IWONA SOBKOWIAK-TABAKA

SIMILAR, YET DIFFERENT. THE ARCH-BACKED PIECE TECHNOCOMPLEX IN POLAND

The 13th millennium BC saw the onset of »azilianisation« – cultural transformations in North-Western and Central Europe marking the transition between the Upper and Late Palaeolithic. Best documented at archaeological sites in the Paris Basin (Bodu et al. 2006), this process spanned nearly the whole of Europe. »Azilianisation« was generally marked by the substantial simplification of the knapping technology and hunting toolkit, characterised by the presence of a variety of arch-backed pieces and short end-scrapers on flakes, in Polish archaeological research known as Tarnovian end-scrapers. Considerable regional variation in flint inventories along with a wide chronological span of their occurrence prompted the identification of several units in the rank of cultures, groups or types: Azilian, Federmesser-Gruppen, Tarnovian Culture, Witovian Culture, Kamienna variant, Penknife Point phase, Hengistbury Head type, Curved-Backed Point groups, Arch-Backed Point technocomplexes (ABP), Ostroměř group, and Tišnov type. Assemblages related to the groups mentioned above have been uncovered throughout vast areas of Western Europe (including the British Isles) and Central Europe (Barton 1991; Bodu/Valentin 1997; Burdukiewicz 1987; 2011; Kabaciński/Sobkowiak-Tabaka 2010; Kaminská 2007; Pettitt/White 2012, 477-489; Schild et al. 2011, 125-130; Svoboda et al. 2002, 244; Vencl 2007), and are reported to occur as far east as western Russia (Zhilin 1996).

The first part of this paper gives a general overview of ABP settlement in Poland. It lays down the main criteria for identifying particular ABP groups, and discusses associated methodological issues and factors possibly determining the typological differentiation of flint artefacts. I shall then attempt to provide an explanation and interpretation of the ABP's considerable diversity.

THE ABP IN POLAND

Archaeological evidence of ABP settlement in Poland was first identified before the Second World War at the site of Tarnowa (Pyzdry commune), which was discovered in the early 1920s by Józef Kostrzewski (**fig. 1**). The analysis of the lithic inventory led Stefan Krukowski to link the materials with the Azilian industry. Having included also the inventory from Grzybowa Góra (Skarżysko Kościelne commune), Krukowski defined the so-called Tarnovian industry (Krukowski 1939-1948, 92). W. Taute (1963) included the inventories from Tarnowa, Grzybowa Góra, Witów (Piątek commune), Siedlnica (Wschowa commune) and Krzekotówek (Kotla commune) into the Federmesser-Gruppen as »Tarnowa Group«.

At present, three groups in the rank of »archaeological cultures« or »technocomplexes« (Federmesser-Gruppen, Tarnovian group, and Witovian group) are believed to have been related to the ABP tradition in Poland. Their variants are sometimes distinguished, mostly on the basis of morphological analyses of assemblages, the appearance of single tool types and sometimes differences in the proportions of certain groups of tools (**tab. 1**). However, the terms »Arch-Backed Piece Technocomplex« (Schild 1984; 2014; Schild et al. 2014) or »Arch-backed Point Technocomplex« (Burdukiewicz 2011) are most commonly used as generic terms.

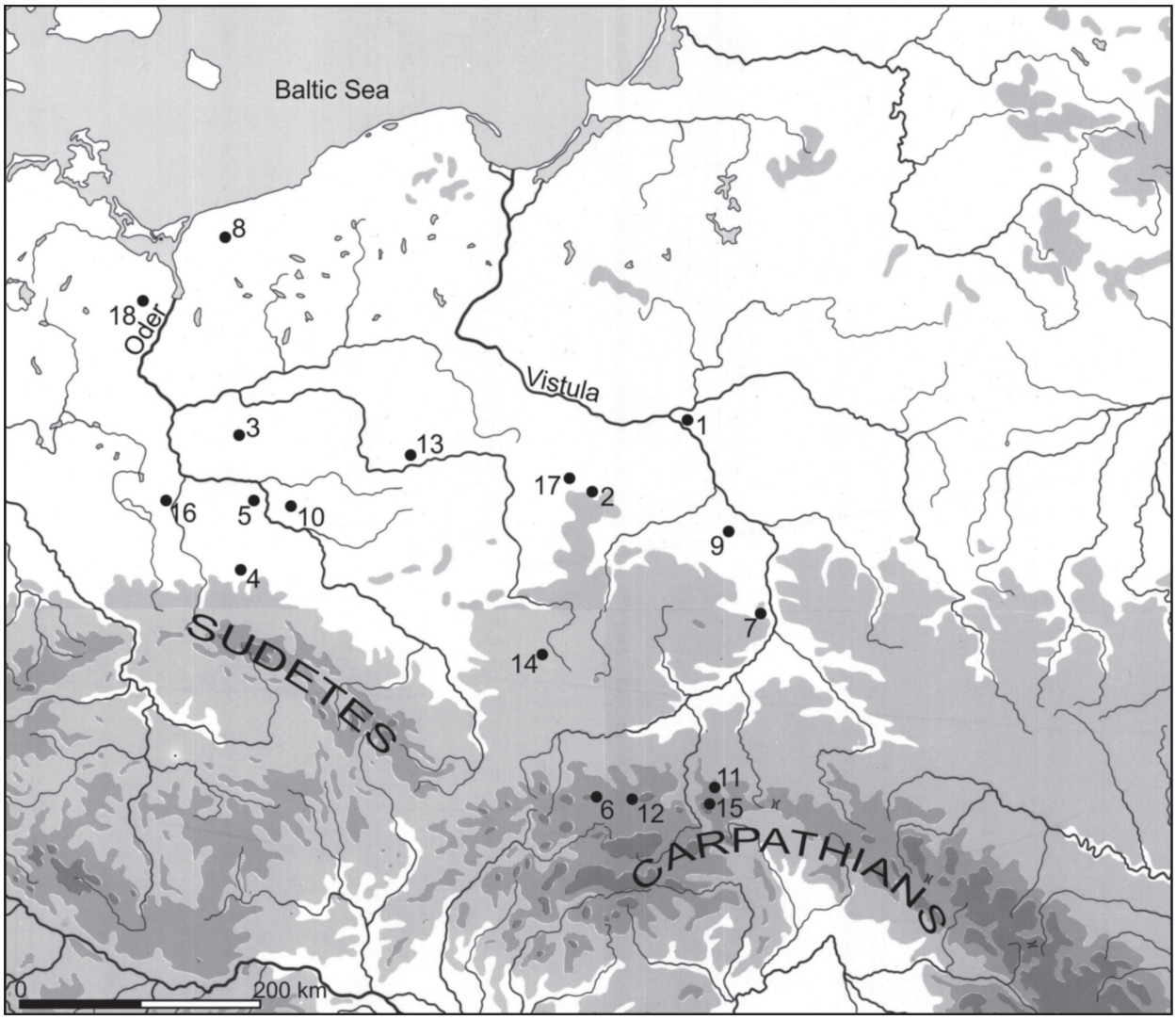

Fig. 1 Map showing the extent of the settlement of the ABP technocomplex in Poland with its most important sites: **1** Całowanie. – **2** Katarzynów. – **3** Lubrza. – **4** Nowa Wieś. – **5** Niedoradz. – **6** Nowa Biała. – **7** Pawłów. – **8** Rotnowo. – **9** Rydno. – **10** Siedlnica. – **11** Skwirtne. – **12** Sromowce Niżne. – **13** Tarnowa. – **14** Trzebca. – **15** Tylicz. – **16** Węgliny. – **17** Witów. – **18** Wołczkowo. – (Map A. Tabaka).

