HOUSING ENVIRONMENT 44/2023 WSPÓŁCZESNA ARCHITEKTURA MIESZKANIOWA W PRZESTRZENI MIASTA / CONTEMPORARY HOUSING ARCHITECTURE IN CITY SPACE e-ISSN 2543-8700 DOI: 10.4467/25438700SM.23.023.18484

JAKUB ŚWIERZAWSKI*, MING HU**, JUSTYNA KLESZCZ***, PIOTR KMIECIK****, DIEU MERCI KAMATE*****

The potential of higher education institutions as catalysts for revitalization in urban planning: A case study of a Medical Simulation Centre at the workers' housing estate of Donnersmark Ironworks in Zabrze

Abstract

The paper aims to investigate the potential of higher education institutions as catalysts for revitalization on an urban scale, using a case study of the revitalization of the workers' housing estate of Donnersmark Ironworks in Zabrze, Poland. The case study showcases the adaptation of a historical building at 2 Londzina Street into a Center for Medical Simulations of the Academy of Silesia. The research was conducted using a mixed historical and interpretive research method and focused on analyzing the urban and architectural structure of the estate, as well as researching local spatial problems and the model of revitalization processes in post-industrial areas of Upper Silesia. The study also examined how the the design of a building serving advanced medical simulation was shaped as comprehensive functional complexes. The findings of this research indicate that revitalization is a comprehensive process that involves bringing degraded areas out of crisis through holistic actions integrating the interventional role for local community, space, and local economy. The paper presents a case study of how higher education institutions can act as catalysts for revitalization in the process of urban planning in Poland. The findings indicate that a well-designed revitalization program ensures broad participation and can have a positive impact on the local community.

Keywords: revitalisation, ironworks, Zabrze, Donnersmark, Medical Simulation Centre

1. INTRODUCTION

The issue of revitalisation as a method of restoring urban areas in former industrial towns has been extensively discussed in Poland for the past twenty years. The most well-known and broadly described areas, such as industrial plants or worker's estates (referred to as „familoks"), as well as entire industrial towns with well-preserved specific urban structure, have already been analysed and documented in literature. But nowadays we have now reached a point where this type of scenario does not work in each and every case, particularly when dealing with smaller plots or less common industrial facilities in terms of form and function. Therefore the paper aims to present one of the latest opportunities, which involves adapting parts of post-industrial estates for higher education purposes, particularly in the fields of medical and education, and exploring their potential role in the housing structure. The case study focuses on a small workers' housing estate located in the inner part of the city of Zabrze, Poland at Londzina Street. The study area encompasses the historic workers' estate of the Donnersmarck ironworks, as well as additional buildings not originally associated with it, including a former school and a complex of tenement buildings.

Zabrze and its location

The city of Zabrze is situated in the central area of the Silesian Voivodeship in southern Poland. According to the 2021 national census, Zabrze has a population of 158.3 thousand inhabitants (3.6% of the population of the Voivodeship), making it the 6th most populous city in the Voivodeship (Urząd Statystyczny, 2022, 4). The city is well-connected, with the A1 and A4 motorways, the Drogowa Trasa Średnicowa (DTŚ), direct railway connections to important cities in Poland, and three airports located within 100 km (Urząd Miasta w Zabrzu, 2021, 4-5). Zabrze and its surrounding cities

* Jakub Świerzawski, Ph.D. eng. arch., Dean, Faculty of Architecture, Civil Engineering and Applied Arts, Academy of Silesia, https://orcid.org/0000-0003-3878-0500, e-mail: jakub.swierzawski@akademiaslaska.pl
** Ming Hu, PhD, School of Architecture, University of Notre Dame, Notre Dame, IN, USA, https://orcid.org/0000-0003-2583-1161, e-mail: mhu1@nd.edu
*** Justyna Kleszcz, , prof. arch, Ph.D. Eng. Associate Professor, Faculty of Civil Engineering and Architecture, Opole University of Technology, https://orcid.org/0000-0002-7571-6367, e-mail: j.kleszcz@po.edu.pl
**** Piotr Kmiecik, Ph.D. eng. Arch, Institute of Natural and Technical Studies, the Angelus Silesius University of Applied Sciences in Wałbrzych, https://orcid.org/0000-0003-1652-3933, e-mail: p.kmiecik@ans.edu.pl
***** Dieu Merci Kamate, The School of Architecture, Planning and Preservation, University of Maryland, USA, e-mail: dkamate@umd.edu

and municipalities form a compact urban landscape associated with the culture of the mining industry. It is a polycentric and heavily urbanised area called the Upper Silesian-Zaglebie Metropolis (GZM) since the beginning of 2018. Its largest cities are Katowice, Sosnowiec, Gliwice, and Zabrze. The Metropolitan Union covers an area of 2 553 km^2 and is inhabited by approximately 2.226 million people (Góralczyk, Panasiuk, Przybyła, 2018). The population density in Zabrze is 2265 inhabitants per km^2 (Statystyki, 2020).

