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**Medieval and post-medieval archaeological heritage in Polish caves
and the problems of its protection**

Abstract. This paper discusses cave use in Poland during medieval and post-medieval periods, focussing on the Cracow Upland in particular. The purpose is to try to provide a short overview of the medieval and post-medieval material culture in Polish caves through the lens of functions played by caves in historical periods (domestic occupation, workshop usage, storage, hideaways in times of unrest, use of caves for funeral purposes), and to indicate present-day threats to the archaeological records in our caves, relating mostly to the unprofessional speleological activities.

Keywords: cave archaeology, storage, refugial place, speleology, Cracow Upland.

Introduction

A common public perception of caves is one in which these dark and gloomy natural features are closely related to past human activities. According to popular beliefs of today's Europeans, caves are inseparable from the early stages of human evolution. Therefore, the shared imagination colonizes these underground spaces with mammoth or cave bear hunters, usually warm by fire or indulgent in mysterious ritual practices. In a nutshell: for an average recipient of popular science, there is no room in caves for a human occupation in periods later than the Paleolithic. This is simply far off the mark, bearing in mind that both caves and smaller cavities, referred to as rockshelters in geological and archaeological literature, frequently hold numerous assemblages dated to younger periods, including historical times. It is not different in the case of Polish cave sites.

Currently in Poland, thanks to both excavations and accidental discoveries, among ca. 180 caves and rockshelters explored for scientific reasons, around 150 can be positively verified in terms of their archaeological content. Almost all of these sites are located in the Cracow Upland (southern Poland), a karstic-rich

region built mostly on Upper Jurassic limestone, where more than 1800 caves and rockshelters are already documented (Kowalski 1951, p. 6; Gradziński, Szelerewicz 2004, p. 75, Fig. 2). The archaeological prospection of these caves started in the southern part of the highland, in the Ojców area, as early as the 1870s. It is difficult, clearly, to recognize these early excavation works as correct in terms of present-day methodology, but denying their significant contribution to archaeological science is impossible. This earliest stage of archaeological recognition of caves, lasting until the early 1890s, brought to light a significant number of extraordinarily important finds. Some of the assemblages in question, like bone and antler objects from Mamutowa Cave or Maszycka Cave (Zawisza 1874; 1876; 1882; Ossowski 1884), soon became iconic for the Polish Paleolithic, and this resulted in recognition of the Cracow Upland as a region of major importance for Polish cave archaeology. Currently, after decades of archaeological prospection, this still holds true (for the history of cave research – see Cyrek 2007; Wojenka 2012a).

Compared to the caves in the Cracow Upland, the examination of sites elsewhere in Poland is currently weak. Only a few cave sites were detected and examined there, but only four of them deserve special attention due to the archaeological finds: Obłazowa Cave in the Pieniny Mountains (Valde-Nowak 2003), Raj Cave and Zbójcecka Cave in the Świętokrzyskie Mountains (Kozłowski 1972; Hadamik 2013) and Komonieckiego Cave in the Beskidy Mountains (Foltyn, Waga 1994). The state of the research leads to the conclusion that, in a practical sense, under the term ‘Polish caves’ used in this paper, one should understand the caves of the Cracow Upland.

Due to the 150-year history of archaeological excavations in Polish caves, the overall impression is given that they reveal enormous informative potential. The current results clearly indicate the multicultural nature of cave occupation and that particular sites may represent different phases of human use in the past. Without going into detail, it must be stressed that contrary to common opinion, most of the studied caves include remnants of material culture much younger than Paleolithic. In terms of the dating of finds assemblages and the frequency of their occurrence in caves, three main chronological units may be indicated when these underground spaces were used in particular: the Neolithic (Rook 1980), the Middle Ages (Wojenka 2018a) and the Younger or Late Roman and the Early Migration Periods, respectively (Dobrzańska 2006). The other fragments of the past, e.g. Bronze Age or Post-Medieval times, are represented to a lesser extent in caves, although some of them appear in surprising contexts (e.g. Kot *et al.* 2021; Wojenka 2018b; Wojenka *et al.* 2021; see below).

With respect to cave finds from later stages of prehistory and historical times, an important issue that must be stressed is their stratigraphic context. In most cases, they can be found in the same layer, which is usually the humic strata deposited on the top of a cave filling. Therefore, the realistic assessment of the uppermost cave

layers is that they demonstrate palimpsests of human activities spanning long times and, in many cases, possibly repeating (Dowd 2015, p. 16).

