



Full length article

Human figurines in the Mesolithic-Neolithic transition of the South Caucasus: New evidence from the Damjili cave, Azerbaijan

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ABSTRACT

Recent research shows that the Neolithization of the South Caucasus occurred in stages. While domesticated plants and animals were introduced rapidly around 6000 BCE, certain cultural elements typical of the Neolithic might have become common later. This study reports the discovery of a stone human figurine from the Damjili Cave, Azerbaijan, which is the first example from a radiocarbon-dated context of the late Mesolithic in the South Caucasus. Its stylistic features considerably differ from those of Neolithic human figurines in the region, providing a valuable reference point for understanding the cultural processes in symbolic aspects during the Mesolithic-Neolithic interface in the South Caucasus.

1. Introduction

Neolithization in the South Caucasus is likely to have occurred due to a combination of cultural influences and human migrations from the “Fertile Crescent” of Southwest Asia. When and how these processes took place in this region have long been unclear. However, recent multidisciplinary research has determined that Neolithic culture rapidly entered the South Caucasus around 6000 BCE (e.g., Sagona, 2018; Nishiaki et al., 2022). Consequently, the cultural and genetic relationships between indigenous Mesolithic and incoming Neolithic communities have become the next focal research question. Regarding the population influx, we are awaiting the progress of ancient genetic research. Nevertheless, archaeological research has been effective in understanding the emergence of the Neolithic way of life. Research thus far has indicated that domesticated cultigens and livestock from South Caucasian Neolithic communities were brought in from the Fertile Crescent (e.g., Benecke, 2017; Kadowaki et al., 2017; Nishiaki et al., 2021). Nonetheless, details of the cultural interactions and/or replacement of local indigenous communities involved in these processes are yet to be studied.

The discovery of a stratified sequence from the late Mesolithic to the

early Neolithic period in the Damjili Cave, west Azerbaijan, is of decisive importance (Fig. 1). It provides a unique dataset for this period in the South Caucasus, revealing, in addition to a discontinuity, a continuity from the local Mesolithic material culture in certain elements (Nishiaki et al., 2019, 2022, 2025). For example, pottery use, popular in the 7th millennium BCE Fertile Crescent, was not directly introduced. The earliest communities of the Neolithic Damjili Cave lived an almost aceramic life at the early 6th millennium BCE, as in the Mesolithic era. Continuity was also observed with the use of lithic raw materials. While obsidian was the predominant lithic raw material in the Neolithic period of the South Caucasus in general, this trend was already the case in the latest Mesolithic period but not in the earlier Mesolithic period (Nishiaki et al., 2025). These and other findings suggest that the transition from the Mesolithic to the Neolithic period was not entirely a cultural replacement for Neolithic immigrants. Accordingly, Neolithization research should be conducted in the South Caucasus, considering the involvement of indigenous communities (Nishiaki, 2021).

One of the least-studied aspects of this subject is its ideological and symbolic sphere. Related evidence of Mesolithic portable arts and other artistic representations in the South Caucasus is currently limited to those from a group of sites in Gobustan on the west Caspian Sea coast

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(Farajova, 2011; Sigari et al., 2020), approximately 350 km away from the core region of the South Caucasus discussed in this paper (Fig. 1). Moreover, related archaeological records from Gobustan have not always been radiocarbon-dated. Therefore, the relationship between the Neolithic symbolic culture, typically characterized by clay female figurines, and the indigenous Mesolithic culture remains unclear.

In this paper, we report on a newly discovered stone figurine from the late Mesolithic context of the Damjili Cave. The figurine is firmly dated to the late 7th millennium BCE, immediately before the advent of the Neolithic period, providing a valuable opportunity to discuss its relationship with Neolithic figurines. Acknowledging that the Neolithization processes in the South Caucasus might have varied by region, this study focuses on the Middle Kura Valley, the heartland of the Shomutepe culture of the Neolithic period (Narimanov, 1987; Helwing et al., 2017), where the Damjili Cave is located (Fig. 1). It examines the continuity and/or discontinuity in the symbolic aspect during the vital period of cultural change at the Mesolithic-Neolithic interface.

2. Material

The Damjili Cave is located on the left bank of the middle reaches of the Kura River in western Azerbaijan, where Neolithic settlements are densely distributed (Fig. 1). Specifically, it is situated in the northern foothills of the Lesser Caucasus Mountains, approximately 650 m above sea level. Discovered in 1953, the cave was extensively excavated in 1956 and 1957. The results demonstrated the existence of Middle Palaeolithic, Mesolithic, and Neolithic occupation traces but none in primary contexts (Huseynov, 2010)—the excavations in the 1950s revealed only disturbed deposits. However, excavations resumed by the Azerbaijan-Japan team from 2016 to 2023 revealed stratified cultural deposits at the eastern end of the cave, which were unexcavated in the 1950s (Nishiaki et al., 2019, 2025). Although the Middle Palaeolithic layer at the bottom had been disturbed by water activities, cultural layers from the Mesolithic and later periods were found in chronological order in deposits of approximately 4.5 m. Extensive radiocarbon dating indicates the following chronology (Nishiaki et al., 2022): Mesolithic

(ca. 6500–6000 BCE); Neolithic (ca. 6000–5300 BCE); Chalcolithic (ca. 4500–3700 BCE); Bronze (ca. 2800–2200 BCE); Medieval Ages (ca. 5th–10th centuries CE). This well-dated stratified Mesolithic-Neolithic sequence at a single site is the first such discovery in the South Caucasus.

The Mesolithic deposits at the Damjili Cave, approximately 40–120 cm thick, have been divided into three sub-units (Units 5.1 to 5.3). Unit 5.3, the earliest, is heavily disturbed and contains Mesolithic and Middle Palaeolithic artifacts. Conversely, the occupational traces of Units 5.1 and 5.2 are well preserved. Distributions of limestone blocks in an irregular shape were found in both strata. They appear to represent the remains of campsites, reminiscent of the Mesolithic architecture of Chokh in the Greater Caucasus (Kushnareva, 1997). Fireplaces have also been discovered. The figurine was discovered in Unit 5.2, whose main architectural features are irregular stone alignment and a few simple fireplaces. The deposits represent a brown soil layer (DMJ18-A0–20), approximately 40 cm thick, accumulated in an open space (Square A0) some one meter from the stone structures. Unit 5.2 has been dated to approximately 6400–6100 cal. BC with seven radiocarbon dates (Nishiaki et al., 2022).

More than one thousand flaked stone artifacts were recovered from the Mesolithic layers. However, ground-stone artifacts are rare; only two specimens were excavated from Unit 5.1, and none were excavated from Units 5.2 and 5.3 (Nishiaki et al., 2025). Additionally, a few small finds made of bone and horn cores were discovered in Unit 5.1 but not in Units 5.2 or 5.3. The stone figurine from Unit 5.2 is a rather exceptional find.

3. The Damjili figurine

The Damjili figurine is an elongated gravel bar with round surfaces (Figs. 2 and 3). It measures 51 mm in length, 15 mm in width, and 9.5 mm at the maximum points, showing an oval cross-section. The notable features are as follows.