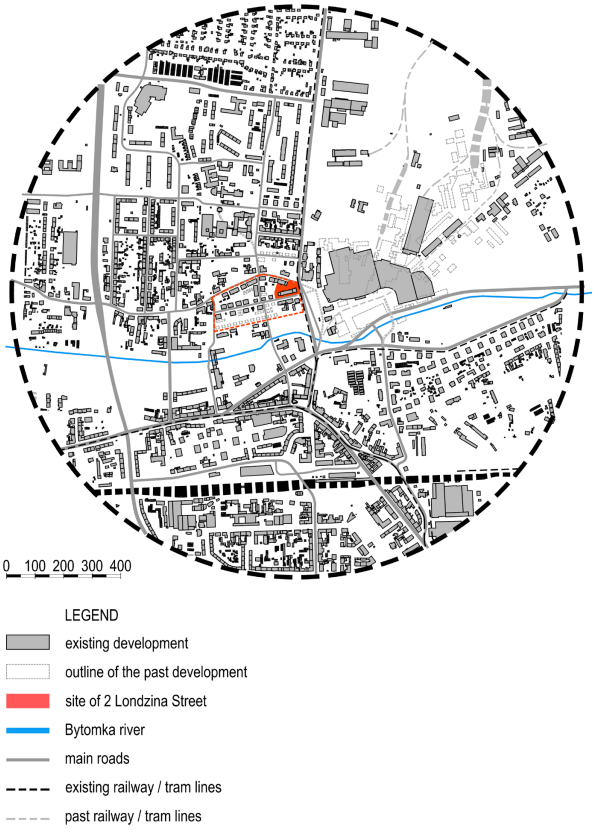
The Center for Medical Simulation of the Academy of Silesia will be in the building at 2 Londzina Street (ill. 1) in the City Center (Śródmieście) District (BIP, 2023). This building is part of a housing complex in an area bounded by the streets of Ks. Józefa Londzina, Franciszka Widery, Mieczysława Niedziałkowskiego, and Mikulczycka. The complex comprises mainly residential buildings, constructed in the late 19th and early 20th century for the needs of Donnsermark Ironworks employees (Waryś and Hodor, 2014). From the above-outlined area of homogeneously styled brick buildings, a contemporary residential building stands out on Niedziałkowskiego Street with a reinforced concrete structure and plastered façade. The group of buildings is characterised in terms of urban planning by organisation, the building lines are preserved, and the heights of the objects are matched to each other. This impression is erased on the spot by crooked sidewalks, litter and the degradation of the buildings and their surroundings. The predominant function in the area is residential, complemented by services and commerce, including a foreign language school and the Municipal Public Library. The immediate surroundings bear the historical significance of the Donnersmark Ironworks. On Theater Square, across from the building at Londzina 2, the New Theater is located in the former Ironworks casino building. Additionally, the Zabrze Philharmonic and the Professor Z. Religa Faculty of Medicine of the Academy of Silesia are housed in the Ironworks library buildings (Huta Zabrze SA, 2023; Urząd Miejski w Zabrzu, 2020). The City Hall is situated 300 metres away, housed in the former ironworks management building. Since 2003, the „Platan'' Shopping Centre has occupied a significant portion of the steelwork's area, which was expanded in 2018 to approximately 42,000 m2 (*Platan…*, 2023). The school is accessible by car via Jagiellońska Street to Londzina Street. Nearby are tram and bus stops, the train station is 700 m away, reachable on foot via Wolności Square in 10–15 minutes (ill. 2).

Academy of Silesia

The Academy of Silesia is a private university that was founded in 2003 as the University of Technology in Katowice (Wyższa Szkoła Techniczna w Katowicach), and first students enrolled in 2004. At the beginning Architecture and urban planning were taught, followed by interior design and civil engineering. Nowadays around 2500 students are enrolled in two faculties: The Faculty of Architecture, Civil Engineering and Applied Arts in Katowice and the Faculty of Medicine in Zabrze, located



Ill. 1. The building at 2 Londzina Street, October 2021. Photo J. Świerzawski



Ill. 2 Location of the workers' housing estate of former Donnersmark Ironworks in Zabrze and the surrounding area in the 15 minutes walking distance. The future Medical Simulation Center of the Academy of Silesia is marked red. Author: Justyna Kleszcz

in a revitalised building at Plac Hutniczy near Londzina 2. The Academy's need for a Medical Simulation Center is connected to requirements that medical universities in Poland must provide infrastructure for practical education, with training in natural conditions preceded by training in laboratories under simulated conditions (Dz.U. 2019 poz. 1573). Medical simulation is not a substitute for in-person contact with patients, it nonetheless has advantages in medical education for doctors, nurses, and other medical professionals. Some of its

advantages are a standardisation of teaching, patients' safety, and possibilities of teaching students a variety of scenarios including unusual ones. Simulating rooms and laboratories are often centralised within a Center for Medical Simulation (Gąsiorowski, Kuliński, Stachowiak-Andrysiak, 2016; Dabrowski, Steliga, Dabrowska, Smereka, Szarpak, 2020). According to the Minister of Health, Adam Niedzielski: „medical simulation centres are one of the investment priorities in the medical education system" (KM, 2022).

Revitalization

In recent years, the concept of revitalization has been frequently used, but it was not until its sanctioning in Polish law that it was given an appropriate definition. The key is the law of October 9, 2015, which comprehensively orders issues related to revitalization and establishes it as an important element of the local development process. Revitalization is a comprehensive process that involves bringing degraded areas out of crisis through holistic actions that integrate intervention for the local community, space, and local economy, carried out in a planned and integrated manner through revitalization programs. A revitalization program is the basic tool for conducting revitalization. It must meet the requirements related to complexity, multi-threading, and the need for involvement of residents and many other entities. The key elements of the program are the vision of the area after the revitalization process, properly selected revitalization projects, and sources of funding. A well-designed revitalization program ensures broad participation of all those who should participate in the revitalization process, including residents, individuals and institutions with real estate, entrepreneurs, as well as individuals and organisations conducting or planning to conduct economic or social activities in the revitalization area (*Czym jest rewitalizacja*, 2023).

2. METHODOLOGY

An important part of the data collection method involved analysing the data collected and generated through the building permit process initiated for the creation of the Center for Medical Simulation of the Academy of Silesia in Zabrze, Poland. The analysis of the obtained source materials served as the primary research method. The results of the comparative analysis of the facilities, conducted in accordance with the predefined set of parameters, are presented in the subsequent section of the paper.

The method employed for this research was a combination of historical and interpretive approaches (Niezabitowska, 2014, 159–160). It entailed analysing the case study by collecting and archiving historical data, both empirical and archival, and organising and evaluating them. The adopted methodology is customarily used in architectural and historical research (Niezabitowska, 2014, 187–9).

The entire study was preceded by an analysis of the latest literature in accordance with the set of keywords adopted for the topic (Groat, Wang, 2013, 141-170). It was supplemented with field research and a graphical analysis. The facility and the neighbourhood were analysed on the basis of descriptive documentation and iconographic material (design documentation, including land development plans and building permit documentation) available in literature sources, on-line or provided by documentation owners.

