

Tomasz Płonka<sup>1</sup>

## THE TARDENOISIAN CONCEPT IN POLISH MESOLITHIC STUDIES

### ABSTRACT

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The evolution of the concept of the Tardenoisian in Polish Mesolithic studies visibly falls into three phases, dating approximately to 1900-1970, 1971-1990, 1991-2016. In the first half of the twentieth century the geographical range of the Tardenoisian, known originally from French sites, was extended to areas in Central Europe, Poland included. Although criticised by Polish researchers of the Mesolithic already in the 1960s, this concept continued to appear in the literature until 1970. In the 1960<sup>s</sup>, 1970<sup>s</sup> and 1980<sup>s</sup> the local cultural taxonomy of the Polish Mesolithic was developed, based on meticulous analyses of the archaeological record. Using these sources, some researchers have recognized influences in southwestern Poland of the Western complex of Mesolithic cultures which includes *e.g.*, the Tardenoisian and Beuronian. New material discovered after 1990 confirmed the presence of Beuronian sites in the Polish zone of the Sudeten. The upland and mountainous zone of Central Europe with its great diversity of lithic resources was heavily exploited by communities of this cultural tradition.

Keywords: Mesolithic, Tardenoisian, Beuronian, Sudeten Mesolithic

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Institute of Archaeology, Wrocław University, Szewska 48, 50-139 Wrocław, Poland; tomasz.plonka@uwr.edu.pl;  
ORCID: 0000-0001-8085-4273

## INTRODUCTION

The term “Tardenoisian” takes its name from the Tardenois natural region in northern France lying in the departments of Aisne and Marne. The first characteristic artefacts were discovered in 1885 by E. Taté at Coincy-l’Abbaye, in a location known as Sablonnière, in the department of Aisne (Taté 1924). In November of that year, E. Taté notified G. de Mortillet, who after inspecting these materials assigned them to a unit named *le Tardenoisien*. In 1889 at the International Congress of Anthropology and Prehistoric Archaeology, E. Vieille made known his discoveries in this same region which – as it turned out – had preceded the works by Taté, having been made in 1879. Later still, it became known that the earliest finds of microliths had been made in 1868. There is no doubt, however, that the term “Tardenoisien” was coined by G. de Mortillet (1896). The Azilian and the chronologically succeeding Tardenoisian were understood to fill completely the settlement hiatus that supposedly existed in Europe between the Palaeolithic and the Neolithic. The stratigraphic and chronological position of the Tardenoisian was narrowed down as a result of excavations by L. Coulonges at Sauveterre-la-Lémance (Lot-et-Garonne) and by R. Lacan at Cuzoul de Gramat (Lot) in the 1920s and 1930s.

The concept of the Tardenoisian was of major importance for the development of research in the Mesolithic and Late Palaeolithic of Central and Eastern Europe, the territory of present-day Poland included. During different period of the development of archaeology, the Tardenoisian was interpreted in different ways. The evolution of this concept in Polish Mesolithic studies largely coincides with the speculations of Central European archaeologists but nevertheless displays some individual features that are an interesting object for reflection. The present article aims at reviewing the evolution of this concept in the studies of the Polish Mesolithic.

### 1900-1970

Shortly after the Tardenoisian was recognized, the term was extended to different inventories with microlithic tools known from Western, Central and parts of Eastern Europe. At the same time, in the early years of the twentieth century, when publishing the second portion of prehistoric materials from the Stopnica district, E. Majewski (1904) did not use the term Tardenoisian, despite being familiar with the work of de Mortillet (1896) where this culture unit was defined. Discussing the chronological position of tools found in Stopnica district, Majewski used the general term “Mesolithic” although he himself was inclined to agree that microlithic tools “need not be of an earlier date than the Neolithic” (Majewski 1904, 155, 156). The term “Tardenoisian” entered the Polish language literature for good in the 1920s. L. Kozłowski (1923) in his contribution discussing the Stone Age in eastern Lesser Polish Upland used the concept of a “microlithic Mesolithic” to describe small

Table 1. The communities and cultures of the Western Mesolithic Cycle in Europe

Sauvterrian community	Tardenoisian community	Castelnavian community
Sauvterrian culture Boberg culture Shippea Hill culture	Beuron-Coincy culture Rhine Basin culture	Castelnavian culture Montbani culture Hoëdic culture Cuzoul culture Muge culture

