

Flintknapping of the Upper Palaeolithic site Kaystrova Balka IV

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Abstract. The Kaystrova Balka IV site was discovered by A. V. Dobrovolsky in Kaystrova Balka in 1933. In 1936, A. N. Rogachev examined the collections from the Kaystrova Balka sites and conducted their technical and typological classifications. The materials were subsequently transferred to the Odesa State Historical and Archaeological Museum. The first publication of the excavated materials from this site occurred in 1949. In 1971, S. V. Smirnov also published the flint inventory from the Kaystrova Balka IV site. It was assumed that part of the flint artefacts was lost during World War II. In the initial publication of materials from the Kaystrova Balka IV site, certain items were attributed erroneously. This error was perpetuated in subsequent publications on the site materials. The author of this study established that the Odesa Archaeological Museum curates the entire collection of the Kaystrova Balka IV site (approximately 7,000 exemplars). Based on the typological analysis of flint knapping products (core, chips, etc.), a reconstruction of the knapping technology is proposed. In the first stage, the platform was prepared (most likely with a single blow). In the second stage, the blanks were detached. Knapping could also occur without the initial preparation of the crest, which is typical for the prismatic technique. In the third stage, further knapping could occur, with or without crest preparation. Blades 1-1.5 cm wide were chipped off to produce retouched bladelets or backed bladelets and other small tools.

Keywords: Ukraine; Dnieper Nadporozhye region; Upper Palaeolithic; Kaystrova Balka; knapping.

Prelucrarea silexului în situl paleolitic superior Kaystrova Balka IV. Situl Kaystrova Balka IV a fost descoperit de A. V. Dobrovolsky în localitatea Kaystrova Balka în anul 1933. În anul 1936, A. N. Rogachev a studiat colecțiile din siturile Kaystrova Balka și a realizat clasificarea tehnică și tipologică a pieselor. Ulterior, aceste materiale au fost transferate la Muzeul Național de Istorie și Arheologie din Odesa. Materialele excavate au fost publicate pentru prima dată în anul 1949. În anul 1971, S. V. Smirnov a publicat și inventarul de silex din situl Kaystrova Balka IV. S-a presupus că o parte din artefactele din silex s-au pierdut în timpul celui de-al Doilea Război Mondial. În prima publicație a materialelor descoperite la Kaystrova Balka IV, unele piese au fost încadrate incorect. Această eroare a persistat și în publicațiile ulterioare ale materialelor sitului. Autorul acestei lucrări a constatat că la Muzeul de Arheologie din Odesa se păstrează întreaga colecție a sitului Kaystrova Balka IV (circa 7.000 de exemplare).

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Pe baza analizei tipologice a pieselor de silex (nucleu, aşchii etc.), se propune o reconstrucție a tehnologiei de prelucrare. În termeni generali, pentru situl Kaystrova Balka IV este posibilă reconstituirea tehnologiei de prelucrare. În prima etapă a fost pregătită platforma (cel mai probabil cu o lovitură). În a doua etapă au fost cioplite suporturile. Cioplirea ar fi putut avea loc și fără pregătirea inițială a unei creste, ceea ce este tipic pentru tehnica prismatică. În cea de-a treia etapă, debitajul era continuat, cu sau fără pregătirea crestei. Lamele de 1-1,5 cm lățime au fost debitate pentru a fi transformate ulterior în lame retușate inclusiv abrupt, dar și în alte unelte mici.

Cuvinte cheie: Ucraina; regiunea Nipru-Zaporojie; Paleoliticul superior; Kaystrova Balka; tăiere.

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The Kaystrova Balka IV site was discovered by A. V. Dobrovolsky in Kaystrova Balka in 1933. The site is located on the left bank of the Dnieper River in the Zaporizhzhia region, 30-35 km south of the city of Dnipro. Here, in 1931, during the construction of the Dneproges, three small Stone Age sites were discovered and researched. The collections of these sites range from several dozens to several hundreds of flint and bone items. During an additional survey of the banks of Kaystrova Balka, partially destroyed after water raising in the reservoir, A. V. Dobrovolsky discovered and then examined the fourth site (Rogachev 1949, p. 249-250; Smirnov 1973, p. 88). As a result of the excavations, A. V. Dobrovolsky identified ten cultural horizons with a similar inventory. In total, during the excavation of the Kaystrova Balka IV site, approximately 7,000 flint items were collected.