3. STATE AND SCOPE OF RESEARCH

Research on the issue is conducted through two approaches, primarily focusing on urban structure and architectural fabric of the estate, a part of which was the analysed facility together with the building itself. Additionally, research is conducted on the model of revitalization processes in the post-industrial areas of Upper Silesia and the specific methods employed in shaping the functionality of buildings currently used for advanced medical simulation as complex functional units. The workers' estate at Londzina Street gained little international recognition. An exception is the thorough analysis of its urban and architectural value assessed by Alessandro Ariel Terranova in his masters thesis at the University of Pisa, tutors: Marco Giorgio Bevilacqua Magdalena Zmudzinska-Nowak Assunta Pelliccio Luigi Pellizzoni Stefania Land (Terranova, 2017).

Historical and architectural analysis, conducted mainly on the basis of preserved cartographic materials (Hindenburg 3308, 1883), information brochures of the Donnersmark ironworks (later Huta Zabrze) (Chojecka et al., 2009), as well as local newspapers from the period of erection of this part of town (*Der Oberschlesische Wanderer*, 1899; 1902; 1906a; 1906b; 1907; 1907a; 1907b; 1907c; Hellmann, 1908) revealed a much more complex urban and architectural history of this part of Zabrze and the estate for the ironworks employees, within which the analysed facility functioned.

The potential and needs of medical simulation centres have been extensively described by medical professionals. However, there is limited architectural research, particularly regarding their role in university campuses (Miller, Kowalski, Arnold, Coffey-Zern, Monson, 2016; Chaudhury, Mahmood, Valente, 2009). One of the most complete studies in the field of designing this type of function is currently the work on the experimental design method in the case of functions, which has now become an integral part of the teaching process in medical schools (Dleikan, Lakissian, Hani, Shrara-Chami, 2020).

Previous research primarily focused on the adopted typologies of spatial systems. It is worth noting that there are only a few works that discuss the potential role of multifunctionality and adaptability of this type of facilities (Seropian et al., 2015; Belda, Nitsche and Brost, 2019; Pierre and Breuer, 2018), as well as numerous analyses of buildings created around the world with a detailed description of their equipment (Seropian and Lavey, 2010; Murphy, 2013). None of the sources discussed, however, address the potential role of the function and the facility on a broader scale beyond education. Similarly, none of the examples discussed referred to the establishment of medical simulation centres as part of the spatial revitalization process.

History of the building and the workers' housing complex

Mining complexes, smelters, and workers' settlements formed the Upper Silesian Industrial District (GOP) and its landscape. From the 18th century an influx of people working in the industry led to the development of workers' settlements known as „familoks". Scattered throughout the cities of Upper Silesia, they still create the architectural identity of the region (Urząd Miejski w Zabrzu, 2020). Under the influence of trends in Europe, worker's housing began to be built, taking into account not only functionality but also aesthetics and the surrounding landscape. These actions were in line with modern urban planning principles that emerged at the turn of the 19th and 20th centuries, which emphasised the importance of planning cities with consideration for both functional and aesthetic aspects (Waryś, Hodor, 2014). These estates were established near industrial plants rather than near the city centre. Employers created places of integration for their employees, which researchers now see as socially transformative but controlling environments where rural residents became workers (Piecha-van Schagen, Węcki, 2017, 71–2). These functions were complemented by a social element, exemplified by the former school building located on 2 Londzina Street (ill. 1).

The building at 2 Londzina Street, originally built as a school for boys, constitutes the eastern closure of the southern part of the residential complex built for the workers of the Donnersmarck steelworks in Zabrze at the turn of the 20th century, although the exact date of construction of this part of the complex is not clear (ill. 3). According to a study by Ewa Waryś and Katarzyna Hodor (2014, 259), the patronal estate which is the subject of the study does not constitute, as in the case of other such complexes in Upper Silesia, a compact layout, but consists essentially of two parts, lying to the west of the smelter site. In 1903 an advertisement appeared in the press for the sale of a property at Londzina Street 2 (back then called: Hochbergstrasse). The description of the property reads: "Plot of land with house, with large grocery (colonial) shop and side building. Large garden etc." (*Der Oberschlesische Wanderer,* 1903) Considering that the numbering of the buildings in the area remained unchanged, it can be assumed that this marks the lower boundary indicating the establishment of the school building. In 1910, a school building for girls was added on the northern side of the plot, at 1 Niedziałowskiego Street. The original school for boys was a two-story building with a usable attic. The brick façades, sitting on a stone plinth, are decorated with brick window lintels, sill plates on the first floor, and brick cornices. The three-story eastern wing was constructed at the end of the 19th century. The last remaining part of the complex is a single-story building located on the western section of the historical building. It was built in 1912 (BPP-I.410.63.2020 3-25200-2020, 2020). The preserved historical form and style of the building, original brick finishes, and decorations make it a valuable cultural heritage site in Zabrze. This is reflected in the opinion of the city conservator, Agnieszka Gerlic from the Zabrze City Office about the undeniable asset of the complex of school buildings (BPP-I.410.63.2020 3-25200-2020, 2020). The building at 2 Londzina Street served as an elementary school until around 2015-2016[1], and since 2020 it has been owned by the Academy of Silesia. The building at 2 Londzina Street is listed in the municipal registry of monuments

Ill. 3 The workers housing estate at Londzina Street in Zabrze, may 2023 photo: J. Świerzawski



(Order No. 1138/BZK/2013 of the President of the City of Zabrze on the establishment of the municipal registry of monuments of the City of Zabrze, amended by Order No. 1128/BPP/2016 of 06.12.2016 and Order No. 779/BPP/2018 of 03.10.2018). However, the building is not included in the register of monuments of the Silesian Voivodeship, and there is no local spatial development plan in force.

The workers' housing estate history is linked to the Donnersmarck ironworks. During the late 1800s, Zabrze's iron and steel industry experienced significant growth. Count Guido Henckel von Donnersmarck launched the Donnersmarck ironworks in 1850, bought an existing steelwork in 1873 and founded the „Donnersmarckhütte AG" (Frużynski, 2007, 25-26; Frużyński 2008, 7). Zabrze's industry formed a centre of coking coal extraction (Frużyński 2008, 13-14). However in 1945, the ironworks were devastated. The nationalisation and renovation of the plant took place in 1946 (Frużyński 2010, 67). In 1997, the ironworks were privatised, and the new owner carried out a reconstruction process. The company was divided into different companies that changed owners over time (Huta Zabrze SA, n.d. a; Malanowicz, 2008). The ironworks now „produce foundry products, machine and equipment elements, and steel structures for industry." (Huta Zabrze SA, n.d. b).