Since the 1960s, two or even three hypotheses on the origin of ABP groups in Poland have been considered plausible. The origin of the ABP is sought, for example, in an influx of people from the Federmesser-Gruppen of the North German Plain (Schild 1975, 255-256), in an influence of Tardigravettian communities (Kozłowski/Kozłowski 1977, 170), or of the communities occupying the western part of the Russian Plain through the Belarusian and Ukrainian ABP groups (Chmielewska 1978, 116-118).

According to J. K. Kozłowski and S. K. Kozłowski (1975, 254), the Federmesser-Gruppen were genetically related to the upland Magdalenian settlement of western Germany and Switzerland. The authors nevertheless questioned the relationship between the Witovian group and the Federmesser-Gruppen, since the inventories of the former lack the characteristic large end-scrapers. This concept was later developed in detail by S. K. Kozłowski (1987; 1992), who argued that the Witovian Culture was affiliated with the Tardigravettian circle developing in the region of the Carpathians and the Balkans.

The dating of the youngest Epigravettian assemblages in the area of the Carpathian Basin varies between the 14th and 12th millennium cal. BC (Lyngel 2009, 243). Three sites, Jászberény, Kiskúnság, and Szekszárd,

Name	Eponymic site / most important sites	Typical artefacts	References	Remarks
Federmesser-Gruppen	Siedlnica (Wschowa commune, Lubuskie Province), Wołczkowo (Dobra commune, Zachodniopomorskie Province)	great variety of backed pieces; backed blades; end-scrapers on blanks, often doubled, also short ones; different kinds of burins	Schild 1975; Burdukiewicz 1987	See **fig. 2**.
Tarnowa Culture (Tarnovian)	Tarnowa (Pyzdry commune, Wielkopolska Province)	short end-scrapers, so-called Tarnovian end-scrapers; burins are rare; different types of backed points; blade blanks	Krukowski 1939-1948; Sulgostowska 2005; Sobkowiak-Tabaka 2012	The homogeneity of the inventory seems highly questionable owing to the way the materials were sorted into earlier and later ones (the raw material criterion, more than 80 % specimens cannot be assigned to a specific flint concentration) – cf. Sobkowiak-Tabaka 2012. See **fig. 2**.
Witów Culture (Witovian)	Witów (Piątek commune, Łódź Province), Katarzynów (Zgierz commune, Łódź Province)	Epigravettian type of flint production; a very small number of greatly varied backed pieces, not unlike segments (»bipointes«); dominance of small end-scrapers; various types of burins; flake blanks	Chmielewska 1961; 1963; Kozłowski 1987	See **fig. 3**.
Classic Tarnovian / Witovian / ABP	Rydno (red ochre quarry and socio-economic centre), Holy Cross Mountains	blade and flake cores with single and opposed striking platforms; hard hammer technique of flint knapping; blanks and tools are often thick and short	Schild et al. 2011	The Rydno settlement complex yielded nearly 50 inventories with arch-backed pieces.
Kamienna variant	Rydno (red ochre quarry and socio-economic centre), Holy Cross Mountains	single platform blade/bladelet cores, often conical or sub-conical and with changed orientation; opposed platform cores are rare – late Magdalenian »inspirations«; exploitation of cores by direct percussion with a soft hammer (soft stone, antler, hard wood?), and sometimes hard hammer percussion; elegant regular elongated blades or bladelets; tools: elongated arch-backed pieces, including segments; straight-backed, short burins resembling the »Lacan variant«	Schild et al. 2011	The Rydno settlement complex yielded nearly 50 inventories with arch-backed pieces; see **fig. 4**.

Tab. 1 Characteristics of Polish ABP groups.

are deemed to be of Allerød age. Yet, they are located in wind-blown areas, and the radiocarbon determinations of their age, placing them in the second half of the 11th millennium, were obtained in the 1960s and are marked by huge standard deviations (500-1,200 years!) (Dobosi 1999, 307-313). The Szekszárd materials are believed by some archaeologists to be of Mesolithic origin (Kertész 2002). At the same time, the area of Slovakia has not yielded any radiocarbon-dated Epigravettian sites from the period after the Last Glacial Maximum (Kaminská 2007, 112-114). It seems that this dating issue still needs to be addressed; the least we can do is acquire well-dated assemblages.

The idea of an »eastern« origin of ABP groups dates back to the 1940s. The possibility that the Tarnovian assemblages might have been linked to the inventories from the Upper Palaeolithic sites of the Dnieper River Basin was originally put forward by S. Krukowski (1939-1948, 93). In the 1960s, M. Chmielewska (1961) presumed that the Witovian inventories were related to the Crimean assemblages with backed bladelets and points of the Shan-Koba Culture. More recent studies, however, suggest a much younger age of these assemblages, dating them to the period from the end of the Younger Dryas until almost the end of the Preboreal (Janevic 1999).

Given the almost total lack of ABP sites east of the Vistula River Valley (Kobusiewicz 1999a, 51; 1999b, 202), some researchers question the validity of the statement that ABP communities had their roots in the western part of the Russian Plain. Besides, with the exception of one excavated site with a poor inventory, only single specimens of backed pieces have been registered in the course of surface surveys, mostly as stray-finds or in heterogeneous inventories (Sulgostowska 1989, 63; Libera 2002, 205-209).

ASSEMBLAGES

In general, ABP inventories from Poland are typified by the presence of single and double platform cores for blades, which were exploited using a soft-hammer or punch technique. Also included are single and double platform cores for flakes, frequently with changed orientations, which were worked using a heavy hammer technique. The striking platforms were usually formed with one blow (Schild 1984, 204; Libera/Wąs/Zakościelna 2008). The aim of lithic reduction was to produce thick and short flake blanks with extensive bulbs and distinct butts, and also wide and thick blades.

Inserts, very characteristic tools in ABP assemblages, include numerous large and very long backed points of the Federmesser-Gruppen type, along with straight-backed pieces and backed pieces with truncated bases. There are also very small and very diverse backed pieces similar to segments (Kozłowski/Kozłowski 1977, 172). Slender, pointed pieces with arched backs, which are quite large in size, occur in considerable numbers (Schild 1975). End-scrapers and burins make up roughly equal groups. Most numerous among end-scrapers are Tarnovian forms, i.e. short, sturdy end-scrapers on flakes. Slender end-scrapers are infrequent. Burins are typically large and sturdy.

Typical artefacts for individual entities distinguished in present-day Poland are characterised in **table 1** and illustrated in **figures 2-4**.

Found in the village of Węgliny, a single-row harpoon made from an ungulate (*Cervidae* or *Bovidae*) metapodial is one of two radiocarbon-dated artefacts made of organic material. This artefact is chronologically related to the Federmesser-Gruppen (Cziesla/Masojć 2007). The other one is an artefact made of elk antler (*Alces alces*), with an ornamentation composed of engraved zigzag lines and a geometrical human figure, found in calcareous gyttja in Rusinowo (near Świdwin, Pomerania).

