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Original article

Shallow coal mining as a case study for derelict legacy – a proposal for a new term

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ABSTRACT

Post-industrial legacy and cultural heritage are important elements of understanding the dynamics of socio-economic and environmental changes over the last 100 years. Additionally, they have a practical dimension to strengthen the cultural potential of cities and regions and they are factors in developing tourism and local identity. However, it can be noticed that the directed development of this potential is uneven. In addition to the well-preserved elements of selected forms and branches of industry, some have been marginalized and even gained the title of derelict legacy. Based on the example of shallow hard coal mining in a large Polish city, the article proposes an original approach to question of derelict legacy. Archival, field and literature research has allowed the identification of a set of former mines and their material and immaterial legacy. Based on elements of tangible and intangible heritage, whose scant fragments still exist in geographical space, yet are not legally protected and are not displayed as tourist attractions, research defines them as derelict legacy. The surprising lack of scientific research on shallow mining in the Katowice conurbation and its legacy paradoxically coexists with a theoretical gap in research on this topic. The article therefore aims to serve as a starting point for further research on the issue of relics of the past, understood as derelict legacy.

KEY WORDS: cultural heritage, mining legacy, derelict functions, shallow coal mines

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1. Introduction

The end of the 20th century and the beginning of the 21st century are a period of increased interest in global climate and energy policy, resulting from the natural and anthropogenic phenomena observed around the world (CHODKOWSKA-MISZCZUK ET AL., 2023; ZHENG ET AL., 2023; BULLOCK ET AL., 2025). In the background of global changes, a permanent element of the discussion is the issue of the present and future being of mining and post-mining regions, which were provided with lasting conditions for development in the 19th and 20th centuries. Due to the change in the paradigm of human-environment relations, such regions must face serious economic, social, and environmental challenges and broadly understood cultural challenges. The disintegration of existing structures and systems of connections in regions that owe their development to mining and heavy industry influences these changes directly and indirectly (DULIAS, 2016). One of the key questions about the future of (post-)mining regions and cities is the issue possibilities of adapting the heritage, and indeed the legacy left behind by the aforementioned industries, for the development of new social and economic activities (RILEY & TKOCZ, 1999; HARFST & WIRTH, 2012, DRAGAN & ZDYRKO, 2023), but also cultural (WIRTH ET AL., 2012; PYTEL ET AL., 2021). Cultural heritage – both tangible and intangible in post-mining and post-industrial areas, can be an important

attribute in the transformation of the socio-economic structure of a former mining or metallurgical centre (MYGA-PIĄTEK, 2012; HARFST & WIRTH, 2012; LAMPARSKA, 2013; HARFST, 2015; KAŹMIERCZAK ET AL., 2019; HIBSZER, 2021; KRZYSZTOFIK ET AL., 2024). This applies to both spectacular examples such as Wieliczka near Kraków, Tarnowskie Góry near Katowice or Zolverein in Essen, which have been inscribed on the UNESCO World Heritage List, as well as lesser-known centres associated mainly with coal exploitation in the 19th and 20th centuries (TOST ET AL., 2021; *World Heritage List*, 2025).

However, the formation of heritage in the material and intangible dimensions is a complex and, at the same time, unconventional process. The state of preservation of heritage, its structure, and the specificity of individual components falls between almost complete preservation and the lack of preservation of any of the components relating to a given attribute of the legacy (HARVEY, 2021). In the case of (post-)mining heritage, the first state is almost wholly preserved objects, infrastructure, equipment, and devices, but also written, inventoried and permanently cultivated elements of the intangible mining heritage (traditions, rituals, holidays, art). For various reasons, there are few such cases; more frequent cases are those in which the heritage is partial, even incidental or preserved to a small extent. Post-mining legacy regarding to shallow coal mines is good example this phenomena. Concerning individual objects, it may be the case that its heritage and legacy have completely disappeared. Its traces are instead found in a larger group of former mines. In this article, such a phenomenon is called a derelict legacy. This case study of a relic legacy, of both individual objects and the entire industry, is that of shallow hard coal mining in southern Poland.

Although the article discuss a case of the large city of Sosnowiec, at least in Poland, it concerns practically all other towns where this type of economic activity operated in the past (STANKIEWICZ & SĄSIADEK, 2023). The proposed model of the relic legacy refers to three concepts: relic cultural landscape (PRINCE, 1969; TAYLOR & LENNON, 2011), legacy and cultural heritage (MYGA-PIĄTEK, 2012; STORM, 2014) and relic areas (BELL, 2004; KRZYSZTOFIK ET AL., 2013). The proposed model generalizes the view of the quite common cases of considerations on the specific state and spatial distribution of cultural heritage components in the post-mining region. This fact is of significant importance to the problem mining legacy being discussed. It also contributes to further considerations, especially concerning identity (BERNARDO & PALMA-OLIVEIRO, 2012; PRESCOTT & SODERLAND, 2015; MIHAYLOV ET AL., 2019) and industrial archaeology (NEVERSON & PALMER, 2012; *The Oxford Handbook*, 2022).