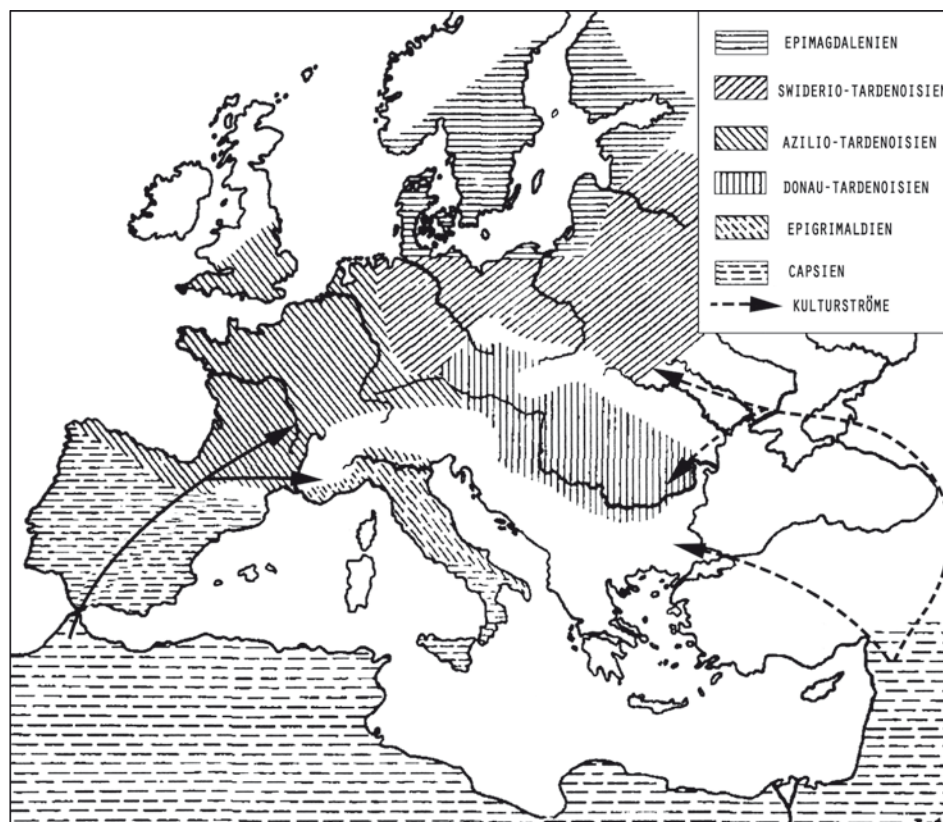


Fig. 1. The Tardenoisian in Europe according to Lothar Zotz (1934, Fig. 6);  
computer processing by N. Lenkow

tools, often of a geometric shape, apparently introduced to our region from areas in south-western Europe. This term by the same researcher in his earlier studies concerned with the early phases of the Stone Age in Greater Poland (L. Kozłowski 1919) and with the state of research in the Stone Age in Poland (L. Kozłowski 1921, 31-33) – recognizing the “Neolithic microlithic” as its end result. According to L. Kozłowski (1923), this same “microlith”

partly belongs to the “Azilian age”, but nevertheless for the most part to the “Tardenoisian culture”. L. Kozłowski concluded that “our microlithic Mesolithic also belongs to this culture” (L. Kozłowski 1923, 145). However, in the next sentence he goes on to describe the same culture as “early Neolithic”. In a chronological table on the following page, he makes a distinction between “Tardenoisian culture” in “Mediterranean countries” and the “microlithic Mesolithic” in the Lesser Polish Upland. Even in this short fragment of Kozłowski’s text reveals his dual understanding of the term “microlithic Mesolithic”; on the one hand it is understood as a certain formal and functional assemblage of artefacts found in the Azilian and Tardenoisian cultures, and later, in the “fully fledged Neolithic”, but in a different passage it is treated as a chronological notion equivalent to the “Tardenoisian culture”. In the first overview of the Polish Mesolithic, L. Kozłowski (1926) distinguished the presence in sandy areas of Poland of the Tardenoisian culture with western European origins.