Hard sandstone was used as raw material. The Damjili Cave is situated in a Cretaceous limestone and flint formation (The State Land and Cartography Committee of the Republic of Azerbaijan, 2000). Nevertheless, within a 20 km radius, particularly in the Agstafa Valley and its

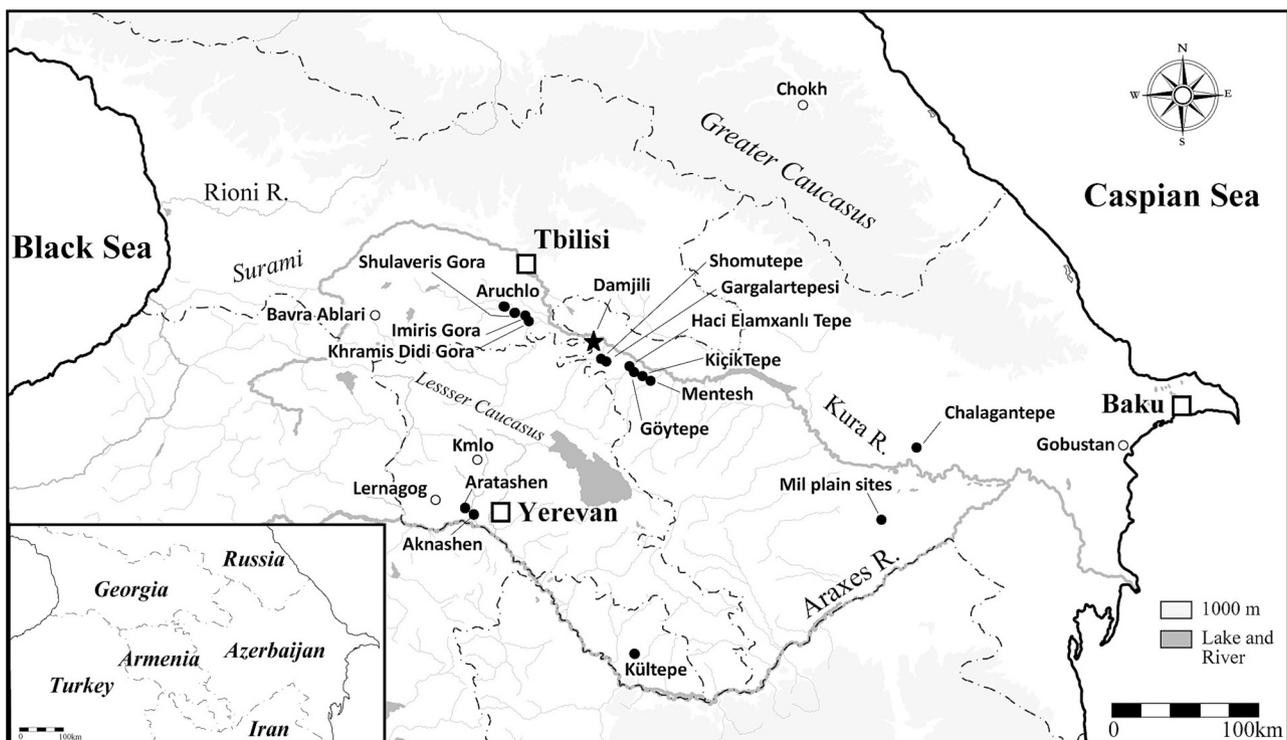


Fig. 1. Location of the Damjili Cave and other related sites. Closed circle: Neolithic settlements; Open circle: Settlements including Mesolithic occupations.

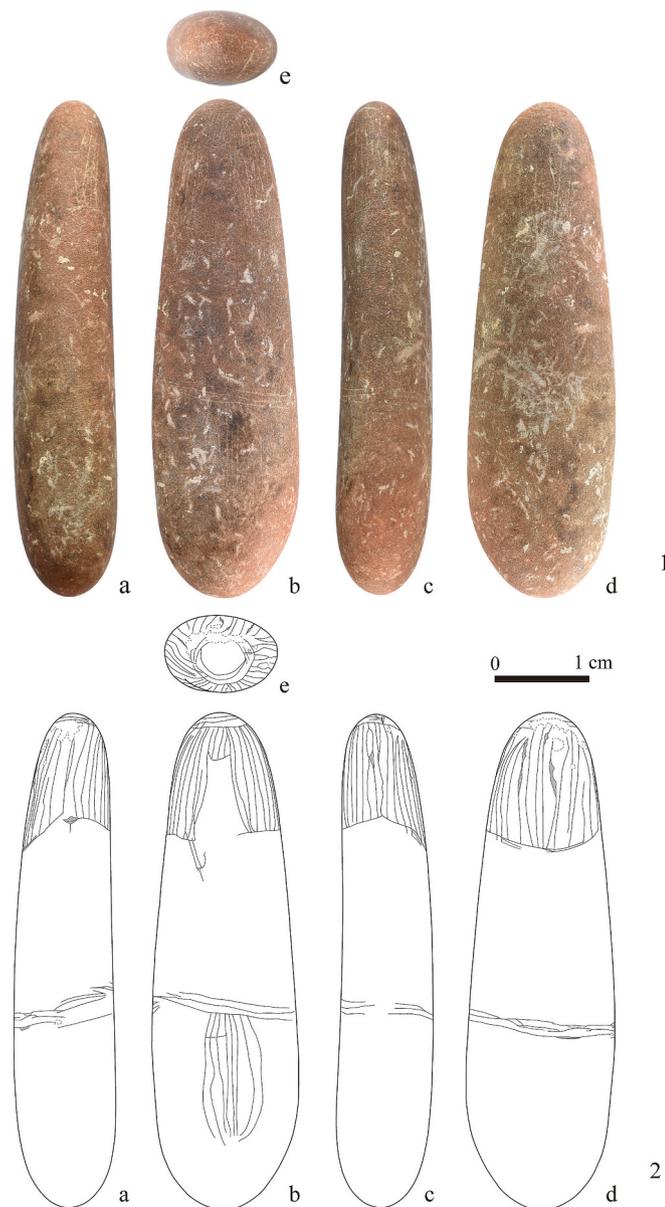


Fig. 2. Mesolithic stone figurine from the Damjili Cave. 1: Photograph; 2: Line drawing.

tributaries, there are primary sources of tuff volcanic rocks and secondary sources providing various rocks, such as andesite and sandstone (Nishiaki et al., 2021). The figurine was likely made from a river pebble obtained from secondary sources.

There are no signs of intentional modification, except for engraving, the details of which are visible only through microscopic analysis (Figs. 2 and 3). The overall pattern suggests that the artifact represents a human figure. One of the wider surfaces with the most complicated engravings appears to be the front side (Fig. 2: 1b, 2b). The supposed head is decorated with several vertical lines from the top, likely representing hair (Figs. 2: 2; 3: 1–3, 5, 8, 10). The vertical lines are rather short in the middle and depict short hair bangs. Interestingly, the ends of these lines are explicitly delineated by horizontal lines (Fig. 3: 3, 5). Further, the face does not show any depiction of facial features such as the eyes and nose (Figs. 2: 2b; 3: 5). Moreover, the top of the head is unprocessed in an area approximately 4.7 mm in diameter (Figs. 2: 2e; 3: 1). This area is encircled by 2–3 circular lines (Figs. 2: 2e; 3: 1, 2, 5), which may represent a hairband or the edge of a cap. The top of the head is not decorated.