In summary, the aim of this article is a holistic approach to the issue of shallow hard coal mining in a large post-mining town as a reference point for research on local and regional heritage. In this case, however, the heritage left behind is very sparse, unimpressive, and insignificant on the map of tourist attractions. which, Since there are more such cases and they concern more than just the mining industry, the article also aims to document, through this particular example, a more general phenomenon, for which the term "derelict legacy" has been proposed. The research and the discuss were based on the case of the city of Sosnowiec, located in the Upper Silesian-Basin Metropolis (GZM) in southern Poland.

2. Theoretical background

The theoretical basis of this research is an attempt to jointly approach the issue of relic cultural landscape (material and immaterial) and, legacy and cultural heritage (cf. ROCHE ET AL., 2021). Both issues are viewed from the perspective of a very small number of studied elements (existing remnants of shallow coal mines) and the fact that the economic activity (coal mining) that brought them into being has disappeared.

Research on the cultural landscape, heritage of (post-)industrial regions, and functionally derelict areas has been addressed in numerous scientific publications. An analysis of the Scopus database indicates several hundred articles per year. Among the existing scientific studies, those that focus on cultural landscapes of (post-)industrial regions, cultural landscapes of highly urbanized areas, the legacy of hard coal mining and relic objects and places that are elements of cultural heritage are significant (KIVELL ET AL., 1998; BELL, 2004; FRANZ ET AL., 2006; WALKER ET AL., 2020). Concerning derelict areas, studies that focus on the issue of variability of socio-economic functions and their consequences, as well as methods and forms of development of such areas, are of key importance (SELLERS ET AL., 2006; KRZYSZTOFIK ET AL., 2013, 2020; FRANTÁL ET AL., 2024; HE ET AL., 2024). It should also be noted that all these issues are considered from the point of view of many scientific disciplines. In the case of intangible heritage, issues related to works related

to art and culture are primarily included, as well as selected issues related to science, education, knowledge and tourism (BYRNE, 2008; LENZERINI, 2011; VON ROHRSCHEIDT, 2016; EICHLER, 2021). The tangible heritage of mining activities is primarily concerned with immovable and movable infrastructure, mainly located in the above-ground part of former mines but often also those preserved underground (GRAHAM ET AL., 2000; LAMPARSKA, 2013; GONZÁLEZ, 2015; BOSÁK ET AL., 2018; JELEN, 2018; NARAMSKI ET AL., 2022). A special case is the relic mining landscape surrounded by an agricultural landscape. In the 21st century, the relic mining landscape has another meaning in many countries. It is about the commonly adopted actions for climate protection, decarbonization and, consequently, restrictions on the role of energy sources such as hard coal. This challenge in Poland concerns the set deadlines for closing almost all hard coal mines (DROBNIAK, 2022; SOKOŁOWSKI ET AL., 2021). However, in the space of many cities, the liquidation of hard coal mining became a fact many years ago – in the 20th century. The areas of liquidated mines and the associated infrastructure have become part of the urban landscape of small and large cities. Some have found new functions, while others are still functionally derelict areas. Some are experiencing vegetation succession, creating new complex landscape elements in a wider anthropogenic range (KRZYSZTOFIK ET AL., 2013; KOJ, 2021; PYTEL ET AL., 2021).

The issues analyzed are also explored within the field of industrial archaeology. With respect to the topic of industrial archaeology and the typology of research areas proposed therein, this article refers to the type: extractive sites and objects (cf. NEVERSON & PALMER, 2012; *The Oxford Handbook*..., 2022).

Building on the concept of absent heritage (cf. LECAIN, 2014), the concept proposed in the article attempts to provide a broader perspective on objects and history of mining sites. Specifically, the inventoried sites of former hard coal mining are presented within the broader context of their geographical location. However, due to the sheer number of these sites and objects and the purpose of the article, a thorough characterization was not undertaken. It also appears that research directly related to objects of the economic past still leaves some gaps that require further study. This is evidenced by the interesting study by VENOVCEVS (2023), in which he proposes the concept of "industrial vestiges." For the reasons mentioned above, this element was also not examined in this article, although considering the functional changes in the preserved buildings, it refers to this research proposal to some extent.

Finally, it's worth mentioning the research on shallow mining in Sosnowiec. In this case, the scientific achievements are very limited. A side from a dictionary-like but valuable description of most of the sites by JAROS (1984) and economic studies of coal mining in shallow mines published by RIPPEL (1960), only fragmentary descriptions of individual sites exist. Individual pieces of information were also published in the daily press and on websites by regionalists.

3. Research methods

The issue of research into mining activities in metropolitan areas is complex. However, this article focuses primarily on findings regarding the network of former mining facilities and their reference to the present day. For this purpose, several maps were used – historical and contemporary, geological, topographic and general geographic. These were maps in both paper and digital versions. These maps are part of the author's collection (topographic and cartographic maps), as well as the State Mining Office in Katowice (geological maps) and the Museum in Sosnowiec (various types of maps). For the article, materials in archival collections, available through the search mode in archives, collections, and the Museum in Sosnowiec, were reviewed.

