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BIOGRAPHIES OF SWIDERIAN BLADES – VARIOUS EXAMPLES FROM THE POLISH TERRITORY

ABSTRACT

Pyżewicz K., Przeździecki M., Grużdź W., Kozak B., Płaza D. K. and Sobko B. Biographies of Swiderian blades – various examples from the Polish territory. *Sprawozdania Archeologiczn*e 76/1, 187-204.

The article discusses the use of unretouched blades by Swiderian societies. To answer the question regarding the function of the artefacts, we analysed macroscopically and microscopically selected blades from five sites: Kołomań, Kielce district, Świętokrzyskie voivodship, Sulejówek Site 4, Mińsk district, Mazowieckie voivodship, Kochlew Site 1, Krzeczów Site 2 and Troniny Site 5, Wieluń district, Łódzkie voivodship. Based on the results, it can be concluded that the unretouched blades, although fulfilling the conditions of being tools, were not used in everyday activities. We can presume that the unretouched blades were usually treated among the Swiderian societies as a waste product, or an element of exchanges or stock.

Keywords: Swiderian, blades, use-wear analysis, lithic technology
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INTRODUCTION

Functional studies of lithic materials from Swiderian sites are primarily associated with analysis of distinctive types of retouched tools, the so-called formal tools. They concern groups of tanged points, willow-leaf points, end-scrapers, and burins. Unfortunately, the issue of blades devoid of intentional retouching is rarely addressed (*cf.* Pianowski 1977; Winiarska-Kabacińska 1988; 1990; 1992; 1993; 2002; 2005; 2009; 2010; 2014; 2016; Osipowicz 2010; 2019; Nowak and Osipowicz 2012; Osipowicz and Weckwerth 2016; Pyżewicz *et al.* 2017; Osipowicz *et al.* 2018; Sobkowiak-Tabaka *et al.* 2018; Bielińska-Majewska 2019, 133-134; Pyżewicz 2019; 2022; Sobkowiak-Tabaka and Kufel-Diakowska 2019).

In this article, we would like to discuss the use of blades that have not been transformed into formal tools. We would like to know whether the blades whose morphology indicates utility potential, *i.e.*, their slenderness, relatively regular course of lateral edges, significant size, and length, were realistically used or should be treated as non-tool forms.

To answer the question of the potential use of blades, we undertook an analysis of lithic materials from selected sites associated with the Swiderian culture: Kołomań, Kielce district, Świętokrzyskie voivodship, Sulejówek Site 4, Mińsk district, Mazowieckie voivodship, Kochlew Site 1, Krzeczów Site 2 and Troniny Site 5, Wieluń district, Łódzkie voivodship. We compared the obtained results of the analyses with data presented in the literature.

MATERIALS AND METHODS

The blades in the collections studied here are from five Swiderian sites in central-southern and southwestern Poland (Fig. 1). To answer the question posed above, the collections were divided into two empirical categories:

a. Reference assemblages, *i.e.*, where all the blades preserved in full or almost in full recorded at the sites were analysed, although burned specimens and those >25 mm in length were excluded from the study. Reference assemblages, on the one hand, are supposed to allow us to identify forms bearing traces of use by investigating whole lithic assemblage. On the other hand, they should allow us to study used forms in a broader context of morphological parameters or technological attribution in relation to forms without traces of use and retouched (formal) tools.

b. Comparative assemblages are those where only a sample of blades with potential utility values was analysed. They were treated as a comparative basis for the results obtained during the analysis of reference assemblages. This allowed us, on the one hand, to define the criteria for such a selection method and, on the other hand, to confront its effectiveness with the results of use-wear analysis.

Fig. 1. Map of the sites presented in the article. Data source: GUGIK. Author W. Grużdź

Blades from the sites of Kołomań, Kielce district, Świętokrzyskie voivodeship, located in Góry Świętkorzyskie (Kondracki 2002, 273) and Sulejówek 4, Minsk district, Mazowieckie voivodeship, which is located on the southwestern edge of Równina Wołomińska, were taken as reference collections (Kondracki 2002, 188, 193-196; Solon *et al.* 2018; Korpak 2020). The Kołomań site was excavated in 2014-2015 (Kozak 2014), the site at Sulejówek was investigated in 2019 (Przeździecki 2021). In both cases, these are sites that have been completely excavated during systematic archaeological excavations. In addition, similar methods – exploration, documentation, were used during the excavations, considering the perspective of use-wear analysis. The similarities between the assemblages also relate to the state of preservation of the artefacts (a small number of patinated or thermally transformed specimens), raw material (chocolate flint), abundance (about 600 artefacts) and typological structure. The last aspect is mainly expressed in the dominance of debitage products. In addition to the forms associated with the core reduction process, in both inventories, were also recorded a similar set of tools, which included end-scrapers, burins and retouched blades. In addition, seven Swiderian points occurred at the Sulejówek site.