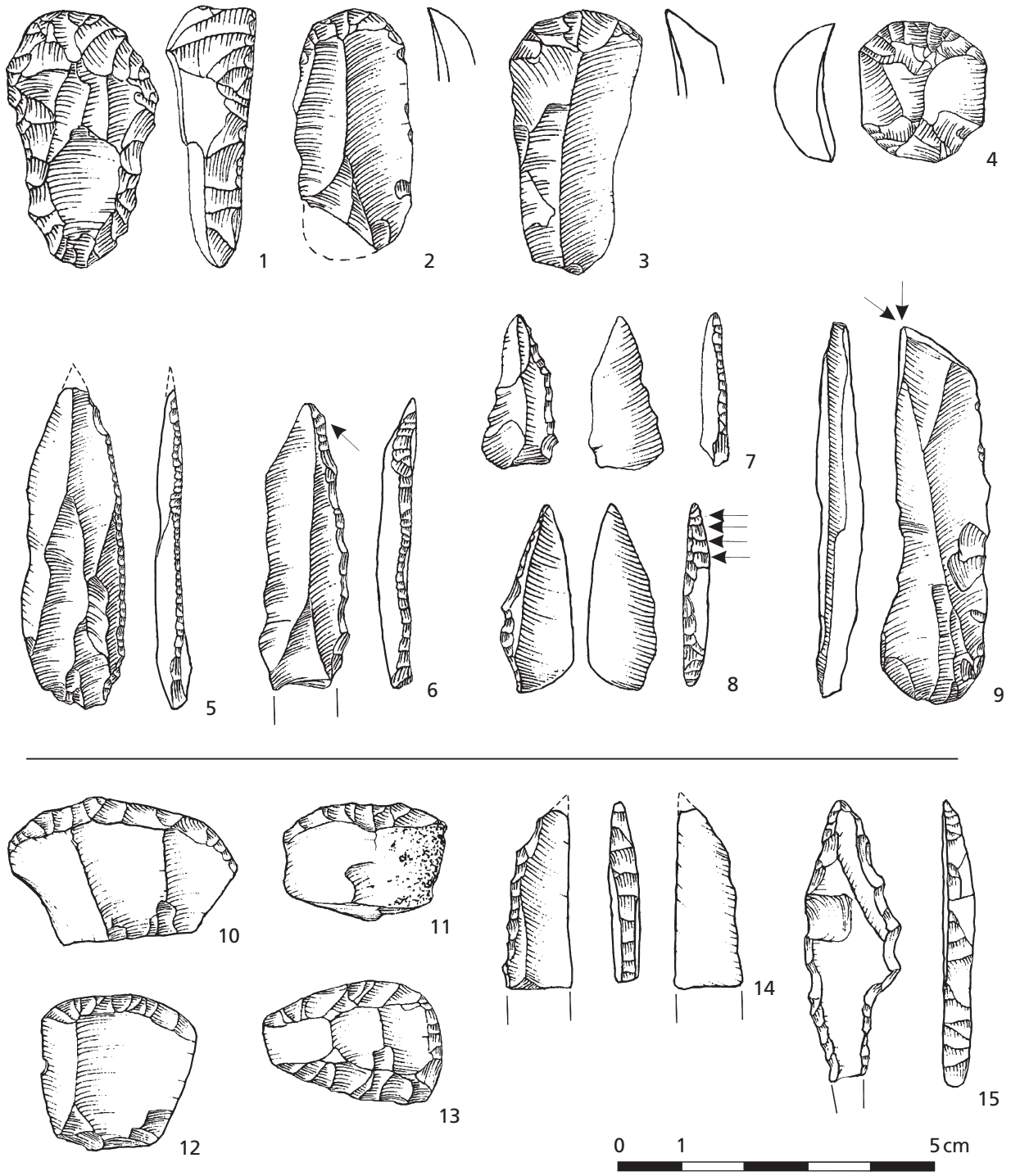

Fig. 2 The diagnostic tool-set of the Federmesser-Gruppen. – Wołczkowo, site 1: **1-4** end-scrapers. – **5-8** backed blades. – **9** burin. – Tarnowa, site 1: **10-13** end-scrapers. – **14** backed blade. – **15** shouldered point. – (After Schild 1975; Krukowski 1939-1948, re-drawn by J. Sawicka).

CHRONOLOGY

A total of 17 samples obtained from ABP settlement sites in Poland (eleven carbon samples, four burnt animal bones and two bone artefacts) have been radiocarbon-dated. The dating has established the earliest flint mining in Rydno (the northern part of the Holy Cross Mountains: Schild et al. 2011, 99) during the

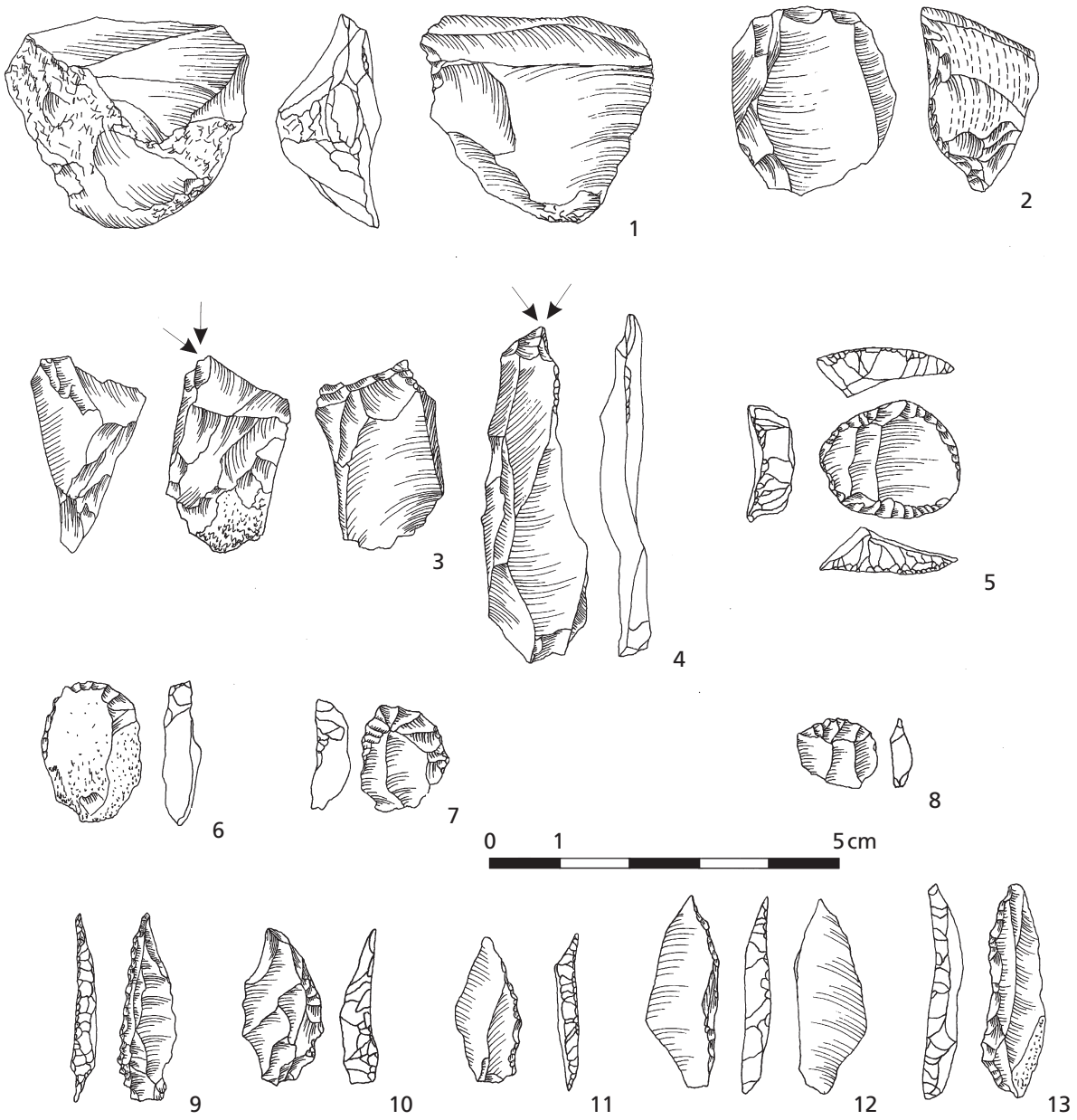

Fig. 3 The diagnostic tool-set of the Witovian Culture. – Witów, site 1: **1-2** cores. – **3-4** burins. – **5-8** end-scrapers. – **9-13** backed pieces. – (After Chmielewska 1978, re-drawn by J. Mugaj).

middle of the Allerød. This is the oldest radiocarbon date obtained for ABP communities in Poland as of yet. The samples from the sites at Rotnowo (Galiński 2007), Całowanie (Schild 2014), and Witów (Chmielewska 1961) have been estimated to date to the end of the Allerød/the beginning of the Younger Dryas. The youngest determination has been obtained for the bone artefact from Rusinowo. It places this object to the period of transition from the Allerød to the Younger Dryas (tab. 2). Moreover, a palynological analysis of the deposit in which the object was found indicates that the neighbouring area was covered by pine-birch forest of a cool climate, with some open areas present (Płonka et al. 2011). The taxonomic affiliation of this artefact is, however, uncertain.