Reference to the contemporary location of the former mines was, in turn, the map of the direction of the spatial development of the city of Sosnowiec which was made available by GZM (*Zbiorcze zestawienie kierunków*...), the Database of topographic objects (BDOT10k) made available on geoportal.gov.pl, as well as field studies at the location of each of the former mines. These materials allowed for the inventory and geolocation of former shallow mines in Sosnowiec. The author's findings are important because knowledge of the detailed location of over half of these facilities has not been published in scientific publications. The findings concerned the broadly understood districts of today's city, including at least several incorrectly location. No publications mentioned two former mines in any context.

The article uses two basic research groups. The first was based on processing knowledge contained in existing cartographic materials and the other contained descriptive materials into the substantive content of maps which presented the issues discussed

in the article. An essential element of the research was the field method. After the initial verification of the nature of the development at the site of the former mines, it was necessary to conduct a field inventory to determine whether any existing buildings and infrastructure could be related to former hard coal mining. This research stage was also preceded by an analysis using LIDAR, which was particularly useful at locating the remains of facilities in forested and difficult-to-access areas. The methods used allowed to determine the actual resources of post-mining facilities and infrastructure as a subject of discussion about the need to protect and popularize knowledge about this branch of the mining industry.

4. Results

4.1. Mining activities in the city of Sosnowiec

The first hard coal mines in modern Sosnowiec were established at the end of the 18th century. They were small facilities and were characterized by an opencast form of exploitation. Mining from this period is also known from Ostrowy Górnicze (then Niemce), Bobrek, Sielec and Śródmieście (KRZYSZTOFIK, 2017). At the beginning of the 19th century, the number of mines and open pits increased in connection with the development of zinc smelting, for which hard coal was the basic energy source. On the one hand, small plants were established; on the other hand, medium and large mines were established during those times (JAROS, 1984). At the turn of the 19th and 20th centuries, corporate hard coal mining dominated this branch of the mining industry. However, large mines focused on the exploitation of deeper coal deposits. Hence, during this period, leasing mining rights became widespread on a large scale but focused on shallow deposits. This development of hard coal mining would last in the city until the 1930s. The interwar period and the economic difficulties that existed at that time also caused a rapid increase in the illegal exploitation of coal as part of the so-called bootleg mining procedure (ZIEMBA, 1967).

During World War II, mines in Sosnowiec continued to operate, and actions were even taken to reopen previously flooded facilities. After World War II, mining was nationalized. A model of mine management was adopted as part of the so-called Mining Unions. The size structure of mines also changed significantly (ZIÓŁKOWSKI, 1960). From that time on, almost exclusively large mines operated. Small facilities – downslopes, open pits or shafts were either branch facilities of the mine from neighbouring town of Jaworzno or a transitional, ephemeral form on the way to integrating them with the expanded large mines in today's Zagórze district. In the 1970s and 1980s, socialist mining experienced its renaissance. All mines were expanded and modernized, and new shafts and other mining infrastructure were built (RECHOWICZ, 1977). Individual mines also invested in developing other social, municipal, and cultural infrastructure.

The political, economic and social transformations at the turn of the 1980s and 1990s were a turning point in the development of hard coal mining in Sosnowiec (TKOCZ, 2001; KRZYSZTOFIK & KANTOR-PIETRAGA, 2025). In the 1990s, mining facilities gradually liquidated, and the last of the existing mines closed in 2015. Although most of the mining infrastructure was demolished, the post-mining areas became one of the key elements in the city's industrialization policy.

4.2. Shallow mining in the city of Sosnowiec

In the context of the development of mining in general in the city and region, shallow mining of hard coal was a permanent feature. Its beginnings in the region and city date back to the end of the 18th century. Initially, it was a natural element of mining activity and was associated with coal outcrops and very shallow deposits. Hence, in the first half of the 19th century, opencast mining was a popular form of exploitation. Its limitations caused the development of deep mining, but from today's perspective, the mines at that time were also shallow. This was, of course, due to technical possibilities, mainly in ventilation and drainage. With the growing role of deep mining, shallow mining seemed to be a foregone conclusion.

Nevertheless, it should be noted that at the turn of the 19th and 20th centuries, the number of small shallow mines began to increase (JAROS, 1984). Namely, large companies reaching for deep-lying yet rich deposits were not interested in shallow ones. Economically, it was more efficient to penetrate to deeper deposits. The economic profitability of deeper deposits for large companies, often employing several thousand people, was so decisive that they gave up exploiting shallow deposits (JAROS, 1984). A more optimal solution for large companies was the paid lease of shallow deposits to smaller companies.

