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# An original technological approach for the figuration of zoomorphic figurines at the Late Palaeolithic settlement of Anetivka 2 (Ukraine)

Alla Hlavenchuk<sup>1</sup>, Oksana Hrytsiuta<sup>2</sup>

**Abstract.** Anetivka 2 is an Upper Palaeolithic settlement of bison hunters. In addition to many different items, non-utilitarian objects were also found in the Anetivka 2 settlement. Among these objects, there are sculptures of small forms that depict zoomorphs and anthropomorphs. Various technological methods were used for their production and design. An interesting technological solution was to mark lines when it was not possible to draw or cut them, or when it was difficult to do so. The lines were indicated using a dotted pattern created either through pecking or drilling. The dotted line could later be transformed into a solid line by connecting the individual prepared dots or left as a dotted line. The depiction of lines with dots represents an original technical approach employed at the Anetivka 2 settlement. A vivid example of such technological approaches to depicting dotted lines can be seen in two figurines of different animals (one quartz mammoth and one kaolin bison).

**Keywords:** Northwest Black Sea Region, Late Palaeolithic, Anetivka 2, production technology, zoomorphic images, sculpture of small forms.

**O abordare tehnologică originală pentru realizarea statuțelor zoomorfe în situl paleolitic final de la Anetivka 2 (Ucraina).** Anetivka 2 este un sit datat în paleoliticul superior aparținând unei comunități de vânători de bizoni. Printre numeroasele descoperiri de obiecte non-utilitare de aici se numără și mici statuete zoomorfe și antropomorfe, realizate prin diverse metode și tehnologii. Una dintre tehnologiile interesante utilizate o reprezintă realizarea unui marcaj punctat al inciziilor, în cazul în care incizarea sau tăierea lor directă nu era posibilă sau era foarte dificilă. Liniile sunt indicate pe seama unui model punctat, realizat prin ciupire sau perforare. Linia punctată putea fi ulterior unită printr-o linie continuă, solidă, prin unirea punctelor perforate, sau putea fi lăsată ca o linie punctată. Această prefigurare a liniilor prin puncte reprezintă un demers original în situl de la Anetivka 2. Un exemplu grăitor al acestei

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tehnologii îl oferă două statuete zoomorfe, una din cuarț, reprezentând un mamut și o a doua – un bizon din caolin.

**Cuvinte cheie:** Nord-vestul Mării Negre, paleoliticul târziu, Anetivka 2, tehnologie de producție, imagini zoomorfe, statuete de mici dimensiuni.

.....

## Introduction

Anetivka 2 is an Upper Palaeolithic settlement of bison hunters, which is located North of the Black Sea, in the Pobuzhzhia steppe (Ukraine, Mykolaiv region), on the bank of Bakshala river (tributary of the Southern Bug). The site has been studied since 1978 (Stanko 1989; Stanko 1993; Stanko 1996; Stanko 1997; Stanko, Grigor'eva, Shvaiko 1989). The settlement functioned during the time of the maximum of the last glaciation (18-19 thousand years ago) (Stanko 1997). The flint industry has clear Epigravettian features. Anetivka 2 is known as a settlement with a particularly rich set of archaeological finds. Here, as in many steppe settlements, finds lie in the so-called "suspended condition" (Glavenchuk 2011) or topographically spread site.

Since 1992, archaeological research has been conducted in the north-east area of the settlement (EII/13-22 and III/23-31). The research methodology included wet-sieving of the sediment from the cultural layer. Thanks to this research method, in addition to small hunting tools, debris of tools, and manufacturing waste, small finds that were previously absent from the list of artefacts at Anetivka 2 also appeared. As a rule, this category of finds includes shells, small beads and pendants, and objects of mobile art, which are well preserved and generally considered not characteristic of steppe settlements. In manufacturing areas EII/13-22 and III/23-31, the archaeological material occurs in clusters of different sizes and has different origins. These clusters are associated with flint production, bone processing, natural processes, and activities of burrowing animals (Glavenchuk 1997; Glavenchuk 2003; Glavenchuk 2003-2004; Glavenchuk 2007; Glavenchuk 2005-2009; Glavenchuk 2018).

Among the many different items found in the Anetivka 2 settlement, non-utilitarian objects were also found: jewellery (pendants, beads, including seed beads), sculpture of small forms (mobile art), and items with engraving, applied patterns, notches, slots, signs, and drawings (on bone or stones). A total of several hundred non-utilitarian objects were discovered in the settlement. The objects belonging to Palaeolithic art found at the settlement include small sculptures represented either by geometric shapes (i.e., discs, triangles) or by anthropomorphic and zoomorphic images.