A major contribution to the development of the Tardenoisian concept was made by L. Zotz (1931; 1932; 1934) who recognized, next to centres of the Western and the Danubian Tardenoisian indicated by H. Obermaier, a northern Central European centre found in Germany and Poland. In the 1930s, L. Zotz formulated the term of a “Swiderio-Tardenoisian” cultural group which supposedly came into being as the result of the superimposition of Tardenoisian elements over Swiderian ones, in a vast territory extending from Lithuania through Belarus and Ukraine almost as far as the Rhine. Zotz argued that strong cultural currents combined with migrations (Fig. 1) ran on the one hand to Western Europe (by way of Gibraltar), on the other hand, to eastern and Central Europe (through Asia Minor and the Caucasus). The former resulted in the emergence of the Azilo-Tardenoisian, the latter led to the development of the Swiderio-Tardenoisian and the Danubian Tardenoisian. It is extremely interesting that it did not occur to Zotz that artefacts resting on the same level may differ in age.

Zotz argued furthermore that “assemblages” containing side by side Neolithic and Mesolithic elements represent the Neolithic with some residual Tardenoisian features (Zotz 1934). Similarly, B. Klíma assigned the industry from Kylešovský kopec to the Swiderio-Tardenoisian industry and from that time on, Czech researchers classified a larger number of sites in the Czech Massif to the Swiderio-Tardenoisian. This concept was adopted also in Soviet literature of that period (A. Formozov, A. Jablonskite). In Central Europe, L. Kozłowski, L. Sawicki, K. Jażdżewski, J. Bryk and Z. Szmyt were recognized as the most influential researchers of the “Tardenoisian problem”, in Russia this applies to M. Rudynsky.

The perception of the Tardenoisian in the period before World War II is summarized in passages discussing the Mesolithic in the entries contributed by J. Kostrzewski to *Encyklopedia Polska* – Polish Encyclopaedia (1939-1945) and in the volume on the prehistory of Poland published after the War (Kostrzewski 1949). The two texts are quite similar although they differ in some details, and J. Kostrzewski would reiterate his observations about the Tardenoisian in his later contributions (Kostrzewski 1955). Kostrzewski traces

the Tardenoisian culture to Africa (as posited by Ed. Vignard), from which region it migrated to the European continent either by way of Gibraltar or through Asia Minor and the Caucasus. Like researchers before him (L. Kozłowski 1926; Clark 1936), J. Kostrzewski argued that the Tardenoisian is to be found almost everywhere in Europe in sandy areas – except for Scandinavia, Eastern Baltic countries and some regions on the Danube. In the pre-1939 territory of Poland, it is noted during the “late Ancylyus Lake period”, ranging from Lesser Poland to Pomerania, Wilno Land and Lithuania – but only in sandy areas. Kostrzewski (1970, 18) explained the marked preference for dunes by the fact that they were free of vegetation and usually situated near water. In his view, the Polish assemblages were more likely to represent the eastern direction of migration because early Tardenoisian assemblages from our region (pre-1939 Poland) and eastern Germany feature Swiderian tanged points, not noted in western Europe.

Chronologically, the Tardenoisian falls into two groups – early (“Lower Tardenoisian”) and late (“Upper Tardenoisian”). Armatures characteristic of this culture are represented in Lower Tardenoisian assemblages by triangles and segments whereas in the Upper Tardenoisian the predominant form are trapezes, burins are no longer in evidence, and a previously unseen form are so-called “pointy scrapers”. This culture continues in evidence until the Neolithic, represented also by the Janisławice burial. During the same age, northern Poland was inhabited by another group of people, whose main subsistence strategy was fishing, living near still and flowing waters, who mostly used tools made from antler and bone. These tools have been recorded in the Mazury Lake District, Gdańsk Pomerania and northern area of Greater Poland (Kostrzewski 1949, 26), or according to a different study (Kostrzewski 1939-45, 121) everywhere in Pomerania, northern Mazovia, Vilnius Region and Lithuania. These antler and bone artefacts are reminiscent of the Kunda culture, although axes and batons apparently are related to “types in the Maglemose culture”. Kostrzewski’s description contains a number of points that, in my view, may be useful to discuss. The first of these follows from the claim that Tardenoisian sites are restricted in their distribution to sandy locations – this leads to the question of where the Kunda and Maglemosian hunters of northern Poland lived – presumably, next to bodies of water where objects of bone and antler made by these people have been found.