Another important aspect due to which we decided to choose these inventories for the study is their relative homogeneity. On the one hand, this is confirmed by the spatial distribution of the artefacts – in the form of isolated, relatively compact clusters, and on the other, by the consistent raw material, typological and technological structure of the analysed materials. Especially important are the similarities in technology – debitage methods and

techniques. We noticed the distinctive set of knapping products, *i.e.*, specific categories of blades, bladelets, flakes (Dziewanowski 2012a; 2012b) and macro- and micromorphological details (Klimek 2006; Przeździecki 2006; Grużdź *et al.* 2012; Płaza 2012a; 2012b). It should be noted that in the case of the Kołomań site, an argument directly confirming the connection between artefacts is also the high frequency of refittings.

The cultural-chronological classification of the lithic inventories was based on typological and technological criteria. In case of typological aspect, the presence of a distinctive three-element tool set – including end-scrapers, burins, but most importantly Swiderian tanged points and willow-leaf points – was crucial (Taute 1968, 12; Kozłowski 1999). For the rest of the types of retouched and unretouched forms, we focused on analysis of morphological attributes, which are crucial for identifying cultural-chronological traditions.

The most important features are:

a. double-platform cores with traces of intense preparation of the back, sides, and striking platforms.

b. predetermined blades, *i.e.*, slender, with negatives of bidirectional treatment, with a leaf-like outline, straight profile and wedge-shaped longitudinal cross-section with a specific shaping located about halfway along its length.

c. predetermining/corrected blades (Dziewanowski 2006; 2012a; 2012b; Migal 2007), including the most distinctive bladelets with a trapezoidal outline, *i.e.*, extending towards the distal part, with a characteristic preserved fragment of the negative related to the detachment from the opposite striking platform.

d. fine, linear or punctiform butts with traces of trimming and abrasion.

The blade types mentioned in points “b” and “c” reflect the two components of the “stadial knapping” according to Bradley and Giria (1996, 23-26) or “predetermined debitage” according to Inizan *et al.* (1999, 61). Based on analyses of the Late Palaeolithic materials and experimental research, the application of this debitage method is confirmed for the Swiderian culture (Migal 2007; Dziewanowski 2006; 2012a; 2012b).

It should be noted that in the case of the analysed materials, classifying specific specimens as predetermined blades or as predetermining blades was not always possible. It is also worth noting that the above division does not mean the automatic uselessness of predetermining forms, which cannot be treated as products. In many cases, their morphometric parameters successfully allowed them to be used as tools. This is confirmed, among other things, by the results of morphological analysis of blades from the site Rydno IV/57 (Fiedorczuk 1992; 1995).

The comparative assemblages are represented by a selected sample of blades from three Late Palaeolithic sites located in the region of Zakole Załęczańskie of the Warta valley: Kochlew Site 1, Krzeczów Site 2 and Troniny Site 5, Wieluń district, Łódzkie voivodship. These sites were comprehensively and methodically investigate during excavations conducted by Krzysztof Cyrek in the 1970s and 1980s (Cyrek 1983, 1996; Cyrkowie M. i K. 1987). As a result of excavations, numerous and representative Swiderian assemblages,

mainly the remains of lithic workshops, were retrieved. The presence of formal tools indicates that other activities, related to the daily functioning of the camp, were also carried out in these sites. The concentration of the Late Palaeolithic sites in Zakole Załęczańskie is due to the presence of Jurassic flint outcrops in this area. Artefacts made of this raw material dominate in the analysed inventories, only single forms made of Cretaceous flint were noticed. The blades selected for our study came from isolated concentrations, distinguished by Krzysztof Cyrek (1996). In addition to spatial distinctiveness, consistent typological, technological, and functional structure (cores and debitage products), their homogeneous nature is confirmed by the refittings.