Among the sculptures of small forms on Anetivka 2, zoomorphic images are best represented. They are far more numerous than anthropomorphic images. Among



the 106 zoomorphic figurines studied, there are sculptures of bison, mammoths, hares, birds, representatives of the Felidae family, a horse, a rhinoceros, and several zoomorphic figurines for which the species is undeterminable (Glavenchuk 2020).

### **The technology used for the production of sculptures of small forms**

Palaeolithic hunter-gatherers at Anetivka 2 used flint burins and blades to make small sculptures. The figurines were made of both soft and hard materials. A wide range of techniques were used in the process of manufacturing figurines. Engraving, carving, grinding, smoothing, drilling, sawing, cutting, upholstery, knapping small spalls (including burin spalls), retouching, pecking (employed to accentuate specific parts of the sculpture's body, including the head and neck), and sparing relief images are among the technical methods used to make figurines. Techniques for creating a convex (relief) image to leave the impression of the volume were also used, with the aim of "raising" individual details above the plane. This technique was used for individual elements of the sculptures. Some figurines are actually made in the form of a bas-relief combined with engraving and carving.

As a rule, a natural piece (stone) which sometimes already resembled a human or animal in shape was chosen and subsequently slightly adjusted. Images were either accommodated to the natural shape of the workpiece or the desired shape was cut from a soft or relatively soft material, which was easier to process. Techniques for processing mineral materials for the purpose of making figurines were often combined. The shape of the natural workpiece often dictated the shape of the body of the depicted animal (e.g. a horizontally elongated figure but vertically short, or a tall and narrow figure). Almost all the figurines could sit on a plane without additional support. For this purpose, the bottom of the figurines was cut to prepare a flat surface at the base of the sculpture. This may indicate that such products were "exhibited" in a dwelling, possibly in a certain special place (Glavenchuk 2020).

Dividing lines (e.g. the line separating the trunk from the head of a mammoth, the line separating the head from the neck) were made by cutting, engraving (drawing), and by drilling, pecking, or drawing notches arranged in a line. Occasionally, these methods were combined. Here, we present such a technological method in the case of two mobile sculptures made of hard (quartz) and soft (kaolin) materials, depicting a mammoth and a bison, respectively – the two main species in the imagery of the zoomorphic sculptures of Anetivka 2.

### **Materials for the manufacture of zoomorphic mobile sculpture**

Both soft and hard minerals and rocks were used for the manufacture of zoomorphic figures. These minerals were, for the most part, raw materials that were easily available to the Palaeolithic inhabitants of Anetivka 2.

In terms of the frequency of the minerals used as raw materials for the manufacture of zoomorphic sculptures at Anetivka 2, there are various dense clayey screeds, including kaolin – a soft, plastic material. The second place is held by veined quartz, a relatively hard mineral (7 out of 10 on the Mohs scale), which required specific efforts, skills and expertise for processing. These are two different materials that are equally used as blanks for small figurines in Anetivka 2.

### **Analogies**

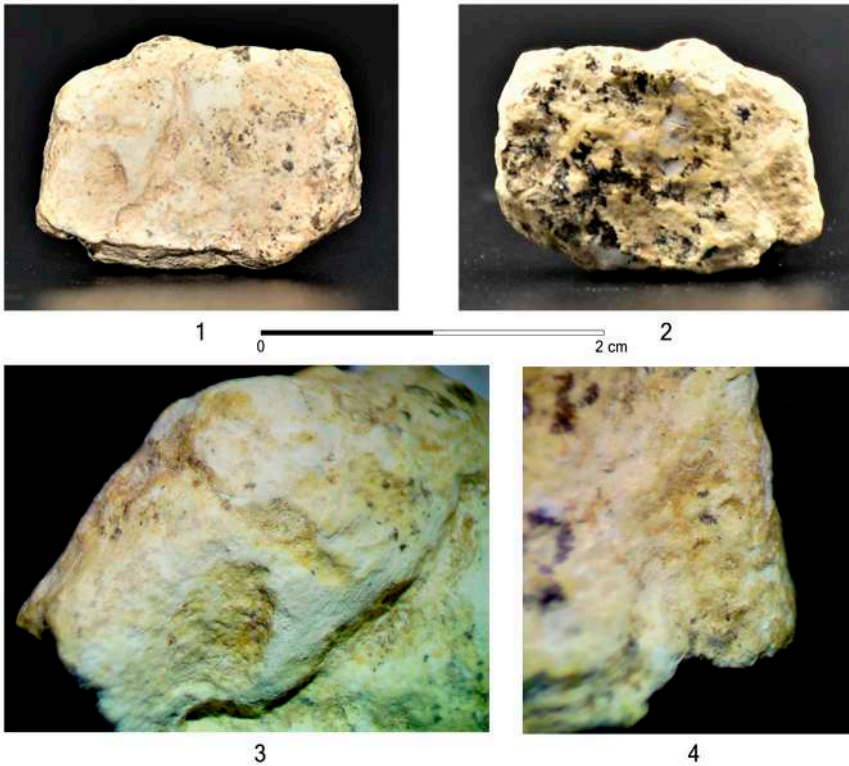
Animal figurines belonging to the Palaeolithic sculpture of small forms category, often beautifully executed, were widespread in Europe and Asia throughout the Late Palaeolithic (Efimenko 1958; Abramova 1962; Leroi-Gourhan 1971; Stolyar 1985; Borziyuk 1989; Abramova 2001-2002; Abramova 2003-2004; Amirhanov, Lev 2009; Yakovleva 2013; Hlopachev (ed.) 2016). The mobile sculpture of Anetivka 2 fits well with the world of Palaeolithic art. Each zoomorphic image has an individual character despite the many features they share in general. The closest analogues to Anetivka are the zoomorphic figures recovered at Palaeolithic sites such as Kosoutsy (Moldova), Sungir, Kostenki 1, Kostenki 4, Anosovka 2, and Avdeev (Russia). In Ukraine, an analogy to the mammoth sculptures from Anetivka 2 is represented by the mammoth figurine made of marl found at Barmaki (Nuzhnyi 2015).