The second doubtful point is geographical, since in his post-War study (1939-45), Józef Kostrzewski lists the Vilnius region and Lithuania as areas inhabited both by the Tardenoisian and the Kunda people. To judge from his observations, we can surmise (but cannot be certain) that the former occupied sandy areas, the latter – after all, they were all fishers – waterside sites. However, it is unclear whether in Kostrzewski’s view this settlement was synchronous or a diachronous phenomenon.

The third doubt is raised by the cultural inventory of the Tardenoisian people, which does not include objects crafted from antler and bone, except for the single burial at Janisławice, but it is unclear whether J. Kostrzewski treated the elements of this inventory as an exception to the rule. In any event, it did not include fishing tools, so characteristic

of the “northern people”. As for the latter, they “almost exclusively” (Kostrzewski 1939-45, 121) used antler and bone tools. However, it is not fully clear how exactly the phrase “almost exclusively” was understood by Kostrzewski. I believe that the Professor had an awareness that lithic tools were also in use (after all something was needed to work antler and bone) but they cannot be linked to objects made of these organic materials. He voiced this view explicitly in his works published in 1955 and 1966, and blamed the absence of lithic artefacts on the level of research – the lack of regular archaeological excavations.

These doubtful points were addressed, with some modified ideas about different peoples, in a volume discussing the prehistory of Pomerania (Kostrzewski 1966, 11-13). During “the Ancylus Lake period” this region was inhabited by peoples of two distinct cultures – Tardenoisian and Maglemosian-Kunda. The former are known primarily from camps on dunes with rich flint inventories, since antler and bone are unlikely to survive there. Finds associated with the latter have been recovered from rivers, lakes and marshland where organic material have a high survival rate whereas lithic artefacts “eluded the attention of casual explorers”. Formerly, the Tardenoisian culture used to be identified mostly with hunters, the latter with fishers, but his view is too one-sided. The sites at Kunda and Maglemose have produced a large number of flints and the grave inventory from Janisławice contained no less than 54 antler and bone objects. Bone and antler tools, contrary to the view of the earlier generation of researchers, were present also on French sites (Barrière 1955; 1956). Thus, the communities of both these cultures practiced gathering, hunting and fishing, with only some prevalence of hunting in the Tardenoisian environment and fishing among the Maglemose-Kunda communities.

Meanwhile, summarizing the state of research on the Tardenoisian, C. Barrière (1955; 1956) found this civilisation is characteristic of western Europe, claiming that the majority of Tardenoisian sites are known from France, and that some Tardenoisian influences are to be seen in Central Europe. In his view, studies of stratified sites prove that the Tardenoisian was preceded by the Sauvterrian. C. Barrière states outright that the Tardenoisian was also familiar with tool forms other than microliths, and with objects made of bone. Furthermore, he argues that there is no need to look for the roots of the Tardenoisian in Africa because microlithic forms and the microburin technique are known from the Upper Palaeolithic and Epipalaeolithic of Western Europe.

The Swiderio-Tardenoisian concept had already come under criticism before the War. In a competent observation made while reviewing the work of C. Engel and W. La Baume, K. Jażdżewski demonstrated that the existence of such a formation cannot be sustained since Swiderian and Tardenoisian materials are evidently chronologically separate (Jażdżewski 1938, 308-309). More criticism and some modifications of the Swiderio-Tardenoisian concept came in the early 1960s, although the author of this criticism, J. K. Kozłowski nevertheless proposed to allocate some assemblages from the former Kraków district to the “Mazovian-Tardenoisian industry” (J. K. Kozłowski 1960, 95). On the other hand, Zotz’s reasoning was criticised firmly by R. Schild and H. Więckowska in their article