As a rule, these were companies employing several people. Their existence depended on the domestic and global demand for coal and local factors – deposit richness, employee salaries, lease fees etc. In the interwar period, illegal (bootleg) mining also appeared as a third form of exploitation. The economic crisis undoubtedly supported its dynamic development with all of its consequences. The attitude of the authorities and large mining companies that owned the grants within which this procedure took place was ambivalent. On the one hand, it was fought against; on the other, it was partly tolerated as a safety valve against potential mass protests. A sense of guilt for the lack of opportunities for a decent life for thousands of people who wanted to take up legal work must also have played a role (ZIEMBA, 1967). As mentioned, World War II, especially the socialist period, completed the disintegration of shallow mining in both the mining and economic-organizational dimensions. Fig. 1 presents the main areas of shallow hard coal mining in the area of the city of Sosnowiec.

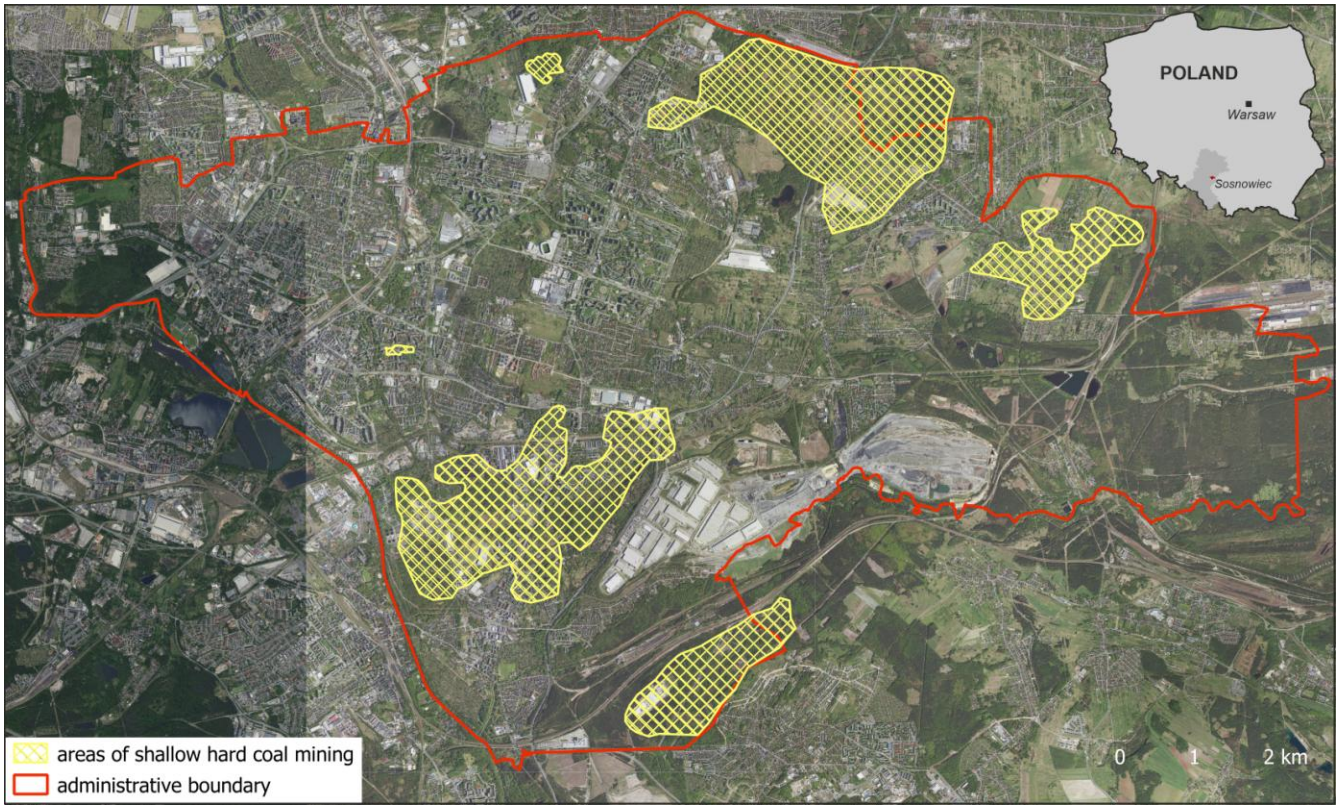

Fig. 1. The most important areas of shallow hard coal mining in city of Sosnowiec, 19th-20th (Source: Author's own elaboration on the base orthophotomap)

4.3. State of preservation of the legacy of shallow hard coal mining

As shown in Table 1, out of 55 former shallow hard coal mines, only two of them have preserved post-mining facilities. Assuming an average rate of 5–6 mining facilities per coal mine, this constitutes approximately 1% of the total. In three cases, there are tiny ruins, mainly of single walls; more often – in a dozen or so cases – only a characteristic terrain relief indicating the location of shaft heads or other facilities and mining infrastructure. At the lid of the Dorota mine shaft, there is also a monument commemorating later tragic events from the time of the Nazi occupation. In the remaining cases, there are no traces of former shallow hard coal mines in the area of the studied city. Traces of former mining activities are relatively straight forward in undeveloped, permeable areas. These are mainly forest areas, meadows, and green areas. There is almost no trace of any mining in residential and industrial areas. Many old shafts and even entire mining facilities are hidden by the modern transport and logistics infrastructure and its surroundings.

