

# Metsamor in Armenia: the sixth season of fieldwork in 2018



**Abstract:** Archaeological exploration of the eastern part of the settlement in Metsamor in 2018 uncovered several rectangular structures. Most of these structures were dated to the early Iron Ages I and II. Roman-period graves were recorded in the ruins of the Iron Age settlement. An anthropological assessment of human remains from three of the burials (sex, age, cranial and postcranial measurements as well as the selected paleopathologies) is presented in the appendix.

**Keywords:** Armenia, Metsamor, settlement, Iron Age period, dwelling structures, metal production, jewellery, primary burials, craniometry, osteometry, trauma, CO, dental pathologies

The Metsamor archaeological site, where a Polish–Armenian team has been excavating since 2013, is situated about 35 km southwest of Yerevan, the capital city of the Republic of Armenia. The name, Metsamor, refers to the remains of an ancient settlement, about 1.5 km south of Taronik village, the archaeological site with a local museum, but also to a nearby modern nuclear power plant and a small town in its vicinity. The team conducted the sixth season of fieldwork in September 2018.

Krzysztof Jakubiak<sup>1</sup>

## Appendix

Ruzan Mkrtchyan<sup>2</sup>  
Hasmik Simonyan<sup>3</sup>

<sup>1</sup> Institute of Archaeology, University of Warsaw

<sup>2</sup> Yerevan State University

<sup>3</sup> Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO

**Team**

*Dates of work:* 28 August–3 October

*Co-Directors:* Krzysztof Jakubiak, archaeologist (Institute of Archaeology, University of Warsaw); Ashot Piliposian (Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO)

*Archaeologists:* Elisabeth Bastien (freelance); Kinga Bigoraj, archaeozoologist (independent researcher); Astghik Simonyan (Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO); Dan Socaciu (University of Liverpool); Marek Truszkowski (Polish Centre of Mediterranean Archaeology University of Warsaw); Artavazd Zaqyan (Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO)

*Archaeology student trainees:* Otto Bagi (Durham University); Joanna Dzik, Ewa Kwiatusińska, Zuzanna Lachowicz, Rachel McClenaghan, Jacek Mońka, Joanna Pawlik, Olga Puskarewicz, Karolina Warecka (University of Warsaw)

*Topographer:* Menua Gevorgyan (Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO)

*Documentalist:* Deborah Gawlikowska (freelance)

*Anthropologists:* Hasmik Simonyan (Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO)

*Restorers:* Lusine Aleqsanyan, Nerses Mamikonyan, Tigran Zakyan (all Service for the Protection of Historical Environment and Cultural Museum-Reservations NCSO)

*Funding body:* National Science Centre grant 2018/29/B/HS3/01843

Focusing on the settlement remains, the project selected the northern part of the inhabited area for exploration. Extensions were made east and west of the main trench [Fig. 1] and the northern

part of the settlement with structure S1 (squares A16, B16) was thoroughly cleaned and examined. The results of the investigations have given a better idea of the town layout and its development.