from 1961 (Schild and Więckowska 1961). Their conclusion was that the speculative culture units are the result of an uncritical analysis of surface finds, containing side by side Late Palaeolithic, Mesolithic and later materials. Addressing the Tardenoisian concept, H. Więckowska (1964, 31) claimed that all too often Mesolithic materials from Europe tend to be classified routinely to the Tardenoisian industry: early (with triangles) or late (with trapezes). While on this subject, she also observed that “the existing synthetic analyses of the Mesolithic are at present untenable”. During the investigation of sites in the region of Dębe, north of Warsaw, it turned out that the materials fall outside the established system, proving that the earlier classifications are outdated. H. Więckowska argues that a new analysis of Mesolithic materials can be attempted only using the concept of industries and industry cycles of S. Krukowski. On the other hand, discussions of this sort found their way to the synthetic prehistory of Poland published in mid-1960s (Kostrzewski *et al.* 1965, 50). An opinion is found in this volume that is quite similar to Więckowska’s position. This is that while so far a few hundred sites are known from Poland to date, many of them had yielded mixed inventories, their chronology remained undetermined and typological differences between them are considerable. Most of these sites were classified to the Tardenoisian culture, but this cultural taxonomy turns out to be completely useless (*nota bene*, the authors reiterate the incorrect view about the origins of the name “Tardenoisian” deriving it from the site Fère en Tardenois). As a result, in the chapter dedicated to the Mesolithic no cultural taxonomy whatsoever is used, only a description is given of phenomena and material culture of that age. The author of this contribution was presumably W. Chmielewski who was well familiar with the context of the discussion of the cultural divisions of the Mesolithic (J. Kostrzewski wrote of the Tardenoisian culture as late as 1970).

Similarly S.K. Kozłowski considered the existing cultural taxonomy of the Mesolithic to be outdated (S. K. Kozłowski 1965, 151, 152). He argued that the “apparent uniformity” of Mesolithic artefacts from Europe had persuaded Polish researchers to adopt French taxonomic solutions – the inventories would be determined as “Tardenoisian”, their chronological determinations dependent on the presence of triangles or trapezes. This was aggravated by incorrect methods used to recover the materials, which resulted in mixing inventories of a different age (which was then used an argument to discredit the value of surface finds in general). At the same time, in a footnote (no. 4 on page 152), the same author was “conditionally” inclined to use the term “Tardenoisian period” as a synonym of the Mesolithic (*cf.* his voice in a discussion at the First Palaeolithic Symposium in Cracow).

What follows from these critical observations is that the Tardenoisian concept had been used routinely as a tool in classifying assemblages with Mesolithic armatures found in Poland, in Central Europe and in parts of Western Europe. Only with the study of the diversity of these tool forms and the parallel development of typological analyses, were culture units, understood to represent specifically local cultural relationships, recognized during the 1950s and 1960s.

## 1971-1990

The effect of these in-depth studies was a series of synthetic studies of the Mesolithic in Poland, the earliest published in the 1970s and 1980s (S. K. Kozłowski 1972; 1989; Więckowska 1975). Their authors proposed a new cultural taxonomy for the Mesolithic materials from this region, one that corresponds to the local lithic styles. S. K. Kozłowski confined the use of the term “Tardenoisian” to a specific complex of cultures characteristic of Western Europe, in its uplands and foothills, with some peripheral sites in Central Europe (S. K. Kozłowski 1972, 206-213), with the Tardenoisian culture proper found only in the west. In Central Europe, in the region directly bordering on Polish lands, he distinguished Smolín type assemblages, named after a type site in Moravia investigated by K. Valoch (1963). In Central European inventories belonging to the Tardenoisian tradition, the main armature forms would be Tardenoisian points, Komornica truncations, mostly with a base in the proximal part of bladelet, short lanceolate backed points, short isosceles triangles, short segments and asymmetrical trapezes. A form characteristic of these assemblages is also the endscraper – either small and short, circular or other forms. In the view of S. K. Kozłowski (1972, 211, 212, Pl. XLVI: 38-51) Smolín type assemblages found in Poland would include the surface inventory from Potasznia I, Milicz district with Komornica truncations with a base in the proximal part of bladelet, isosceles triangles, an asymmetrical trapeze, a Tardenoisian point or a small Janisławice point as well as some small and short endscrapers (Fig. 2: 1-5). He interpreted these materials as evidence of a sporadic penetration of the region and, as such, not likely to be found in high numbers in