It is worth noting that some of the dating results of material from the mine in Rydno (Bln-2037; Gd-713; Gd-724), from Całowanie (Gd-2882; Gd-2723; Gd-4165), and Witów (Gro-828) are marked by very large

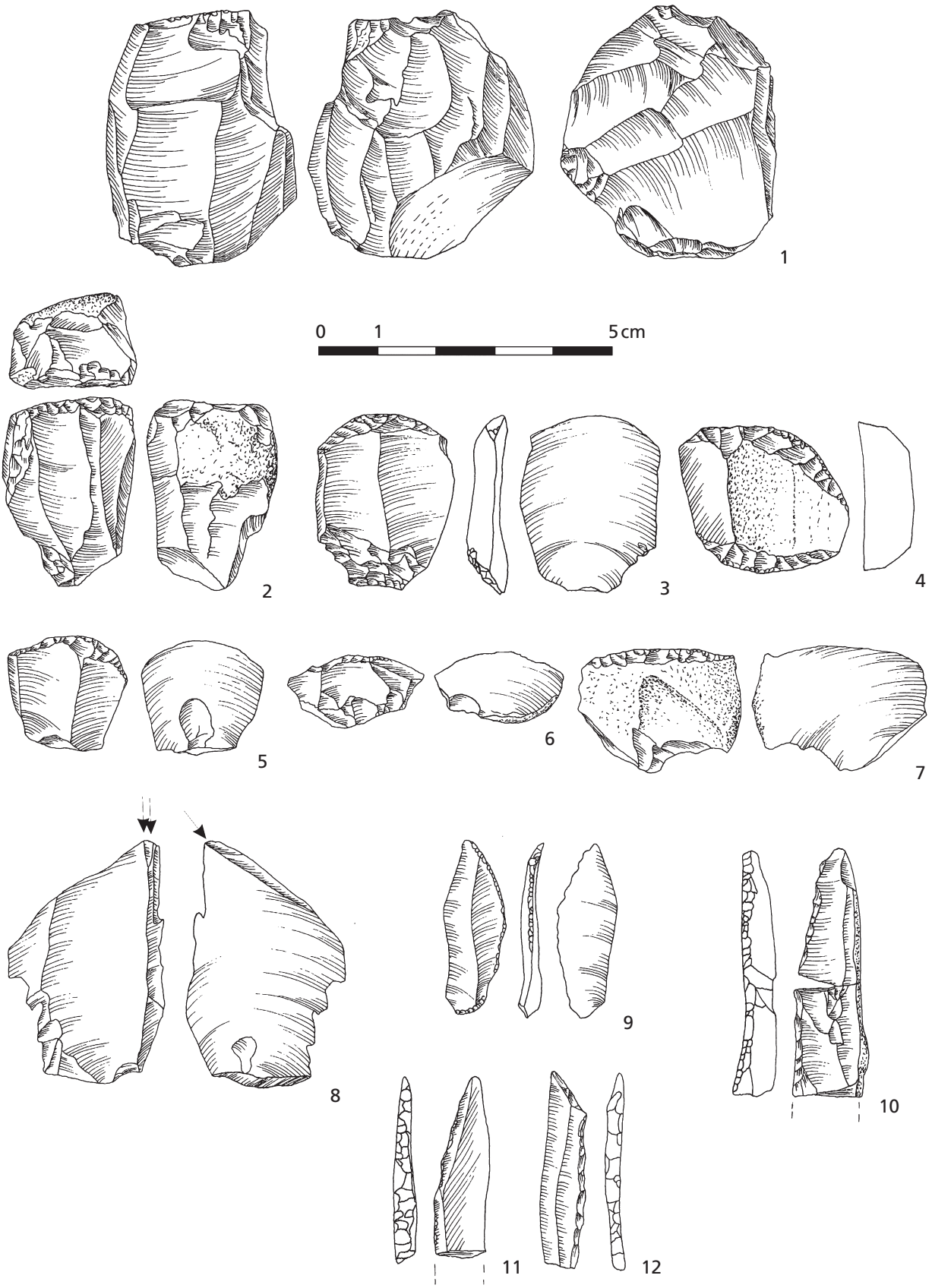

Fig. 4 The diagnostic tool-set of the »Kamienna variant«. – Rydno, Sahara: **1-2** cores. – **3-7** end-scrapers. – **8** burin. – **9-12** backed pieces. – (After Schild et al. 2011, re-drawn by J. Mugaj).

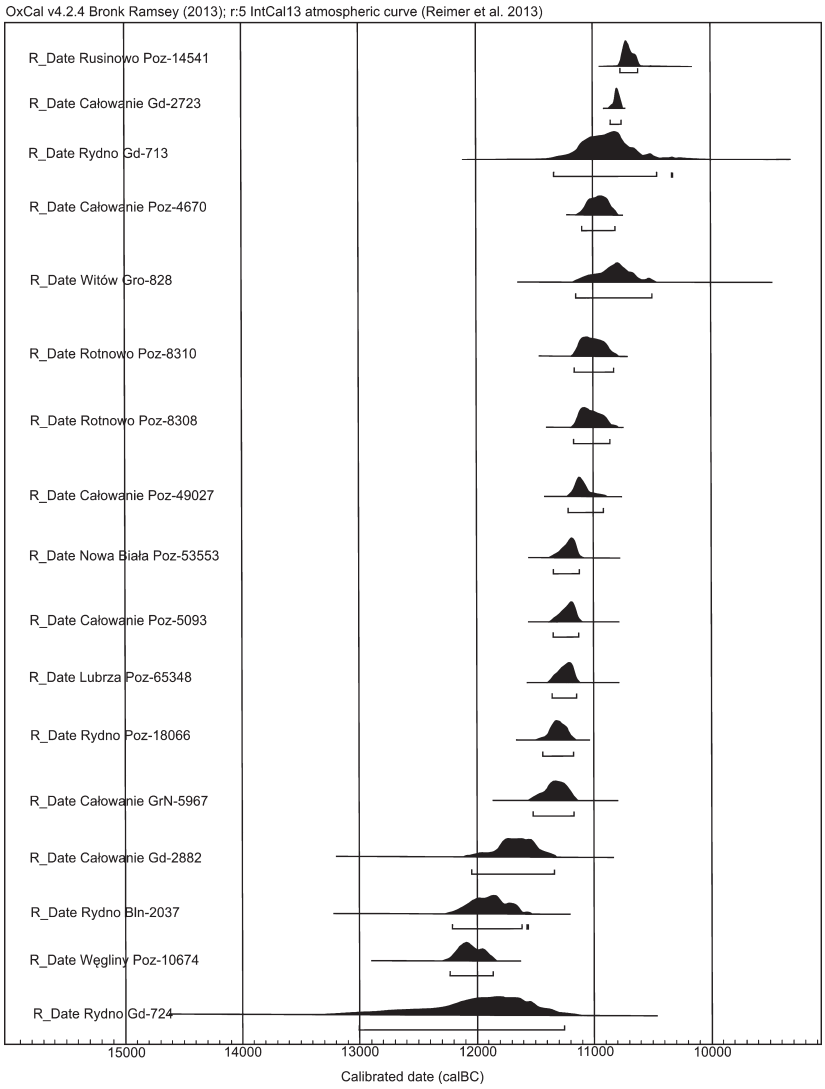

Fig. 5 Radiocarbon dating of ABP sites after calibration with the program OxCal v. 4.2.3 (Bronk Ramsey/Lee 2013); application available on: https://c14.arch.ox.ac.uk/oxcal/OxCal.html.

standard deviations, ranging from 125 to 300 years (Schild et al. 2011, 99-100; 1999; Chmielewska 1961). This minimises their accuracy and opens up various possibilities of interpretation (**fig. 5; tab. 2**).