As in the case of reference assemblages, the taxonomic classification of comparative assemblages was based on typological and techno-morphological considerations. Also, attention was paid to specific sets of tools, *i.e.*, burins, end-scrapers, retouched blades, but the presence of points with retouched base on ventral side – Swiderian tanged points and willow-leaf points – was considered a crucial argument. Similarities also applied to the macro- and micromorphological attributes defined above in the context of the reference sites.

Our lithic studies were conducted at the macroscopic (first stage) and microscopic (second stage) level. As part of the first stage, the selected blades were analysed to note the modifications visible to the naked eye in the form of small negatives and micro scars occurring along the edges. In addition, a morphometric and technological analyses of the studied artefacts were performed. The second stage of the study were microscopic analyses, which were carried out using a standard methodology. Before analysis, the materials were washed, including primarily wiped with acetone. The research was conducted using a Keyence VHX-7000 series digital microscope and using magnifications from ×20 to ×300. Attention was focused on the identification of retouches, abrasion, rounding, linear traces and polishes. The interpretation of the microscopic traces was made with reference to experimental base composed of lithic forms with technological, use-wear and postdepositional traces (the collection is located at the Faculty of Archaeology, University of Warsaw).

RESULTS

The Swiderian inventory from the Sulejówek site consists of 590 specimens. They are all made of chocolate flint, the nearest outcrops of which are located more than 100 kilometres south of the site. The dominant categories are debitage products and cores, although the percentage of retouched tools is relatively high – about 5%, moreover, they represent a wide set of types including tools of daily use (end-scrapers, burins, truncated blades, perforators), as well as elements of hunting weapons (Swiderian points). There are 209 blades from the Sulejówek site, but only 83 specimens met the criteria established in the study (without severe thermal transformations, length >25 mm) – 21 complete forms, 23 proximal fragments, 24 mesial fragments and 15 distal fragments.

The Swiderian inventory from Kołomań consists of 594 specimens. They are all made of chocolate flint, deposits of which are known within a radius of several kilometres to the north and east of the site. Only one retouched form was recorded at the site. The remaining artefacts are debitage products and cores, which clearly allows us to interpret this assemblage as the remains of a flint workshop. From this inventory, 56 blades were analysed, including 24 preserved in their entirety, 18 proximal fragments, six mesial fragments and eight distal fragments.

Besides the raw material, among the important common characteristics of the blades from the reference sites, we should include their regularity and large size. The first attribute is expressed in a symmetrically convergent course of lateral edges, an orderly parallel arrangement of negatives, pronounced slenderness, a trapezoidal cross-section, and a gentle feathering of the tip. In case of the size of the blades from the "reference assemblages", we can conclude that their average length is 55 mm – for blades from Kołomań, and 52 mm – for blades from Sulejówek (only whole pieces were measured).

In the case of comparative assemblages, we are dealing with sites very rich in lithic artefacts. Most of them are made of a local variety of Jurassic flint, there is also a small number of forms made of erratic Cretaceous flint and hornstone. Outcrops of Jurassic flint *in situ* or redeposited sediments are located from several hundred meters to several kilometres from the sites. The dominance in the described inventories of debitage and cores indicates that we are dealing with the remnants of a flint workshop. A total of 32 blades were selected from the comparative assemblages: from Kochlewo, five complete forms and one mesial fragment; from Krzeczów, eight complete forms, three proximal fragments; from Troniny, 12 complete forms, three distal fragments. In selecting them, apart from the metric criterion, attention was paid to their regularity, and the presence of macroscopic traces (microretouches, micro scars) that may indicate their use. It is noteworthy that the blades from the comparative assemblages are less regular and smaller than the forms from the reference assemblages. They are mainly distinguished by a lower degree of standardization, less symmetrical lateral edges, more stocky proportions. The sampled blades from the "comparative assemblages" (Krzeczów, Kochlew and Troniny) have average length of 50 mm.

The linking element between blades from reference and comparative assemblages is the technological aspect, mainly expressed in:

a. concept of double platform core treatment – it is associated with a detachment of blades characterized by straight profile, wedge-shaped cross-section;

b. a stadial knapping method – the occurrence of predetermined and predetermining blades;

c. the direct percussion technique with a soft stone hammer, using rotation "parallel" to the plane of the striking platform – linear or punctiform butts, small, not well pronounced bulbs (sometimes with a lip).