The lower body is decorated less intensely than the head. There are three horizontal lines at approximately two-fifths from the bottom, representing a “belt” 1.3 mm wide (Figs. 2: 2; 3: 4, 6, 9, 11). In the middle of the belt on the front, a group of vertical lines 6.3 mm wide run downward, ending approximately 6.7 mm upward from the bottom of the figurine (Figs. 2: 2b; 3: 6, 7). This likely represents a loincloth or apron hiding the genitals. The lower ends of the head hair are delineated using horizontal lines, whereas the vertical lines on the lower body fade at the ends. These lines were constructed using deep- and shallow-engraving techniques (Fig. 3: 3, 10).

This specimen is unique in the prehistory of the South Caucasus. We performed a series of nondestructive archeometric analyses to determine its techno-morphological features in greater detail.

3.1. Computed tomography analysis

Careful observation of the figurine with the naked eye and an optical stereomicroscope provided insights into the technology of grooving lines and their distribution patterns. However, differences in lighting during the inspection and the color on the surface might have interfered with the precise assessment of the detailed features. Therefore, we reconstructed a three-dimensional model using X-ray computed tomography (CT) to enable a closer examination of the surface conditions and engraved lines (Fig. 4).

The figurine was scanned using TXS-UF225CT (Tesco Corporation) X-ray CT device with the resolution of 24.09288 μm , and the three-dimensional model was reconstructed with TomoShop (version 1.2.0, Midorino Research Corporation) for the whole body. For the finer resolution, each one-sixth part of the figurine was additionally scanned using ScanXmate-B100TSS110 X-ray CT scanner (Comscantechno Co., Ltd.) with the resolution of 17.803 μm , and the reconstruction of the three-dimensional model was conducted with coneCTexpress (version 1.66, White Rabbit Co., Ltd). The scanning was carried out with the tube voltage of 100 kV in both machines. The visualization and screenshots of these models were performed on a three-dimensional analysis software Molcer (version 1.8.5.1, White Rabbit Co., Ltd.).

The engraving seems to show a variety, such as common engraving, broad engraving, and light engraving, which are found on different parts of the figurine surface. The patterns of the varying engraving lines observed through a thorough investigation of CT three-dimensional models can be depicted as follows. In general, the lines on the upper part of the figurine are steadier in depth and width, whereas those on the lower parts tend to vary. Specifically, the connections between the vertical and horizontal lines representing the head hair show elaboration with only minor gaps or protrusions (Fig. 4: 1). The vertical lines for the apron show similar characteristics in the connection with the horizontal line depicting the belt (Fig. 4: 3). Conversely, the lower ends of these vertical lines are of different lengths but seem to terminate without fading. The horizontal lines on the back side of the belt are particularly ambiguous and show certain deviations in the engraving strokes, whereas those on the front side are relatively neat. Moreover, these front grooves seemingly fade on the left side and do not connect to the engravings from the back (Fig. 4.2). As described thus far, the engraving seems to have been performed carefully in most parts, representing the high sophistication of the craftsman, although different intensities of the work are also observable.

3.2. X-ray fluorescence analysis

The surface of the figurine exhibits a light reddish-brown color. According to our naked-eye observations, both ends appear to display a more conspicuously reddish color. This pattern reminds us of stone sticks used for grinding pigments in later periods. Accordingly, we conducted a point analysis and elemental mapping of the figurine surface using a portable X-ray fluorescence (p-XRF) analytical instrument (ELIO map, XGLab, Italy) to evaluate the origin of the reddish color. For



Fig. 3. Microphotographs of the Mesolithic stone figurine from the Damjili Cave. Scale bar = 500 μ m.

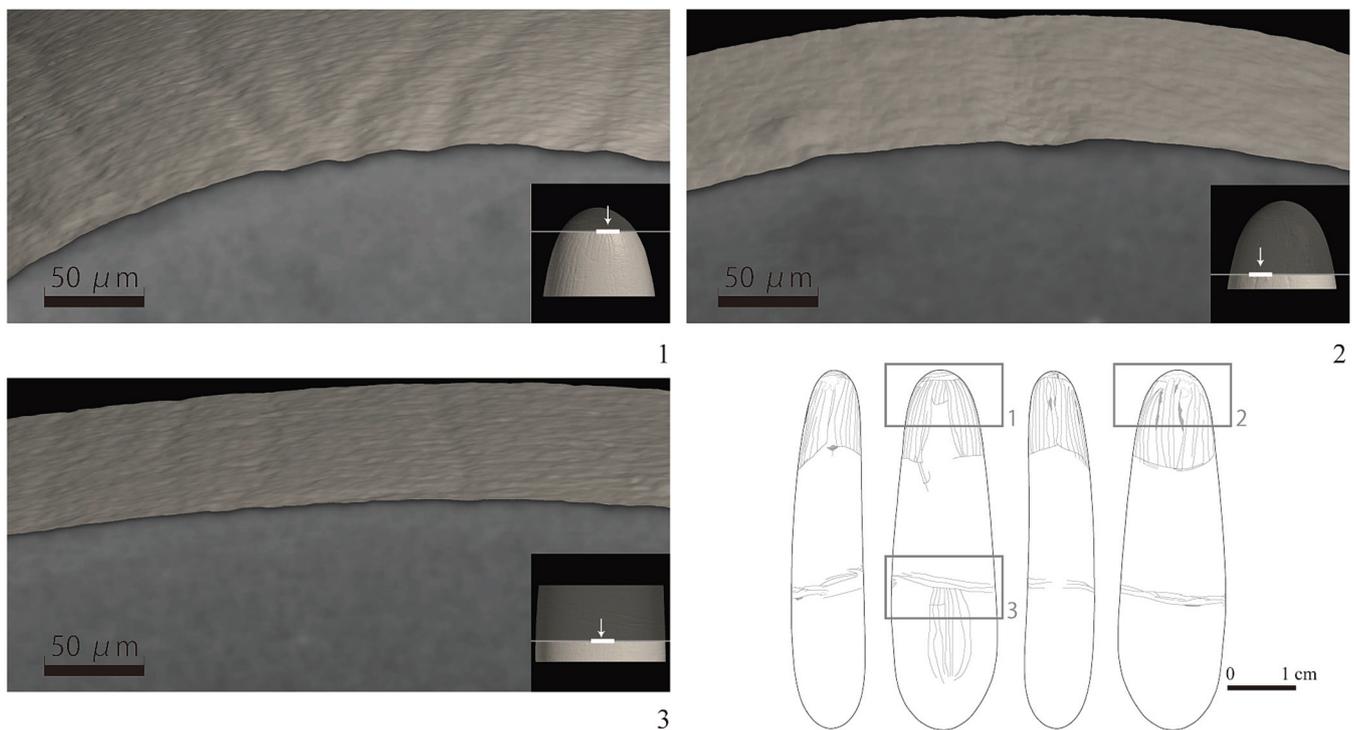


Fig. 4. Computed Tomography images showing different engraving intensity for the Damjili stone figurine. The most intensive engraving is applied to the front side of the head (1).

comparison, a stone stick discovered alongside a pigment-grinding stone at the Chalcolithic site of Tell Kosak Shamali (Nishiaki, 2003), dating back to approximately 5000 BCE, was analyzed using the same instrument.