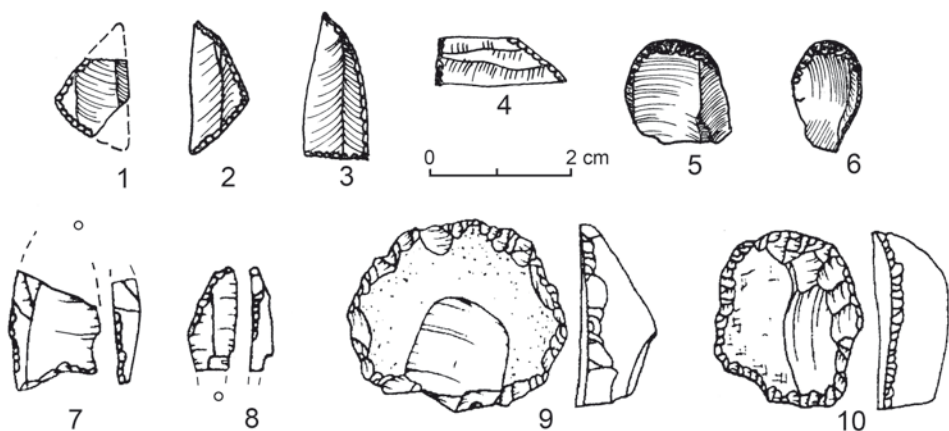


Fig. 2. Stone artefacts from southwestern Poland. 1-5 – Potasznia I; 6-10 – Ratno Dolne 2 (1, 2 – isosceles triangles; 3 – Tardenoisien or Janisławice point; 4 – asymmetric trapeze; 5, 6, 9, 10 – endscrapers; 7 – Tardenoisien point (?); 8 – Komornica truncation with a base in the proximal part of bladelet; 1-7, 9, 10 – erratic flint; 8 – opal). After Bagniewski 1976; Bronowicki 2002; computer processing by N. Lenkow

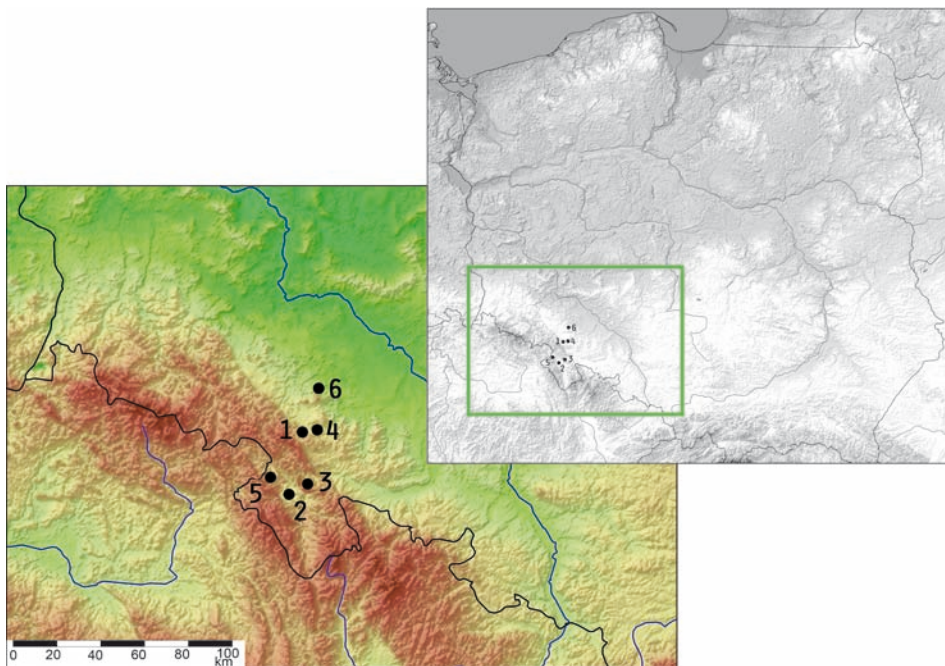


Poland, “possibly except for the little studied uplands in Lower Silesia (?)” (S. K. Kozłowski 1972, 212). In later studies, the site Potasznia I was allocated to the Beuronian (“the Beuron-Coincy culture”). J. K. Kozłowski and S. K. Kozłowski elaborated a two-stage taxonomy of Mesolithic cultural units in Europe (Tab. 1) in which “the Beuron-Coincy culture” belonged alongside the Rhine Basin culture to the Tardenoisian community of the Western Mesolithic Cycle (J. K. Kozłowski and S. K. Kozłowski 1975, 274; 1977, 245). This cycle grouped cultures that had originated in the Palaeolithic of southwestern Europe. At the end of the 1980s, based on materials then at hand, S. K. Kozłowski ultimately rejected the argument of the existence of sites of this culture in southwestern Poland (S. K. Kozłowski 1989, 189, 190).

