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Middle and Upper Palaeolithic surface finds from Iłża 3 "Krzemieniec I"

Abstract:
In the present paper, we would like to discuss results of a preliminary field research in the vicinity of the chocolate flint outcrops in Iłża, Site 3, "Krzemieniec I" (Kielce Upland, south-eastern Poland), including the discovered lithic finds – debitage products (flakes and blades), cores, and formal tools, such as bifacial knives. We made an attempt to infer the chronology of those lithic specimens which were found during the surface survey or in trenches without preserved stratigraphy. Based on their spatial distribution, as well as typological and technological analysis, we distinguished the oldest traces of occupational activities of prehistoric societies in the vicinity of Iłża related to the Middle and Upper Palaeolithic. Additionally, we conducted a microscopic analysis of the state of preservation of characteristic lithic artefacts. This showed possibilities of linking specific states of preservation of flint surfaces with a generalised chronology of the Stone Age and Bronze Age.

Keywords: Middle Palaeolithic, Upper Palaeolithic, lithics, bifacial technology, patina, Iłża sites, south-eastern Poland

In this paper, we would like to tackle the problem of distinguishing Middle and Upper Palaeolithic lithics from surface collections. The identification of such finds can be

problematic in some cases, especially in places where raw materials had been extracted and where traces of human activity were identified for different periods.

We conducted our study on materials from Site 3 in Iłża, located in the vicinity of chocolate flint outcrops (Kielce Upland, south-eastern Poland). During our preliminary research, we used typological, technological, and microscopic analyses. We focused on flint tools, namely bifacial forms in the type of Bockstein knives, cores, debitage products, as well as forms related to blade technology.

The site

The slope on which the archaeological site of Iłża 3 "Krzemieniec I" is located shows western exposure and stretches for several hundred metres. In the vicinity of the site, there is an outcrop of the chocolate flint which was exploited during different times in prehistory. The archaeological sites in this area were first discovered by Stefan Krukowski in the interwar period[1]. In the 1990s, another field research was carried out, but the flint materials obtained at that time have not been published[2]. Despite the discovery of Middle and Upper Palaeolithic materials, further research was abandoned at that time, because most of the artefacts were found in a secondary position in the topsoil. Underneath it, in the place where the trenches were located, there was mostly limestone from which the hill is formed. The lithics obtained from this research were not included in the analysed sample.

Knowing the location of the site from the documentation, we decided to come back to Iłża 3 "Krzemieniec I" in 2021. Our field research consisted of field-walking, drilling with hand augers, and trial-trenching. We aimed to verify whether the site still existed and whether it was possible to find the layers with flint artefacts dated to the Pleistocene. As a result of the undertaken research, we were able to determine the area of the site and its chronology. The artefact clusters are scattered across the area of ca. 7 hectares (Fig. 1). The most numerous concentrations are located in the lowest part of the slope, near its steep edge (205 m a.s.l.) offering a view on the majority of the Iłżanka River valley. From this point, flint clusters continue for 400 metres further eastwards, up the slope and to its end at 225 metres above the sea level. On the lower part of the site, more fragments of the limestone bedrock were recorded on the surface, which indicated thinner quaternary sediments and accumulation of materials as a result of the mass movement process and agricultural activity – ploughing. The

[1] Schild 1971.
[2] Bednarz 1997; Budziszewski, Bednarz 1997.

middle part of the site was not accessible, due to the apple orchard planted on it, which resulted in the lack of findings and influenced the heat map to some extent.

The trenches Ia, Ib, Ic, II, III, and IV were located in different parts of the slope. In most cases, the limestone bedrock was recorded just underneath the topsoil. The trenches Ia, Ib, III, and IV have not yielded any lithic materials. In Trench Ic, there was only a single blade, found directly underneath the topsoil. The most promising Trench II was excavated in a part of the slope showing high density of lithics and stratigraphy analogous to the rest of the trenches. The only difference was the occurrence of a karst fissure from which two flint precores were excavated. Most probably, the artefacts were redeposited into the karst, which is filled up with both Quaternary and Tertiary sediments. The lithics were located in the upper part of the karst. The excavated sediments were sampled for further analysis, but the state of preservation of artefacts, which is analogous to the ones from the surface, indicates that they have been redeposited a long time after their making.