Macroscopic analysis

Based on macroscopic observations, two categories of modifications/traces on the blades were identified. Most often, only one category of traces was recorded on an individual specimen, although a few blades characterized by the co-occurrence of modifications/traces of both types were also noted. For the purposes of further stages of the analysis, these modifications/traces were defined as:

1. Potential intentional, functional, or postdepositional retouches (Fig. 2; 3). These retouches are continuous (linear), semi-steep, composed of small, morphometrically similar negatives, covering a small section of the edge (a maximum of several millimetres in length).

2. Potential functional or postdepositional traces – edge chipping, micro scars (Fig. 4). They usually cover the entire length or most of the edge. Sometimes they are accompanied by extremely fine (though visible to the naked eye), negatives of quasi-retouch. Unlike the retouches described above, they are not continuous, linear. Most often they occur singly or in small clusters randomly scattered along the edges. In addition, they are characterized by far greater morphological diversity.

Blades belonging to the first category occurred at the sites: Kochlew – one specimen, Krzeczów – one specimen, and Sulejówek – 12 specimens. Based on the criteria mentioned earlier, they should be described as regular, symmetrical, large, or very large, mostly slender (index >4). Most often, the retouching was located only on one edge (nine specimens), in the proximal part, about 0.5 cm below the butt, covering a section from 6 mm to 12 mm (Figs. 2; 3). In only one case did the length of the retouched fragment reach 21 mm (Fig. 2: 3, 4). Interestingly, this type of traces was recorded slightly more often on the left edge (five specimens.). Only two blades with retouching in the proximal part had additional retouching on the other edge or in another part. A separate subcategory consists of four artefacts with retouching in the mesial part (Fig. 2: 1, 2). Unfortunately, only one of them was preserved in its entirety, which makes it possible to determine the actual length of the retouched section, which was 11 mm. Modifications/traces of the second category, *i.e.*, edge chipping and/or quasi-retouch, were noted on five blades with potential intentional, functional or postdepositional retouching. They occurred on one or two edges, usually covering all or most of their length (Fig. 2: 3; 3: 3, 5).

Blades representing the second category of traces occurred only at the Kochlew, Krzeczów, Troniny and Sulejówek sites. The most pronounced modifications, *i.e.*, chipped edges and quasi-retouch negatives were recorded on three artefacts from Sulejówek (Fig. 4). In one case, they were found on both edges, while in the other two cases, they were found on one edge. Blades from sites in Zakole Załęczańske have traces less intense, making it much more difficult to determine which are forms with and without edge modifications. This meant that distinguishing the group of blades with modifications/traces (second category)

