998, pp. 409–412; KUJAWA, Karol, Polityka historyczna islamskiej partii SDA w Bośni i Hercegowinie na przełomie XX i XXI wieku. In: *Rocznik Instytutu Europy Środkowo-Wschodniej*. Lublin, 2020, pp. 23–35; Hayden, Robert. Religious Structures and Political Dominance in Belgrade. In: *Ethnologia Balkanica*, vol. 9, Belgrade, 2005, p. 222.

[8] STOJKOVIĆ, Momir (ed). *Balkanski ugovorni odnosi 1876–1996. Dvostrani i višestrani međunarodni ugovori i drugi diplomatski akti o državnim granicama, političkoj i vojnoj saradnji, verskim i etničkim manjinama*, I tom (1876–1918). Beograd, 1998.

[9] OHRANOVIĆ Fuad. 120 godina institucije reis-l-uleme i rijaseta u BiH (1882–2002). In: *Zemzem*, br. 132, Sarajevo, 2003.

[10] *U Sarajevu je od 1996. Godine sagrađeno samo 45 džamija*, accessed August 1, 2023, https://vakuf.ba/bs/aktuelnosti/u-sarajevu-je-od-1996-godine-sagradeno-samo-45-dzamija/1143; See also: BOJIC Mehmedalija. *Historija Bosne i Bosnjaka*. Sarajevo, 2001.

[11] See also: MACAN, Trpimir. *Povijest hrvatskog naroda*. Zagreb,1992.

mosques in Sarajevo were also demolished (including the Baghdadi Mosque in Bistrik in 1953). The situation changed in the late 1950s. Since then, Bosnia and Herzegovina has experienced dynamic modernization and economic progress and has undergone urbanization. According to some sources, more than 800 mosques were built between 1969 and 1980.[12] In addition, in 1956 the Federative People's Republic of Yugoslavia adopted the Convention for the Protection of Cultural Property in the Event of Armed Conflict (the so-called Hague Convention of 1954).[13] Support for the Islamic community in communist Yugoslavia, however, was no accident. The renovated mosques became Yugoslavia's calling card. They were meant to promote it to the West, but especially to rich Muslim countries and encourage them to cooperate economically with Yugoslavia.[14]

All these activities made Muslims a true mainstay of socialism. During their religious holidays (including *ramazan* or *bajram*), they often greeted their leader with the statement: "long live our dear leader Marshal Josip Broz Tito of Yugoslavia; long live the brotherhood and unity between our peoples".[15] The loyalty and allegiance of Muslims to the ideas of communist Yugoslavia were confirmed by opinion polls conducted in 1989. They showed that as many as 88 percent of Muslims felt strong ties to collective Yugoslavia (85 percent of Serbs and 63 percent of Croats).[16]

Destruction of Muslim Cultural Property during the 1992–1995 War

In the independence referendum held in the first days of March 1992, 99.44% of the population voted for the sovereignty and independence of Bosnia and Herzegovina, with the referendum boycotted by the Serbs. On April 2, 1992, Bosnian Muslim leader Alija Izetbegović declared the independence of BiH.[17] In response, the Bosnian Serbs, with the help of the federation's Yugoslav People's Army (JNA) troops led mainly by Ratko Mladic, began bombing Sarajevo and many other Muslim towns (Tuzla, Žepa, Srebrenica). Two of the first objects shelled by Serbian artillery in Sarajevo were the National Library, built in the Oriental style by the Austro-Hungarian monarchy, and the Institute of Oriental Studies, founded by the Communists in the 1960s. In the village of Gerzevo, meanwhile, the tomb (*turbe*) of a national