Materials

During the study, we discovered remains of exploitation and processing of flint raw material dating from the Middle Palaeolithic to the Early Bronze Age. The collection consists of 258 flint pieces which formed clusters in different parts of the site (Fig. 1).

Typological and technological analysis

The oldest traces of activity on Site 3 in Iłża 3 represented by two biface knives and one flake core sharing similarities with the Levallois method of reduction (Figs. 2–3). All forms were found in the middle part of the site, but they are scarce and spatially removed from each other, which precludes interpreting them as a lithic cluster. Their state of preservation is associated with post-depositional processes – there is a thick patina, extensive "natural" abrasion, and gloss on their whole surface. To prove the Middle Palaeolithic chronology of bifacial knives, we present them separately, along with a detailed description of the technological traits identifying them, in our opinion, as "Neanderthal-made" forms rather than a result of the Early Bronze Age production. The discussion in Polish literature about mistakes in attribution between the Middle Palaeolithic and Early Bronze Age bifacial materials has a long history[3], but it is worth mentioning that the first published example

[3] e.g. Schild 1971; Migal, Urbanowski 2008.

illustrating this problem was item noted by Stefan Krukowski in "Paleolit" as a "niby-prądnik" artefact from Iłża "Krzemieniec"[4].

The first knife made of the Świeciechów flint is plano-convex (this is a characteristic feature of Middle Palaeolithic bifacial tools) and asymmetrical towards the working edge (Fig. 2. 1), . Most of the reduction was carried out on the convex side of the tool. The opposite side was shaped with one main blow that left a large negative and smaller one caused by shaping of the working edge and the base. The natural surface on the flat side indicates that this part was not extensively reduced. The second knife was shaped from the chocolate flint and is also plano-convex, corresponding typologically to the Bockstein knives (Fig. 2. 2). The flat surface was shaped starting from the working edge and towards the natural back, with some cortex left on the base. The opposite side was flaked starting from the working edge and the back of the knife. On this side, the negatives are smaller, and 2/3 of the form is left with the natural surface, which betrays it as a result of frost or tectonic crack. The second characteristic feature that supports the Middle Palaeolithic chronology of the artefact, is the treatment of the working edge. In contrast to the Early Bronze Age bifaces that had working edges shaped at the last stage of reduction, in the case of the Middle Palaeolithic knives shaping of the cutting edge was important and started at the early phases of reduction. Very often the rest of the tool was left natural or only slightly shaped to fit the needs of the maker. This feature is easily-noticeable when we are dealing with a very straight and regular working edge that does not exceed 1/3 of the tool length, and the rest of the tool is left almost unshaped.

The second collection is the most numerous and was discovered in a concentration near the edge of the slope, which can be attributed to an unspecified Upper Palaeolithic community occupying the area. It is associated with manufacturing blades from the local chocolate flint. This lithic scatter is characterised by high density – within this location limestone pieces are visible on the surface of the topsoil. Additionally, two precores from the karst fissure can be linked to the surface collection. Most of the materials from this scatter, can be distinguished also based on the occurrence of "natural" abrasion and glossy surface and patina, as in the case of the previous group. The blade technology in the main lithic scatter is represented by 18 blade cores (13 single-platform and 3 double-platform cores) and their fragments (2 pieces), 11 blades, and 5 tools. Additionally, 40 flakes and 12 precores/flake cores were included in this group, based on their state of preservation,

[4] Krukowski 1939–1948, pl. 38.

comparable to the rest of the collection, as well as on the fact that they were found within the same scatter (Fig. 4). The lithic production was aimed at rather thick blades with irregular edges and ridges, detached from the single- and double-platform cores. The acute flaking angle of the debitage products and the big bulbs seen on them suggest the application of direct percussion with a hammerstone or a billet (Fig. 4, 1–3, 5, 7). Platforms of cores were usually plain (Fig. 4. 6), with traces of trimming and abrasion. Most of the tools discovered in this cluster were typologically classified as flakes and blades with retouch, with the exception of a single burin (Fig. 4. 4).