Scale of the problems in the revitalisation process of the Zabrze inner city

The systemic, economic, and technological changes following the political transition in Poland in 1989 had a significant impact on the development of industry in the country. Employment levels in the domestic steel industry reflect long-term socio-economic changes. During the socialist economy, the sector employed over 180,000 people. The restructuring programs implemented in the steel industry had a significant impact on employment reduction. Between 1989 and 2006, the sector experienced a decrease of over 100,000 employees. The most significant departures occurred during 1991–1993 and 1998-2001. Another challenging period was the crisis from 2007 to 2009, resulting in over 5,000 layoffs in ironworks. The growing competition in the steel market may continue to necessitate staff reductions (Gajdzik, 2015, 62). The change in employment structure also had an impact on Zabrze, whose economy was based on large industrial plants. The highest unemployment rate in the city was recorded in 2003, reaching nearly 24% (Urząd Miasta w Zabrzu, 2020, 21)

The City ordered an analysis of the city's revitalization situation that was developed based on an original indicator system for conducting a comprehensive revitalization process in the city beginning in 2023. The research was carried out by the WSB Academy in 2020 in the report titled „Delimitation Diagnosis for the Purpose of Determining the Degraded Area and Revitalization Area of the City of Zabrze". It indicates the challenges the city has faced and those that its leaders still need to address. Based on this document a revitalization strategy can be formulated. Positive changes include a decrease in unemployment, a decline in the number of people receiving social benefits, and a reduction in juvenile crime rates. However, the city also faces several challenges, such as demographic regression typical of post-industrial metropolitan areas, characterised by changes in age structure and migrations. There is also social stratification in neighbourhoods, leading to concentrations of individuals who face difficulties in professional and social activation. In addition a portion of housing resources in the area is poorly equipped. The analysis shows the importance of infrastructure investment in the development, aiming to improve the quality of life for individual residents, their families, and the communities affected by the crisis area. One threat to revitalization is the limited development of civilizational competencies among residents and a partial lack of engagement from partners outside the city's budget (Wrana, Raczek, Lis, n.d., 3-7).

The workers' estate at Londzina Street located in the city centre is part of the identified by the local government degraded area and the revitalization area. The area of revitalization is focused around the city centre district and partially includes neighbouring districts. Additionally, a part of the revitalization area covers the former industrial site of the Makoszowy Coal Mine, where actions will be carried out to address social issues within the revitalization zone (Resolution no. LVI/808/22,2022). The revitalization area has been characterised as territorially concentrated and degraded, yet with development potential. Its proximity to the city centre positions it as a hub for economic and cultural activities, which is crucial for improving the quality of life of its inhabitants. The crisis states identified include, among others, a partial lack of aesthetics and spatial order, technical degradation of buildings, and low levels of energy efficiency. Furthermore, there is a need for the renewal and adaptation of public spaces to accommodate individuals with disabilities or those at risk of exclusion. Additionally communication infrastructure, including parking facilities, requires renovation. The Śródmieście district has been classified as having a „Very high" (Wrana, Raczek and Lis, n.d., 19) level of social problems in the Delimitation Diagnosis, which indicates a range of environmental, technical, and spatial-functional issues. As of 2021, the district was home to 6.5% of Zabrze's population, amounting to 9,783 individuals. Spanning an area of approximately 1.4 km^2, the district boasted a population density of nearly 6,988 persons per km2 in 2021. Notably, roughly 8.95% of all individuals receiving social assistance belonged to this district, an above-average metric for Zabrze. The system of social assistance is typically invoked to support individuals experiencing poverty, unemployment, long-term illness, or disability. The district registered 252 unemployed individuals at the end of 2021, accounting for 8.5% of the total number of unemployed people in Zabrze. Among them, 142 people (56.3%) had been unemployed for a long time, while 48.4% of the total number of unemployed individuals were unskilled. On a per capita basis, the district's unemployment rate stood at 2.6 individuals,

which exceeded the city's average of 1.9. Finally, the rate of long-term unemployment in the district was 1.1 per 100 inhabitants, compared to 1.0 in the city (Wrana, Raczek, Lis, n.d., 33-34).
The Śródmieście district is highly urbanised and centrally located with access to the city's administrative centre, services, trade, public spaces, and cultural facilities such as the House of Music and Dance (designed by Julian Duchowicz and Zygmunt Majerski, 1959), the New Theater (built in 1901), the „Platan'' shopping gallery (opened in 2003), and the City Hall (located in the former Donnersmark Ironworks Management building) (Toros, 2012). The district's attractive urban layout and valuable architectural landmarks from the late 19th and early 20th centuries, the interwar period, and contemporary times are among its assets, including the art-deco-style Admiralpalast building (designed by Richard Bielenberg and Josef Moser, 1924-1928), the modernist building at 1 Maja Street currently serving as the Central Police Education Center in Zabrze (designed by Erich Böddicker, 1928-1929), the modernist Stadtsparkasse und Provinzialbank building (now the Mostostal company, designed by Dominikus Böhm, 1929), and the ZUS building (Andrzej Duda, Henryk Zubel INARKO, 1997). Unfortunately, the lack of legally regulated ownership has resulted in the deterioration of certain historical buildings, including abandoned properties, and the renovations of old structures does not always preserve regional identity. The poor technical condition of these buildings, coupled with the limited green spaces occupying approximately 8% of the district's area, hinders the development of public spaces. The Delimitation Diagnosis indicates that despite the presence of educational institutions such as schools and kindergartens in the district, accessibility to education and childcare facilities is low due to high population density. Furthermore, the results of the mandatory eighth-grade exams for students finishing primary school in schools located in the district are lower than the city average. The district's level of safety also needs improvement, as incidents such as fights, thefts, and events resulting in harm to health have been reported (Wrana, Raczek, Lis, n.d., 33-34).