### **Description of the figures**

Bison figurines are made of dense kaolin concretions, beige, with a white interior. The overall shape, deliberately given to the object, is quadrangular. On one blank, sculptures of two bisons were made (two-sided, **Fig. 1/1-2** and one-sided, **Fig. 3/1** representation).

**Bison No. 1.** The left side (profile) of the figure represents the bison “looking” to the left. The bison is depicted in a calm state (standing) (**Fig. 1/1**). The head is turned slightly to the left. The bottom is trimmed (the figurine can be placed on a flat surface). The top is partially trimmed. The massive head is well depicted, and the hump on the back of the animal is rendered very well. A line separates the head from the body. Several points were initially drilled to mark this, and later they were connected by a continuous line through incision (**Fig. 1/3; Fig. 2/1-3**).

The bison’s facial features, the wool above the face (“bangs”), the ear, and the downward-pointing horn are well represented (**Fig. 1/3**). In this case, the depiction is achieved through incision, drilling, and material removal to create volume in specific areas (such as the ear, horn, or wool on the head). The wool on the head is separated from the face by an incised line (on the left side of the figurine and at the front – on the bison’s forehead). Near the hump, there is a stellated cavity from impact (intentional pecking or accidental indentation). It could be a dent

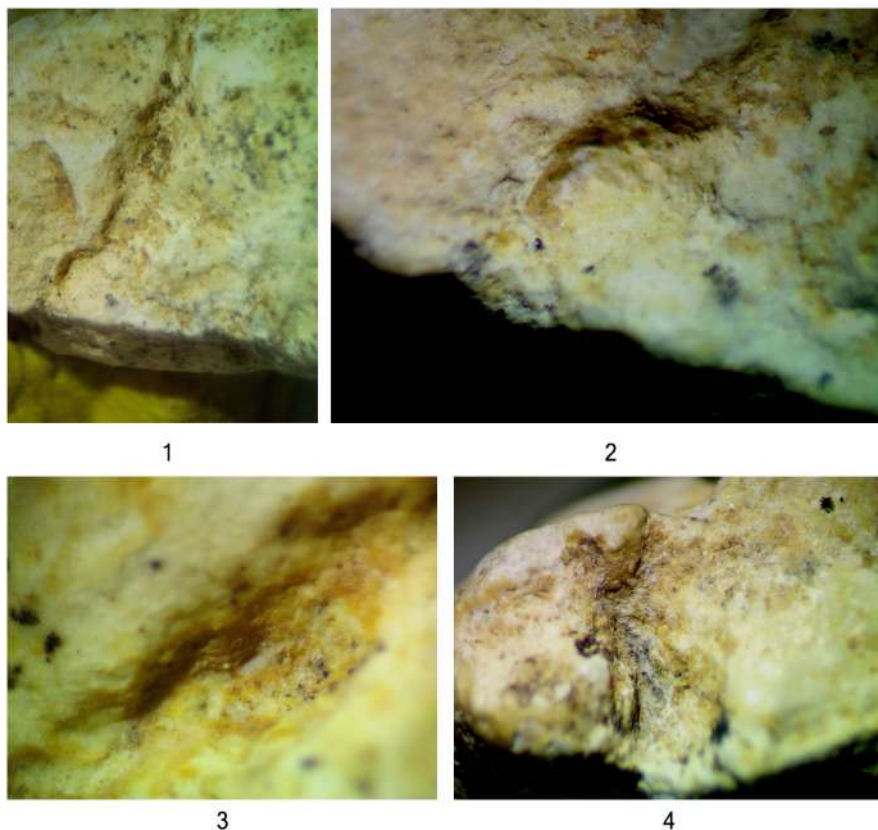


**Fig. 1.** Anetivka 2. Sculpture of small forms. Polyiconic figure of zoomorphs (kaolin). Bison No. 1 (double-sided). 1. Left profile of the sculpture; 2. Right profile of the sculpture; 3. Bison head No. 1, left profile ( $\times 0.9$ ); 4. Bison head No. 1, Right profile ( $\times 10$ ).

**Fig. 1.** Anetivka 2. Sculptură de mici dimensiuni. Figură zoomorvă poli-iconică (caolin). Bizon nr. 1 (două fețe). 1. Profilul stânga al statuetei; 2. Profilul dreapta al statuetei; 3. Capul bizonului nr. 1, profilul stâng ( $\times 0.9$ ); 4. Capul bizonului nr. 1, profilul dreapta ( $\times 10$ ).