Table 1. List of shallow coal mines in the area of city of Sosnowiec (Source: author's own elaboration)

No.	Name of coal mine	Period	Quarter	Mining buildings	Type of land use
1	Alwina !	B, C, D	Niwka	B	O
2	Alwina II	C,D	Niwka	B	I
3	Alwina III	D	Dańdówka	B	I
4	Andrzej	A	Dańdówka	B	G
5	Andrzej I	B, C	Dańdówka	B	G
6	Barbara/Upadowa	C	Klimontów	A	I
7	Bobrek	A	Niwka	A	F
8	Dębowa Góra	C	Dębowa G.	B	G
9	Dorota	D	Ostrowy G.	B	F
10	Edward	B	Dańdówka	B	R
11	Feliks	B	Centrum	B	G
12	Feliks	A	Ostrowy G.	B	G
13	Flötz Rudolf (Orion)	B,C	Niwka	B	R,G
14	Fryderyk	A,B	Dębowa G.	B	G
15	Fryderyka	B,C,D	Dębowa G.	B	G
16	Graf Andreas	A,B	Dębowa G.	B	O
17	Halina	C,D	Niwka	B	R
18	Helena	C,D	Dańdówka	B	R, G
19	Henryk	D	Ostrowy G.	B	R, G
20	Irena	C,D	Dańdówka	B	R
21	Jacek	A,B	Niwka	B	G
22	Jadwiga	C	Dańdówka	B	F
23	Jadwiga II	C,D	Dańdówka	B	I
24	Jakub	C	Milowice	B	I
25	Janina	C,D	Zagórze	B	F
26	Jarosław	D	Dębowa G.	B	F
27	Joanna (Telmut)	D	Cieśle	B	F
28	Ryszard	C,D	Dańdówka	B	G
29	Józef	A	Niwka	B	F
30	Józef II		Zagórze	B	F
31	Karol (Carl)	B	Niwka	B	R
32	Karol	C,D	Zagórze	B	F
33	Komuna Paryska (Upadowa Jan I, Upadowa Jan II, Upadowa Marian V – Zachód, Centralny, Wschód, Upadowa Zbyszek"; „Odkrywka Jęzor II; Szyb Wschodni)	E	Jęzor	B	F, T
34	Kuźnica-Zienciów	C,D	Sielec	B	R
35	Leszek	D	Cieśle	B	F
36	Lilit	C,D	Ostrowy G.	B	R
37	Maurycy	A	Niwka	B	G
38	Mauritius	B	Niwka	B	G
39	Matylda	B,C	Zagórze	B	G
40	Nadzieja Ludwika	A,B	Sielec	B	R
41	Odkrywka Rudolf	B,C	Niwka	B	O
42	Ostra Górka	A,B	Ostra Górka	B	R
43	Papiermühle	A	Dębowa G.	B	G
44	Pogonia	A,B	Centrum	B	T
45	Porąbka	C	Zagórze	B	F
46	Sariusz	B,C	Niwka	B	G
47	Staszic	C,D	Zagórze	B	F
48	Szarlota (Charlotte)	A,B	Ostra Górka	B	I
49	Uexcull (Ikskul)	A	Zagórze	B	S
50	Upadowe Mortimer II, III, IV	E	Zagórze	B	F
51	Walenty	B	Zagórze	B	F
52	Wańczyków	B,C,D	Zagórze	B	F
53	Wilhelm II	B	Zagórze	B	G
54	Wilhelmina II	C,D	Dębowa G.	B	G
55	Zagórze	A,B	Zagórze	B	F

Explanations: Period: c. 1800-1850 – A, 1851-1900 – B, 1901-1918 – C, 1919 – 1945 – D, 1946 – 2016 – E. Mining buildings: A – yes, single building, B – no buildings. Land use: industrial areas – I, residential areas – R, service functions – S, transport and logistics – T, forests – F, meadows or green areas – G, other type of development – O

The analyzed city had two cases of preserving old shallow mining facilities. These were:

1. Adaptation of the water shaft of the "Jacek" mine into a residential building (Niwka-Bobrek) (Fig. 2),
2. Adaptation of the former downward mine "Barbara"/"Upadowa"("Upadowa Niwecka") to the needs of a large mine ("Klimontów"), and currently for running a small company,

The water shaft building of the "Jacek" mine was built in the 19th century. The inaccessible "Cecylia" water adit, which drained the first shallow mines in this area, begins underground. Today, the building serves as a residential building. It was rebuilt and modernized in various periods (Fig. 2).