ENVIRONMENTAL CONDITIONS

In general, ABP settlement in Poland developed in the Allerød (Greenland Interstadial [GI] 1a-1c; c. 11,950-10,700 cal. BC), and in the initial phases of the Younger Dryas. The results of archaeobotanical analyses have enabled the identification of two main phases of the development of the Allerød vegetation: the older one, the so-called birch phase, with a dominant share of birch in forest formations, and a younger phase, with a dominant presence of pine (Latałowa 2004, 387). Detailed studies have shown that the warm oscillation was interrupted by periods of cold climatic conditions. After an initial rise, the temperature fell (Gerzensee oscillation: GI-1b, lasting c. 400 years); after that period the temperature increased, only to drop once again (Schwander/Eicher/Amman 2000).

The then vegetation system in Poland was markedly stratified into horizontal bands, which resulted from thermal conditions, the time that had elapsed since the ice sheet retreat, and the distance from refuges. The changes in habitat conditions are reflected in the increasing share of birch in relation to pine towards the

Site	Lab. no.	Years ^{14}C-BP	Dates cal. BC 2σ	Level / trench	Remarks	References
Rusinowo	Poz-14541	10,700±60	10,776-10,614	found in calcareous gyttja	ornamented elk bone artefact	Płonka et al. 2011
Witów (»hut« 1)	Gro-828	10,815±160	11,116-10,471	Level 5, hearth from hut 1	charcoal	Chmielewska 1961
Rotnowo	Poz-8308	11,100±70	11,146-10,841	shallow pit-house	burnt bones from the hut; 0.9-1.0 m below the surface; Sq 58Gc	Galiński 2007
	Poz-8310	11,090±80	11,146-10,813	shallow pit-house	burnt bones from the hut; 1.0-1.2 m below the surface; Sq 59Gb	Galiński 2007
Całowanie	GrN-5967	11,380±95	11,466-11,123	Level III, Trench 6, Bed 4a, Sample BIS	charcoal from washed-out hearths	Schild et al. 1999
	Poz-5093	11,280±60	11,320-11,104	Level III, Cut XII, Concentration 2, Bed 4a	charcoal	Schild et al. 2014
	Poz-49027	11,170±60	11,196-10,899	Level III, Cut X, Bed 4a	charcoal	Schild et al. 2014
	Poz-4670	11,020±50	11,075-10,792	Level III, Cut XIII, Concentration 2, Bed 4a	charcoal	Schild et al. 2014
	Gd-2723	10,900±130	10,847-10,757	Level IV, trench IX, Bed 5c	charcoal from hydromorphic soil	Schild et al. 1999
	Gd-2882	11,770±160	12,046-11,341	Level ?, Peat Trench IX, Bed 5a, base?	charcoal	Schild et al. 1999; Schild et al. 2014
Lubrza	Poz-65348	11,300±60	11,326-11,115	hearth?	burnt bones	Sobkowiak-Tabaka et al. 2018
Nowa Biała 1	Poz-53553	11,270±60	11,317-11,096	pit	charcoal	Valde-Nowak/Kraszewska 2014
Rydno (Sahara-Cypel)	Poz-18066	11,390±60	11,410-11,146	Trench II / 1990, Sq. 39 (29) Cat. 151	calcium carbonate / bones from the hut	Schild et al. 2011
Rydno (ochre quarry)	Bln-2037	11,970±125	12,186-11,833	Sample 2, Pit 2, Cut I/77	Sample 2, charcoal – Pit 2	Schild et al. 2011
Rydno (ochre quarry)	Gd-724	11,940±300	12,999-11,260	Sample 3, pit	Sample 3, charcoal – pit	Schild et al. 2011
Rydno (ochre quarry)	Gd-713	10,910±220	11,336-10,302	Sample 1, pit	Sample 1, charcoal – pit	Schild et al. 2011
Węgliny 1	Poz-10674	12,120±60	12,194-11,833		barbed harpoon (*Cervidae* or *Bovidae*)	Cziesla/Masojć 2007

Tab. 2 Radiocarbon dates from ABP sites in Poland.

west and north-west. The share of herbaceous plants varied. In the western part of the Oder River Basin, the share of tundra plants increased at the expense of steppe-type plants. In the earlier period of the Allerød, central Poland was characterised by low density birch and pine forests. Woodless areas were dominated by willow, juniper, sea buckthorn and herbaceous plants, albeit in much smaller quantities than in previous periods.

In the second half of the Allerød, most parts of Poland were characterised by dense pine/birch as well as pine forests with aspen, rowan and willow. In the north, forests were rare and open. In southern Poland, the presence of larch was registered at several sites, sometimes along with spruce and alder. In mountainous areas, forests included the Swiss stone pine as well (Latałowa 2003, 271-272).
The Younger Dryas (Greenland Stadial 1, c. 10,700-9,600 cal. BC) saw another period of cool climate. Studies of Polish laminated sediments indicated that the deterioration of climate conditions occurred quickly, as reflected in the increase of non-arboreal pollen with taxa characteristic of a cold, dry climate. This change could have happened within 80-150 years, and as early as in the first period of climate deterioration, during which the forest cover was reduced, and steppe communities as well as the forest-tundra spread in central Poland (Latałowa 2004).
The poor condition of the animal remains recovered from ABP campsites does not permit a comprehensive reconstruction of the then fauna, thereby precluding the recognition of ABP subsistence strategies. The fill deposit of a shallow pit-house at Rotnowo yielded burnt bones of an ungulate (T. Galiński, pers. comm.). In addition, heavily burnt animal bones belonging to a small ruminant (roe dear or ovicaprid) and a large ruminant (red deer or horse) were recovered at Rydno (Sahara-Cypel, Trench II/1990; Schild et al. 2011, 130). Small fragments of burnt long bones of mammals were also discovered at Lubrza (Sobkowiak-Tabaka et al. 2018).