The purpose of this paper is twofold: first, to try to provide a short overview of the medieval and post-medieval material culture in Polish caves through the lens of functions played by caves in historical periods, and second, to indicate present-day threats to the archaeological records in our caves. Due to the limited scope of this paper, understandably, the data will be reduced rather to provide background information than to demonstrate a detailed picture of medieval and post-medieval cave usage. The latter will be the subject of a separate monograph prepared by the author at the Institute of Archaeology of the Jagiellonian University.

*Medieval and post-medieval finds in caves:
how often and how many?*

The general picture of medieval cave usage may be drawn on the basis of the check queries I made in the depositories of various museums and university institutions and on my own archaeological experience in caves. In this sense, the literature search was of minor importance, as assemblages from historical times that were unearthed in caves were rarely in the limelight of cave researchers, so the state of their publication with a few exceptions is rather not satisfactory (Wojenka 2012a; 2018a). The results indicate that most of the caves and rockshelters examined contained more or less abundant medieval or/and post-medieval finds (99 sites, which is more than 65% of all caves and rockshelters positively verified in terms of their cultural content; Fig. 1; Table 1). Additionally, the finds in question are known from caves that differ in size, length, and access to daylight. They were registered in both large and dark caves comprising wide chambers and long corridors (eg. Ciemna Cave, Łokietka Cave, Wierzchowska Górna Cave, Źarska Cave), as well as smaller one-chamber caves (e.g. Krowia Cave or Bezimienna Cave) or minor rockshelters (Krucza Skała rockshelter, Garncarskie rockshelter).

Although due to the current state of research it is impossible to characterize the cave occupation on a country-wide scale, it is fair to say that at least in the case of the Cracow Upland there are strong indications that all (or almost all) larger caves, contain some remains of material culture dated to historical times. Regarding the caves located elsewhere in Poland, it is too early to draw any conclusions. However, in my opinion, since the most contributing factor to the exploitation of caves in historical times was their location within an inhabited area or not very distant from it, there is a strong likelihood that caves located in sparsely inhabited areas, remote from settlements or located in higher parts of highlands or mountains, were beyond the interest of medieval and post-medieval communities.

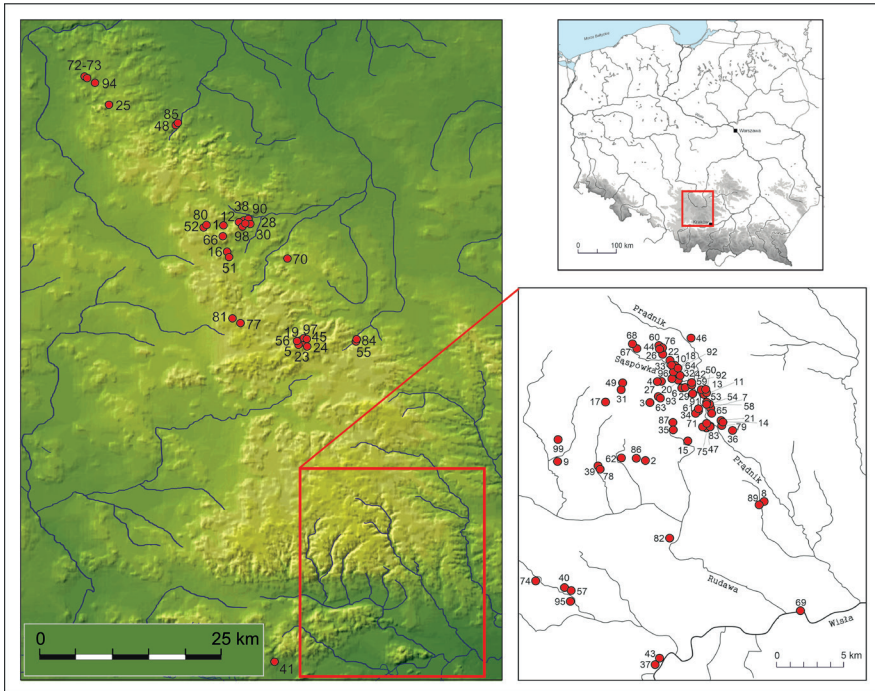


Fig. 1. Caves and rockshelters with remains of the material culture dated to historical times (see table 1 for the list of sites) (drawn by M. Wojenka)

Table 1. Caves and rockshelters of the Cracow Upland with archaeological records dated to historical times