Point analyses were performed under analytical conditions of X-ray tube voltage of 40 kV, tube anode current of 100 μ A, working distance of \sim 1.4 cm, and acquisition time of 120 s. Mapping analyses were also conducted under analytical conditions of tube voltage of 40 kV, tube anode current of 100 μ A, working distance of \sim 1.4 cm, and probe diameter of 1.0 mm. The analyzed areas were scanned using a step size of 1.0 mm and an acquisition time of 10 s per point. Point analyses were performed at 2 mm intervals from edge to edge of each stone sample, avoiding curved surfaces. For the mapping analysis, the surface to be analyzed must be horizontal. Therefore, it was not possible to include some of the measurement points in the point map analysis. We attempted to analyze as much of the reddish area as possible. However, it was difficult to analyze a large reddish area in the Damjili stone figurine because the reddish-colored area had a curved surface at the edge.

The results of the point and mapping analyses are presented in Figs. 5 and 6. The integration of iron in each stone sample was not comparable because of the different types of stone used. The areas of the stone samples could be compared. The point analysis of the Damjili stone figurine shows that the reddish areas of numbers 1–4 have a higher integration of iron than the non-reddish areas after number 5 (Figs. 5 and 6). However, the results of the point analysis for the grinding stone from Tell Kosak Shamali are more varied than those for the Damjili stone figurine. This is considered an effect of surface roughness. The results of the mapping analysis clearly show that the Damjili stone figurine has higher integrating counts of iron in the upper left corner of the analyzed area, indicating a more conspicuously reddish color (Fig. 5).

Similarly, the grinding stone from Tell Kosak Shamali shows higher integrated counts of iron in a reddish area distributed across the left half. (Fig. 6). Higher counts of iron may suggest remnants of red pigments, such as iron oxide. However, it may instead reflect a higher integration of iron in particular parts of the stone. Therefore, we examined the areas

using scanning electron microscopy (SEM) to determine whether any pigment remained.

3.3. Scanning electron microscope analysis

The surface condition of the figurine was further analyzed using a scanning electron microscope (SEM) device X8800 (Keyence Corporation). The scanning process was conducted at 20–100 \times magnification for most parts of the surface (Fig. 7), with several trial shots at 200 \times magnification. All images were obtained with an accelerating voltage of 1.0 kV under a vacuum without surface preparation.

Examination of the surface using SEM images shows that the Damjili figurine is made of pitted uneven stone, while the surface seems to be smoothed, probably by natural processes. In addition, surface areas with relatively higher integrating counts of iron were thoroughly observed, and so far as the SEM images revealed, no clear evidence of residual pigment (i.e., particles or adhesive material) was identified, showing features similar to other parts with lower Fe values (Fig. 7). It should be noted that the specimen was washed after excavation, which might have considerably affected the condition of the surface residual particles.

In addition, the above-mentioned stone stick from Tell Kosak Shamali was also scanned for comparison with the same instrument and analytical conditions (Fig. 7). The SEM images of this specimen show a relatively even surface where adhering substances with cracked appearances, which correspond to black stains, are noticeable (Fig. 7). Other than the black substances, no distinctive difference was detected between the surface conditions of the reddish and non-reddish parts of the specimen. This case of Kosak Shamali stone stick is useful to consider the surface condition. Though the adhering black substance is conspicuous, we can say the Damjili figurine does not seem to have visually identifiable materials on the surface in any case. In other words, the relatively high Fe presence demonstrated on a part of the figurine surface by p-XRF analysis may not be explained as a result of pigment residuals remaining on the surface.

At present, we lack the conclusive evidence to assert that the Mesolithic stone figurine discovered in Damjili Cave was used as a

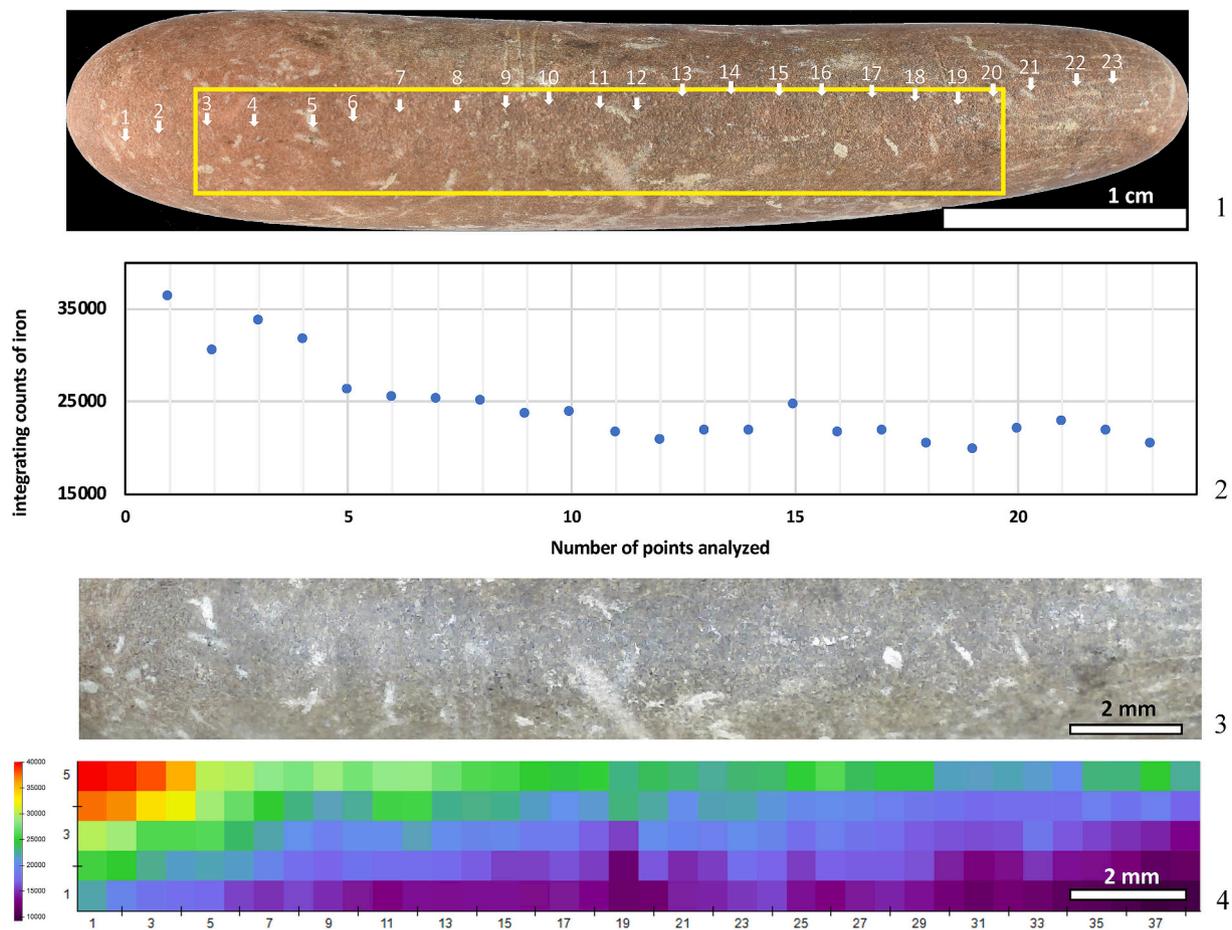


Fig. 5. X-ray fluorescence analysis of the Damjili stone figurine. 1: Photograph showing the mapping area (yellow rectangle) and points analyzed using p-XRF; 2: Results of a point analysis to examine the integrating counts of iron; 3: Details of the mapping analysis area; 4: Elemental mapping made with x-ray fluorescence analysis. Numbers of color scale bars on the right side of the map show integrating counts in the peak area of Fe. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