The administrative building of "Barbara"/ "Upadowa" (Fig. 3) originally belonged to the shallow mine "Barbara" in the Dańdówka and Klimontów quarters. This object also operated as an independent "Upadowa" mine. Later, the facility was taken over by the large mine "Klimontów." The "Klimontów" mine used it until its liquidation in the 1990s. The utility of "Upadowa Niwecka" allowed it to survive the periods when similar facilities were liquidated. It should be noted, however, that only one building remains of this facility. In the past, as shown in Figure 4, many more of them existed. The building is an administrative office for the local scrapyard.

Fig. 2. Former water-shift at "Jacek" mine, now residential house (Sosnowiec-Bobrek) (Source: author)

Fig. 3. Administrative building and area of the former "Barbara" shallow coal mine in Sosnowiec (Source: author)

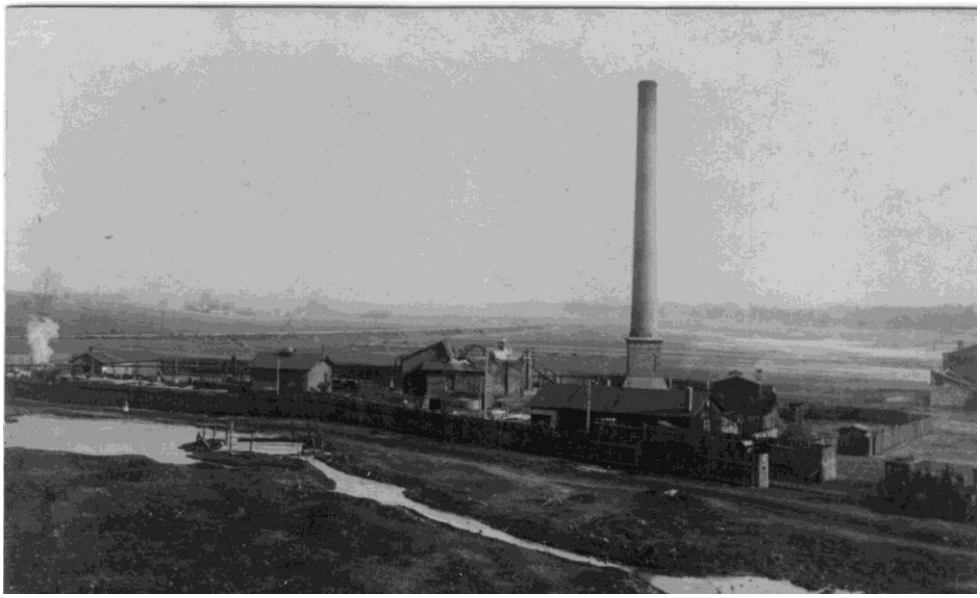

Fig. 4. Shallow coal mine "Barbara"/"Upadowa". Original photo from the album Kaiserliche-Deutsche Polizei Direktion für das Industrie - Gebiet des Kreises Bendzin in Sosnowice. Rusische Polen. (ca. 1916, Atelier Bracia Altman). Contemporary photographs showing a view of the preserved administrative building (on the left in the old photo) and the unpreserved buildings in the boiler room area (Source: author'sown collection)

A tragic place on the map of the former shallow mining is the area of the former "Dorota" mine. Near the visible ruins of one of the buildings, a commemorative monument was placed (Fig. 5), dedicated to the family of the pre-war director of the mine who was thrown into the shaft together with his family by a (probably communist) gang in 1945.

Fig. 5. Monument on the site of the former "Dorota" mine (Source: author's own)

The symbolic legacy of shallow mining that these objects represent also applies to its intangible part. The conducted research (Museum in Sosnowiec, Municipal Museum "Sztygarka" in Dąbrowa Górnicza, analysis of websites; "Foto-Polska," "National Digital Archive," State Archive - "Search in Archives," "41-200 Archive") shows that less than nine photographs of shallow, small mines ("Barbara"/"Upadowa", "Dorota", "Halina") during their operation and one legend ("Maurycy" mine) have survived. There are probably still some photographs in private collections that have not yet been made public digitally or been shown at public exhibitions. However, geological and mining maps have been preserved in relatively good condition. Geological and mining maps, in turn, are preserved in relatively good condition and in considerable numbers. The maps are held in the collections of the Voivodeship Mining Office in Katowice, the State Mining Institute – State Research Institute in Warsaw/Sosnowiec, the Municipal Museum "Sztygarka" in Dąbrowa Górnicza, and other museums and archives. In addition, the post-mining legacy concerning historical small mines was mentioned in the local and regional press of the time. They appeared mainly in connection with disasters, crimes, social events or moral issues. This element of the intangible legacy is the best preserved. It should be mentioned, however, that there are no articles about most mines, and the articles concern a small group of mines, mainly from the interwar period.