5. REVITALIZATION OF 2 LONDZINA STREET IN ZABRZE

The design documentation was completed in 2021 by design Studio BB Architekci Tomasz Bradecki and involves the renovation and transformation of the historic building at Londzina 2 into the Medical Simulation Center of the Faculty of Medical Sciences named after Professor Zbigniew Religa at the Academy of Silesia. The following description was made based on the design documentation. The renovation will preserve the building's stylistic features and repair any damages according to the City Council guidelines. This includes cleaning the brick facade, replacing the roof structure while retaining its original geometry, and installing white PVC windows that mimic the original window layout. The wooden entrance doors will be preserved or recreated, and a garage door will be added on the western side for ambulance access. The bricked-up arcades will be replaced with windows (Studio BB Tomasz Bradecki Architekci, 2022, 4-5).

Medical simulation centres closely resemble actual clinical rooms, such as the Emergency Room or ICU. This level of authenticity is important for providing a realistic training environment. At the same time, simulation centres need to be versatile enough to accommodate a wide range of clinical activities within the same space. There are specialised areas not found in a hospital like control or debriefing rooms and an audio-video system recording and synchronising data from the phantoms (Gąsiorowski, Kuliński, Stachowiak-Andrysiak, 2016). However, there is no set single template for what should be included in a medical simulation centre. Instead, legal standards define the topics that are required in practical and simulation classes. This led to the development of an individualised functional program, which began in the summer of 2020. The initial drafts were developed by the Academy of Silesia administrative team and university authorities in collaboration with the architects. This stage involved addressing queries from teaching staff, analysing educational standards and other legal documents, as well as visiting other centres in Poland for reference. In subsequent stages during 2020 and 2021, the drafts were further developed and adjusted through collaboration with the academic teachers, professors in medicine and nursing, and microbiology researchers. These stages involved individual and group consultations where medical professionals, teachers and researchers provided feedback on the design. Furthermore, the investors' intention is to create a multipurpose building beyond its main function as a hub for medical education and research. The plan includes facilities such as a bistro, spaces for public events, and its proximity to the nearby Medical Faculty nearby.
The functional program developed by the Academy of Silesia team (the co-author of this article, J. Świerzawski, was involved in this teams work) in collaboration with architects focuses on providing specialised educational facilities, including typical classrooms, medical laboratories, and simulation rooms. Simulations will take place in rooms prepared for various purposes, such as a morgue with facilities, surgery simulation rooms, and obstetrics and gynaecology rooms. The building also includes offices, hotel rooms, a garage for an ambulance, technical and storage facilities, and a bistro for around 20 persons in the basement. Access to the building is available from the street and through the internal stairs and elevator. The eastern section of the building will be used for teaching and research in laboratories. (Studio BB Tomasz Bradecki Architekci, 2021, 15).

Education

Medical Simulation Centers play a key role in medical education, as they enable learning in conditions that closely resemble real-life situations. It is a requirement imposed on medical universities in Poland to provide

such facilities that allow for practical training and the development of skills among future doctors, while ensuring patient safety. At the Academy of Silesia fields of study include doctors, nurses and soon paramedics. Therefore, specialised facilities are necessary, ranging from typical classrooms for theory-based learning to medical laboratories, and simulation rooms for perfecting practical skills. The simulation rooms are designed to simulate real-life medical scenarios and are equipped with state-of-the art mannequins and phantoms representing human physiology. The building will also provide office spaces for staff and places for students to relax.

Research

The eastern section of the building has been designated as a research facility. It will operate independently and be secured with access control. The ground floor will have a microbiological laboratory with a hermetically sealed wash-fume hood, and equipped laboratories with ancillary rooms will be located on the first floor. This will allow for cutting-edge research in medical science to take place within the building. Exercise and office spaces are planned for the second floor (Studio BB Tomasz Bradecki Architekci, 2021, 15).

Local services

The building is planned to serve as a local services centre, featuring a basement-level bistro that can accommodate up to 20 people and is accessible directly from the street. The building will not only provide employment opportunities for local residents, but also serve as a gathering place for the community, as well as students and staff. Additionally, the building will offer spaces for meetings, workshops and public events that are open to individuals interested in advancing their medical training and knowledge. Examples of such activities include first aid training and open lectures.

6. CONCLUSIONS

The development of the city of Zabrze, including its architecture and urban structure, has been closely intertwined with the industrial sector that drove the economy. The mining and metallurgical industry necessitated the establishment of suitable housing, technical infrastructure and logistical support. As technological, social, and economic changes occurred, the city's architecture and urban planning also evolved. Moreover, the industry played a significant role in shaping the culture and traditions of the city, which continue to have a visible impact today.

Buildings and settlements were owned by companies, provided housing, living conditions, and necessary infrastructure and public spaces for their employees. The settlement emerged from the mid-18th century until World War II. Initially, they were perceived as foreign elements artificially imposed onto the local landscape, and their inhabitants were often migrant workers. Over time, these settlements became home to their residents, and, much like mines and ironworks, they influenced the regional landscape and the mindset of the people. In the situation where the industrial plant of the settlement no longer functions, workers' colonies have become a difficult legacy of the region. Despite recent improvements, workers' colonies in Upper Silesia continue to be associated with issues such as poverty, unemployment, and safety concerns. Without appropriate intervention, this heritage is at risk of further deteriorate (Juzwa, 2005, 74-76).

The location of the building in a degraded area in the city centre district bears potential for urban renewal and can strengthen the city centre as a hub for economic and cultural activity. A revitalization of the building will also improve the technical infrastructure of the estate, its aesthetics and spatial order. It is also an example of engagement of private partners outside of the city's budget that involves the education and development of civilizational competencies among local residents.

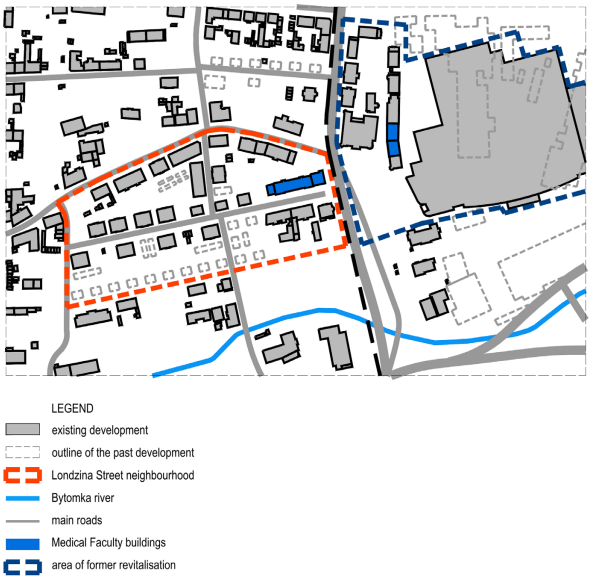
The planned renovation of the building at Londzina 2 will preserve the building's stylistic features, and maintain the genius loci of the historic workers' housing estate, creating an example of good practices in the new approach towards revitalisation as a tool for gaining new quality of post industrial space.The function of the building will relate to the historical educational function of this part of Londzina estate, although it will serve different age group than before.