from some tongs used to hold the blank during the figurine creation process (for example, when working on delicate parts). Another symmetrical cavity is present at the bottom of the sculpture. These two indentations are located at the ends of an imaginary straight line at the top and bottom of the artefact. Along the bottom of the figurine, the head (face) is visually separated from the body by incision (Fig. 2/4). On the left side, several drillings connected by incision form a figure resembling a segment of a circle, possibly representing “legs” or indicating the artist’s intention to carve out this part altogether.

Right side (profile) of the object (bison “looking” to the right). Only the head of the animal is detailed on this side: the thickness of the head is reduced compared to

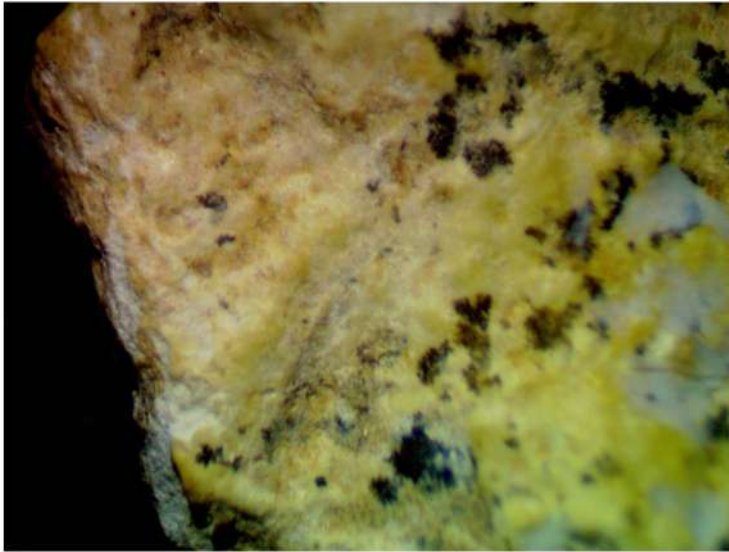


**Fig. 2.** Anetivka 2. Sculpture of small forms. Bison No. 1. 1. Left profile of the sculpture. The line separating the head of the image from the body ( $\times 0.8$ ); 2. Left profile. A blind hole-point near the muzzle of a bison ( $\times 20$ ); 3. Left profile. One of the blind holes forming a dotted line ( $\times 25$ ); 4. Cut under the muzzle of the bison No. 1 from below ( $\times 15$ ).

**Fig. 2.** Anetivka 2. Sculptură de mici dimensiuni. Bizonul nr. 1. 1. Profilul stânga al statuetei. Linia care separă capul de trunchi ( $\times 0.8$ ); 2. Profilul stânga. Perforație circulară amplasată lângă botul bizonului ( $\times 20$ ); 3. Profilul stânga. Una dintre perforațiile formând linia punctată ( $\times 25$ ); 4. Tăietură amplasată sub botul bizonului, vizibilă din partea inferioară ( $\times 15$ ).

the body, and a shallow line separates the head from the body (**Fig. 1/2, 4**). Unlike the left side of the figurine, there are no detailed depictions of individual elements (such as the ear or horn) on the face of the bison. In some areas, the body volume is intentionally reduced.