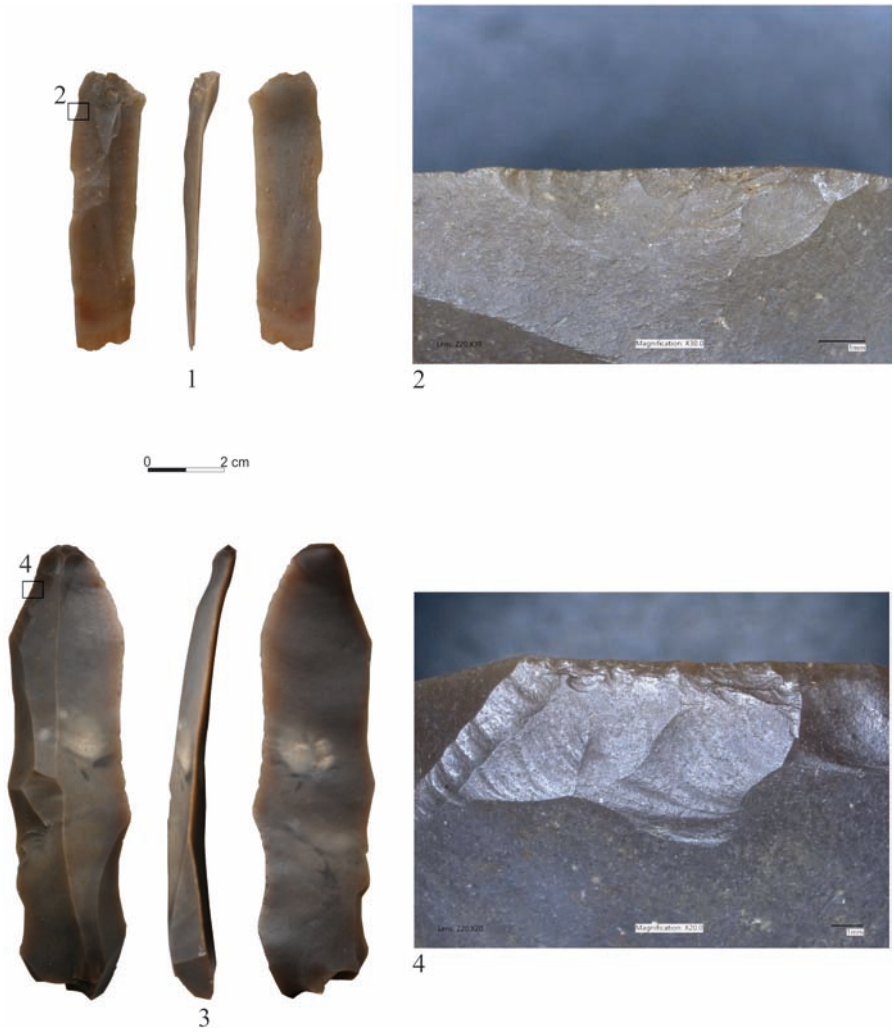

Fig. 2. Sulejówek Site 4.
1-2 – blade with potential intentional, functional, or postdepositional retouches located in the proximal and mesial parts; 3-4 – blade with potential intentional, functional, or postdepositional retouches located only on one edge in the proximal part and with additional traces of edge chipping and/or quasi-retouch.
Photos by K. Pyżewicz, W. Grużdź

was much more subjective than in the case of the materials from Sulejówek or Kołomań. Considering the mentioned limitations, modifications belonging to the second category were registered on: four specimens from Krzeczów, three specimens from Kochlewo, and five specimens from Troniny.