pigment grinder. Notably, however, the stone figurine exhibits reddish parts at the head and the lower end, regardless of the reasons, including the selection of a naturally colored stone raw material. Our excavation records indicate the discovery of a piece of pigment in the same layer as Unit 5.2. However, this pigment was recovered from Square C1, approximately 2.5 m away from the discovery point of the figurine (Square A0). In addition, the lithic assemblage from Unit 5.2 included no ground stones, which serve as indispensable lower stones for processing pigments.

4. Discussion

The above analysis indicates that this object is a human figurine made from a riverstone. There is no representation of the genitals, breasts, or buttocks. Therefore, the sex of the figurine is indeterminate. The engraving was most likely conducted with stone tools, resulting in varied depths and widths: i) common engraving, leaving relatively sharp lines and mainly applied to the head hair (Fig. 4: 1); ii) broad engraving, which is only seen in limited parts of the back hair (Fig. 4: 2); iii) light engraving, typically seen in the lower part (Fig. 4: 3). The combination of these varied techniques could be a result of the different ease of working on various curved surfaces of the stone, the order of operations causing tools to dull, or unequal attention to different parts in the manufacturing process. Nonetheless, the most intense traces of engraving on the front side of the head suggest the manufacturer's emphasis on the head, although the details of the face of the figurine were not depicted.

This object is the first Mesolithic human figurine discovered in the Middle Kura Valley, the heartland of the Shomutepe Neolithic culture. Its strictly defined radiocarbon dating context is significant in the South Caucasus. The known Mesolithic sites in the Kura and its neighboring regions have not yielded any recognizable human figurines (Fig. 1). A recent study from the Kmlo and Lernagoc Caves in Armenia, dating from the 9th to 8th millennium BCE, does not refer to any portable art (Gasparian and Arimura, 2014). Similarly, the literature on the 7th millennium BCE site of Bavra Ablari, Georgia (Varoutsikos et al., 2017), and Chokh in the North Caucasus, southernmost Russia (Kushnareva, 1997), includes no references to human figurines.

The manufacture of human figurines seems remarkably rare in the Mesolithic South Caucasus. The examples known to date are from old excavations in Gobustan, the Caspian Sea coast (Fig. 1). The Gobustan figurines, often called "venus" (Sigari et al., 2020), were generally made on flat stones instead of stick-shaped gravel (Fig. 8), unlike the Damjili figurine. Furthermore, they do not exhibit accurate engravings, such as those on the Damjili figurine. The stylistic similarity between the figurines and petroglyphs in Gobustan (Fig. 9), although not correlated through radiometric dating, suggests the development of a local Mesolithic tradition of artistic representation on the western Caspian coast. Similarly, the Damjili figurine suggests a different Mesolithic tradition of manufacturing portable art developing in the inland South Caucasus.

During the Mesolithic occupations at the Damjili—the late 7th millennium BCE—Neolithic cultures were established in the Fertile Crescent of Southwest Asia, fully equipped with a Neolithic type of clay figurines as an important cultural element (Kozłowski and Aurenche,

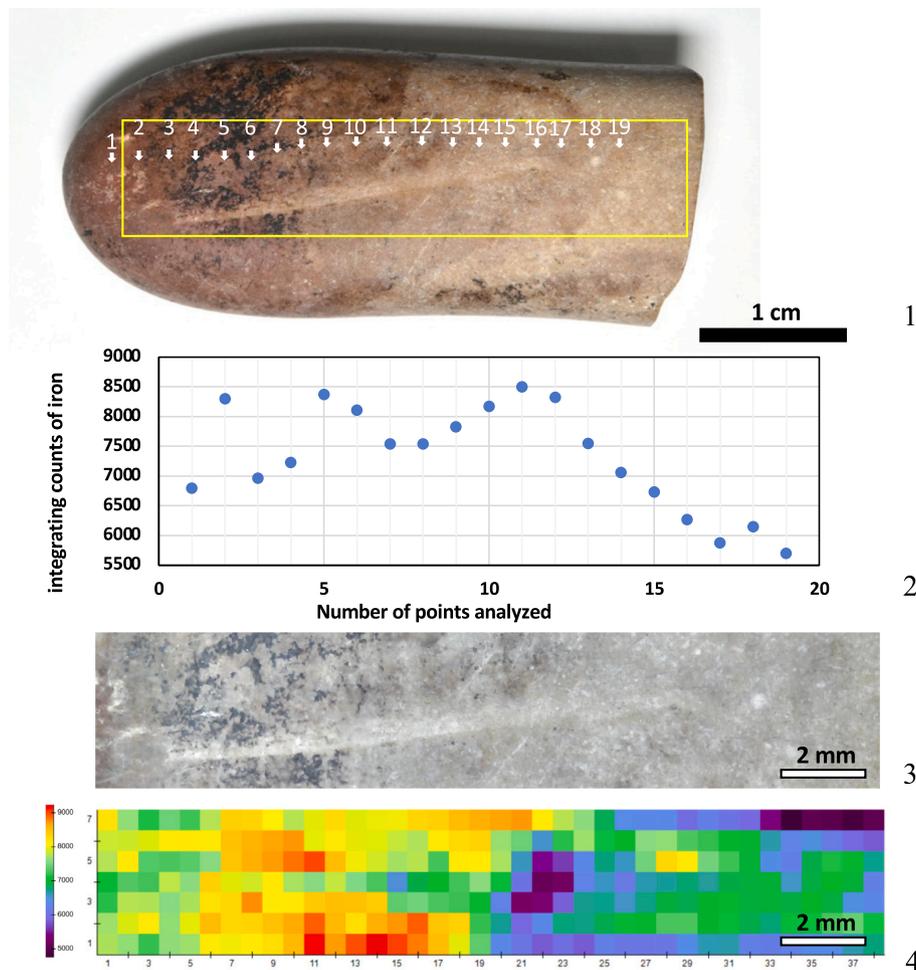


Fig. 6. X-ray fluorescence analysis of a grinding stone from the Chalcolithic site of Tell Kosak Shamali, Syria. 1: Photograph showing the mapping area (yellow rectangle) and points using p-XRF; 2: Results of a point analysis to examine the integrating counts of iron; 3: Details of the mapping analysis area; 4: Elemental mapping made with x-ray fluorescence analysis. Numbers of color scale bars on the right side of the map show integrating counts in the peak area of Fe. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

2005; Hansen, 2007). The manufacturing of clay figurines in the Neolithic South Caucasus was likely derived from the Fertile Crescent along with the agro-pastoralist socio-economy. These processes probably followed different paths by regions. Unlike the Middle Kura Valley across Azerbaijan and Georgia (Fig. 1), intensive excavations at Aratashen and Aknashen in the Ararat Plains of Armenia (Badalyan et al., 2022) and Kültepe in the Araxes Valley in Nakhichevan (Narimanov, 1987; Marro et al., 2019) have not yielded any Neolithic figurines. This finding, certain to be verified with more data in the future, suggests a different origin of the incoming Neolithic culture, a different response by local Mesolithic communities, and their combination.