No.	Site	Location	Middle Ages	Post-medieval period
1	Apteka rockshelter [Szczelina w Aptece]	Podlesice, comm. Kroczyce	+	+
2	Bezimienna w Bolechowicach Cave	Bolechowice, comm. Zabierzów	+	
3	Bębtowska Dolna Cave	Bębło, comm. Wielka Wieś	+	
4	Biała Cave	Ojców, comm. Skała		+
5	Biśnik Cave	Smoleń, comm. Pillica	+	+
6	Boczne przy J. Łokietka rockshelter	Ojców, comm. Skała	+	+
7	Borsucza w Górze Okopy Cave	Ojców, comm. Skała	+	
8	Borsucza w Podskalanach Cave	Tomaszowice-Podskalani, gm. Wielka Wieś,	+	
9	Borsuka Cave	Radwanowice, comm. Zabierzów	+	+
10	Bramka rockshelter	Sąspów, comm. Jerzmanowice-Przegonia		+
11	Ciemna Cave	Ojców, comm. Skała	+	+
12	Deszczowa Cave	Kostkowice, comm. Kroczyce		+

Table 1 (continued)

No.	Site	Location	Middle Ages	Post-medieval period
13	Dolne Zachodnie w Górze Koronnej rockshelter	Ojców, comm. Skała	+	
14	Dolne Średnie w Kopcowej Górze rockshelter	Ojców, comm. Skała		+?
15	Duża w Mącznych Skałach	Biały Kościół, comm. Wielka Wieś	+	+
16	Dziadowa Skała Cave	Zawiercie-Skarżyce, comm. Zawiercie	+	
17	Dziewicza Cave	Łazy, comm. Jerzmanowice-Przegonia	+	+
18	Dziurawiec Malesowy rockshelter	Sąspów, comm. Jerzmanowice-Przegonia		+
19	Fałszy rockshelter	Złożeniec, comm. Pilica		+
20	Garncarskie rockshelter	Ojców, comm. Skała		+
21	Główna w Kopcowej Skale Cave	Ojców, comm. Skała	+	+
22	Ilowe rockshelter	Sąspów, comm. Jerzmanowice-Przegonia	+	+
23	Jasna Smoleńska Cave	Smoleń, comm. Pilica	+	+
24	Jasna Strzegowska Cave	Strzegowa, comm. Wolbrom	+	
25	Komarowa Cave	Zrębnice, comm. Olsztyn	+	+
26	Koziarnia Cave	Sąspów, comm. Jerzmanowice-Przegonia	+	+
27	Krakowska Cave	Ojców, comm. Skała	+	+
28	Kroczycka Cave	Kostkowice, comm. Kroczyce	+	+
29	Krowia Cave	Ojców, comm. Skała	+	+
30	Krucza Skała rockshelter	Kostkowice, comm. Kroczyce	+	
31	Łabajowa Cave	Jerzmanowice, comm. Jerzmanowice-Przegonia	+	+
32	Łokietka Cave	Ojców, comm. Skała	+	+
33	Małe przy Bramce rockshelter	Sąspów, comm. Jerzmanowice-Przegonia	+	
34	Małe w Korytaniu rockshelter	Ojców, comm. Skała		+
35	Mamutowa Cave	Wierzchowie, comm. Wielka Wieś	+	+
36	Maszycka Cave	Maszyce, comm. Skała	+	
37	Na Gołąbcu Cave	Piekary, comm. Liszki	+	
38	Na Górze Słupsko rockshelter	Kostkowice, comm. Kroczyce	+	
39	Na Łączkach Cave	Kobyłany, comm. Zabierzów		+
40	Na Łopiankach 1 Cave	Mników, comm. Liszki	+	
41	Na Wrzosach Południowa Cave	Wrzosy, comm. Czernichów		+

Table 1 (continued)

No.	Site	Location	Middle Ages	Post-medieval period
42	Nad Bystrą Wodą rockshelter	Ojców, comm. Skała	+	
43	Nad Galoską Cave	Piekary, comm. Liszki		+
44	Nad Jaskinią Niedostępną rockshelter	Sąspów, comm. Jerzmanowice-Przegonia		+?
45	Nad Jaskinią Zegar rockshelter	Smoleń, comm. Pillica	+	+
46	Nad Mosurem Starym Duża Cave	Grodzisko, comm. Skała	+	+
47	Nad Tunelem w Stodoliskach Cave	Biały Kościół, comm. Wielka Wieś		+
48	Niedźwiedzia Górna Cave	Złoty Potok, comm. Janów	+	
49	Nietoperzowa Cave	Jerzmanowice, comm. Jerzmanowice-Przegonia	+	+
50	Oborzysko Małe Cave	Ojców, comm. Skała	+	+
51	Okiennik Cave	Piaseczno, comm. Kroczyce	+	
52	Okiennik Rzędkowicki rockshelter	Rzędkowie, comm. Włodowice	+	
53	Okopy Górna Cave	Ojców, comm. Skała	+	+
54	Okopy Wielka Dolna Cave	Ojców, comm. Skała	+	+
55	Perspektywiczna Cave	Udórz, comm. Żarnowiec	+	+
56	Piarzyste rockshelter	Smoleń, comm. Pillica		+
57	Pod Kochanką Cave	Mników, comm. Liszki		+
58	Pod Okopami rockshelter	Ojców, comm. Skała	+	+
59	Pod Rękawicą rockshelter	Ojców, comm. Skała	+	
60	Pod Tunelem Wielkim rockshelter	Sąspów, comm. Jerzmanowice-Przegonia	+?	
61	Potrójna Cave	Ojców, comm. Skała	+	+
62	Przechodnia w Kobylanach Cave	Kobylany, comm. Zabierzów	+	
63	Przechodnie w Żytnej Skale rockshelter	Bębło, comm. Wielka Wieś		+
64	Przy Łące rockshelter	Ojców, comm. Skała		+?
65	Puchacza Cave	Ojców, comm. Skała	+	+
66	Ruska Skała rockshelter	Skarzyce, comm. Zawiercie		+
67	Sąspowska Wschodnia Cave	Sąspów, comm. Jerzmanowice-Przegonia	+	
68	Sąspowska Zachodnia Cave	Sąspów, comm. Jerzmanowice-Przegonia		+
69	Smocza Jama Cave	Kraków, comm. Kraków		+
70	Stajnia Cave	Mirów, comm. Niegowa	+	+
71	Sypialnia Cave	Biały Kościół, comm. Wielka Wieś	+	