In the 1970s and 1980s, no Mesolithic sites were recorded in the Polish Sudeten and their foreland. This situation was thought to reflect the specific preferences of the Mesolithic hunters who avoided hilly and mountainous terrain bordering in Poland on the European Lowland (Rotherth 1936; Bagniewski 1987). In his work on the Mesolithic settlement in southwestern Poland, Z. Bagniewski (1987, 9) observed that despite many years of study no Mesolithic sites had been identified in the Sudeten mountains above 250 m a.s.l. But he did not rule out their existence because their remains could have been redeposited and buried by erosion processes, much more intensive in the mountains than in the lowlands.

## 1991-2016

The late 1980s and 1990s brought intensive archaeological investigations in the Sudeten Mountains and the Sudeten Foreland oriented on discovering evidence of Palaeolithic and Mesolithic occupation (Bronowicki and Kowalski 1990; Płonka 1995; Bobak 1996; Bronowicki 1999a; 1999b; Masojć 2004). This fieldwork revealed the presence of rich Mesolithic settlement in the region, confirmed in any case by a large number of finds known from the Czech part of the Sudeten (Vencl 1978; 1991a; 1991b; 1992; 1996). Material recovered in the Polish part of the Sudeten resembled the “Lowland” Mesolithic inventories known from southwestern Poland, with characteristic microlithic forms, other tool forms and cores (Bagniewski 1987; Bronowicki 1999a; Masojć 2004; Płonka 2007). At the same time, different areas of northeastern Bohemia, in the region of Sopotnice, in the Orlickie Foothills and in the Lusatian Mountains, have produced sites that may be referred to using the term Beuronian, despite the exceedingly rare occurrence of Tardenoisian points (Vencl 1991b; 1992; Svoboda 2003). Next to a large selection of armatures such as isosceles and other triangles, segments, Komornica-type truncations with a base in the proximal part of a bladelet, these sites are characterized by the regular use of local raw materials, with the proportion of Baltic erratic flint in some sites as high as 55-79% (Płonka 2007, tab. 1). In any case, a feature characteristic of these sites is the raw material polymorphism; the lithic



**Fig. 3.** Beuronian sites and sites with Beuronian elements in southwestern Poland. 1 – Bielawa 12; 2 – Kamieniec 3; 3 – Ławica 8; 4 – Piława Dolna 16; 5 – Ratno Dolne 2; 6 – Ślęza (mountain) 177; computer processing by N. Lenkow

artefacts found in them were made of many different raw materials, some of them sourced over 50 km away. They date to the Boreal and the Atlantic period (Płonka 2007).

In the 1990s and early years of the 21st century, the studies of J. Bronowicki revealed the existence in the Polish Sudeten of sites similar in character (Fig. 3). They delivered some characteristic tool forms like Tardenoisian points (?), round endscrapers and Kormornica truncations with a base in the proximal part of bladelet (Fig. 2: 6-10). One of these sites, at Ławica 8 in the gorge on the Nysa Kłodzka river in the Bardzkie Mountains, produced an inventory of several hundred Mesolithic artefacts struck from erratic flint and local siliceous rock, as well as other raw materials (Bronowicki and Bobak 1999; Bronowicki 2000). The Polish sites with Beuronian elements cluster in three regions (Bronowicki 2002; 2008; 2016; Masojć 2016): i./ the gorge on the Nysa Kłodzka in the Bardzkie Mountains; ii./ in the western Ścinawskie Hills in the Kłodzko Basin; iii./ near the Międzyzlesie Gate in the Kłodzko Basin. Elements of this culture are known also from the Bielawa Basin at the foot of the Sowie Mountains (Masojć 2016). These sites are marked by an impressively rich selection of local rocks used in knapping; diverse types of rock crystal, radiolarites from the Bardzkie Mountains, jasper, opal, chalcedony, agate, lidite, various quartzites

and others. In addition to them, the same sites produced finds of lithics originating from areas of Sudeten found today across the border in northeastern Bohemia (assorted spongolites, including spongolites of Ústí nad Orlicí type). Also noted are artefacts struck from raw materials originating from an even more remote area: assorted cherts sourced in Moravia (*e.g.*, Krumlovský les and Olomučany chert), radiolarite of the Szentgál type from northwestern Hungary, Vlára radiolarite from northwestern Slovakia, and the Bečov and Skršín quartzite from northern Bohemia. This confirmed the early tentative conclusions reached by S. K. Kozłowski (1972), reiterated in the 1990s by T. Galiński (1997, 67), about the existence of sites representing the Western complex of Mesolithic cultures in the upland and mountainous regions of southwestern Poland. Also worth noting is that the distribution of this phenomenon in the Polish Sudeten (Fig. 3) tends to reflect the earlier directions of archaeological fieldwork – most likely, the Beuronian is to be found also in other parts of the Sudeten.