Representative Neolithic figurines from the Middle Kura are shown in Fig. 10; they are all in a seated form. Although stylized, the representations of the breasts and buttocks indicate that most were female figurines. Fragments of the head (Fig. 10: 8, 9) do not show any indication of sex. However, the decoration patterns, either as lines or dots, probably representing tattoos (Farajova, 2011), indicate a derivation from the same tradition. Their pointed head protruding back is also interesting because of its potential relationship with the artificial cranium deformation of the human head, commonly known in the Southwest Asian Neolithic (Meiklejohn et al., 1992). Overall, these stylistic features are comparable to those of the 7th to 6th millennium BCE of the Fertile Crescent (Kozłowski and Aurenche, 2005; Hansen, 2007). Nevertheless, they certainly differ from the engraved figurine of the Damjili Cave (Fig. 2).

In comparing these Neolithic figurines with the Damjili specimen, we point out the following dissimilarities: (1) the Damjili figurine shows a standing form, typical of the Palaeolithic to early Neolithic Southwest Asia (Cauvin, 2000), while the Neolithic figurines are presented in a seated form; (2) the Damjili figurine lacks sexual representation; (3) the expression of the hairstyle is also different: the Damjili figurine shows a bobbed hairstyle, unseen in the Neolithic figurines; (4) the face and body of the Damjili figurine does not exhibit decorations by incisions and dots frequently seen on the Neolithic clay figurines; (5) the Damjili figurine depicts a loincloth on the lower body, while comparable representations are not seen on the Neolithic figurines. These dissimilarities are regarded as reflecting more than the difference in plasticity between stone and clay. Additionally, the lack of stone figurines in the Neolithic period itself suggests a discontinuity in portable art from the Mesolithic period, at least in the Middle Kura Valley.

This contrast between the Mesolithic and Neolithic figurines must be evaluated in the chronological context of the South Caucasian Neolithization. Neolithic elements were brought to the South Caucasus in stages, regardless of figurine manufacturing. The first process involved the introduction of domesticated cultigens and livestock from Southwest Asia. However, the introduction of cultural elements underwent more complicated processes (see above; Nishiaki, 2021). Determining the changing processes in symbolic/ideological or other spheres should be based on a solid, radiometrically dated chronology. The key sites in this respect are Hacı Elamxanlı Tepe and Göytepe, the Middle Kura Valley,

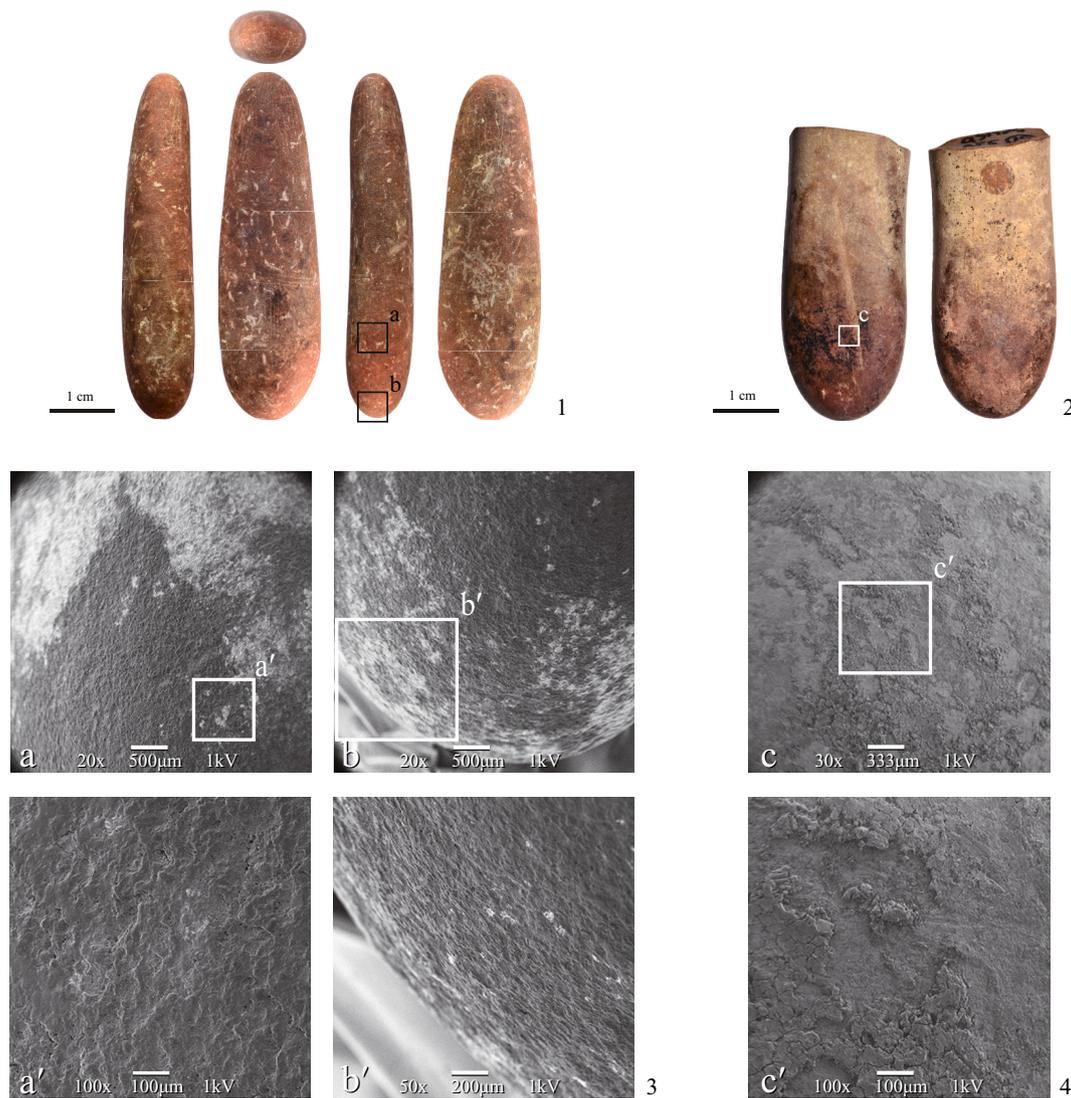


Fig. 7. SEM analysis of the Damjili and Tell Kosak Shamali specimens. 1: Damjili figurine; 2: Tell Kosak Shamali stone stick; 3: SEM images of the Damjili figurine; 4: SEM images of the Tell Kosak Shamali stone stick.

west Azerbaijan, representing the early (ca. 5950–5800 BCE) and late phases (ca. 5650–5450 BCE), respectively (Nishiaki and Guliyev, 2020; Nishiaki et al., 2022). In light of this scheme, the site of Kiçiktepe, also well-dated in west Azerbaijan (Palumbi et al., 2021), is assigned to the latest range of the early phase. Further, the main occupations of Mentesh, west Azerbaijan (Lyonnet et al., 2016), and Aruchlo, eastern Georgia (Helwing et al., 2017), are assigned to the beginning of the late Neolithic phase (Nishiaki et al., 2022). The group of Neolithic sites in the Mil Plain downstream of the Middle Kura are dated mostly to the mid-6th millennium BCE (Helwing et al., 2017), which is comparable to the late phase of the Shomutepe Neolithic.