In 1936, A. N. Rogachev examined the collections from the Kaystrova Balka sites and made their technical and typological classifications. These materials were subsequently transferred to the Odesa State Historical and Archaeological Museum.

For the first time, materials from the Kaystrova Balka sites were published in 1949 (Rogachev 1949). In this publication, A. N. Rogachev used A. V. Dobrovolsky's documentation and paid special attention to the location, stratigraphy, and planigraphy of the sites. He concluded that instead of the ten cultural horizons identified by A. V. Dobrovolsky, there was only one heavily destroyed cultural layer on the Kaystrova Balka IV site. A. N. Rogachev described the flint inventory from the sites in general terms. For Kaystrova Balka IV, the researcher provided one plate with 11 items (Rogachev 1949, fig. 8). Later, P. I. Boriskovsky published these drawings in a monograph on the Palaeolithic of Ukraine (Boriskovskiy 1953).

In 1971, S. V. Smirnov published the flint inventory from the Kaystrova Balka IV site (Smirnov 1971, p. 164-172). In 1973, materials from the Kaystrova Balka sites were also published in his monograph on the Palaeolithic of the Dnieper Nadporozhye region (Smirnov 1973, p. 88-99, 135-137). Subsequently, these materials were cited in academic papers to demonstrate the development of Upper

Palaeolithic industries in the Dnieper region (Rogachev, Anikovitch 1984, p. 220; Nuzhniy 2015, p. 379).

Absolute data of the site are unavailable. Several animal bones (bison) were found during the excavations (Smirnov 1973, p. 98). Currently, these bones are not in the museum site collection. At the same time, based on the analysis of the archaeological collection and stratigraphic position of the cultural layer, all researchers dated the site to the end of the Upper Palaeolithic (“Magdalenian time”) (Rogachev 1949; Smirnov 1973, p. 99).

The author of this study also reviewed the collection from the Kaystrova Balka IV site, which includes more than 7,000 flint objects. The collection comprises the entire cycle of flint exploitation – from amorphous fragments to various products, indicating secondary processing and use.

The raw materials used in knapping are of high quality, although their geological origins remain to be established.

There are a few cores – approximately ten pieces. One gets the impression that several large flint pebbles, which were used in the technological process, were brought to the site. However, it should be noted that A. V. Dobrovolsky perhaps did not completely excavate the site. After World War II, a large number of flint items were collected near the site. This locality was named Kaystrova Balka VI (Smirnov 1973, p. 82-88). At the same time, some researchers suggested that this locality represents the remains of the Kaystrova Balka IV site washed out by the water reservoir (Nuzhniy 2015, p. 380).

The cores display one- and two-platforms, with dimensions of up to 6 cm. The knapping technique is prismatic. The striking platform was obtained through one or more removals. A hard hammer was used in the flintknapping process. This is confirmed by the presence of a large percussion bulb on the ventral surface of the flakes and blades. Blade negatives on the cores range between 1.8 to 0.7 cm (**Pl. I; II**).

The larger part of the collection from the Kaystrova Balka IV site, as well as from other Upper Palaeolithic sites, consists of flakes and blades (more than 6000 pieces), with flakes being predominant. Their sizes differ. Small flakes and chips, which are production waste, predominate. At the same time, the collection contains a few rather large and massive flakes (approximately 150 pieces), ranging in size from 4 to 11 cm. The pebble cortex is present on the dorsal surface of most of these flakes. Several large flakes have been attributed to the core category by previous researchers (e.g., **Pl. III/3**). At least one turned out to be a large flake with dimensions of 7.8 × 4.5 × 2.2 cm (**Pl. III/3**). The dorsal surface preserves the negatives of elongated removals. They reach the middle of the item, where the spalls broke off. The rest of the dorsal surface is cortical. No traces of processing

were observed on the ventral surface. A large bulb of percussion is present. Judging from the remains of the striking platform, it can be assumed that it was made by one removal. Thus, this item is not a core (Pistruil 2023).