**Bison No. 2.** If the figurine with the described image is turned upside down, the right side of the bison becomes the left side of the second bison, and the bison starts “looking” to the left (**Fig. 3/1-2**). This representation is one-sided. The head



2

**Fig. 3.** Anetivka 2. Sculpture of small forms. Polyiconic figure of zoomorphs (kaolin). Bison No. 2 (one-sided). 1. Left profile of the sculpture; 2. Bison head, left profile ( $\times 10$ ).  
**Fig. 3.** Anetivka 2. Sculptură de mici dimensiuni. Figurină zoomorfă poli-ionică (caolin). Bizonul nr. 2 (reprezentare laterală). 1. Profilul stânga al statuetei; 2. Capul bizonului, profilul stânga ( $\times 10$ ).

is depicted (looking to the left). The head is separated from the body, as shown by transferring different thicknesses of the head and torso. The figurine is standing. From this perspective, a hanging neck fold of the animal is depicted.

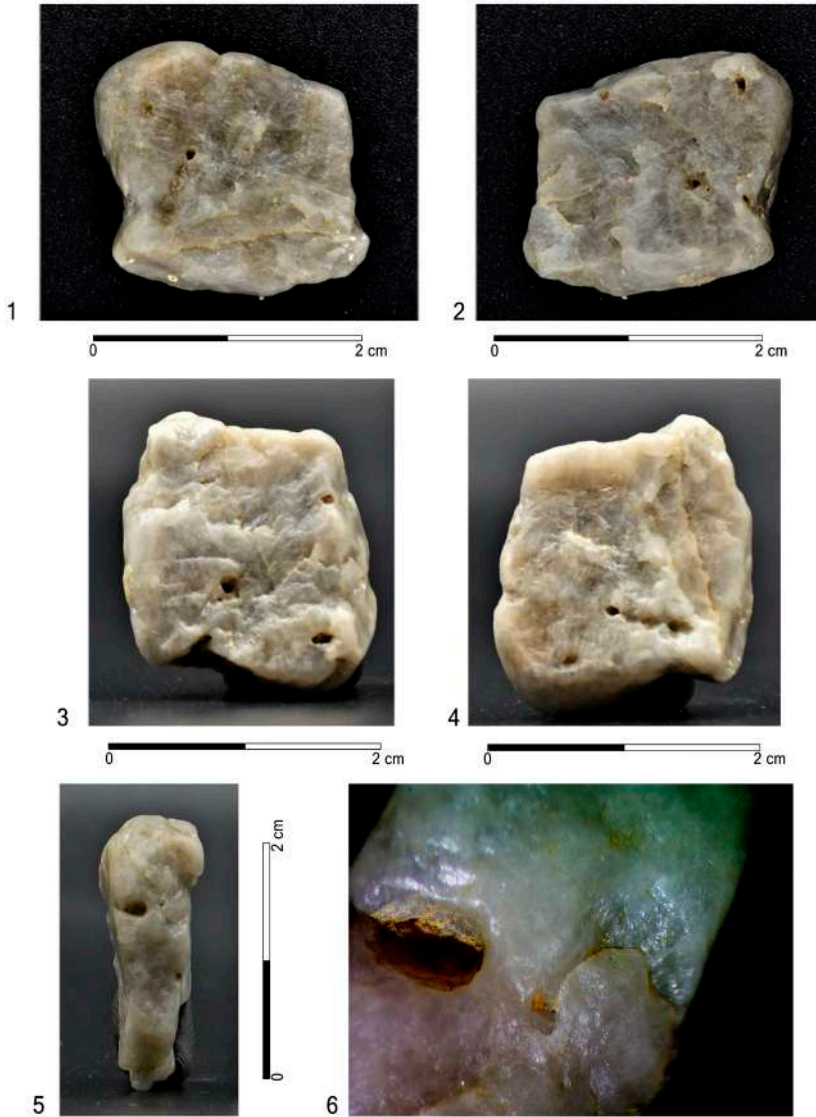
We cannot confidently say whether this is an intentional representation of two bisons (one two-sided and one-sided), or if one of the images (possibly the one-sided) was deemed unsuccessful, and a second one was made (already detailed from both sides).

Mammoths are carved from matte quartz pebble, whitish-grey. The blank is flattened by trimming and chipping scales (techniques used to reduce the volume of the figurine and make it flatter). In some cases, a bas-relief representation of the details exists. Overall, it has a shiny and highly polished appearance. There are visible depictions of two mammoths.

**Mammoth No. 1.** is two-sided (**Fig. 4/1-2**). The figurine represents two sides of one mammoth that the creator attempted to make symmetrical (though not entirely successful) or an intentional representation of two different mammoths on each side. Left side (profile) of the object (mammoth “looking” to the left) (**Fig. 4/1**). The trunk is separated from the body by a line. A dotted line (line which separates the trunk from the body) consisting of 5-6 dots is used to depict the trunk (**Fig. 5/1, 3**). The eye is depicted through drilling or puncturing (with twisting) (**Fig. 5/1-2**). On the hump, a line “dividing” the head and body of the depicted animal is shown using large and small dots created by drilling or pecking. The head is massive, and the trunk is directed downward. The bottom of the figurine is trimmed and polished. By reducing the volume and smoothing the surface, the left ear of the mammoth is depicted as bas-relief.