On the site, but outside the main lithic scatter, we discovered five blade cores with more regular negative scars and extensive facetting, which was aimed at isolating the point of impact in the shape of a spur. Such cores are well known from the Magdalenian assemblages (Fig. 5) and were used to detach blades with *en éperon*. Unfortunately, without more data and stratigraphic reference, it remains uncertain whether they can be linked to the rest of the debitage sequences or rather resulted from a separate chronological event. Additionally, within the researched area, we recorded artefacts without any post-depositional alterations. In some cases, these materials typologically and technologically correspond to more modern flint technologies from the Neolithic (end scraper) and Neolithic or Bronze Age (splintered pieces). Lithics from this group were less common and found in different parts of the site without any discernible spatial pattern.

Analysis of the state of preservation

We are fully aware that patination should not be considered a reliable age marker for archaeological lithics, because it is related to deposition in sediments and post-depositional factors. Nevertheless, we decided to investigate the state of preservation of some specimens. For this purpose, we selected characteristic typological forms, the chronology of which could be determined on the basis of their morphology (presented above). Additionally, we analysed five specimens from the site of "Krzemieniec", situated next to Iłża 3, where we found remains of an Early Bronze Age workshop.

Previous studies showed that patina can form on lithic artefacts in result of natural soil processes, and it is usually related to the properties of the environment surrounding the artefacts, such as acidity, alkalinity, and humidity. The formation of surface sheen on lithic

artefacts is associated with mechanical and chemical processes, such as the activity of water and sand[5].

We conducted macroscopic and microscopic analyses and used a digital microscope Keyence VHX-7000 with magnification from 20x to 1000x. As a result of our analysis, the collection of lithics could be divided into three groups. The first group is characterised by intense patination (blue and white) and surface sheen, with the occurrence of intense abrasion of the edges and ridges caused by natural factors (Fig. 6. 1,2). This group consists of artefacts that can be described as Middle and Upper Palaeolithic. The second group (consisting of Early Bronze Age materials from the above-mentioned workshop) is distinguished by well-developed white patina but almost no surface sheen and abrasion of the ridges or edges (Fig. 6. 3,4). It is worth noting that this kind of patina is very often found on the chocolate flint near its extraction places, most probably being a result of deposition near limestone in the area. Some of the researchers in Poland also call it a "mining patina". The last category consists of lithics which are not covered by patina, without any clear surface sheen (there are only single sheen spots) or abrasion, and these artefacts are close to examples produced during modern knapping experiments (Fig. 6. 5,6). The second and third groups consist of artefacts which can be described as Neolithic and Early Bronze Age lithics.

Conclusions

Based on the conducted field research and technological, typological, and microscopic analyses, we can conclude that remains of settlements of Middle Palaeolithic and Upper Palaeolithic groups were found within the site of Iłża 3 "Krzemieniec I". These are the oldest traces of prehistoric societies occupying the vicinity of Iłża[6]. Their presence was probably related to acquisition of chocolate flint nodules for further processing – outcrops of the chocolate flint are located several hundred metres from the site. The lithic production on the site is proven by the numerous precores or post-preparation flakes. At the same time, formal tools were obtained from the site – finished bifacial knives, including one made of the Świeciechów flint, or a burin – which proves that Palaeolithic communities undertook, at least sporadically, other everyday activities.

In addition, the preliminary microscopic analysis of the state of preservation indicates that it is possible to link specific states of preservation of flint surfaces with a generalised

[5] e.g. Plisson, Mauger 1988; Van Gijn, 1990, 51–53; Levi Sala, 1993; 1996, 31–32, 71; Kamińska, Szymczak, 1994; Burroni *et al*. 2002.
[6] e.g. Bujakowski 2016.

chronology. There are clear differences between the Middle and Upper Palaeolithic specimens compared to the Early Bronze Age ones. These data are an important contribution to the discussion on methods of recognising lithic artefacts at multicultural sites, located near mining centres and lacking any preserved stratigraphy, as exemplified by Iłża 3 "Krzemieniec". Doubts related to determining the chronological affiliation of the bifacial forms and waste products from their manufacturing – whether it is a Middle Palaeolithic or an Early Bronze Age relic – were mentioned by researchers in earlier flint studies[7]. We hope that the results of our microscopic analysis will facilitate future identification of analogous lithic specimens found during surface surveys or at sites without preserved stratigraphy.