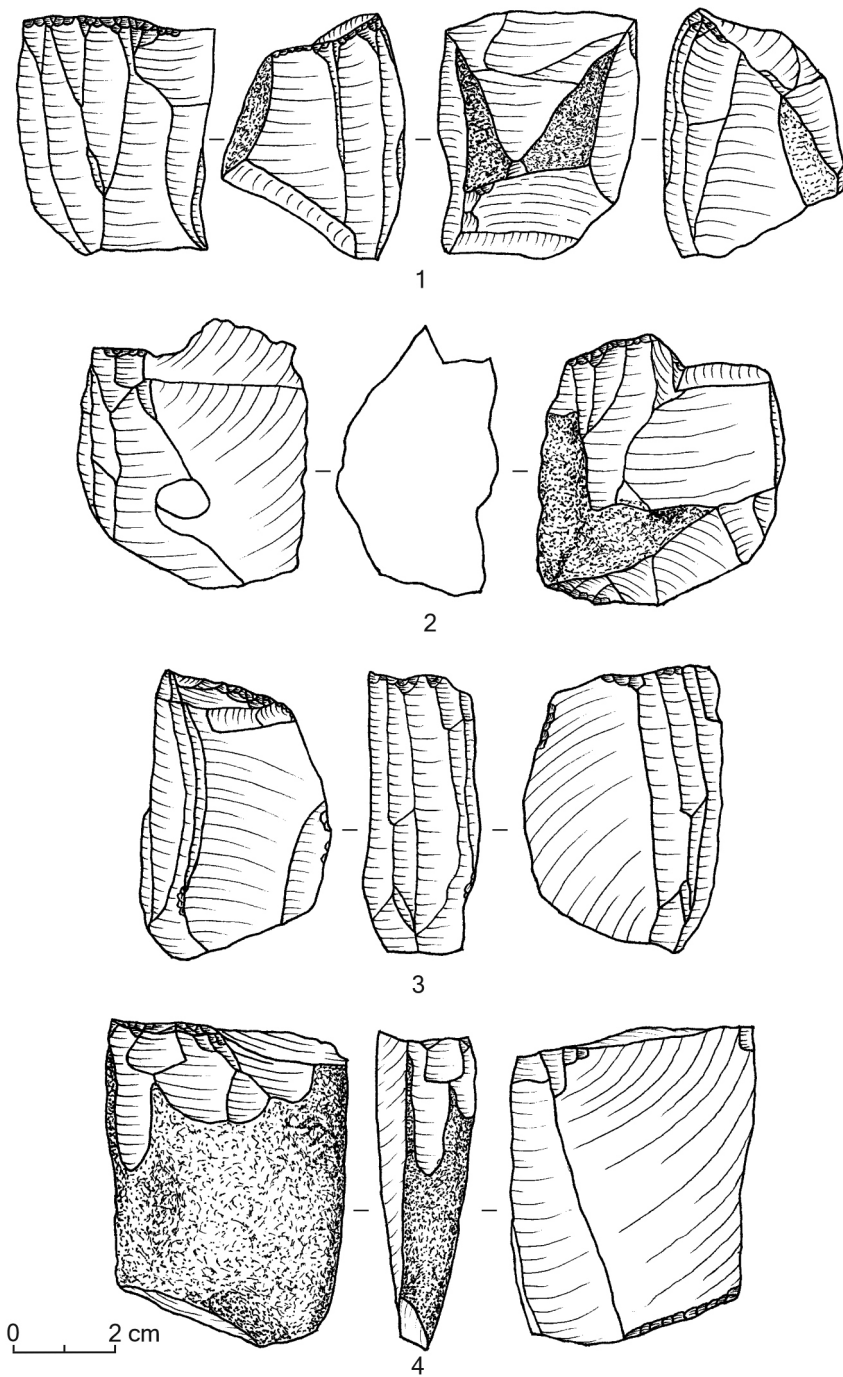
However, one core on a large flake is present in the collection (**Pl. I/3**). Blades are also quite diverse in terms of size. Those up to 2 cm predominate. However, as with the flakes, there are a series of large and massive blades (approximately 200 pieces), ranging from 2 to 4.8 cm in width. Their length reaches 8-10 cm. Some of them show remnants of the pebble cortex on the dorsal surface.

The vast majority of items with secondary processing (burins, scrapers, points, blades, and flakes with retouching and so on) were made on large blanks (mostly blades). Blades (1-1.2 cm wide) were used mainly for making truncated blades, retouched blades, or backed bladelets (**Pl. IV**).