Planning the function of the Medical Simulation Centre required an interdisciplinary approach in which the architects collaborated with the administration and the university's lecturers and researchers.

7. DISCUSSION - UNIVERSITIES POTENTIAL TO BE A CATALYST OF URBAN RENEWAL/REVITALIZATION

The University' has the potential to contribute to the improvement of a deteriorated area, as exemplified by the synergistic relationship between two buildings: the Faculty of Medicine and the Medical Simulation Center. These buildings are formally integrated, offering the opportunity for a symbiotic relationship between them. The newly renovated Simulation Center will not only provide medical facilities but also hotel rooms for guests and staff, while the Medical Faculty building will provide a large conference room and a cinema theatre. This allows the organisation of various events and workshops with invited guests, facilitating knowledge sharing and collaboration within and outside of academia.

The workers' estate, while located across the street of the revitalised area (ill. 4), requires revitalization itself. The revitalised area, on the other hand, boasts a range of cultural and commercial attractions, including a theatre, Philharmonic, shopping mall, restaurants, and the Medical Faculty. To function properly, this area would require a reconstruction of its pedestrian communication system connecting the housing estate and the already revitalised area. The biggest constraint on the connection between the former housing estate and the MSC and the buildings on the other side of the street is Mikulczycka Street itself. Due to the high volume of traffic and the lack of a direct, straight-line connection

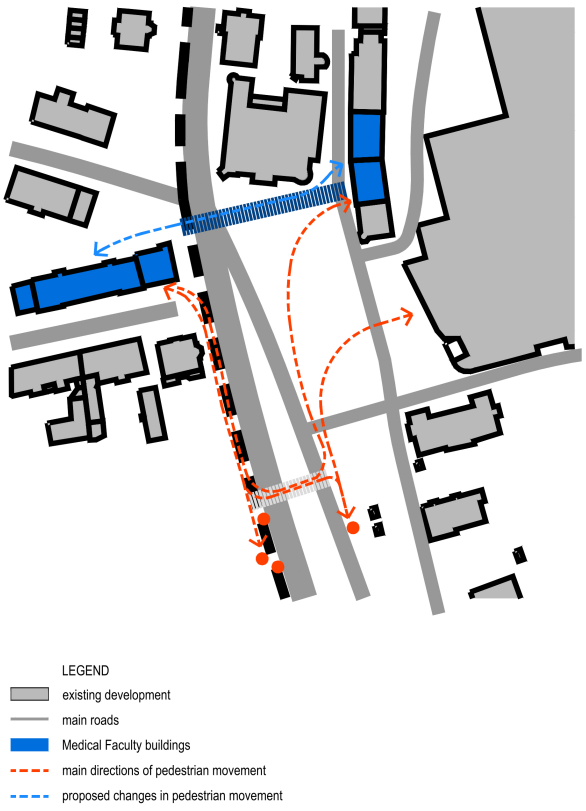


Ill. 4 A synergy of function between the faculty buildings (marked blue) could help improve conditions in the workers estate (marked with red lines). So far revitalization efforts were focused on the area surrounding the theatre (marked with blue lines). Author: Justyna Kleszcz

between the MSC and the medical faculty of the Academy of Silesia, a comfortable functioning of the research and teaching unit itself may also be hindered. At the same time, it can be assumed that such a change will occur sooner or later, forced by increasing pedestrian traffic. It can be assumed that it will also have a positive impact on the revitalization process of the remaining area of the complex (ill. 5).

The building demonstrates resilience in the face of various crises, such as pandemics, wars, or natural disasters, as it can be adapted to function as an impromptu healthcare facility. This adaptability is crucial for addressing emergency situations effectively. Additionally, the building will features its own garage for an ambulance, enabling quick and efficient transportation of patients to the nearby hospital. The simulation rooms could also be used to train medical professionals in emergency procedures, ensuring that they are prepared to handle any situation that may arise.

Both the Medical Simulation Center and the Medical Faculty building are equipped with state-of-the-art laboratories, enabling cutting-edge medical research and education. This ensures that the new Medical



Ill. 5 A reconstruction of pedestrian communication system connecting the housing estate and the already revitalised area could improve revitalization processes. Author: Justyna Kleszcz

Simulation Center is not only a place for practical training but also a hub of medical innovation and progress changing the economic nature of the estate. This can contribute to the renewal of Zabrze aiming to be a Center for Medical Science in Poland.

In conclusion, the Center for Medical Simulation building is designed to fulfil a diverse range of functions, encompassing education, research, local services, and healthcare during times of crisis. Equipped with state-of-the-art technology and equipment, the building aims to offer students an exceptional educational experience and provides researchers with necessary tools for conducting cutting-edge medical research. Additionally, the building is poised to be a valuable resource for the local community, generating employment opportunities and serving as a gathering place for residents.

PRZYPISY / ENDNOTES

[1] Based on the documents in possession of the inspection of the building installations.