This chronological pattern suggests that the common manufacture of clay figurines was a cultural characteristic of the late Neolithic phase. The earliest Neolithic settlements of Hacı Elamxanlı Tepe and Kiçiktepe have not yielded a reliable clay figurine. The archaeological assemblages from Hacı Elamxanlı Tepe include a small clay object, potentially interpreted as a figurine (Fig. 10: 1). However, it is hardly comparable to later figurines in either style or decoration (Fig. 10: 2–12). The inventory in Fig. 10 includes figurines from the non-radiocarbon-dated sites of Shravelis-Gora (Fig. 10: 2), Gargalatepesi (Fig. 10: 3), Khramis Didi Gora (Fig. 10: 5–7), and Chalagantepe (Fig. 10: 13). These materials from old excavations may be dated using an architectural chronology recently proposed for the Shomutepe culture (Nishiaki et al., 2021; Baudouin

et al., 2022). The scheme suggests a temporal change in the household building plan from the snowman- to ring-shaped types, with an intermediate shape called a “proto-ring-shaped compound” (Baudouin et al., 2022). According to this chronology, the published illustrations of the architecture (Munchaev, 1982; Narimanov, 1987) may suggest a late Neolithic date for the Khramis Didi Gora and Chalagantepe sites, while the settlements of Gargalartepesi and Shulaveris-Gora, which yielded both snowman- and ring-shaped buildings, were likely occupied over a longer period, including the early phase.

Apart from the case of Gargalartepesi and Shulaveris-Gora, all other clay figurines considered to belong to the ring-shaped building phase point to the common manufacturing of clay figurines as a phenomenon of the late Neolithic. Given the scarcity of pottery and clay objects during the early Neolithic phase of the Middle Kura in general (Miki and Shimogama, 2021; Nishiaki et al., 2022), this is not surprising. In this regard, it is intriguing that a continuity between the late Mesolithic and early Neolithic periods has been suggested in ornamental production. Perforated pendants made of wild boar tusk are known at the Damjili Mesolithic and the early Neolithic sites such as Hacı Elamxanlı Tepe and Mentesh, while they disappeared in the late Neolithic (Arai, 2021). It is also to be mentioned that comparable perforated teeth of wild animals have been reported from the Shulaveris-Gora and Imiris Gora settlements (Kiguradze, 1976), both showing the snowman-shaped

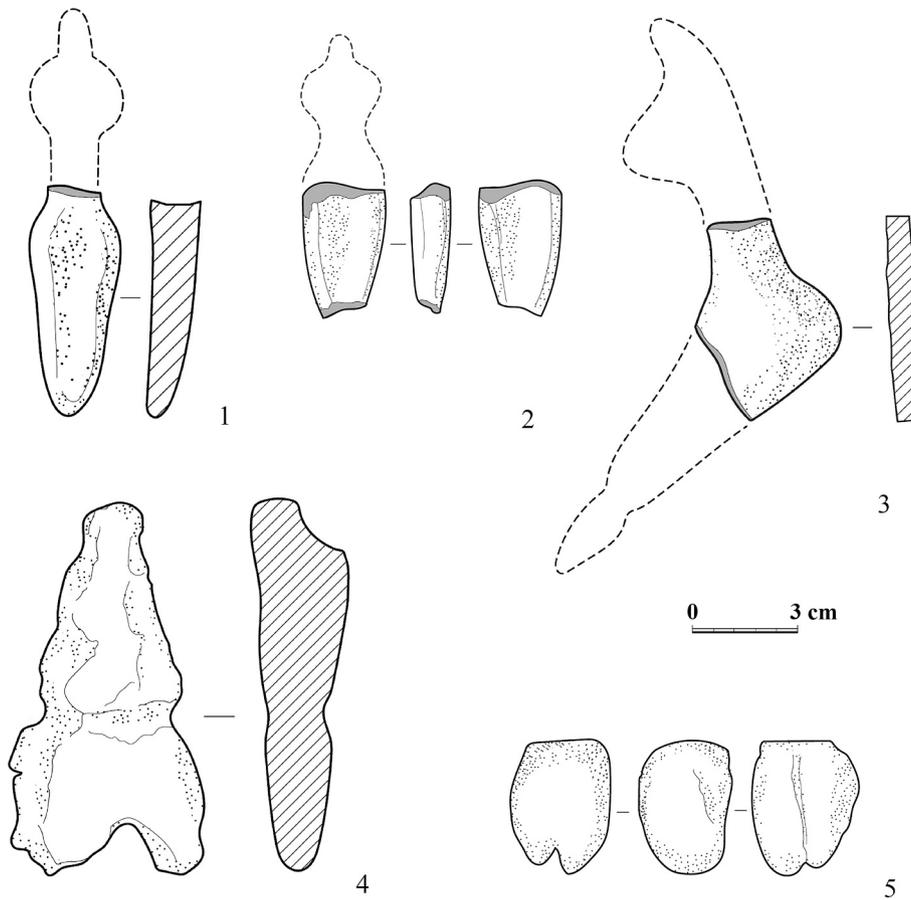


Fig. 8. Mesolithic stone figurines from the Kaniza Rockshelter, Gobustan (adapted from [Rustanov, 1986](#)).

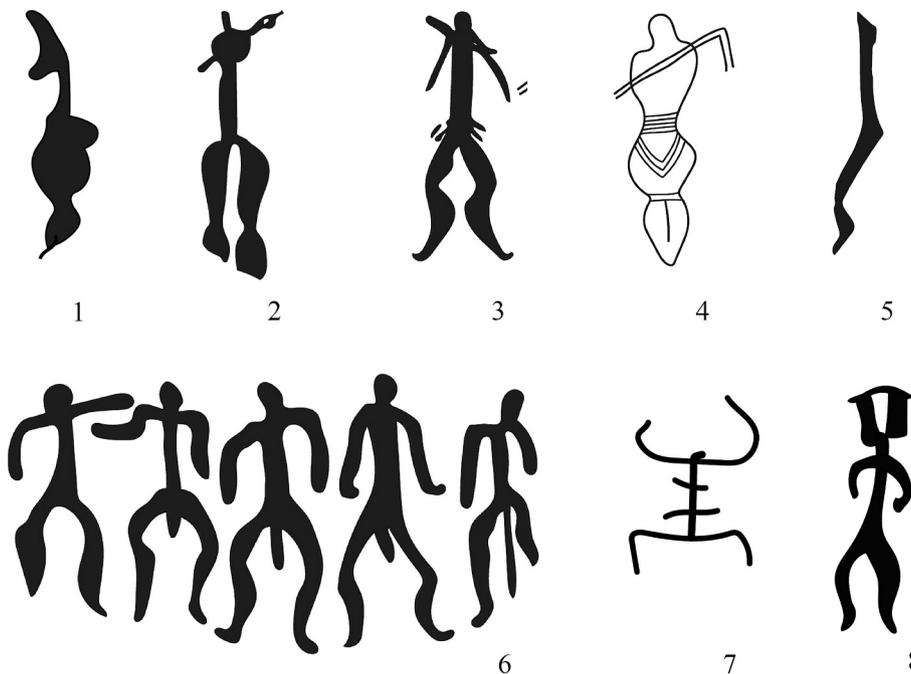


Fig. 9. Selected petroglyphs of human figures from Gobustan (adapted from [Farajova, 2011](#)). 1, 2: Late Upper Palaeolithic; 3-5: Mesolithic; 6-8: Neolithic.