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[7] Krukowski 1939–1948; Schild 1971; Migal, Urbanowski 2008.

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Illustrations

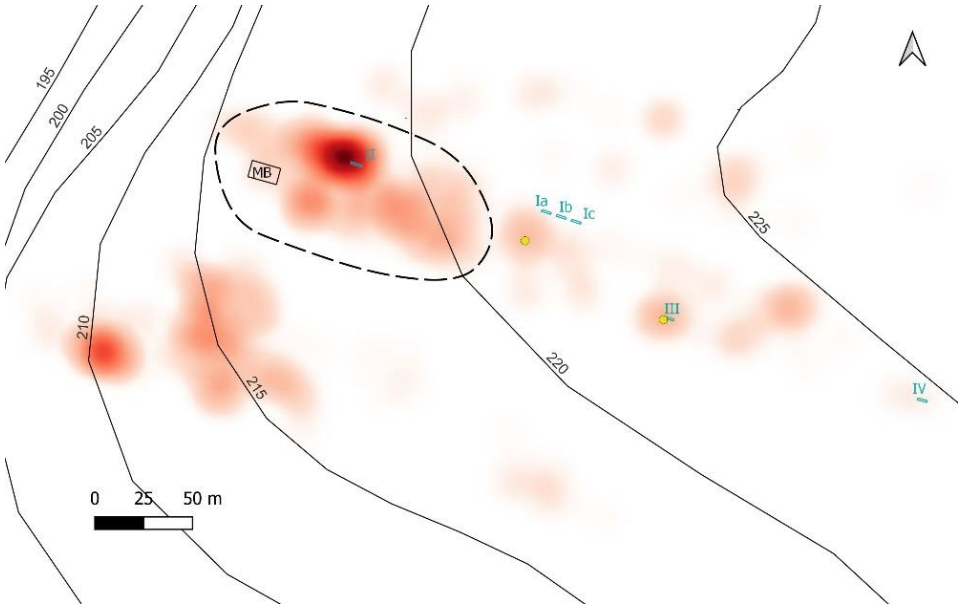

Fig. 1. Iłża, Site 3 "Krzemieniec I". The heat map showing the distribution of lithics. Dashed line – the main lithic cluster; yellow dots – bifacial knives; MB – excavations of Marcin Bednarz from the 1997 season; Ia, Ib, Ic, II, III, IV – test trenches from the 2021 season.