Table 1 (continued)

No.	Site	Location	Middle Ages	Post-medieval period
72	Towarna Cave	Kusięta, comm. Olsztyn	+	
73	Towarne rockshelter	Kusięta, comm. Olsztyn	+	
74	Tunel w Sance rockshelter	Sanka, comm. Krzeszowice	+	
75	Tunel w Stodoliskach	Biały Kościół, comm. Wielka Wieś		+
76	Tunel Wielki Cave	Sąspów, comm. Jerzmanowice-Przegonia	+	+
77	W Górze Birów rockshelter	Podzamcze, comm. Ogródzieniec	+	
78	W Łączkach rockshelter	Kobylany, comm. Zabierzów	+	
79	W Ogrójcu Górna Cave / Boczne rockshelter	Ojców, comm. Skała	+	
80	W Rzędkowicach Dolne rockshelter	Rzędkowie, comm. Włodowice		+?
81	W Rzędowej Skale rockshelter	Zawiercie-Bzów, comm. Zawiercie	+	
82	W Skale Kmity rockshelter	Zabierzów, comm. Zabierzów	+	
83	W Stokowej Skale rockshelter	Ojców, comm. Skała	+	+
84	W Udorzu III rockshelter	Udorz, comm. Żarnowiec	+	
85	W Żółtym Potoku IV Cave	Żółty Potok, comm. Janów	+	+
86	Wielka Strąka Cave	Kobylany, comm. Zabierzów	+	
87	Wierzchowska Górna Cave	Wierzchowie, comm. Wielka Wieś	+	+
88	Większe za Dziurawcem nad ujściem Sąspówki rockshelter	Ojców, comm. Skała	+?	
89	Wilczy Stok Cave	Tomaszowice-Podskalany, comm. Wielka Wieś	+	+
90	Wisielców Cave	Kostkowie, comm. Kroczyce	+	
91	Wschodnie w Korytaniu rockshelter	Ojców, comm. Skała	+	
92	Wylotne rockshelter	Ojców, comm. Skała		+
93	Wysokie w Żytnej Skale rockshelter	Bębło, comm. Wielka Wieś		+
94	Zamkowa Dolna Cave	Olsztyn, comm. Olsztyn	+	+
95	Zawalona Cave	Mników, comm. Liszki	+	
96	Zbójcka Cave	Ojców, comm. Skała	+	+
97	Zegar Cave	Smoleń, comm. Pilica	+	+
98	Złodziejska w Kroczykach Cave	Kostkowie, comm. Kroczyce	+	
99	Żarska Cave	Żary, comm. Krzeszowice	+	+

More to the point, the number of finds from historical periods usually depends on the range of archaeological prospections, the size of a cave or rockshelter and the function of the site. There is clearly no single pattern – while the most representative cave assemblages hold several thousands of medieval and post-medieval finds (e.g. Ciemna Cave or Zamkowa Dolna Cave), some of the archaeologically explored caves or rockshelters provided barely single artefacts.

Finally we should note that elements of medieval and post-medieval material culture in caves and rockshelters represent a very diversified set of finds. It is dominated by pottery fragments and other everyday artifacts such as knives, dress fittings, coins, bone, or antler objects (Wojenka 2012a). Of particular importance are, however, the elements of medieval military equipment, horse harness, and riding gear (Wojenka 2017), as well as metal devices related to a household.