architecture that may represent the early Neolithic occupations. The bear tooth pendants recovered at Kotias Kldé ([Meishveilani, 2013](#), Georgia National Museum permanent exhibition) also match the

Mesolithic tradition, although ornamental representations cannot be directly compared to human figurine styles. This finding deserves a further study to interpret the Mesolithic-Neolithic relationship, with

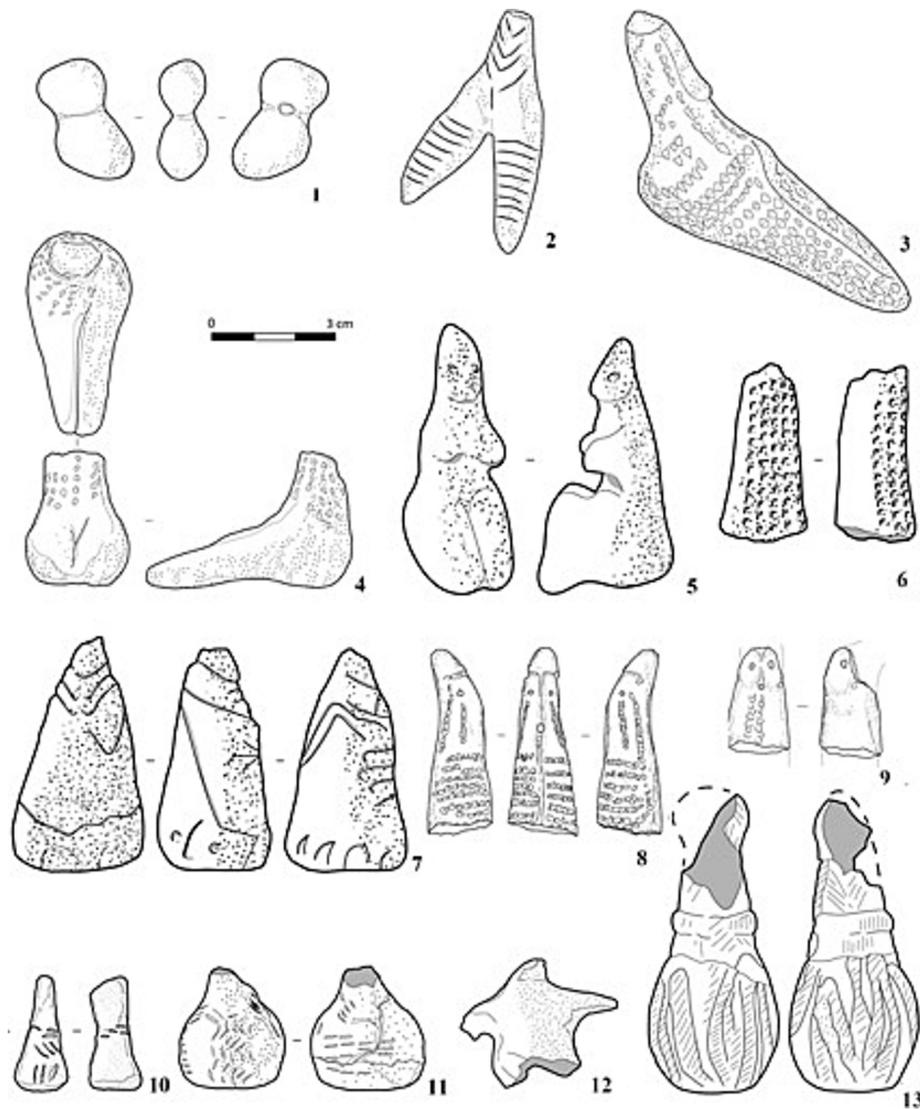


Fig. 10. Neolithic clay artifacts/figurines from the Middle Kura Valley. 1: Hacı Elamxanlı Tepe (Miki and Shimogama, 2021); 2: Shulaveris-Gora (Munchaev, 1982); 3: Gargalartepesi (Munchaev, 1982); 4: Aruchlo (Hansen et al., 2006); 5–7: Khramis Didi Gora (Sagona, 2018); 8, 9: Göytepe (Shimogama, 2020); 10–12: Mil Plain sites (Helwing et al., 2017); 13: Chalagantepe (Cherlenok, 2013).

more data available in the future.

5. Conclusion

Among the Neolithic cultural elements introduced into the South Caucasus, the symbolic/ideological element has been the least studied because of the near-complete absence of necessary data from the Mesolithic period. The discovery of a stone figurine at the Damjili Cave in a well-dated context of the latest Mesolithic has provided the first opportunity to explore the continuity or discontinuity in the portable art between the Mesolithic and Neolithic periods in the South Caucasus. Our case study in west Azerbaijan, the heartland of the Shomutepe culture of the earliest Neolithic culture of the South Caucasus, suggests a discontinuity. The stylistic dissimilarities are evident. Moreover, our literature survey revealed that human figurines from reliable contexts of the early phase of the Neolithic in the South Caucasus are practically absent. At the same time, it calls our attention to the occurrence of ornamental pieces similarly made on wild animal tusks in the Mesolithic and early Neolithic phases and their disappearance in the late Neolithic.

Thus, the stone figurine from the Damjili Cave is an important item to further study the complicated processes of South Caucasian

Neolithization from a symbolic/ideological perspective. It would also help us to evaluate the “staging hypothesis” proposed earlier, which surmised the introduction of the Neolithic cultural elements not as a package from Southwest Asia but on an element-basis by stage (Nishiaki, 2021; Nishiaki et al., 2022).

Simultaneously, the implications of this figurine should be evaluated in a wider context, with reference to symbolic changes in the Neolithization process in Southwest Asia and beyond. Therefore, comparable items from reliable contexts are indispensable (see Biehl, 2016). It should be noted that the engravings of the Damjili figurine are not easily discernible with the naked eye. Such figurines can easily escape collection because of extremely faint engravings recognizable only with the aid of magnifiers and microscopes. We hope that this research will provide a cautionary note when investigating small stone items from sites during the introduction of the agro-pastoral socio-economy in the South Caucasus. A more discovery of Mesolithic portable arts should certainly contribute to our better understanding of the Mesolithic-Neolithic transition in the South Caucasus.

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CRedit authorship contribution statement

Yoshihiro Nishiaki: Conceptualization. **Ulviyya Safarova:** Investigation. **Fumika Ikeyama:** Data curation. **Wataru Satake:** Formal analysis. **Yagub Mammadov:** Supervision.

Declaration of competing interest

We have no conflict of interest to declare.

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