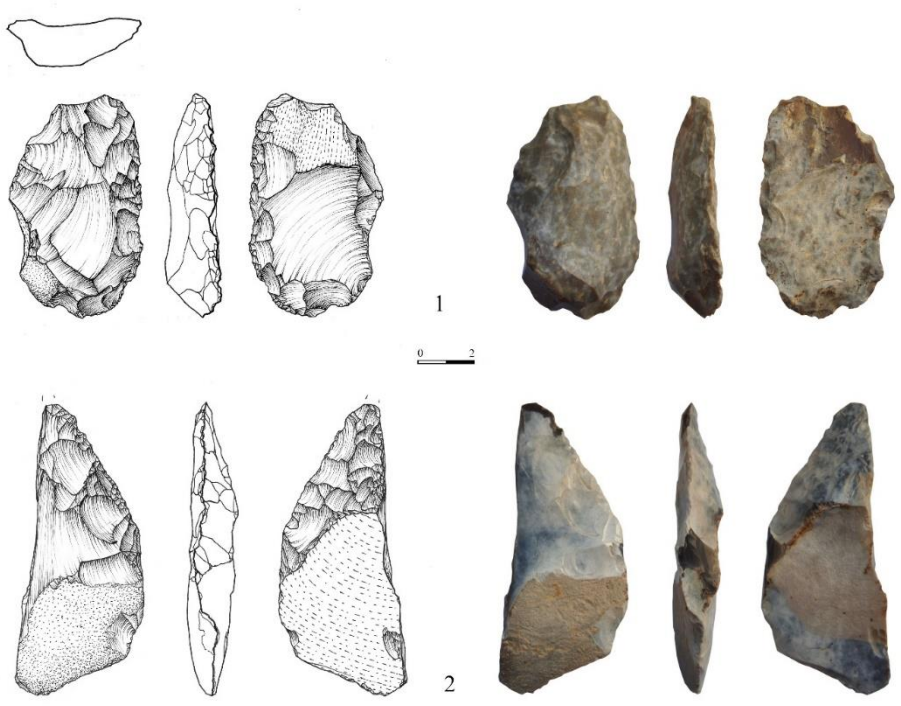

Fig. 2. Iłża, Site 3 "Krzemieniec I": 1 – bifacial knife of the Świeciechów flint; 2 – bifacial knife of the chocolate flint (drawing by O. Pałasz, photo by W. Grużdź).

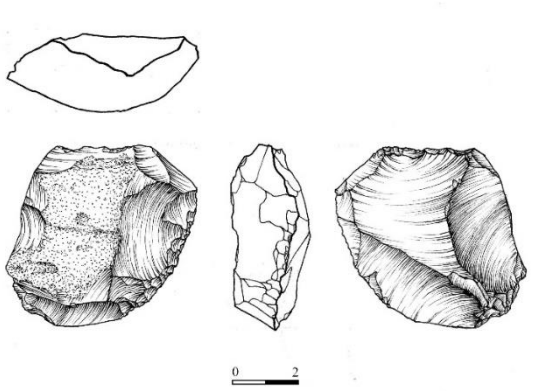

Fig. 3. Iłża, Site 3 “Krzemieniec I”. The flake core of the chocolate flint with the Levallois reduction (drawing by O. Pałasz).

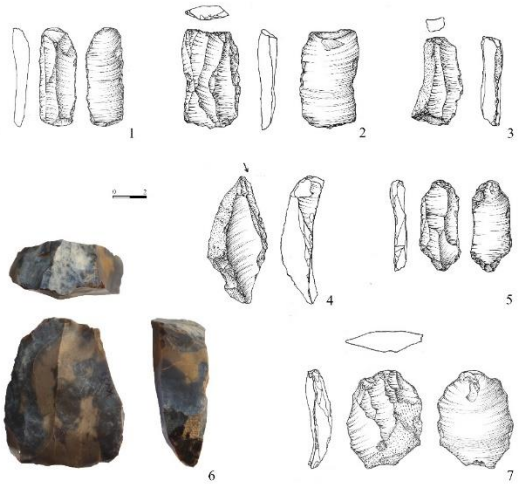

Fig. 4. Iłża, Site 3 “Krzemieniec I”. 1–3, 5 – retouched blades; 4 – burin; 6 – blade core; 7 – flake (drawing by O. Pałasz, photo by W. Grużdź).

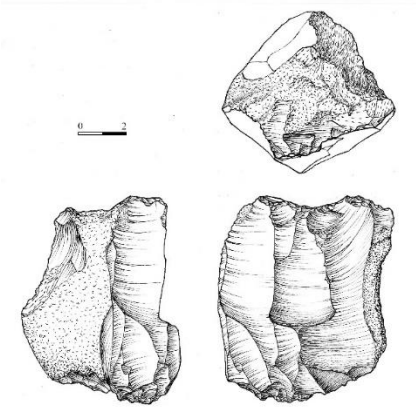

Fig. 5. Iłża, Site 3 “Krzemieniec I”. The blade core with the facetted platform (drawing by O. Pałasz).