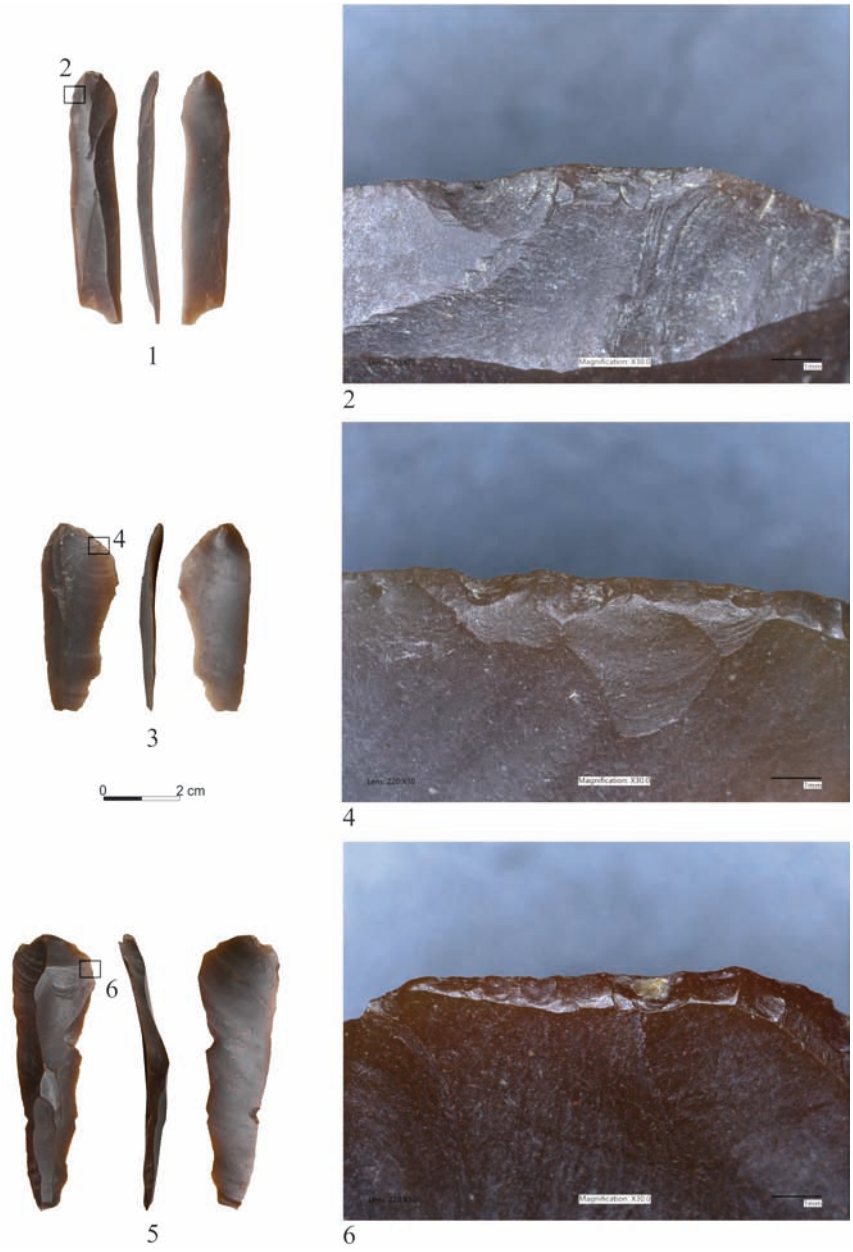

Fig. 3. Sulejówek Site 4.
1-2 – blade with potential intentional, functional, or postdepositional retouches; 3-6 – blades with potential intentional, functional, or postdepositional retouches and with additional traces of edge chipping and/or quasi-retouch. Note that all of them have retouch on one edge in the proximal part.
Photos by K. Pyżewicz, W. Gruździ

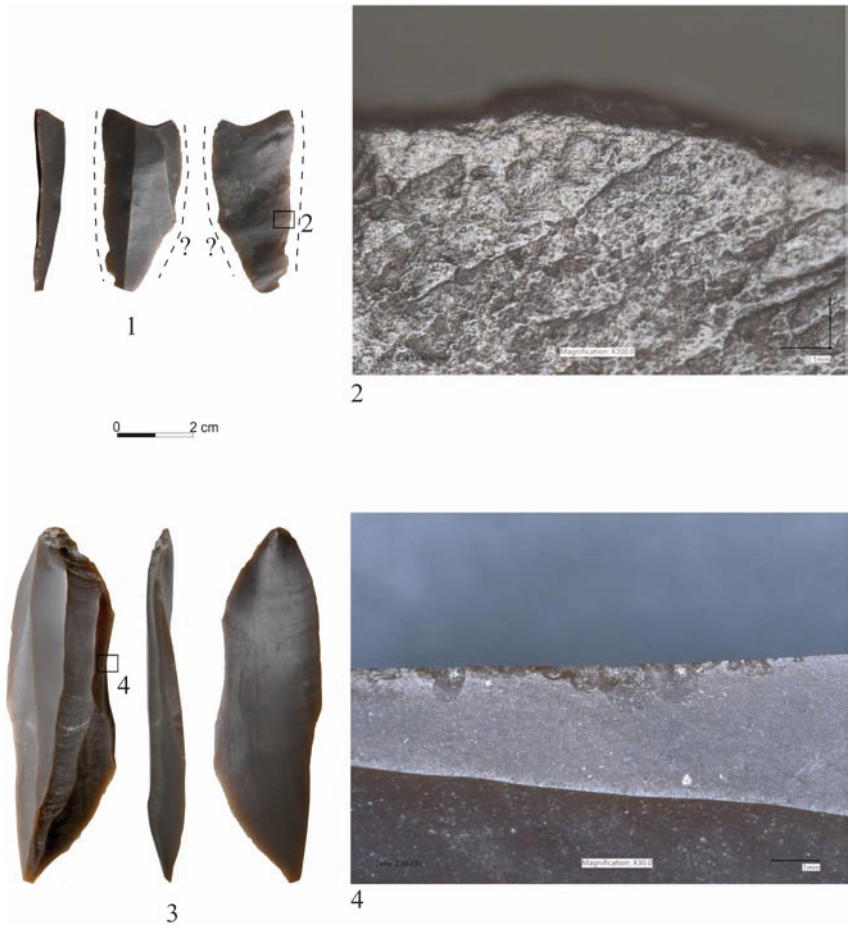

Fig. 4. Sulejówek Site 4.
1, 3-4 – blades with potential functional or postdepositional traces – edge chipping, micro scars/quasi-retouch; 2 – use-wear traces related to the processing of skins. Photos by K. Pyżewicz, W. Grużdź