Chronological position of medieval and post-medieval cave assemblages

Before describing the main functions of the sites in question, I would like to make some observations about the chronology of human activity in caves during historical periods. In a nutshell, the story begins rather late in the medieval period. The earliest example of cave use may be related only to about a dozen of pottery fragments from the 9th–10th century, discovered in the Na Górze Słupsko rockshelter in Kostkowice (Krajcarz *et al.* 2014, p. 25, Fig. 5: b). However, it is hard to resist the impression that these are related to the cave site rather by coincidence, since they appear to represent the same phase of settlement as the surrounding stronghold, which may be tentatively dated to the 9th–10th century on the basis of ‘axe-like’ grivnas (Zagórska-Telega, Bochnak 2001). This isolated case from the pre-state period does not find parallels elsewhere in the Polish caves. Subsequent evidence for the use of caves appears to be more than a century later and comes from a couple of sites situated in the southern part of the Cracow Upland. The caves in question yielded small amounts of pottery fragments dated broadly to the 11th–12th century. They were found in Ciemna Cave, Dolne w Górze Koronnej rockshelter, Koziarnia Cave, Tunel Wielki Cave (Kot *et al.* 2020), Mamutowa Cave (Fig. 2), Maszycka Cave, Wilczy Stok Cave, Małe przy Bramce rockshelter and in Okopy Wielka Dolna Cave. Particular attention must be drawn to the latter case, where in 1897, during the excavations led by Stanisław Jan Czarnowski, a silver hoard was discovered (Czarnowski 1898; Reyman-Walczak *et al.* 2013, pp. 127–130). The hoard consisted of 116 coins and two amorphous cast silver ‘ingots’ (Czarnowski 1898) deposited in a small clay container (Wojenka 2012b). Among the coins, represented mostly by a relatively common issue of the so-called cross pennies, worth noting are the 26 rare specimens from the first private Polish coinage, minted late in the 11th century by the powerful nobleman Sieciech. The latest coin in the hoard was



Fig. 2. Mamutowa Cave in Wierzchowie: a view from the inside (photo by M. Wojenka)

minted in Hungary during the reign of Ladislaus I (1077–1095), leading to the conclusion that the hoard was deposited not very far from the estimated data ca. 1100 (Wojenka 2012b). There are strong indications, however, that not far from the aforementioned cave the another hoard was hidden at the same time. This was probably the case of Pod Rękawicą rockshelter, where two coins issued by Sieciech were discovered (Suchodolski 1987, pp. 18–19; Reyman-Walczak *et al.* 2013, p. 130), likely a remnant of some larger deposit.

In summary, despite the significant finds mentioned above, the realistic assessment of cave use in this period is that they were rather rarely visited by people.

As demonstrated by the number of finds, a significant change took place in the 13th and early in the 14th century. Caves and rockshelters situated in a different parts of the Cracow Upland began to be incomparably more frequently visited by humans, who left there not only the pottery fragments, but also personal adornments, military equipment, riding gear, and several coins, to mention only a few. Evidence for the use of a cave at this stage is known from around 40 sites. In many cases, like in Ciemna Cave, Mamutowa Cave, Okopy Wielka Dolna Cave or Biśnik Cave the finds assemblages from this period may be counted in hundreds, and there are strong indications that similar chronology may be attributed to many domestic animal bones appearing in the upper humic cave layers. And this should be said right: archaeological finds dated to the 13th and early 14th centuries are definitely the largest part of medieval assemblages known from Polish caves.

During the later stages of the Middle Ages and in the early post-medieval period, caves were rarely a subject of human interest. The archaeological evidence for the use of caves is then scarce. The most intriguing assemblages dated to this stage are known from a hardly accessible Okopy Górna Cave, where a remarkable set of the 14th century ceramic vessels was discovered. Particular attention should be paid here to the fragments of jugs and lids, which are very rarely found in caves. The other evidence dated to the late medieval period comes mainly from Zamkowa Dolna Cave and Perspektywiczna Cave, where assemblages dated to the 15th–turn of the 16th century were found. It should be noted that in the case of Zamkowa Dolna, the use of a cave resulted more from the fact that it was encompassed by the fortifications of the castle, and we can suspect that if it was only located outside, it would not attract special attention (Fig. 3).

As evidenced by the scant archaeological material, the 16th century as a whole was a period when the caves in question were definitely of minor interest, and it was not until the 17th–18th century that significant attention was paid to them again (Wojenka 2018b). The assemblages dated to this period – for the most part pottery fragments – were recognized in around 20 caves or rockshelters situated in the Cracow Upland. Quite similar is the number of caves containing younger artefacts related to the 19th century, mostly brown glazed pots. However, it is important to note that the real number of post-medieval sources from the excavated sites may be underrepresented due to the fact that, in many previous studies, little interest was paid to the post-medieval artifacts.