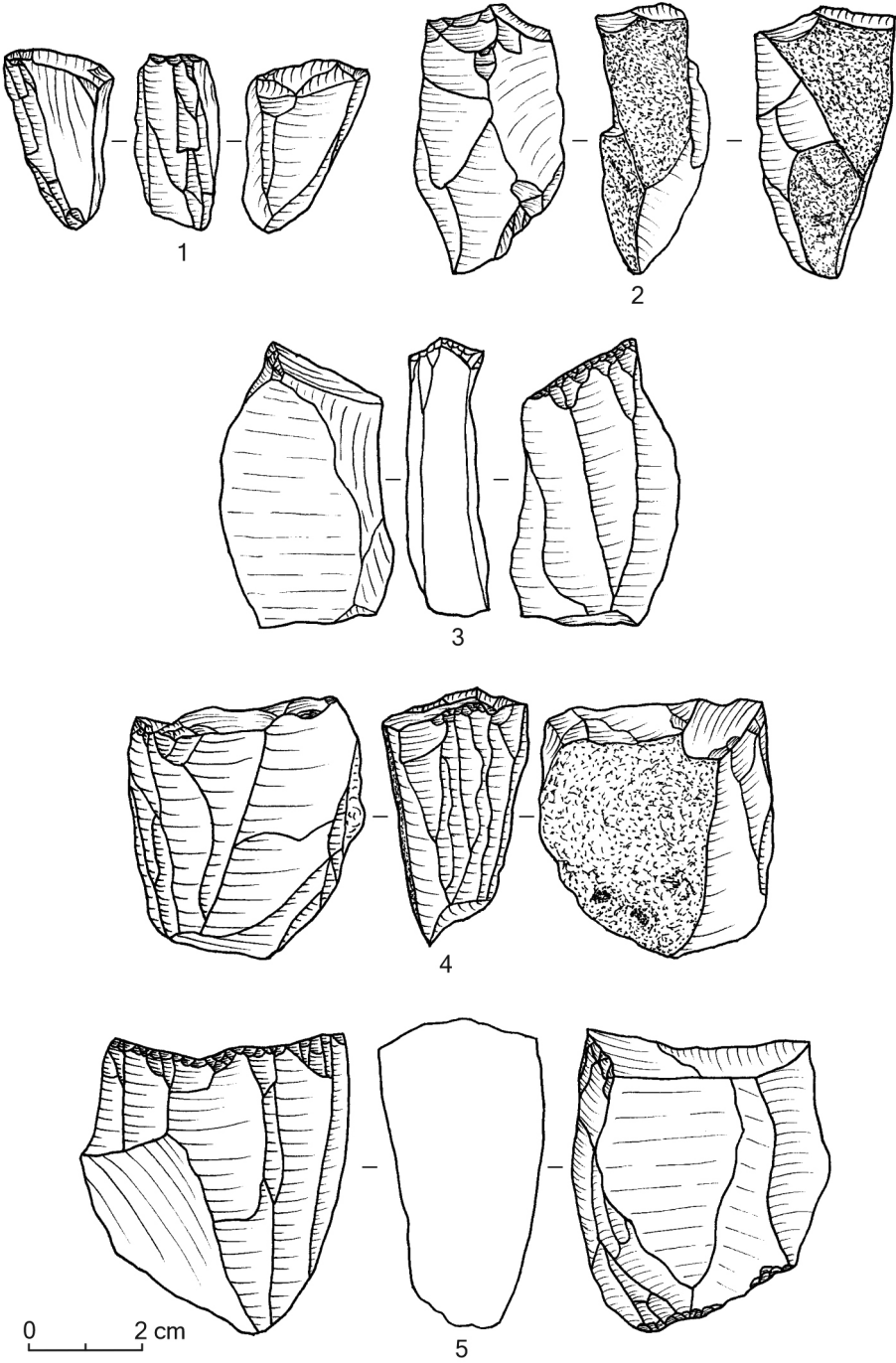
Thus, in general terms, it is possible to reconstruct flintknapping technology at the Kaystrova Balka IV site (**Pl. V**). Flint pebbles or large fragments (judging by the removals, larger than 10 cm) were brought to the site. Flint testing and initial preparation for knapping took place directly on the site. In the first stage, the platform was prepared (most likely with one blow). In the case of fragments, a suitable surface could be used as a platform, or a new platform could be additionally made. The second stage involved the reduction process. The knapping could also occur without the initial crest preparation, which is typical for the prismatic technique. During knapping, flakes could break off, which prevented further use of the core. At the same time, the working surface was renewed for further knapping. In the third stage, further knapping could occur, with or without crest preparation. Blades 1-1.5 cm wide were selected for making retouched bladelets or backed bladelets and other small tools.