4.4. The mechanism of the creation of a post-mining legacy with the example of Sosnowiec

In the case of (post-)mining heritage, in some cities, almost entirely preserved objects, infrastructure, equipment, and devices are recorded, inventoried, and permanently cultivated as elements of material culture – as in the case of Czeladź near of Sosnowiec. In such a case, the legacy usually takes the form of heritage. It is rare for preserved material and intangible assets to be objects unconsciously protected in the social dimension. However, there are few such cases of former mining activities for a variety of reasons. More frequent cases are when the legacy is partial or has disappeared about individual objects. This was the case with shallow coal mining in Sosnowiec. While we have relatively good knowledge of the underground infrastructure of these mines and partial knowledge of their coal production, we don't know much about their appearance, personnel and crews, whole systems of connections, and most facts at the relationships: mine – social environment. Moreover, what has already been indicated about material legacy is that there are only individual objects of 2 mines. There were 55 mines of this type, and the number of above-ground buildings can be estimated at 250–300 (author's research based on the recognition of more than 600 historical maps and plans).

So what is the reason for the described condition? There are two primary factors here – technological-geological and urban-architectural.

The first factor is shallow mining, which does not require advanced and extensive mining infrastructure (JAROS, 1984). Available deposits could be exploited with relatively minimal investment costs. Therefore, the size of mining buildings, including administrative buildings, the height of shaft sinkings, and the power of equipment was limited. Whenever possible, wood was used as a building material, not brick. Large and deep mines required much more significant investment outlays, and more miners worked there. The deeper they went, the more complex the mining facilities and infrastructure became. All this meant that buildings were primarily made of brick. To sum up – the deeper the deposit was, the greater the chance of building brick mining buildings with

large and numerous facilities, which, in the event of liquidation of the facility, could be used for other economic or social purposes.

The second mechanism is partly related to the first one. The larger the mine, the greater the chances that mining buildings – at least some of them – will be distinguished by interesting architecture, and an accumulation of decorative details. This was also the case in this region, where the following styles were particularly noticeable: tower-shaped shaft buildings and *malakow*-type towers.

Without a doubt, the finesse of the architecture of buildings in a society aware of cultural heritage favours their protection and increases social resistance to their possible disintegration. Shallow, small mines did not have these features. The development was simple and most often primitive, considering perception and aesthetics. Many buildings were made of wood. This did not facilitate the implementation of post-mining buildings for new functions. While it was easier to preserve the sophisticated and durable (brick) buildings of former large mines during urban development, the simple and mostly wooden architecture of buildings in small mines was doomed to disintegration. This also explains why the only buildings of this type are in peripheral places, far from expansive residential or industrial development zones.

Regardless of the new function type, interesting architectural objects of large mines are also easier to implement as a local or regional tourist value (Ćopić et al., 2014; Berger & Pickering, 2018). In this case, the unsophisticated architecture of shallow mine buildings did not favour their survival. Today, they are only an element of local tourist trips, and only city residents are interested. Their interest stems from a sense of local identity. For people from outside the city, apart from a few enthusiasts, this is not a sufficient argument for a tourist visit.

4.5. Towards a new approach

Concerning the specificity of the issues presented in this article concerning shallow hard coal mining, and based on the subject of research in geography, history, architecture and cultural sciences, the aforementioned concepts (mining legacy/heritage, cultural relic landscape, industrial archaeology and economically/functionally derelict areas) have specific deficits. Is it possible to encompass three legally unprotected over 120-year-old former mining facilities of small coal mines and their surroundings with one term? It should be noted that these buildings are three of several hundred other buildings which no longer exist.

Since none of the existing, previously mentioned contextual concepts fully explains the essence of the case of remnants of shallow hard coal mining, the article proposes a new one – derelict legacy. It may have a universal cognitive scope because cases such as the one indicated in the article also occur in other countries and regions, may concern other economic activities, and may also be characterized by an unregulated legal status in the context of the attribute of cultural heritage.

Derelict legacy – refers to the few remaining material and intangible objects that are not legally protected and whose existence refers to a no longer functioning economic sector or industry. These objects currently constitute a small part of their former potential in a specific area that already performs other economic and social functions.

More specifically, this model indicates a state close to the complete disappearance of material objects, devices or accompanying infrastructure (broadly understood material legacy) of the former industry and complete material disintegration of the vast majority of individual plants. In the case of intangible industrial heritage, however, complete disintegration is incidental, sporadic, and extremely rare. This is precisely the case with shallow hard coal mining in Sosnowiec, but also in neighboring areas (preliminarily identified through research).

5. Discussion

Research on the case of Sosnowiec indicates an almost complete disappearance of the legacy of mining activities conducted in small and shallow hard coal mines. Therefore, it is worth asking a key question at the beginning of the discussion: did the facilities associated with the former shallow mining have any chance of surviving today? Yes, if they met several important criteria: they were adopted in the post-war period by other large mines, were given new functions after the socio-economic transformation in 1989 or earlier and were located relatively close to the developed areas. It was also important to confront them with the mechanism of creating the post-mining legacy discussed in the previous section.

It should be emphasized, however, that the indicated criteria did not guarantee but only strengthened the chance of survival of the above-

ground mining facilities and infrastructure. It should also be emphasized that most large mines have been partially or fully disintegrated (STANKIEWICZ & SĄSIADEK, 2023).