Fig. 3. Zamkowa Dolna Cave in Olsztyn: a view from the inside (photo courtesy of K. Pierzgałski)

Functions of caves in historical period

Domestic occupation

The term 'domestic occupation' is reserved here for the usage of caves that involve all domestic functions associated with living in a house. Regarding the Middle Ages and post-medieval times, a permanent year-round occupation may be considered very rare and limited to people living at a basic level of subsistence. Theoretically, on the archaeological background, this function should be reflected by a wide range of domestic debris like personal belongings, unspecialised tools, and large pottery assemblages (Branigan, Dearne 1992, p. 16). However, in my opinion, due to the stratigraphic sequence recorded in most of Polish caves, this function is not easy to determine only on the basis of archaeological finds. In contrast to this, an important contribution to this issue can be made through written accounts and ethnographic sources. In the given area of the Cracow Upland, the earliest evidences are as early as the late 18th century and they both relate to the southern part of the Ojców area. The first is a brief mention about the household of a poor butcher Jan Duda, who dwelled in Prądnik Czajowski (currently in Ojców) in a small cave built up with timber construction (Falniowska-Gradowska 1976, p. 264). Taking into account the localization of this cave household, I would not be surprised if it was identical with Krowia Cave, a medium-sized cavern situated on the right bank of Prądnik river, clearly depicted by Teodor Baltazar Stachowicz as a dwelling, possibly in 1820s (Fig. 4). Unfortunately, a verification of this hypothesis by fieldwork is impossible because of the later destruction of the inner part of the cave at the turn of the 20th century, when it was incidentally converted into a cold storage. In any case, S. J. Czarnowski, who explored Krowia Cave early in the twentieth century and was not aware of the possible use of this place in the past for dwelling purposes, discovered some pieces of window glass inside. Whether it corresponds to a cold storage or to the windows depicted by T. B. Stachowicz, must remain an open question.

The second example of domestic use of caves can be circumstantially indicated by a poet and journalist Konstanty Majeranowski (Pielgrzym z Tenczyna), who informed in 1823 about a hermit who lived in Stodoliska Gorge in Prądnik Korzkiewski 'back several decades', therefore, beyond doubt in the second half of the 18th century. According to K. Majeranowski, the hermit dwelled in a small cavern situated above a tunnel-like rock (Fig. 5), the latter of which served for him as a barn (Majeranowski 1823, pp. 49–50). Both caves mentioned by the aforementioned author can be easily identified with Tunel w Stodoliskach Cave and Nad Tunelem w Stodoliskach Cave; moreover, both yielded fragments of pottery vessels broadly dated to the 17th–18th century.



Fig. 4. Krowia Cave in Ojców depicted by T. B. Stachowicz, possibly in the 1820s (photo from the archive of DA Agra-Art)



Fig. 5. Tunel w Stodoliskach Cave in Biały Kościół (photo by M. Wojenka)

In terms of the possible domestic function of caves and rockshelters, a mention should also be made of the remnants of furnaces discovered in Pod Bronówką rockshelter and in Puchacza Skała Cave. The first one, built of stones (Kowalski 1951, p. 241) may as well be referred to some workshop activity, while the second, made of bricks, should be interpreted as an oven. A strong point in favour of the premise on domestic function of the latter cave is the assemblage unearthed there by S. J. Czarnowski in 1899, who commented on daub, rotten wood, glazed pottery and iron scissors (Czarnowski 1904, p. 8).

Workshop usage

The earliest evidence for a workshop use of a cave is as early as the 15th century and comes from the Zamkowa Dolna Cave, in the Middle Ages located within the area of the lower castle in Olsztyn. In most previous research on this cave, it was linked with medieval bloomery and smithy (Kopacz 1975, p. 71). However, due to the most recent excavations carried out by Mikołaj Urbanowski (Urbanowski *et al.* 2020) it appears that, in fact, the cave function was much more complex. In the 15th century, the middle part of the site was occupied by a large furnace, which probably served for a copper smelting¹. The metallurgical story of the cave must have ended before 1532, when a *rock pantry* was mentioned there (*testudo magna in rupe naturaliter facta*; Nabiałek 2012, p. 306). In this particular case, it is more than likely that safety reasons and protection from spreading fire were the factors that influenced most of the metallurgists in choosing a cave. Similar reasons may be implied for the Garncarskie rockshelter, where a pottery kiln was placed in the second half of the 19th century (Wojenka, Kot 2019).