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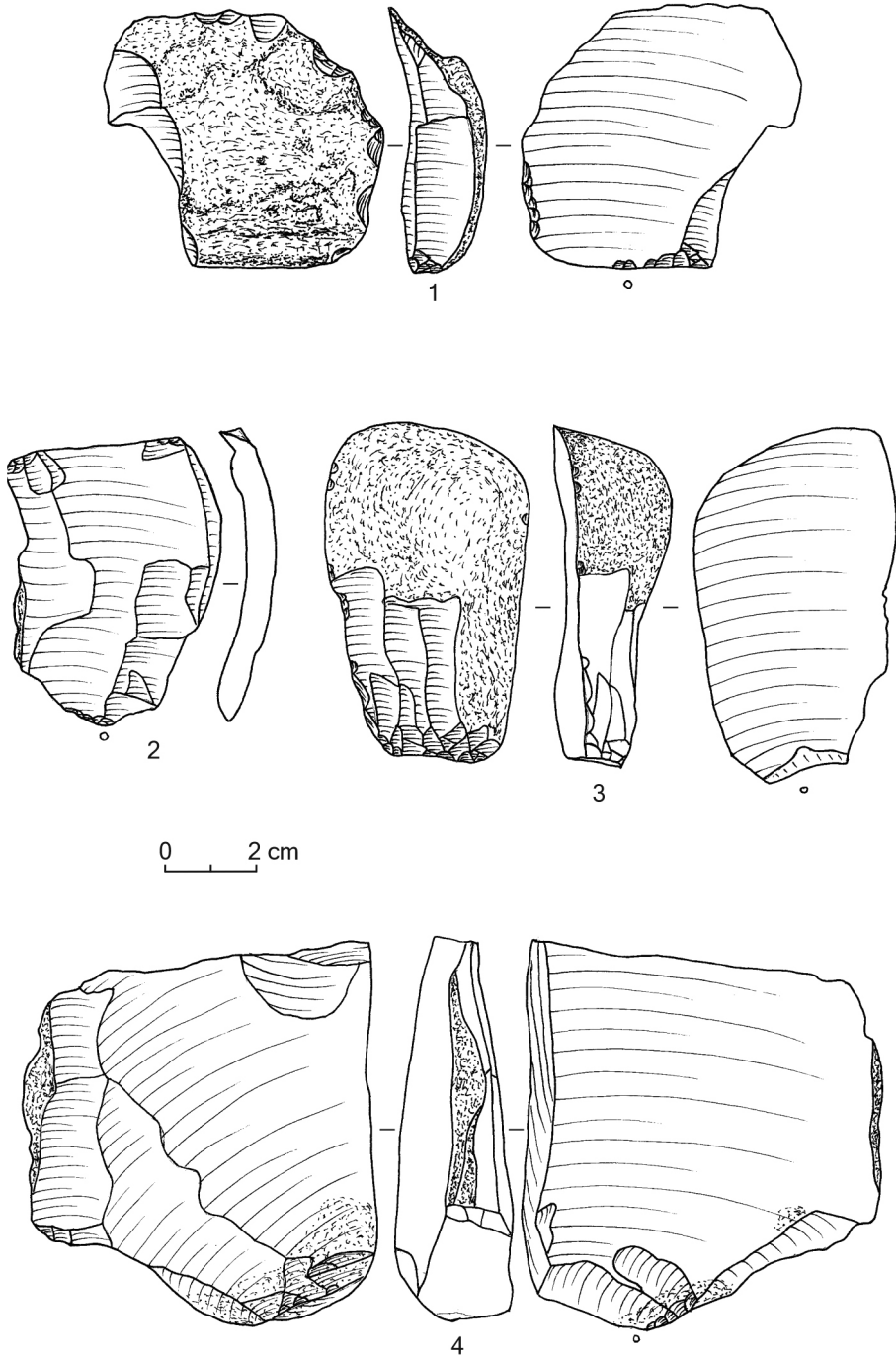
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