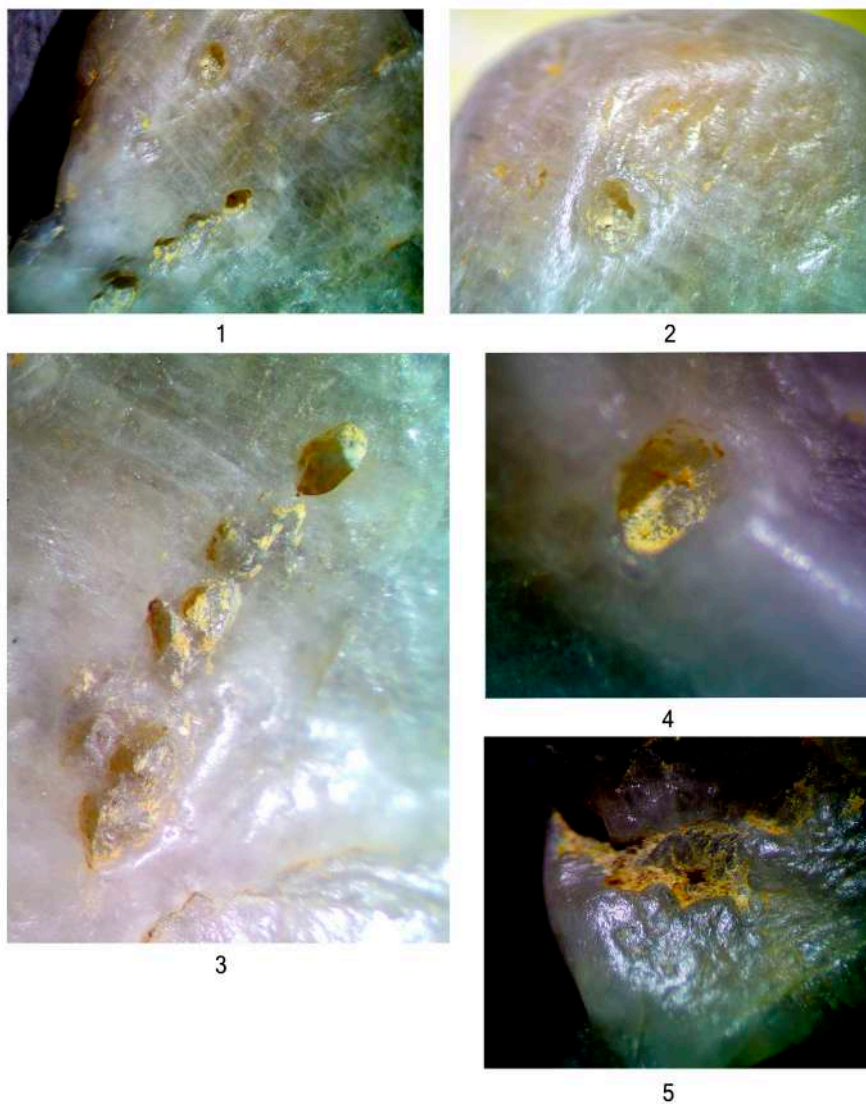
On the reverse side, a mammoth is depicted (right profile) (**Fig. 4/2**). The head is smaller than that in the left profile, and the eye is shown as a drilled dot (**Fig. 6/1**). Perhaps, later on, this eye depiction was considered unsuccessful. Visually, the eye is perceived as too high. Below, another small shallow dot (pecking) depicts another eye (?). To the left of the upper blind hole-“eye”, there is a splintered fracture of ancient origin. Most likely, as in the left profile, there was a relief representation of the mammoth’s ear that was broken during further processing (it could have been accidentally damaged by the quartz-processing tool). Dots were used to mark the separation of the different depictions. Two dots were attempted to represent the line separating the mammoth trunk from the body. A similar dotted line, consisting of 2-3 points connected by a slit directed downwards, is applied at the end (the face of a mammoth in full face) to designate the mammoth’s trunk (**Fig. 5/5**). The trunk is visually perceived as slightly forward-facing on the right side of the depiction.