SETTLEMENT

Approximately 100 sites related to ABP settlement are known in Poland (Burdukiewicz 2011): single finds of backed points, small concentrations of flint artefacts, i. e. remains of workshops or domestic units (Lubrza, site 10, Lubrza commune), and large settlement structures, such as those registered at Witów (Chmielewska 1961), Całowanie, or Rydno (Schild 1984, 223; 2014; Schild et al. 2011).
A sandy island, standing clearly out against the peatland, and heavily damaged by deflation and sand exploitation, the site at Całowanie is located in the fossil Allerødian Vistula channel. This place was frequented by hunter-gatherer communities during the Late Glacial and the Holocene, perhaps owing to its favourable location in a wide Vistula Valley, in the vicinity of the confluence of three large rivers: Vistula, Bug, and Narew. The first three settlement levels (Levels II, III, and IVb) are related to the occupation of ABP communities, although this relation is uncertain in the case of level II. Levels III and IVb produced five and nine flint concentrations, respectively. Level III occupation is radiocarbon-dated to the second half of the Allerød, while the settlement activity from level IV occurred at the end of the Allerød (Schild et al. 1999; Schild 2014, 99. 130).
Rydno is a complex of more than 170 archaeological sites, located near chocolate flint outcrops in the northern part of the Holy Cross Mountains on the terrace of the Kamienna River. The location was occupied in the Late Palaeolithic, Mesolithic, Neolithic, and Early Bronze Age. The extraordinary role of this place, associated with the procurement of hematite by ABP communities, is confirmed by the presence of a few huts situated near hematite outcrops along with several workshops. The accumulation of these types of features is unparalleled at any other hunter-gatherer site in the Allerødian forests of Europe. The communities occupying the site have been shown to have controlled the quarrying, working and further distribution of hematite (Schild et al. 2011, 394-395).
Most frequent among settlement remains, however, are one- or two-family campsites (five to twelve people), manifested by the presence of single flint concentrations with a small number of tools, and small hunting camps, e. g. Niedoradz (Otyń commune; Kwiatkowski/Masojć 2011) and Lubrza, site 42 (Kabaciński/Sobkowiak-Tabaka/Winiarska-Kabacińska 2014).

ABP sites are most often located in the Polish Lowland and generally are not documented beyond the Vistula River Valley to the east, with the exception of individual inventories from the Chodelska and Sandomierz Basin (Libera 2002, 202-205). Single sites have also been registered in the Carpathians (the Pieniny Mountains – see fig. 1: Sromowce Niżne, Czorsztyn commune, Nowa Biała, Nowy Targ commune). The richest assemblages are known from the sites in Całowanie (the Mazovian Lowland), Witów (Central Mazovian Lowland), Katarzynów (Zgierz commune), Rydno and Pawłów (Zawichost commune, Sandomierz Upland).

The dispersion of ABP sites shows that that these communities exploited a variety of ecosystems. Some lived in the belt of lake districts and exploited the young glacial landscape, which was marked by a very diversified landform (e. g. Rotnowo, Gryfice commune, the complex of sites in Lubrza, Święty Wojciech, Międzyrzecz commune, Santocko, Kłodawa commune) (Galiński 2007; Sobkowiak-Tabaka et al. 2018). Other communities inhabited lowlands (e. g. Siedlnica, Wschowa commune, Niedoradz, Siciny, Niechlów commune, the settlement complex in Całowanie, Sowin [?], Łambinowice commune, Kozłówki, Kietrz commune). ABP sites are also known from uplands (the Rydno complex, Pawłów; Schild et al. 2011; Libera/Wąs/Zakościelna 2008), and basins (Potoczek, Potok Wielki commune; Libera 2002). A few sites have been registered in the Podhale region (southern Poland: Nowa Biała 1, Sromowce-Niżne 1 [Valde-Nowak 1987], Skwirtne 1, Uście Gorlickie commune [Valde-Nowak 1996] and Tylicz a, Krynica-Zdrój commune [Tunia 1978]).

It follows that unlike the Magdalenian and Hamburgian communities in the area of present-day Poland, which were connected exclusively to the ecosystems of the uplands and valleys, respectively (Kabaciński/Sobkowiak-Tabaka 2012; Połtowicz 2013, 136), the ABP societies exploited diverse, (mostly) Allerødian environmental zones (see Latałowa 2004, fig. 102). If we take into consideration the wide chronological span of the settlement, along with the climatic changes in the Allerød (see above), the image that emerges is that of extremely flexible communities, well-adapted to various ecological niches and skilfully exploiting the environment (Sobkowiak-Tabaka 2017, 320).

RAW MATERIALS

The ABP communities exploited a variety of lithic raw materials (fig. 6). The vast majority of inventories from the Polish Lowland were made from local raw materials: Cretaceous erratic flint, procured mainly in the form of cobbles at the edges of river and lake valleys, consisting both of till sediments and fluvioglacial deposits.

Unsurprisingly, ABP groups that inhabited the area of the ochre mine and chocolate flint outcrops at Rydno and its vicinity (the northern part of the Holy Cross Mountains) during the Allerød and Younger Dryas used mostly chocolate flint (Schild/Królik 1981). In addition, individual flint concentrations in the area showed a large share of Jurassic flint, ranging from a few to several percent of each total inventory (Schild et al. 2011). Chocolate flint was also used on a massive scale at Pawłów, which yielded almost 29,000 artefacts mostly made of this raw material (a few specimens were made of Świeciechów flint; Libera/Wąs/Zakościelna 2008). Exceptional in this case is the site at Tarnowa. Located c. 250 km away from chocolate flint outcrops, the site produced an assemblage made almost entirely of chocolate flint (Krukowski 1939-1948, 92). It is the only site at such a distance from any outcrop of raw chocolate flint to yield an assemblage with almost 90 % of the artefacts made of chocolate flint. We must nevertheless bear in mind the doubts as to the homogeneity of the inventory (Sobkowiak-Tabaka 2012).

Furthermore, the use of quartzite by ABP communities has been recently documented at Lubrza, site 10. The outcrops of quartzite are located in southern Wielkopolska, in Lower Silesia and in the Holy Cross Mountains (Osipowicz/Sobkowiak-Tabaka 2014).