Against the background of the factors listed so far that create legacy and heritage in this region, there is one more that has not been mentioned. Namely, it is the so-called 'surplus heritage' (DRAGAN ET AL., 2020). It has a double dimension. Firstly, it concerns the same group of monuments (mainly material), and secondly, the accumulation of many historical objects representing a different branch of industry or economy. Thus, in the vicinity of Katowice and Sosnowiec, hard coal mines, steelworks, zinc and lead smelters, former power plants, cement plants and former plants of other industries have become evidence of the historic past (CZERWIŃSKA, 2018; STANKIEWICZ & SĄSIADEK, 2023).

Additionally, the unique heritage related to the beginnings of railways in Europe and sand railways (KRZYSZTOFIK ET AL., 2022) is, in a way, competitive. In the 1980s, at the end of the development of industrialization, there were hundreds of objects in total. All these objects – already redundant – were confronted with the economic crisis of the 1990s, the lack of funds for social policies, revitalization and general urban shrinkage. In these conditions, it was difficult for many historic objects to survive. DRAGAN ET AL. (2020) point to other reasons – "unwanted" (political difficult, social taboo etc.) history or the so-called development policy of local governments – "here and just now" or better known as "grant coalition". Therefore, post-mining identity has a significant element of competition in the historical perception of this region (cf. STRANGLEMAN, 2001; MURZYN-KUPISZ & GWOSDZ, 2011; MIHAYLOV ET AL., 2019).

However, many objects related to small mines were demolished during the socialist period. Here, the dilemma and discussion were related to another challenge – modernizing and developing the region or remaining in the status quo. The second model was implemented without fail, and the socialist authorities often treated "what is old" as "capitalist," and therefore bad, incompatible with the political system of the time. Furthermore, the old, often decapitalized buildings were not as modern as the authorities expected.

As mentioned, these facilities also have no chance of becoming supra-local tourist attractions (cf. JONES & MUNDAY, 2001). Although in at least one case, they could. As indicated by PANASIUK (2020), LAMPARSKA (2019), BAZARGANI & KILIC (2021), the tourism product has its own rules, and a large number of facilities with better aesthetic values and adaptability which push the less interesting ones into oblivion in terms of tourism.

It is also worth referring to the concept of a derelict legacy. The first problem is whether insignificant remnants of former mining activity can be treated as heritage or legacy. In quantitative terms, several of the several hundred old buildings that still exist and the ruined basements of several others may raise doubts as to whether they constitute heritage. In the case of intangible legacy, these are instead values of hundredths or thousandths of a fraction. However, it cannot be stated, as in the case of many individual archaeological artifacts, that we are not dealing with a legacy at all. An attempt to connect these two problematic issues is precisely the concept of a derelict legacy. Functional derelictness has a double meaning here. The existing facilities lost their mining functions, and the entire hard coal mining industry definitively ceased to exist in this city 10 years ago. It is also necessary to refer to cultural relict and functional derelict. Although the first one as a synonym of the phrase – faint traces of the former economic landscape – might seem more appropriate because this activity is no longer continued – neither in these facilities nor even in the entire city, the term – derelict seems more relevant. It is also significant that the incidentally preserved ruins of walls, highlighted in the physiognomy of the ground of the shafts and other terrain denivelations, are located precisely in areas that are functionally derelict with respect to the original activity – mainly forests (succession of vegetation) and other permeable, poorly developed areas.

The doubts raised here, especially those concerning the proposed new concept of "derelict legacy," require further scientific criticism and development. Further empirical research in other cities, not always associated with hard coal mining, will certainly be helpful. Ultimately, a larger meta-analysis would be valuable. Furthermore, qualitative research that also takes into account the opinions of stakeholders associated with industrial heritage, as well as residents, would be interesting.

6. Conclusions

The article proposes the concept of derelict legacy as a model explaining the existence of material and immaterial traces of former economic and social

activities in the conditions of contemporary changes in their functions. Based on the functional, spatial and cultural background, this model specifies the relationality of the elements of the legacy concerning a given activity to its contemporary state, location in geographical space and social perception. The proposed model fills a specific gap visible in the study of heritage and cultural legacy, especially about economic activities that have disappeared, which once constituted an important local elements and, in some cases were genetic factors. This model may be beneficial in the context of the above-mentioned phenomena – competition for attention, competition of places, relativization of historic and tourist values, and local and regional identity.

On the one hand, the accelerated development of civilization and technology in the 20th and 21st centuries provide big opportunities for cultivating material and intangible legacy (among others through availability, universality, search for identity, increased wealth). On the other hand, it is a significant threat to it (i.e.: new visions of development, marginalization of certain fields, and distraction). These threats are also related to the "excess" of places important for the economic and social development of a given region, and the often-resulting marginalization of those that are of secondary importance, are difficult to access, or, particularly importantly, do not have interesting aesthetic values. Such an example is the titular shallow coal mining in Sosnowiec and other (post-)mining towns in southern Poland.

Founding

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