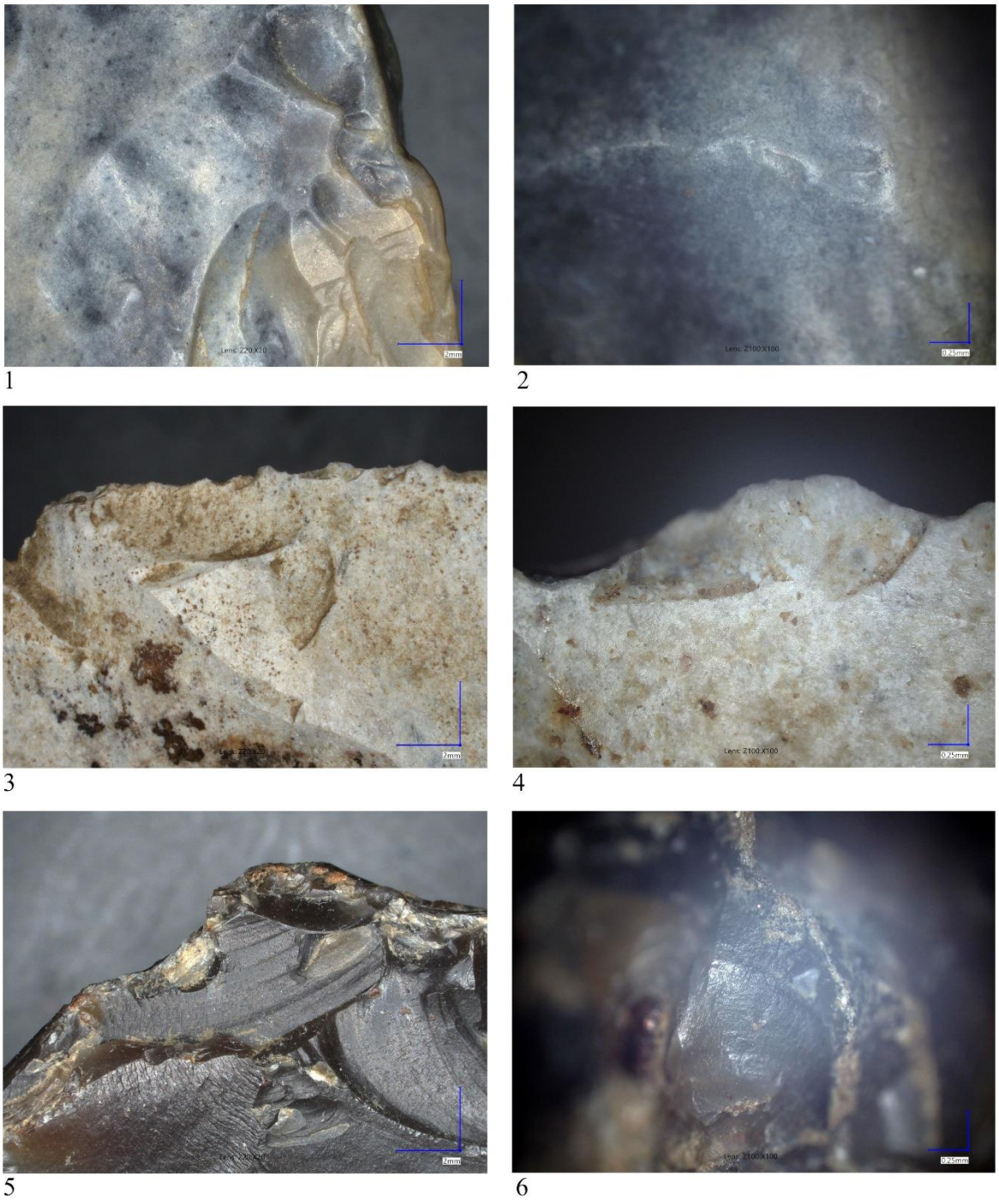

Fig. 6. Iłża, Site 3 “Krzemieniec I” (1–2, 5–6) and “Krzemieniec” (3–4). The different stages of surface preservation on flint: 1–2 – first category, intense patination (blue and white) and surface sheen; 3–4 – second category, moderate patination, lack of intense surface sheen; 5–6 – third category, no noticeable post-depositional changes (photo by K. Pyżewicz).