Microscopic analysis

Based on the microscopically analysed group of blades from the sites at: Kołomań (47 specimens), Sulejówek (49 specimens), Kochlew 1 (six specimens), Troniny 5 (20 specimens), Krzeczów 2 (12 specimens), it can be concluded that in most cases these specimens were not used (the difference in the number of blades selected to macroscopic and microscopic analysis is due to the exclusion of a number of blades from microscopic analysis due to their state of preservation). It should be noted that in the analysed group of blades, there are forms that did not change due to significant postdepositional modifications.

Artefacts are not covered by patina, or they are covered with a light shiny patina of a spotty nature, which does not significantly affect the possibility of identifying usable traces. Additionally, as pointed above, these specimens morphologically and metrically may have been functional tools used in everyday activities. The retouching and chipping identified at the macroscopic level, should be considered to have occurred incidentally or because of the activity of postdepositional factors. They are not accompanied by any additional microscopic traces – rounded edges, abrasions, linear traces, or polishes that could indicate a utilitarian character.

Only two specimens from the analysed group of blades from the Sulejówek site, are characterized by use-wear traces. The first is a fragment of a massive blade (Fig. 4: 1). The retouch extends along one of its edges, and at the microscopic level, there are polished areas, linear traces and rounding of the working part (Fig. 4: 2). The polished areas are placed near the working edge, are "greasy", dull, and penetrating the microstructure of the specimen. Based on this, it can be concluded that the blade was used in the processing of skins. The preserved linear traces, which are arranged parallel to the working edge, suggest that cutting movements were made. The second blade, also massive, is characterized by non-distinctive utilitarian polishing and micro scars. Therefore, it was not possible to identify its function.

DISCUSSION

Based on the results of the analysis presented above, regarding the selected blades from sites from Zakole Załęczańskie and Kołomań lying on the edge of Góry Świętokrzyskie, there are no identified blades used by Swiderian societies. Only two of the blades from Sulejówek near Warszawa bear signs of use.

To some extent, these data correspond to information obtained from microscopic analyses of blades from other Swiderian sites. Approaches to the use of unretouched blades vary from region to region, including distance from raw material deposits. Based on studies of a selected group of blades from the Rydno IV/57 site, from the workshop next to the "cache" and "hut", specimens from the mounds and from the so-called home area, it was concluded that they were not used in daily activities (Fiedorczuk 2006, 141). Also, the selected group of blades (44 specimens) from the Kraków-Bieżanów site (Pyżewicz *et al.* 2017, 2019) was not characterized by signs of use. The same observation is associated with the analysis of a group of debitage products from the Suchodółka site (Grużdź *et al.* 2012). Single blades, sometimes with additional intentional retouching, from sites such as Wojnowo "a" and 2, Cichmiana, Całowanie, Kraków-Kurdwanów, Lubrza and Sandomierz, were used for processing animal carcasses, as well as scraping and cutting wood and sometimes antler, and cutting plants (Winiarska-Kabacińska 1992; 2002; 2005; 2009; 2014; 2016; Sobkowiak-Tabaka and Kufel-Diakowska 2019; Płaza and Pyżewicz 2023). Among the

exceptional ones are the results of use-wear analyses of blades from the sites at Brzoza (Kotlina Toruńska) and Stare Marzy (on the border of Bory Tucholskie and Kotlina Grudziądzka) (Osipowicz 2010, 122 and others, Table 82; 2019). In both cases, almost entire inventories were analysed (artefacts corresponding in parameters to potential tools and in a suitable state of preservation were analysed). Based on the results of use-wear analysis, the author of the study concluded that at least 60% of the total group of identified used tools were unretouched forms, mainly blades, but sometimes also flakes. These specimens were used primarily for cutting meat, as wood chisels, sometimes also as piercers (such as for skin), skin scrapers, antler or bone scrapers and chisels, wood scrapers or burins, or individually for other activities.

We should consider what the reasons are for not using so many blades that morphometrically correspond to analogous specimens that can be used in everyday activities. We can investigate that based, among other things, on data from the literature or experimental results (more Pyżewicz 2022).