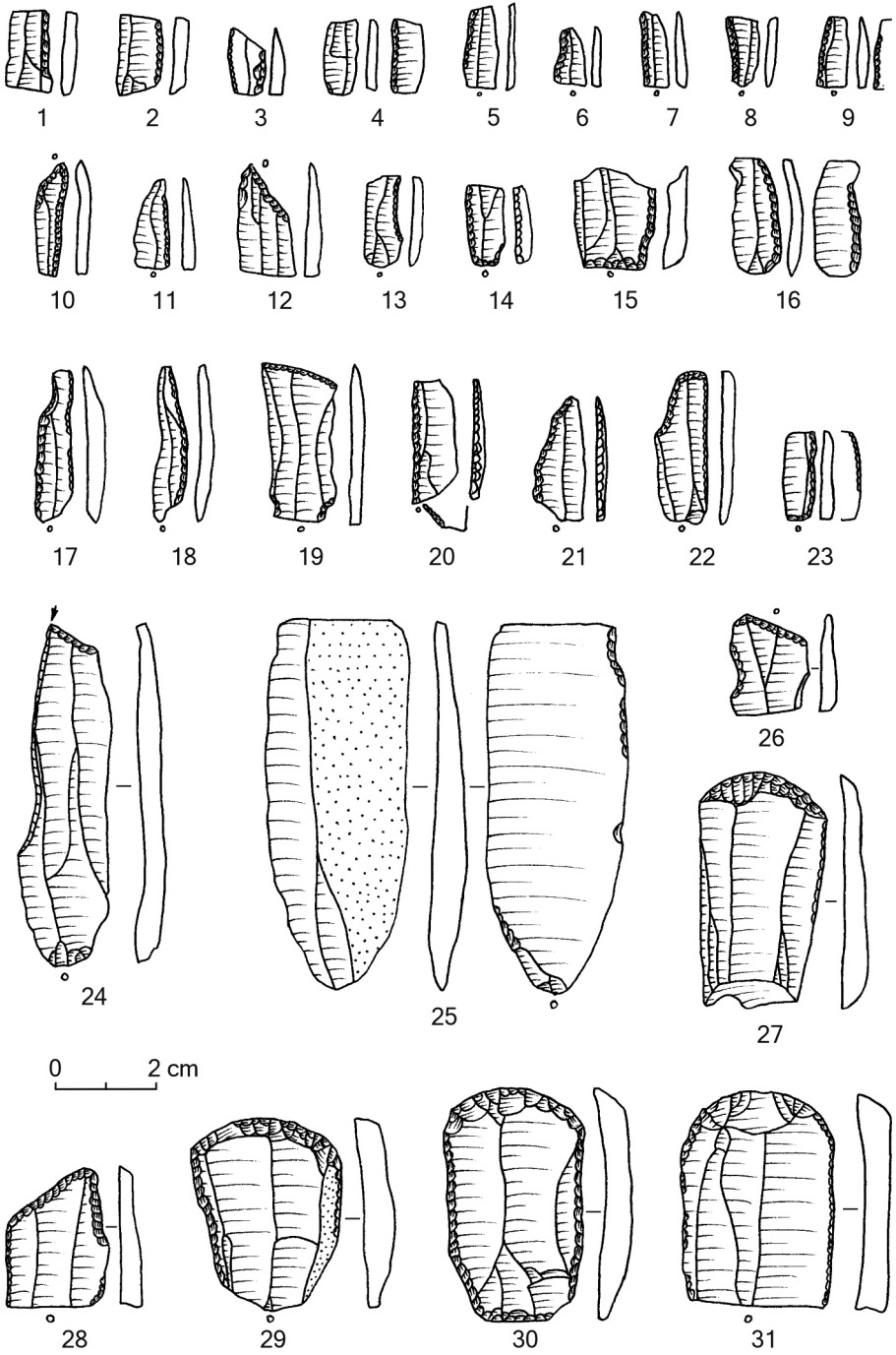
Pl. I. Kaystrova Balka IV site. Cores.
Pl. I. Situl Kaystrova Balka IV. Nuclee.