When discussing cave workshops, it is also necessary to mention illegal activities such as counterfeiting money. Choosing a cave for such an activity certainly was not by chance, since forgery required operating in strict secrecy. Currently, the three cave sites may be linked to counterfeiting: Ciemna Cave, Żarska Cave (Wojenka *et al.* 2016, p. 203) and The Fałszerzy rockshelter (Muzolf 1993). The archaeological records leave no doubt that in all these cases the counterfeit coins were the copper shillings of king John Casimir from the second half of the 17th century. Importantly, thanks to written accounts, in case of Żarska Cave we may deal with a strictly rare opportunity to identify forgery with specific person – I believe that it must have been Wojciech Kordowicz, a recidivist forger from the nearby Żary village, who was beheaded in 1676 (Hniłko 1923, p. 61).

¹ The final publication of this extraordinarily important feature will be a subject of a separate multi-author paper, now in preparation.

Storage caves

This function of caves, usually difficult to identify on the basis of archaeological records, may be indicated in the Cracow Upland through written sources and ethnographic surveys (Wojenka 2018b, pp. 588–590). The earliest evidence for such an activity is related to the aforementioned Zamkowa Dolna Cave in Olsztyn, where a rock pantry was mentioned in 1532, as well as to the Smocza Jama Cave in Cracow. In the latter case, storage played rather an additional role. As evidenced by historical records, at least from the 16th century to the 1770s the immediate vicinity of the cave, probably the area adjacent to the cave mouth, served as a tavern (Firlet 1996, p. 79). It was in 1616, when Martin Csombor, a Hungarian teacher who travelled across Poland, noted, that he drank a beer inside the cave (Csombor 1961, p. 99). In the archaeological picture, the tavern in Smocza Jama Cave is confirmed by a substantial number of post-medieval pottery sources (Firlet 1996, p. 79). It would also appear that a cold storage may be conditionally considered in the case of caves situated in the immediate vicinity of some medieval fortified sites (Na Gołąbcu Cave, Biśnik Cave), since their 13th- the early 14th century assemblages fully correspond with the cave finds (Leńczyk 1938; Muzolf 1996; 1997).

Hideaways and occasional shelters

It is highly expected that caves from both the Middle Ages and the post-medieval period from the area in question were used as hideaway places of refuge during military disturbances. However, due to the elusive nature of such visits to caves, the identification of a hideaway function is usually fraught with difficulties. In my opinion, most of the medieval and post-medieval assemblages found in Polish caves may be linked with people seeking refuge. Indirect evidence for such a role played by caves is the chronology of medieval and post-medieval finds. As has already been argued, the vast majority of medieval archaeological records from caves explored in the Cracow Upland may be dated to the 13th and the early 14th century, while post-medieval sources are represented mostly by a series of artifacts dated to the 17th–18th century. This is certainly not by chance, since the timespans in question broadly coincide with wartime events, during which the local communities experienced both violence and robbery. The occurrence of a significant number of archaeological records in caves dated to the 13th and the early 14th century may have something to do both with the three Mongol invasions on Poland, in 1241, 1259–1260 and 1287–1288, with the struggles for wresting a throne of Cracow undertaken by several Polish dukes during the whole 13th century, as well as with heavy fights and minor clashes which took place in the Cracow Upland at the turn of the following century between the troops of Władysław the Elbow-high and the military forces backing the Bohemian king Venceslaus II. Furthermore, there are strong indications that

numerous metal finds such as military equipment, chivalric belt fittings, and riding gear, which were found in the caves in question, may correspond to the popular legend of the aforementioned prince Władysław, who was expected to find refuge in a cave located somewhere in the Ojców area (Wojenka 2017).

A similar interpretation may be implied to some part of the post-medieval sources discovered in caves and dated to the 17th–18th century, and therefore to the period which was politically dominated by the wartime events of the so-called Swedish Deluge (1655–1660) and the Great Northern War (1702–1704), both periods enormously devastating to local communities inhabiting the Cracow Upland (Wojenka 2017; Wojenka, Urbanowski 2020).

Last but not least, it is important to note that the refugial function of caves may also be seen through written accounts. The most important in this particular case, although distant in the geographical sense, is a legal act from 1543, related to the cave known as *Horodyszczce*, which was located in Podilia, on the Smotrycz river (Ukraine). Access to the cave was possible only via a ladder, and when threatened by Tatars, local communities of the nearby villages Załucze and Czerńcze used to hide in their depths and to drag the ladder into the cave. According to law, the cave belonged to both communities, who at the same time were obliged to keep the ladder in good state of repair (Jabłonowski 1911, p. 296). It is fair to add that this early record relates to the function that was important even as late as the 20th century. For example, during November and December 1914 – the early months of World War I, the Koziarnia Cave in the Ojców area served as a place of refuge for the people who inhabited the nearby Sąspów village. As it was reported by Jan Nowina-Sapiński, a parish priest from Sąspów: ‘[in Koziarnia] for many days and nights more than a hundred people, with children and injured, with cows and horses, stayed in the cold and humidity’ (Nowina-Sapiński 2022, p. 188).