If we see the left profile of the mammoth, at the bottom of the figurine, will be noticeable “scratch”/“crack” that appear as a drawn line. It was most likely formed during quartz processing, related to the properties of this material (certain layering). Above the “line”, the side is carved in the form of a triangle. As a result, we visually perceive the lower back part of the figurine as a depiction of the animal’s leg. Overall,



**Fig. 4.** Anetivka 2. Sculpture of small forms. Polyiconic figures of zoomorphs and anthropomorphs (quartz). 1. Mammoth No. 1, left profile of the sculpture; 2. Mammoth No. 1, right profile of the sculpture; 3. Mammoth No. 2, left profile of the sculpture; 4. Mammoth No. 2, right profile of the sculpture; 5. Full-face anthropomorph face; 6. Face of an anthropomorph full face. Image of eyes ( $\times 15$ ).

**Fig. 4.** Anetivka 2. Sculptură de mici dimensiuni. Figuri zoomorfe și antropomorfe poliiconice (cuart). 1. Mamutul nr. 1, profilul stânga al statuetei; 2. Mamutul nr. 1, profilul dreapta al statuetei; 3. Mamutul nr. 2, profilul stânga al statuetei; 4. Mamutul nr. 2, profilul dreapta al statuetei; 5. Figură antropomorfă, reprezentare facială; 6. Figura antropomorfă. Reprezentarea ochilor ( $\times 15$ ).



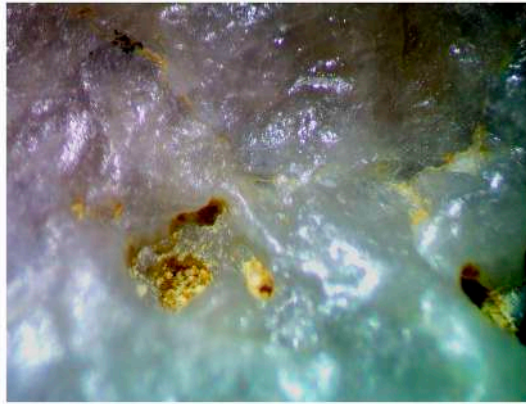
**Fig. 5.** Anetivka 2. Sculpture of small forms. Mammoth No. 1. 1. Left profile of the sculpture, eye and trunk line ( $\times 10$ ); 2. Left profile of the sculpture, eye ( $\times 17$ ); 3. Left profile of the sculpture, blind holes-points forming a dotted line ( $\times 15$ ); 4. Blind hole-point on the end of the image (on the forehead of the mammoth) ( $\times 30$ ); 5. Slot on the end of the image (on the trunk of the mammoth) ( $\times 15$ ).

**Fig. 5.** Anetivka 2. Sculptură de mici dimensiuni. Mamutul nr. 1. 1. Profilul stânga al sculpturii, ochiul și linia trunchiului ( $\times 10$ ); 2. Profilul stânga al sculpturii, ochiul ( $\times 17$ ); 3. Profilul stânga al sculpturii, perforații formând linia punctată ( $\times 15$ ); 4. Perforații la extremitatea imaginii (amplasate pe fruntea mamutului) ( $\times 30$ ); 5. Indentație la periferia imaginii (pe trunchiul mamutului) ( $\times 15$ ).





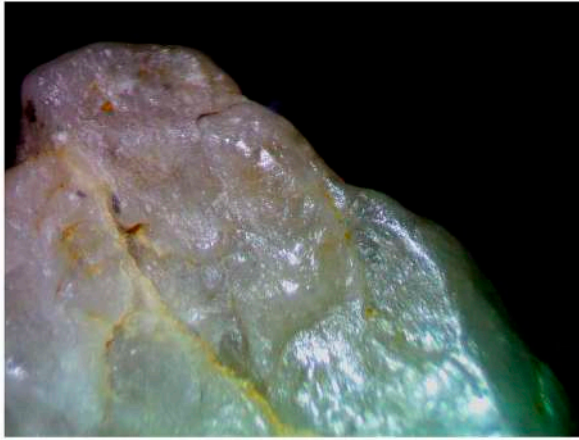
1



2

**Fig. 6.** Anetivka 2. Sculpture of small forms. Mammoth No. 1. 1. Right profile of the sculpture, eye ( $\times 30$ ); 2. Right profile, blind hole-point for the identification of the mammoth trunk ( $\times 15$ ).  
**Fig. 6.** Anetivka 2. Sculptură de mici dimensiuni. Mamutul nr. 1. Profilul dreapta al sculpturii, ochiul ( $\times 30$ ); 2. Profilul dreapta, perforație pentru identificarea trunchiului mamutului ( $\times 15$ ).

a line crack divides the lower part of the image in half. At the top, there is an upward-pointing triangle, and at the bottom, (a “mirror reflection”) figures in the form of a segment of a circle or an ellipse with a small chipped cavity on the right side. However, if the image is rotated counterclockwise by  $90^\circ$ , the geometric elements with the crack at the bottom transform into the front view of another mammoth with a massive distinct head (**Mammoth No. 2**). The crack now serves as a line “drawing” the head and trunk of the animal. This image of the mammoth is also two-sided. It depicts a massive head, trunk, and the right eye (**Fig. 4/3-4; Fig. 7/1-2**).