At this stage of Mesolithic studies, Beuronian sites were first identified with a definite mountain and upland landscape. Thus, the spread of this cultural phenomenon was associated with this specific geographic environment with a varied hypsometry, substantial microregional diversity, with numerous outcrops of local rock of a varying quality. In many cases (*e.g.*, Hřibojedy) the quality was poor, but regardless of this, the strategy of using local lithic resources was more attractive than sourcing them from more remote sources. Nevertheless, erratic flint continued to play a significant role as a raw material, even if available only from glacial sediments found in the Sudeten Mountains and their foreland.

## THE TARDENOISIAN CONCEPT – EVOLUTION OF INTERPRETATIONS

The three periods of perception and use of the term “Tardenoisian” belong to the mainstream of changes in archaeology both worldwide and European. In the first period (1900–1970) the archaeology of the Stone Age identifies phenomena on a global scale. Cultural units distinguished at this time in European Palaeolithic and Mesolithic studies had a very wide geographical range covering much of our continent. The Tardenoisian became a convenient classification tool that included finds with microlithic tools in the type of armatures from western, central and parts of eastern Europe. This global approach was accompanied by ideas on migration that trace the origins of the Tardenoisian to Africa attributing its spread to Europe to movements of foragers. Additionally, the Tardenoisian became the core of the Swiderio-Tardenoisian concept of the evolutionary development of the Late Palaeolithic cultures into Mesolithic ones.

In the 1960s, as local systems of taxonomy and chronology of the Mesolithic were being developed in Central Europe the “Tardenoisian” concept came under criticism, and it was

replaced with new cultural units identified through the analysis of local lithic artefacts. Nevertheless, in contributions close to popular science, and in monographs concerned with regional prehistory, the term may be seen to continue in use during this period (Kos-trzewski 1966; 1970). At the same time in the literature concerned with the European Mesolithic, the Tardenoisian is regarded as a local phenomenon with a geographical distribution limited to some areas of western Europe (Barrière 1956).

During the next period (1971-1990), the Tardenoisian is redefined in the Polish literature only as an element of a larger complex of Mesolithic cultures (Western Mesolithic Cycle). The geographical extent of the Tardenoisian was made clear, with suggestions made about the impact of these cultures or even physical presence of groups representing them in the territory of Poland (of Smolín type assemblages, Beuron-Coincy culture, Beuronian), supposedly in its southwestern region, especially in the foothills and mountain zones (Sudeten and Sudeten Foreland). Ultimately these conjectures were not confirmed by the archaeological record, which did not corroborate occupation or impact of communities from the Western complex of Mesolithic cultures.

After 1990, intensive archaeological fieldwork in the Polish Sudeten led to the discovery of new materials which may be allocated to the Beuronian, or at least include some artefacts characteristic of this culture. These finds are corroborated by discoveries made in northeastern Bohemia also identified with the Beuronian. This period of reflection about the Tardenoisian concept brings a new understanding of the connection of this settlement with the Central European uplands and mountainous zone, and the model of the raw materials economy largely aimed on the exploitation of local lithic resources, but also on raw materials sourced at a greater distance of more than fifty, even several hundred kilometres.

## FINAL REMARKS

While following the interesting phenomenon of the evolution of the Tardenoisian concept in Mesolithic studies in Poland, one may wonder about the possible directions future studies of this subject could take. What needs solving is the matter of the presence of Beuronian sites in other parts of the Polish Sudeten and their range – both their local cultural attribution and chronological range. These problems can be solved partly through investigation of well stratified sites with Beuronian materials that still await discovery. No less interesting is the matter of interactions between the communities of the Western complex of Mesolithic cultures and the hunter-gatherers of the Lowland zone also settled in the Sudeten zone.

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