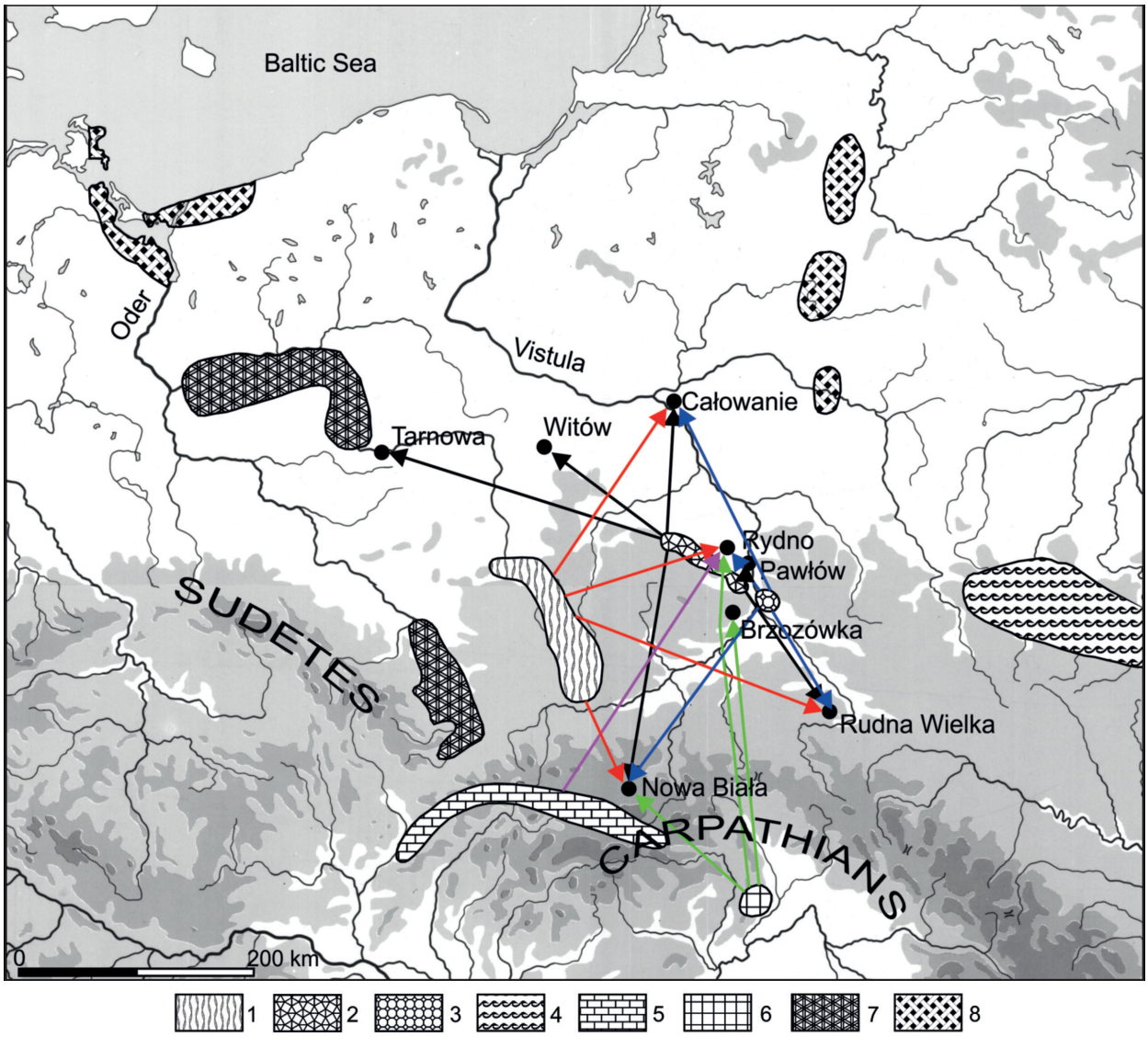

Fig. 6 Outcrops of flints and radiolarites in Poland: **1** Jurassic flint. – **2** chocolate flint. – **3** Świeciechów flint. – **4** Volhynian flint. – **5** radiolarite. – **6** obsidian. – **7** rich occurrences of erratic flint. – **8** concentrations of glacial rafts with Cretaceous flint. Arrows indicate raw material use at different sites. – (After Sulgostowska 2005, fig. 10; Bobrowski 2009; map A. Tabaka).

Noteworthy is the presence of artefacts made of obsidian in the Federmesser-Gruppen inventories: Outcrops of obsidian are found in central and south-eastern Slovakia and north-eastern Hungary. Given the macroscopic characteristics of the specimens (transparency, greyness), they are very likely to have come from outcrops in Slovakia. The provenance was also confirmed by geochemical investigations of some of the artefacts (Hughes/Werra/Sulgostowska 2018). A fairly large number of such findings are known from Rydno (Tomaszewski et al. 2008), and their concentration has been registered at sites in the Podhale region, i. e. Nowa Biała 1, Sromowce Niżne, Skwirtne 1 (Valde-Nowak 1991), and Tylicz, site A (Tunia 1978).

Intensive contacts between ABP communities inhabiting southern Poland, northern Bohemia and Moravia are evidenced by numerous erratic flint imports. Chocolate flint has also been found to have reached these regions (Kozłowski 1992; Vencl 2007, 117). The ABP communities engaged extensively in mining raw materials. Mine shafts were dug at chocolate flint outcrops in Orońsko II (Krukowski 1939-1948), and intensive exploitation and distribution of hematite by the Federmesser-Gruppen and the communities of the Sviderian Culture have been registered at Rydno (Schild et al. 2011, 53-58).

DISCUSSION

The basic list of backed point types was compiled in the 1950s by Schwabedissen (1954). Based on the inventories from Witów, Katarzynów, Rydno, Całowanie, and a few other less important sites, the list of types from Poland was presented by R. Schild (1975, 164, Zestawienie I). This fairly extensive catalogue of forms was grossly simplified by S. K. Kozłowski (1987, 242), who distinguished three basic types of backed points: Federmesser points (as defined by Schwabedissen in 1954), large and very long, with a slightly curved back, usually with steep and high retouch, and a transverse unretouched base (class I); similar to the above, yet shorter and smaller, typically with a more curved back and low retouch (class II); and short segments with a fairly curved back and both ends pointed (class III). According to the author, the differentiation has a functional, chronological, and territorial significance. Smaller backed pieces occur in assemblages from mountainous areas and uplands of eastern Germany, Poland, and the Czech Republic, while larger blades are registered in assemblages from eastern Germany, Poland, and parts of the Central European Lowland.

Such backed point diversity generates a huge variety of assemblages, notably within the group of points, and indirectly spawns the classification of a number of regional and/or chronological groups, with a concurrent invariance of the general pattern of the toolkit. To some extent, this stems from culture-history, the dominant theoretical paradigm in archaeology until the 1960s, when the basic ABP groups were defined in Poland. The culture-historical school of archaeology perceived particular categories of material culture as types. These were treated as criteria for sorting the materials in time and space, and used to define their spatial distribution (Marciniak 2012, 32-39).

It is important to note, however, that the morphological variability within the group of backed pieces, a group of implements that are used as the so-called taxonomic markers, may in fact result from functional differences. A microscopic analysis of backed points from Lubrza, site 42, has shown that massive forms were used as points, while smaller ones served as inserts and barbs (Kabaciński/Sobkowiak-Tabaka/Winiarska-Kabacińska 2014, 209). The backed pieces found at Całowanie also functioned as elements of weapons (Winiarska-Kabacińska 2014, 277). Backed pieces recovered from Lubrza, site 10, however, performed different tasks. They were used as elements of weapons (points and inserts) or knives, and one massive backed piece was used for piercing or punching/drilling (Sobkowiak-Tabaka/Kufel-Diakowska 2019). A different situation was observed in Rekem (Belgium), where smaller pieces served as projectile components, while wider and longer pieces were used as butchering knives. Perhaps that results from a difference in the size of the mentioned sites. With only a few artefact concentrations, sites Lubrza 10 and 42 provide examples of short-term, task-oriented occupations, whereas Rekem is a multi-seasonal occupation site where a variety of activities were undertaken (De Bie/Caspar 2000; Kabaciński/Sobkowiak-Tabaka/Winiarska-Kabacińska 2014, 209).

Let us recall here the aforementioned reduction of the extensive catalogue of typological forms carried out by S. K. Kozłowski. It is a sufficient example to illustrate how archaeologists create their concepts of a past reality, far from what it in fact could have been. Note that the primary criteria used by archaeologists to sort materials in order to determine time and cultural space is the principle of similarities and differences, generally regarded as universal. Similar artefacts are seen as concurrent, while physically different objects are deemed to be products of different times.

It has been widely accentuated in the subject literature that one of the major problems faced by archaeologists is »the cultural labelling« of Late Palaeolithic flint inserts to the total neglect of their symbolic meaning, which was an integral trait of past societies, closely interwoven with the objects' practical-technical use. A completely unsubstantiated contention – that the typological diversity matches cultural diversity – is thus implied. As a result, it is an archaeologist (not the Late Palaeolithic manufacturer!) who, through various

metric classifications of artefacts, actually creates diverse cultural groups that were to occupy the same cultural territory (Schmitt 2007, 146-148).

Nonetheless, the understanding of identity in ancient societies did not quite match the meaning of the term as understood by contemporary people (Kowalski 2001, 87). Unlike archaeologists, people in the past treated items as identical not because of their physical similarity, but due to their coexistence within the same space and at the same time. For that reason, objects could have been utterly different in terms of their physical appearance and function. According to U. Eco (1998), two things that were considered to be different in Aristotelian categories come to be treated as the same if they manage to occupy the same spatial area at the same time. This statement is corroborated by observations by M. Mauss (2004) who in the early 20th century wrote about the Inuit of the Baffin Land and Hudson Bay. To the Inuit, there were rigid distinctions between »summer« and »winter« things, pertaining to the hunted animals, hunting equipment, type of clothing, or tents to live in, and even people (born in winter or summer). Using these inventories at the same time, or at any other time of the year than the one for which they were intended, was not allowed. Yet, seeing two different types of inventories in the same area, an archaeologist would eagerly identify two cultures/cultural groups.