1



2

**Fig. 7.** Anetivka 2. Sculpture of small forms. Mammoth No. 2. 1. Right profile, eye ( $\times 10$ );  
2. Right profile, the edge of a mammoth's head ( $\times 15$ ).

**Fig. 7.** Anetivka 2. Sculptură de mici dimensiuni. Mamutul nr. 2. 1. Profilul dreapta, ochiul ( $\times 10$ ); 2. Profilul dreapta, extremitatea capului ( $\times 15$ ).

**Anthropomorph.** In addition to the depiction of the two mammoths, on the back of the first mammoth (at the end face of the second mammoth, from behind), there is an image of an anthropomorphic face (full face) (**Fig. 4/5**).

The surface is partially flattened through chipping. The face features two eyes (the right eye is drilled, while the left one is only marked) (**Fig. 4/6**), a small nose,

mouth, and chin. The drilling technique was used to depict the right eye, whereas the left eye was created using pecking (precise strikes in four places). Pecking was applied to “outline” the eye. It seems that the intention was to weaken the quartz grain by striking it in a circular motion and subsequently removing or extracting it, possibly to drill a hole through it. However, another puncture mark (the fifth), which left a star-shaped mark, was not completely successful. It is this mark that destroyed (disrupted) the “ear” on the right profile of mammoth No. 1. On both sides, at the bottom of the face, two small blind holes are made, slightly asymmetrically positioned in the area of the “mouth.”

During the Palaeolithic period, widely recognised representations known as polyiconic images existed. Similar depictions can be found on the artefacts from Anetivka 2. Such crafts on a single piece display multiple distinct images, including zoomorphic or anthropomorphic depictions or a combination of both zoomorphic and anthropomorphic elements on a single artefact. Both artefacts from Anetivka 2 (the quartz mammoth and the kaolin bison) are examples of objects that feature more than one image, i.e., they are polyiconic.

### **Discussion and conclusions**

Quartz is a relatively hard material that is not as easy to cut or draw on compared to kaolin or other clay-like substances. An interesting technological solution was found at the Anetivka 2 settlement, which was used to mark lines when it was not possible to draw or cut them or when it was difficult to do so. The lines were indicated using a dotted pattern created either through pecking or drilling. A vivid example of such technological approaches to depicting dotted lines can be seen in two figurines of different animals (one quartz mammoth and one kaolin bison). In the case of the bison, the dotted line was later connected into a solid line through engraving.

It is possible that this technique was not always used because of the difficulty of drawing or engraving lines per se, but rather “out of habit” because it had already been used, or it was preferred and familiar. This may be the case illustrated by the depiction of the kaolin bison, which has a slightly softer texture and is easier to draw or cut.

The depiction of lines with dots represents an original technical approach employed at the Anetivka 2 settlement, which facilitated the drawing of lines on hard materials such as quartz and allowed avoiding or minimising errors in figure making as well as achieving a smoother and more accurate depiction of the desired drawing or line. In addition to dotted lines, pecking (precise strikes) or drilling blind holes were used to mark the eyes and separate the depicted elements (such as separating the head from the body of the depicted animal) alongside drawn

lines or in conjunction with them. In addition to these techniques, other technical methods were employed to create these figurines, including smoothing, chipping off small scales to reduce the volume or alter the dimensions of the artefact, and to depict protruding or three-dimensional details.

The ancient inhabitants of Anetivka 2 created zoomorphic sculptures as part of their small-scale art by employing various technical methods to achieve the desired results. One of the interesting approaches used was for depicting lines of specific configurations, particularly on hard materials such as quartz, where correcting errors in the depiction proved difficult or impossible. The lines were mostly depicted by engraving, incising, or scratching using a stone burin or the edge of a broken blade. However, because both the material of the crafting tool (flint) and the material of the stone blank (quartz) had similar hardness, the artisan had to exert significant effort, spend considerable time, and possess the necessary skills to avoid damaging the artefact and achieve the intended outcome. In some cases, the technique of pecking and drilling dots was employed to “draw” lines and create a dotted pattern. The dotted line could later be transformed into a solid line by connecting the individual prepared dots or left as a dotted line.

The examination of the artistic works produced by the Palaeolithic hunters of Anetivka 2, who resided in the periglacial steppe regions 18-19 thousand years ago, will continue. Each artefact warrants dedicated and meticulous analysis since, despite shared crafting techniques and some common features, it possesses its own individuality and unique qualities.

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