Some researchers interpret the unused Swiderian blades as "stock" or "take-away" items, "exported" blades, semi-products of tanged points (see among others Ginter 1974; Cyrkowie M. i K. 1987; Szymczak 1992, 113; Fiedorczuk 1995; 2006; Cyrek 1996; Sulgostowska 2005; Pyżewicz 2022, 110-127). In this concept, the distinctive morphology of the blades is emphasized – these are blades that were selected by the Late Palaeolithic producers. They are usually larger and thicker, made more precisely compared to other blades. They are referred to as selected blades (Fiedorczuk 2006). It should be noted that the results of the conducted morphometric analysis of the blades indicate that the forms used in our study correspond to the definition of selected blades described by Jan Fiedorczuk (according to this definition, the group included both predetermined and predetermining forms).

Also, in case of describing the issue of "preferential" blades, the issues of selection and choice of blades with appropriate parameters are emphasized (among others, by Dziewanowski 2006; Migal 2007; Pyżewicz 2022, 110-127). In this concept, which was first formulated by Witold Migal, the goal of the Swiderian flintknappers was to obtain a blade of the right size and shape. Such a blade could be used to make a potential point, the tip ending with feathered termination would not require further shaping by retouching, since the distal part of the blank is sharp. In contrast, all other blanks produced during core treatment, even those with favourable parameters for use, could be treated as waste products. Witold Migal, presenting the concept of the phenomenon of preference, referred to the refittings of Swiderian materials, especially to Rydno IV/57 blocks refitted by Jan Fiedorczuk (see, among others, 1992; 2006). He pointed to a numerous group of blades contained in the refittings that were without any signs of use. It is possible that the blades that we analysed were also treated as waste products, due to same reasons.

Based on the data presented above, it can be concluded that the Late Palaeolithic producers selected blades intended for further use. This process was also related to the

availability of good quality raw material, access to sources of material, to outcrops. At the sites interpreted as flint workshops, where numerous traces of the processing of raw material, whose deposits are in proximity, are found large numbers of unused blades (see, for example, Ginter 1974; Schild 1984; Fiedorczuk 1997; Schild *et al.* 2011). Most likely, the flintknappers wanted to produce blanks with certain parameters, and because of easy access to the raw material base, they did not care about the number of waste products. They were able to make selections of blanks from the considerable number of specimens they acquired. The presence of retouched blades in these types of sites may be related to the activity of postdepositional processes leading to the formation of pseudo-tools. This reason was already pointed out by Jan Fiedorczuk (1995), who paid special attention during his studies to the issue of retouched blades identified in flint workshops. He pointed out two important things: first, that the flint workshops were places not very convenient for carrying out other types of activities than those related to the knapping process, and second – the forms there are typologically uncharacteristic and do not have distinctive retouches.

In contrast, from the areas of the camps, located further away from the outcrops of the good quality flint (*i.e.*, from the areas where the presented sites are located, including Stare Marzy, Brzoza and Lubrza), blades, but also other unretouched intentionally collected debitage products, were used more often in daily activities.

It should be added that at sites where nodules of raw material were worked intensively and used tools are also recorded, such as Suchodółka, the toolkits come from production sequences not captured at the site from different raw material and were certainly transported from the previous settlement site. In contrast, the specific specimens formed at the site were carried away for further potential use – in daily activities or for exchange.

CONCLUSION

In the present article, we have attempted to answer the question of potential use of Swiderian blades, which are not formal tools. According to the results of our analyses, but also based on data from other studies (presented in the article), a significant number of blades were not used. Only a small number of specimens were intended for working with skin, animal carcasses, wood, bone or antler and plants. It can be concluded that blades, sometimes additionally retouched, were multifunctional tools. This represents a dissimilarity compared to formal tool groups – Swiderian points were usually used during the hunting strategies and activities undertaken during hunting, end-scrapers were associated with the processing of skins, and burins were used in work related to the processing of harder materials, that is, antler, bone, or wood.

Summarizing the results of the study, it should be considered that the lack of traces on the forms recognized as selected blades according to Fiedorczuk's definition (among others,

2006; *i.e.*, with morphometric parameters that allow use as a tool), indicates that we still do not fully understand which criteria were the basis of decisions made by people in the past about the utility or non-utility of specific forms. It is possible that the unused blades were a waste product, or a elements of exchanges or stock for the Swiderian societies.

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