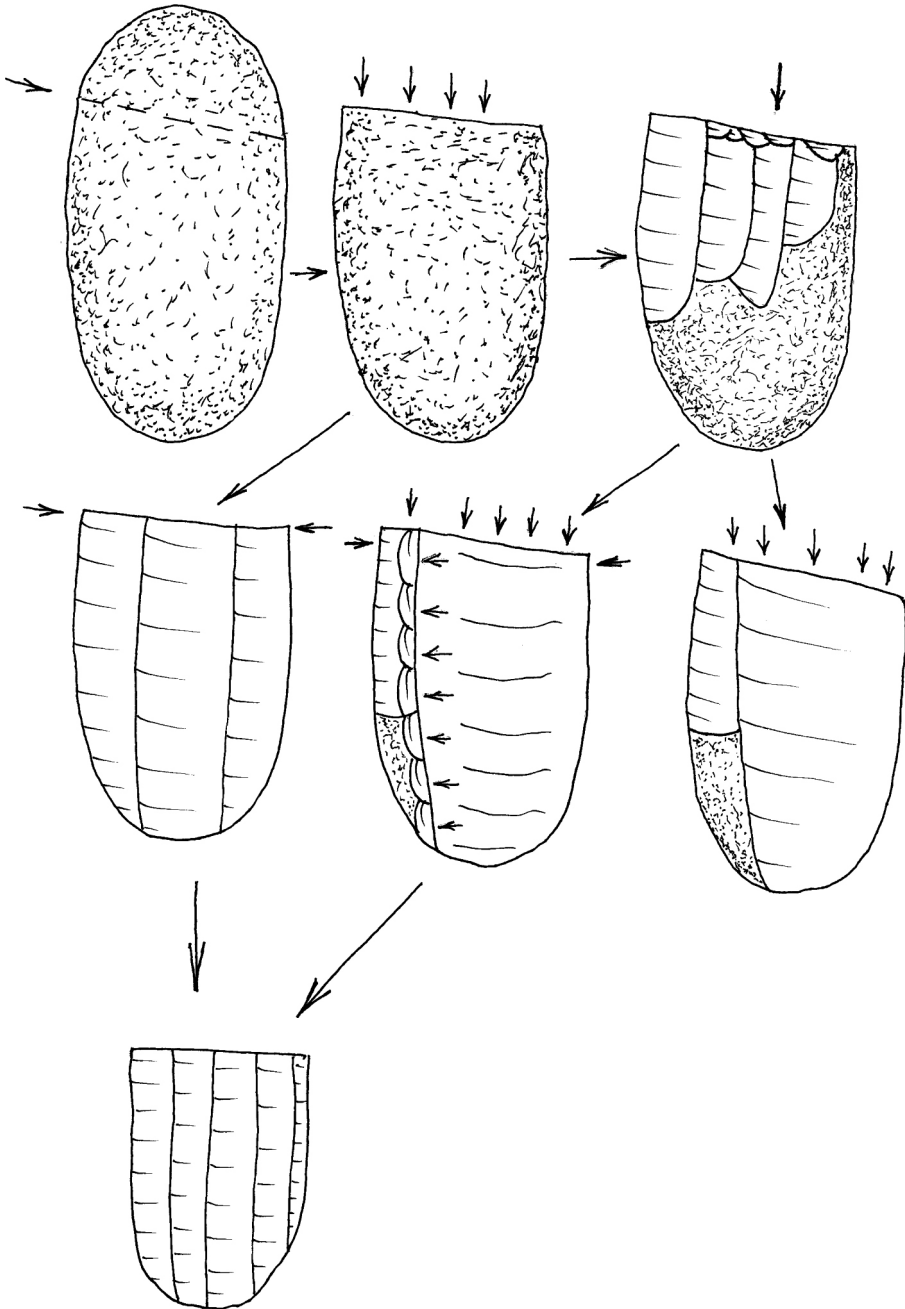
Pl. II. Kaystrova Balka IV site. Cores (after Pistrui 2023).
Pl. II. Situl Kaystrova Balka IV. Nuclee (după Pistrui 2023).



Pl. III. Kaystrova Balka IV site. Flakes (after Pistrui 2023).
 Pl. III. Situl Kaystrova Balka IV. Așchii (după Pistrui 2023).



Pl. IV. Kaystrova Balka IV site. Tools on blades.
Pl. IV. Situl Kaystrova Balka IV. Unelte pe suport laminar.



Pl. V. Kaystrova Balka IV site. Knapping technology scheme.
Pl. V. Kaystrova Balka IV. Schema tehnologiei de debitaj.