[12] *Saopštenje kabineta reis-ul-uleme*. In: Glasnik Rijaseta Islamske zajednice u SFRJ, br. 1. Sarajevo, 1990, p. 117. Svečano otvorenje obnovljene džamije i novosazidane munare u selu Vranićima (1965). In: *Glasnik vrhovnog islamskog starjesinstva u SFRJ*, br. 3-4. Sarajevo, pp. 39–40; Svečano otvorenje temeljito obnovljene >Bajrakli< džamije u Beogradu. In: *Glasnik vrhovnog islamskog starješinstva u SFRJ*, br. 1-2. Sarajevo, 1964, pp. 51–58; FAJIĆ, Zejnil. Bibliografija Glasnika. Vrhovnog islamskog starjesinstva u SFRJ, knjiga II. In: *Rijaseta Islamske zajednice u SRRJ od 1983.do 1992*. Godine, Sarajevo, 1995, pp. 18–19.

[13] *Black lamb and grey falcon: A journey through Yugoslavia*, accessed August 1, 2023, https://diyanet.gov.tr/en-US/Content/PrintDetail/11001.

[14] Alžirska delegacija u posjeti IVZ u SFRJ. In: *Glasnik vrhovnog islamskog starjesinstva u SFRJ*. br. 11-12. Sarajevo, 1969, pp. 516–522; Delagacija marokanske uleme uzvratila posjetu islamskoj zajednici Jugoslavije. In: *Glasnik vrhovnog islamskog starjesinstva u SFRJ*. br. 11-12. Sarajevo, 1969, pp. 653–655.

[15] These words were spoken at a meeting of representatives of the Islamic community in Belgrade in 1963. (Službeni dio. Prvo zasjedanje petog saziva vrhovnog sabora islamske vjerske zajednice u SFRJ održanog u Beogradu dan 18. Decembra 1963. Godine. In: *Glasnik Vrhovnog islamskog starješinstva u SFRJ*. Sarajevo, 1963, p. 73).

[16] VELIKONJA, Mitja. *Religious Separation and Political Intolerance in Bosnia-Herzegovina*. Texas A&M University Press, 2003, p. 229.

[17] For more on the Islamic community's attitude toward BiH's independence, see: Treće ne želimo! Dvije Jugoslavije su već previše. In: *Novi Behar*, broj 10, Sarajevo, 1988, p. 3; Zaključi vrhovnog sabora islamske zajednice u SFRJ. In: *Glasnik vrhovnog islamskog starjesinstva u SFRJ*, br. 4. Sarajevo, 1989, p. 110; Izvještaj o radu vrhovnog straješinstva (rijaseta) islamske zajednice u Jugoslaviji. In: *Glasnik Rijaseta Islamske zajednice u SFRJ*, br. 5. Sarajevo, 1990, pp. 129–130.

hero of the Bosnian Muslims, Alija Đerzelez, was blown up. From the beginning of the war, the White Fortress (Bjela Kula) in Gradačac, built by the national hero of the Bosnian Muslims, Zmaj od Bosne (Dragon of Bosnia), was also bombed.[18]

During the war, however, the religious facilities of the Muslim community suffered the most. According to the Islamic Community, there were 1,144 mosques in Bosnia and Herzegovina before the war, 614 of which were destroyed. However, the Catholic and Orthodox communities also suffered losses. It is estimated that 269 Catholic churches and 125 Orthodox churches were demolished.[19]

The main role in the destruction of cultural property was played by the Army of the Republika Srpska (VRS) and the Yugoslav People's Army (JNA). According to the calculations of the Islamic Community, these troops demolished 534 mosques.[20] There is no doubt that these actions were part of the policy of Serbian leaders in BiH seeking to destroy the cultural heritage of Muslims. This is evidenced by the statements of VRS leaders such as Radovan Karadzic themselves, who at the beginning of the war stated that Sarajevo and the lands up to the Drina belonged to the Serbs, and that the Muslims living there (known as Turks or Poturčenac) should be displaced:

> We have to prove to the international factor that we are not actually conducting any siege of Sarajevo. In fact, we are protecting our territories, and here you can see that Sarajevo was built on Serbian land, as Serbian property, and the entire surroundings of Sarajevo are Serbian, these are all Serbian villages, Serbian towns, Serbian settlements. We wouldn't have resolved these issues yet, but only where the ethnic areas overlap, that is, where the maps overlap, would be the disputed part in the Neretva valley, perhaps in the Sava valley, perhaps here on the Drina itself.[21]

Besides, that the destruction of Muslim cultural property was a planned action is evidenced by the folk songs of the Serbian army which were written during the war. In one of them, the author calls for the destruction of mosques. He claims that after the deaths of the leader of the fascist NDH state, Ante Pavelić, the leader of communist Yugoslavia, Josip Broz Tito, and the leader of communists in Kosovo, Azam Vllasi, the Muslims of BiH are vulnerable and it is time for a revanchist:

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[18] KUJAWA, Karol. *Bośniaccy muzułmanie: Tożsamość, liderzy, bezpieczeństwo.* Wydawnictwo Naukowe Akademii WSB, Dąbrowa Górnicza, 2021, p. 34.

[19] PUHALO, Srdan. *Ko je i koliko rušio vjerske objekte u Bosni i Hercegovini?*, accessed November 1, 2023, https://www.frontal.ba/blogovi/blog/60507/ko-je-i-koliko-rusio-vjerske-objekte-u-bosni-i-hercegovini; ČABARAVDIĆ, Sabina, *Uništavanje božjih kuća „onih drugih" i njihova obnova*, accessed August 1, 2023, https://www.slobodnaevropa.org/a/tema_sedmice_vjerski_objekti/1733524.html; *Dan džamija u BiH: Podsjećanje na 614 srušenih džamija*, accessed August 1, 2023, https://balkans.aljazeera.net/news/balkan/2022/5/7/dan-dzamija-u-bih-podsjecanje-na-614-srusenih-dzamija.

[20] *Podsjećanje na 614 džamija porušenih u BiH*, accessed August 1, 2023, https://balkans.aljazeera.net/news/balkan/2014/5/7/podsjecanje-na-614-dzamija-porusenih-u-bih; *Danas je Dan džamija*, accessed August 1, 2023, https://preporod.info/bs/article/6155/danas-je-dan-dzamija.

[21] *Radovan Karadžić - Serbian Sarajevo - Russian guest*, accessed August 1, 2023, https://www.youtube.com/watch?v=IERNMqEEg5s&t=51s.

Došlo vrijemje da se Srbi svete.
Sve džamije u oblake lete.
Nema Ante, Azema i Tite, date opet od Srbina štite (x2).
Džaba Bosni ramazanskog posta, ne spase te ni Alah ni Gospa.
Jer Srbina nema nigdje ravna, Srbin neće ničijega jarma (x2).
Došlo vrijemje da se Srbi svete.
Sve džamije u oblake lete[1].

Noone is stronger than Serb.
All mosque, flying among the clouds.
No Ante, Azem, or Tito to protect you from Serb again (x2).
Fasting the Ramdan is useless, Allah or Holy Mother won't help you.
A Serb's second to none, and Serbs won't be enslaved (x2),
Noone is stronger than Serb.
All mosque, flying among the clouds.

(Author's own translation).

Also, responsible for the destruction of Muslim cultural property are Croatian Defence Council (HVO) troops and the Croatian Army. In 1993, Croatian forces broke off cooperation with the BiH Army and began pushing for the creation of a separatist Croatian state within BiH. After that, HVO troops and the Croatian Army began destroying the cultural property of Bosnian Muslims. In Mostar, eight mosques were demolished and their remains removed. The 1676 mosque on Babun near Ilići was demolished, followed by the 1975 mosque in Jasenica near Mostar, the 1847 mosque of Ali Pasha Rizvanbegović on Buna near Mostar, the mosque on Gubavica near Mostar from the seventeenth century, the mosque in the village of Pijesca from 1962, the mosque of Hajji Alibeg Lafa from 1651, the mosque of Baba Bešírova in Balinovac from 1631, the mosque of Dervish Pasha Bajezidagić in Podhum from 1592, etc. Along with the bombing of the Balinovac mosque, a general attack on the 4th ARBiH Corps, which was defending part of Mostar, began on May 9, 1993. Two days later, the Pijesce mosque was demolished. It is estimated that Croatian troops destroyed 80 mosques during the war in BiH.[22]