BIBLIOGRAFIA / REFERENCES

[1] Belda T., Nitsche J., Brost B., 2019, *Creation of Structure–Function Relationships in the Design of a Simulation Center,* in: Brost B., Thiemann K., Belda T. and Dunn W., *Clinical Simulation. Operation, Clinical Engineering and Management* (Second Edition), Academic Press, pp. 595-611, doi.org/10.1016/B978-0-12-815657-5.00041-3.
[2] Chaudhury H., Mahmood A., Valente M., 2009, T*he effect of environmental design on reducing nursing errors and increasing efficiency in acute care settings: a review and analysis of the literature*, in: *Environment and Behavior*, vol. 41, no. 6, pp. 755-786, doi.org/10.1177/0013916508330392.
[3] Chojecka E. et al. (eds.), 2009, *Sztuka Górnego Śląska od średniowiecza do końca XX wieku*, second edition, Katowice: Muzeum Śląskie - Muzeum Rejestrowane, pp. 347–74.
[4] Dabrowski M., Steliga A., Dabrowska A., Smereka J. and Szarpak Ł., 2020, *Use Simulation to Improve the Effectiveness of PPE in COVID-19*, in: *Disaster and Emergency Medicine Journal*, vol. 5, no. 3, pp. 171-173, doi.org/10.5603/DEMJ.a2020.0028.
[5] *Der Oberschlesische Wanderer,* 1899, Jg. 72, no. 173, p. 2,
[6] *Der Oberschlesische Wanderer*, 1902, Jg. 75, no. 225, p. 2.
[7] *Der Oberschlesische Wanderer*, 1903, Jg. 76, no. 298, p. 7.
[8] *Der Oberschlesische Wanderer*, 1906, Jg. 79, no. 54, p. 6.
[9] *Der Oberschlesische Wanderer*, 1906, Jg. 79, no. 66, p. 6.
[10] *Der Oberschlesische Wanderer*, 1907, Jg. 80, no. 87, p. 6.
[11] *Der Oberschlesische Wanderer*, 1907, Jg. 80, no. 89, p. 6.

[12] *Der Oberschlesische Wanderer*, 1907, Jg. 80, no. 109, p. 10.
[13] Dleikan C.T., Lakissian Z., Hani S., Sharara-Chami R., 2020, *Designing a simulation center: an experiential guide*, in: *Journal of Facilities Management*, vol. 18 no. 5, pp. 487-504, doi.org/10.1108/JFM-02-2020-0011.
[14] Frużyński A., 2007, *Zabrze - centrum górnośląskiego przemysłu koksochemicznego. Część I do 1876 r.*, in: *Górnik Polski. Zeszyty Naukowe Muzeum Górnictwa Węglowego w Zabrzu*, no. 1, pp. 11-33.
[15] Frużyński A., 2008, *Zabrze - centrum górnośląskiego przemysłu koksochemicznego. Część II - lata 1876-1945*, in: *Górnik Polski. Zeszyty Naukowe Muzeum Górnictwa Węglowego w Zabrzu*, no. 2, pp. 7-43.
[16] Frużyński A., 2010, *Zabrze - centrum górnośląskiego przemysłu koksochemicznego. Część III (1945-2010)*, in: *Górnik Polski. Zeszyty Naukowe Muzeum Górnictwa Węglowego w Zabrzu*, no. 4, pp. 39-69.
[17] Gajdzik B., 2015, *Analiza zmian w poziomie zatrudnienia w hutnictwie w długim okresie*, in: *Organization & Management Scientific Quarterly, Organizacja i Zarządzanie*. *Kwartalnik Naukowy*, no. 2, vol. 30, pp. 49-64.
[18] Gąsiorowski Ł., Kuliński D., Stachowiak-Andrysiak M., 2016, *The development of medical simulation centres in Poland–a strong opportunity for modernization of nursing education*, in: *Pielęgniarstwo Polskie/Polish Nursing,*, vol. 4, no. 62, pp. 598–601, doi.org/10.20883/pielpol.2016.67.
[19] Gil A., Nina J., Sulimowska-Ociepka A. and Witeczek A., 2010, *Architektura i urbanistyka współczesnego przemysłu*, Gliwice: Wydział Architektury Politechnika Śląska.
[20] Groat L.,Wang D., 2013, *Architectural research methods (2nd Ed.)*, Hoboken: John Wiley & Sons Inc.
[21] Hellmann F., 1908, *Adressbuch für die Gemeinde Zabrze 1908-1909. Unter Benutzung amtlicher Quellen durch den Gemeindebeamten F. Hellmann, Zabrze. Beilage: Spezial-Adressbuch für Handel und Gewerbe von Zabrze*, Breslau.
[22] Hindenburg 3308, 1:25000, Königl. Preuss. Landes-Aufnahme 1882, Herausgegeben 1883.
[23] Juzwa N., 2005, *Transforming Landscapes: Recommendations Based on Three Industrially Disturbed Landscapes in Europe ; an Italian-Polish-German Project "Restructuring Cultural Landscapes" - REKULA*, B. Hunger (ed.), Internationale Bauausstellung Fürst-Pückler-Land, Großräschen: IBA Fürst-Pückler-Land, pp. 74–76.
[24] Miller, K., Kowalski, R., Arnold, R., Coffey-Zern, S., Monson, S., 2016, *Designing health care facilities to maximize productivity and patient outcomes*, in: *Proceedings of the International Symposium on Human Factors and Ergonomics in Health Care*, vol. 5, no. 1, pp. 38-43, doi.org/10.1177/2327857916051.
[25] Murphy, J.I., 2013, *Using plan do study act to transform a simulation center*, in: Clinical Simulation in Nursing, vol. 9, no. 7, pp. E257-e264, doi.org/10.1016/j.ecns.2012.03.002.
[26] Niezabitowska E., 2014, *Metody i techniki badawcze w architekturze*, Gliwice: Wydawnictwo Politechniki Śląskiej.
[27] Piecha-van Schagen B. and Węcki M. (eds.), 2017, *Kolonie robotnicze w Zabrzu i ich mieszkańcy*, Zabrze: Muzeum Górnictwa Węglowego w Zabrzu.
[28] Pierre M., Breuer G., 2018, *Simulation in der Medizin. Grundlegende Konzepte - Klinische Anwendung*, Berlin, Heidelberg: Springer, doi.org/10.1007/978-3-662-54566-9.
[29] Pismo Miejskiego Konserwatora Zabytków mgr inż. arch. Agnieszka Gerlic (z up. Prezydenta miasta) BPP-I.410.63.2020 3-25200-2020 z 26.08.2020.
[30] Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 26 lipca 2019 r. w sprawie standardów kształcenia przygotowującego do wykonywania zawodu lekarza, lekarza dentysty, farmaceuty, pielęgniarki, położnej, diagnosty laboratoryjnego, fizjoterapeuty i ratownika medycznego, Dz.U. 2019 poz. 1573, z 21.08.2019.
[31] Resolution no. LVI/808/22 of the council of the city of Zabrze from the 17th of October 2022 on the designation of the degraded area and the revitalisation area of the City of Zabrze, 2022.
[32] Seropian, M. and Lavey, R., 2010, *Design considerations for healthcare simulation facilities*, in: *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*, vol. 5, no. 6, pp. 338-345.
[33] Seropian M., Alinier G., Hssain I., Driggers B.J., Brost B.C., Dongilli T.A., Lauber M.C., 2015, *Building a Simulation Center: Key design strategies and considerations,* in: Palaganas J, Mancini B, Maxworthy J, Epps C, (eds.), *Defining Excellence in Simulation Programs*, Wolters Kluwer, pp. 434-452.
[34] Studio BB Tomasz Bradecki Architekci, 2021, *Budynek wydziału nauk medycznych im. Prof. Zbigniewa Religii w Zabrzu - Rewitalizacja obiektu byłej szkoły w Zabrzu ul. ks. Józefa Londzina 2 z nadaniem nowych funkcji publicznych/edukacyjnych w ramach Wyższej Szkoły Technicznej w Katowicach poprzez utworzenie nowych Laboratoriów i Centrum Symulacji Medycznej,* construction project authorized by construction permit decision no. 116/2022 issued on 01.03.2022.
[35] Waryś E., Hodor K., 2014, *The landscape value of the labour colony in Zabrze*, in: Czasopismo Techniczne, no. 6-A, pp. 258–62.
[36] *Zabrze. Raport za 2020 rok*, 2021, Zabrze: Urząd Miasta w Zabrzu,pp. 4–5.