The basic issue to be addressed herein is the reason for the variations in the ABP material culture, regardless of its subsequent classifications by archaeologists.

Here, an environmental factor should first and foremost be taken into consideration. It is undeniable that we cannot simply equate the change in environmental conditions with the change in tool production technology, as evidenced by the results of long-term research of J. Bower and M. Kobusiewicz (1998). Societies inhabiting comparable environmental zones in Europe and North America in the late Pleistocene and early Holocene did not develop in the same way. While a significant technological change (i. e. microlithisation and geometrisation of flint artefacts) occurred in Europe, a continuous development of bifacial technology is observable in North America. Note that the development of flint tool production in communities occupying various ecological zones of southern Africa stands in marked contrast to this (Mitchell 2000), as the flint industries of societies there were identical, and any transformation happened roughly at the same time. Hence, »toolkits were modified for social (rather than) ecological reasons, though the nature of social reasons« (Bower/Kobusiewicz 2002, 138) is unspecified. Local environmental conditions are nonetheless significant in regard to choosing hunting strategies, site location and hunting equipment. Thus, a specific landscape type (i. e. open landscape, woodland) could have determined the employed subsistence strategies (Mortensen/Henriksen/Bennike 2014; Mortensen et al. 2014). While a specific type of adaptation/specialisation, e. g. reindeer or horse hunting, necessitated a proper toolkit, it nevertheless did not precisely regulate the form of implements or weapons. Such forms were the outcome of the influence of the cultural environment and the resultant stylistic diversity of artefacts. We can therefore define Late Palaeolithic hunter-gatherers as functional communities differentiated in terms of artefact styles, the variation, though, stemming from pre-existing diverse cultural environments (Kozłowski 2012, 938).

An example of the influence of the cultural environment has been recently discussed by R. Schild. The author argues that the »Kamienna variant« is technologically and stylistically affiliated to Magdalenian inventories known from southern Poland and site Rydno II/1959. Schild believes that the observable changes resulted from the adaptations of technological strategies, aimed at saving time and minimising raw material loss (Schild et al. 2011, 129-130).

The problem arises now whether the changes in material culture go indeed back to such technological considerations. I am of the opinion that it would not be appropriate to explicitly assume that rationality focused on technological utility – a basic human trait typical of modern humans – also characterised archaic mentality. Hence, the development of archaic societies cannot be simply a reflection of the scheme of development

of their material culture, as constructed by archaeologists. According to C. Lévi-Strauss (1963, 4): »A[n] ax […] does not generate another ax. There will always be a basic difference between two identical tools, or two tools which differ in function but are similar in form, because one does not stem from the other; rather, each of them is the product of a system of representations«. Moreover, the whole category of points as parts of arrows functioned in a more symbolic context as social markers and exchangeable items, too (see Wiessner 1983).

CONCLUSIONS

In my paper, I attempted to highlight problematic areas related to the issue of ABP settlement in Poland and discussed the reasons for considerable variability in ABP inventories, taking into account typological, functional, environmental and methodological aspects. The processes of »azilianisation« that occurred in Western Europe at the end of the Magdalenian settlement also took place in the area of present-day Poland, highlighted by changes in economic strategies, settlement models (decline in the number of sites and their structure), the structure of raw materials supply, and a simplification of flintworking technologies. This argument has lately been raised by R. Schild, according to whom a transformation is likely to have occurred in Poland between Late Magdalenian/ABP assemblages, analogous to the one in Western Europe (Bodu et al. 2006), i.e. in the Paris Basin with the gradual techno-stylistic transformation of Magdalenian artefacts into Azilian artefacts. However, the author emphasises that the weakness of this hypothesis lies in the rather tenuous proxy chronology of Terrace III of the Kamienna River at Rydno, which yielded material from Magdalenian and ABP occupations, and the problem of dating Magdalenian settlement in southern Poland to the early phases of the Late Glacial (GI-1e) (Schild et al. 2014, 350-355). We should bear in mind that Federmesser-Gruppen settlement of a fairly early origin (Older Dryas: GI-1d) is known not only from the Paris Basin, but also from Reichwalde (Saxony, Germany), next to the Polish border, documented by radiocarbon measurements of burnt bones along with palynological and stratigraphic observations (Vollbrecht 2005, 19-24). On the other hand, the area of eastern Poland yielded assemblages (Mosty, Wierzawice) that could possibly attest to a long-term classic Magdalenian occupation in its eastern peripheries (Połtowicz-Bobak 2013, 322-323). Not only did ABP communities occupy areas hitherto settled by Magdalenian societies, they enjoyed a fair amount of »colonisation success« as well, having moved considerably towards the north (Bocquet-Appel et al. 2005). This hints at a high degree of flexibility resulting from the ability to adapt to various ecological niches.

There are several conceivable reasons for the variability of ABP inventories noticeable not only in Poland but in the whole of Europe. It is noteworthy that the typological diversity within the group of inserts may simply stem from the variation between contemporary craftsmen (Thomas 1974). Alternatively, it might have been the result of a stylistic drift, as in the case of Palaeoindian fluted points (Morrow/Morrow 1999, 227). This diversity may also stem from the functional diversity of camp sites or the length of camp occupation (e.g. Lubrza, Rekem). We also cannot rule out environmental factors completely, although at this point I wish to emphasise once again that it is rather about the selection of hunting strategies and appropriate equipment, not the shape of the tools.

Regional differences in ABP diversity, notably within the group of projectile points, could be explained by the intensity of cultural transmission. Studies carried out by R. L. Bettinger and J. Eerkens (1999) concerning the morphological diversity of projectile points showed that communities that only occasionally come into contact with each other (most likely groups speaking different languages, meeting occasionally for commercial purposes) are marked by a very high diversity of blades, unlike groups that maintain regular contact. Compared to earlier Hamburgian groups, found exclusively in the Polish Lowlands, and Magdalenian groups,

known to have lived mostly in the Polish uplands, ABP communities have been shown to have occupied much larger and more diverse areas. Consequently, utterly different ecological conditions enforced the application of various hunting strategies. Hamburgian reindeer hunters migrated seasonally following reindeer herds and hunted in larger groups (see Grøn 2005) – all that fostered contacts and cultural transmission. Life in the luminous Allerød forests and the dissemination of bow and arrows could have brought about the development of individual hunting among ABP communities (large hunting groups were quite pointless); hence a greater variability of the hunting toolkit may have developed.

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Summary

This paper provides an overview of the settlement of the Arch-Backed Piece technocomplex (ABP) in Poland and seeks to explore and interpret the considerable variability in its material culture. ABP inventories were for the first time identified in Poland by S. Krukowski in the 1920s (at the time as the »Azilian« industry). Almost 100 years of excavations and studies have produced approximately 100 ABP assemblages (including stray-finds). Based mostly on lithic inventories marked by substantial technological, typological and morphological variability (notably in the group of backed points), three taxonomic units have been distinguished (the Federmesser-Gruppen, the Tarnovian, the Witovian), along with, recently, their local variants. The article provides the main criteria for identifying particular ABP groups in Poland and discusses associated methodological problems and factors that may have brought about the typological diversity of flint artefacts. Finally, the author offers an interpretation of the assemblage variability.

Keywords

Poland, Arch-Backed Piece technocomplex (ABP), assemblage variability, chronology, settlement patterns