Caves as final resting places

In the historical period, caves and rockshelters appear in the funeral context only in extreme cases. Currently, due to radiocarbon dating of human bones, the remains of only three people deposited in two caves can be attributed to the period which is in the scope of this paper. The first two samples, taken from bones discovered out of an anatomical position in the humic layers of Rockshelter III in Smoleń, turned out to produce medieval radiocarbon dates (645 ± 30 BP and 730 ± 30 BP; Krajcarz *et al.* 2020). The interpretation of the moment in which the deceased people were buried or only left in the cave are far from clear, although it is worth noting that due to the calibration of the given data, they both may as well represent the same age, and, conceivably, they both have to be seen in the context of wartime events occurring in the late 13th or at the turn of the 14th century. Interestingly, the Rockshelter III in Smoleń did not produce any other evidence of human use in historical times.

The third example, unearthed in 1968 in Tunel Wielki Cave and only recently studied, is an exceptional and fascinating case. It is a burial of a 10–12 year old girl of likely Fennoscandian or Baltic genetic ancestry, who died in the post-medieval period and was regularly buried in the cave with the placement of one or maybe two chaffinch (*Fringilla coelebs*) heads in her mouth (Fig. 6). The bones produced post-medieval radiocarbon date 215 ± 30 , calibrated to the wide range encompassing mostly the mid-17th to the 18th century. Due to the complex analysis carried out, including DNA examination, it was possible to argue in favour of linking the girl with Finno-Karelian troops of a Swedish garrison stationed at the adjacent Ojców Castle during King Carl Gustav's invasion of Poland in 1655–1657 (Wojenka *et al.* 2021).



Fig. 6. The burial from Tunel Wielki Cave in Sąspów during the 1968 excavations (photo from the archive of the Faculty of Archaeology at the University of Warsaw)

Current threats to archaeological records in caves

Due to the evidence briefly underlined above, it appears that caves and rockshelters have been frequently used in medieval and post-medieval times. At the same time, it should be stressed that, similarly to other archaeological sites from historical periods, the sites in question currently face multiple problems related to the protection of stratigraphic records. However, the most devastating are those that find no parallels in the other archaeological sites. In this case, it is necessary to look closely at the field activity of groups of amateur speleologists, who penetrate

caves for two main reasons. While the first one, which involves hobby-like visits to a cave, may be considered harmless to cave sediments, particular attention should be paid to the second one, linked with measuring works or, in the simplest terms, with determining cave maximal dimensions.

In a practical sense, the second type of activity involves frequent intrusions into cave fillings, resulting in damage to the stratigraphic context. And to be absolutely clear in this context, it must be said that in many cases a wish to determine the maximum dimension and the full plan of the cave involves more or less advanced extractions of sediments, often resulting in devastation of the stratigraphic context of archaeological finds (Fig. 7). At least in the case of Cracow Upland (the caves of which I am most familiar) this problem is hardly to be recognized as marginal, since due to informal data obtained, there could be even several dozens of smaller or larger caves or caverns dug up during a year. Certainly, some of them are potential archaeological sites. Unfortunately, from the perspective of the Office for Monuments Protection, this problem is far from being solved, since the cavities in question are not listed as archaeological sites.

In practical terms, the current situation requires some regulation. First of all, it is important to include as many sites as possible to the index of archaeological sites, and to some extent, this can be achieved by large-scale surface surveys. Secondly, it would appear that reaching people interested in speleology with some sort of



Fig. 7. Żarska Cave in Żary. Heaps of earth resulting from speleological activity, 2011 (photo by M. Wojenka)

archaeological educational campaign would benefit the protection of caves, and starting a kind of cooperation between archaeologists and speleologists may result in verification of many caves and rockshelters on account of their archaeological potential (Wojenka *et al.* 2017). However, there are strong indications that we are barely in the early stages of solving the problems described above.

Conclusions

During the medieval and post-medieval periods, caves and rockshelters were an important part of the landscape and were occasionally used by people for different purposes. Contrary to the prehistoric period and due to Christianity, from the Middle Ages caves apparently lost their 'supernatural' meaning and became spaces that could be inhabited, used for storage, or could serve as refuges. Although due to the limited scope of this paper it was not possible to determine all the roles played by caves in the periods in question, the five functions indicated above are the most essential and of major importance. It is beyond doubt, however, that location of caves within an inhabited area was the main factor contributing to their exploitation in historical times.

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