Legal Responsibility

As a result, more than 3,000 religious buildings were destroyed or damaged during the war in BiH. Despite the enormous material losses, no one was held accountable for these crimes. The only exceptions were a few sentences handed down in the Hague and the Tribunal of Bosnia and Herzegovina, in which some individuals were convicted of war crimes. Demolition of religious buildings and other war crimes were added to the indictment in connection with the crime of destroying cultural and historical monuments under Article 151(1) of the SFRY Criminal Code. In addition, the Prosecutor's Office in Banja Luka prosecuted the war crime case, but it applied the Criminal Code of the Socialist Federal Republic of Yugoslavia (CFR Yugoslavia), which was still in effect at the time. According to this law, the act of the "Destruction of Cultural and Historical Monuments" was punishable by imprisonment from one to 15 years, with the statute of limitations for criminal prosecution expiring 15 years after the commission of the criminal

[22] *Kulturocid HVO-a i HV-a na prostoru Hercegovine – Samo u Stocu, Čapljini i Mostaru srušeno je 40 džamija*, accessed August 1, 2023, https://bosnae.info/index.php/kulturocid-hvo-a-i-hv-a-na-hercegovine-samo-u-stocu-capljini-i-mostaru-sruseno-je-40-dzamija-2

act. As a result, no one has suffered punishment for the destruction of cultural property in BiH.[23]

Conclusion

The destruction of the Muslim heritage in the Balkans began in the nineteenth century. With the collapse of the Ottoman Empire, the influence of the Muslim community weakened. New Christian states such as Serbia emerged, which sought to eliminate Ottoman legacies due to their association with foreign occupation. As a result, just one mosque remained in Belgrade at the end of the nineteenth century. The destruction of mosques in the Western Balkans was halted in the territories of Bosnia and Herzegovina by the Austro-Hungarian monarchy. They annexed the area in 1878. The Austrians sought to maintain the status quo in the region. The authorities did not persecute Muslims and even strengthened the development of their architecture in the Oriental spirit. A similar policy toward Muslim heritage was adopted during World War II by the authorities of the fascist Croatian state NDH.

However, the greater flourishing of the Muslim community occurred paradoxically under Communist Yugoslavia. New mosques were built and Ottoman traditions were revived. This attitude of the communist authorities turned Bosnian Muslims into a mainstay of socialism, and they expressed widespread support for the Yugoslav authorities. The death of the leader of Communist Yugoslavia, Josip Broz Tito (1980), as well as the collapse of Communist Yugoslavia, proved tragic for Muslims.

After the declaration of BiH's independence (1992), they became the target of the Serbian army, which proceeded to eradicate the Ottoman legacy in the territory. As a result, during the war in BiH, according to various estimates, 614 mosques were demolished and destroyed. The main responsibility for the destruction of these religious facilities lies with the Serbs. In 1993, Croatian armed forces joined in the destruction of Muslim heritage. After the war, attempts were made to settle accounts with the criminals who perpetrated the destruction. Until now, those responsible for the destruction of Muslim heritage have not been punished. Thus, the example of BiH shows that international law continues to fail to protect religious sites. Everything indicates that there will be a similar situation after the end of the war in Ukraine.

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[23] *Smijemo li reci ko nam je srusio dzamije?* accessed August 1, 2023, https://www.pressreader.com/bosnia-and-herzegovina/preporod/20211215/281767042533380

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