ŹRÓDŁA INTERNETOWE/ ONLINE SOURCES

[1] *BIP - Urzędu Miejskiego w Zabrzu - Biuletyn Informacji Publicznej*, 2023, https://bip.miastozabrze.pl/engine//bip/571?o=TreeMenu&e=e|571 (accessed May 29, 2023).
[2] *Czym Jest Rewitalizacja? - Ministerstwo Funduszy i Polityki Regionalnej*,n.d., https://www.funduszeeuropejskie.gov.pl/strony/o-funduszach /rewitalizacja/czym-jest-rewitalizacja/, (accessed May 29, 2023).
[3] Góralczyk M., Panasiuk E. and. Przybyła M., 2018, *Statystyczny obraz Górnośląsko-Zagłębiowskiej Metropolii w 2017 r. / Statistical Picture of the Górnośląsko-Zagłębiowska Metropolis in 2017*, Katowice: Urząd Statystyczny w Katowicach, https://katowice.stat.gov.pl/publikacje-i-foldery/inne-opracowania/statystyczny-obraz-gornoslasko-zaglebiowskiej-metropolii-w-2017-r-,6,3.html (accessed May 29, 2023).
[4] *Huta Zabrze S.A. (Donnersmarckhütte), Zabrze - 1922 Rok, Stare Zdjęcia*, n.d., https://fotopolska.eu/1281183,foto.html?o=b679&a=1662&b=2209&c=4, (accessed May 29, 2023).
[5] Huta Zabrze SA, n.d. a, *Kalendarium « Huta Zabrze S.A.,* https://www.hutazabrze.com.pl/o-firmie/kalendarium/, (accessed May 29, 2023).
[6] Huta Zabrze SA, n.d. b, *Huta Zabrze S.A.,* https://www.hutazabrze.com.pl/ (accessed May 29, 2023).
[7] KM, October 20, 2022, *Ministerstwo Zdrowia: 78 centrów symulacji medycznych z dotacjami z funduszy europejskich*, <https://www.rynekzdrowia.pl/Aparatura-i-wyposazenie/Ministerstwo-Zdrowia-78--centrow-symulacji-medycznych-z-dotacjami-z-funduszy-europejskich,238267,5.html, (accessed May 29, 2023).
[8] Malanowicz M., 2008, *Huta Donnersmarcka w Zabrzu*, http://www.gliwiczanie.pl/Reportaz/huty/donnersmarck/donnersmarck.html, (accessed May 29, 2023).
[9] *Platan Pokazał Nowe Oblicze Po Rozbudowie*," https://zabrze.com.pl/i,platan-pokazal-nowe-oblicze-po-rozbudowie,200274,909546.html, (accessed May 29, 2023).
[10] Terranova A.A., 2017, *The revitalization of Ul. Londzina. Enhancing workers' estates as post-industrial historical heritage in Zabrze, Poland*, master thesis Architecture and building engineering, University of Pisa, pp. 1-352. https://etd.adm.unipi.it/theses/available/etd-09252017-093616/unrestricted/The_revitalization_of_ul_Londzina.pdf (accessed May 29, 2023).
[11] Urząd Miejski w Zabrzu (blog), August 15, 2020, *Adaptacja budynku biblioteki Donnersmarcków dla potrzeb Filharmonii Zabrzańskiej*," https://miastozabrze.pl/miasto/pro (accessed May 29, 2023).
[12] Urząd Miejski w Zabrzu (blog), August 16, 2020, *Statystyki*, https://miastozabrze.pl/miasto/statystyki/ (accessed May 29, 2023).
[13] Urząd Statystyczny w Katowicach, 2022, *Stan i Struktura Demograficzna Ludności oraz Liczba Budynków i Mieszkań w Województwie Śląskim – Wyniki Ostateczne NSP 2021*, https://katowice.stat.gov.pl/opracowania-biezace/opracowania-sygnalne/ludnosc/stan-i--struktura-demograficzna-ludnosci-oraz-liczba-budynkow-i-mieszkan--w-wojewodztwie-slaskim-wyniki-ostateczne-nsp-2021,5,1.html (accessed May 29, 2023).
[14] Toros J., august 20, 2012, *Urząd Miasta w Zabrzu przenosi się do Huty Donnersmarcka*, in: *Dziennik Zachodni*, https://dziennikzachodni.pl/urzad-miasta-w-zabrzu-przenosi-sie-do-huty-donnersmarcka/ar/c3-639983 (accessed May 29, 2023).
[15] Wrana K., Raczek M. and Lis M., n.d., *Diagnoza delimitacyjna na potrzeby wyznaczenia obszaru zdegradowanego i obszaru rewitalizacji miasta Zabrze"*, https://bip.miastozabrze.pl/db/8_338_251473_47034.pdf (accessed May 29, 2023).