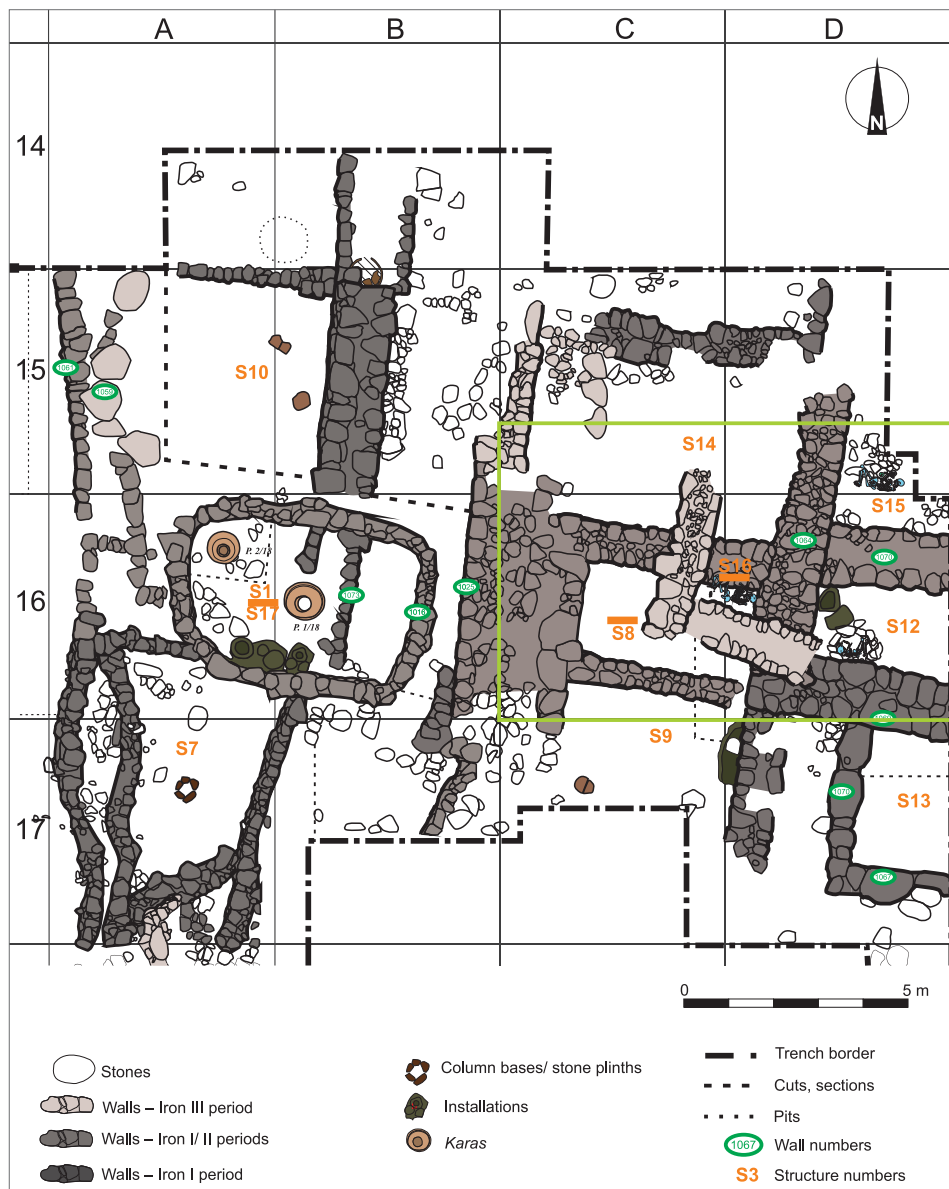


Fig. 1. Plan of the eastern part of the excavated area after the 2018 season; box indicates the area of the graves shown in close-up in Fig. 6 (University of Warsaw Metsamor Project | drawing M. Iskra)

## STRUCTURE S1

Much as it has been disputed, the S1 structure seems to be crucial for the chronology of this part of the site. Initial exploration in 2017 unearthed a large pithos inside the structure and another similar storage jar, partly sunk into a clay floor, which came to light in the 2018 season. The two thick-walled containers, intended most probably for liquid storage, fit the Iron I (about 1100–850 BC) chronology of a storeroom [Fig. 2] that preceded structure S1.

Its walls and floor levels were dismantled and removed, making way for the oval structure S1. The only surviving evidence is a small fragment of a partition wall (context 1073), separating the storeroom from a contemporaneous structure (S17) recorded further east, under walls 1016 and 1025. Both jars seem to be inclined in the same direction and at almost the same angle, suggesting that the storeroom they were part of may have been devastated by an earthquake probably at the beginning of the Iron Age I period. Moreover, the two jars are both cracked in the same place on the body, making the pithoi useless for any further storage of liquids. However, they continued to be used for other purposes as long as structure S1 remained functional as attested by the finds. In this period, the rims of the jars were barely visible in the floor of the room, although one jar (2/18) was placed a few dozen centimetres lower than the other (1/18), making it a perfect place for the concealment of valuables, such as the bronze bracelets that were found at its bottom. At the time of discovery, the

first pithos was still sealed with a stone lid. The second one yielded two massive bronze bracelets.

Based on the stratigraphic sequence recorded during the excavations inside structure S1, both the pithoi and the storeroom appear to have been constructed at the beginning of the Iron I period. The dwelling structure S1, which was built in the ruins of the storage unit, should be dated to the late phase of the Iron I period; it was inhabited at the beginning of the Iron II period as attested by the radiocarbon dating of samples taken from the floor level (late 9th–first half of 8th century BC). The age of structure S1 can be additionally confirmed by stratigraphic and pottery dating: the ceramic sequence spans a period from the Middle Bronze Age III (18th–16th century BC) to the Iron Age II (8th–6th century BC).

The two pithoi were dug through a thick cultural layer characterized by the presence of sherds of painted ware representing the Karmirberd ceramic horizon (Iskra and Zaqyan 2019, in this volume). Judging by the pottery assemblage, represented mostly by thick-walled coarse kitchen forms, the MBA III material may be linked to a household or camp rather than a tentative Middle Bronze Age cemetery. It should also be noted that nothing resembling the later phases of the Late Bronze Age was observed between the MBA III and IA I accumulations. A few of the Late Bronze Age I sherds were found in secondary context in the upper, Iron Age layers. The floor “refurbishment” and its reuse, studied in

the context of the overall stratigraphy of this part of the site, show that local pottery was still being used during the Iron II period, which is commonly associated with Urartian presence in the Ararat

Plain. Vessels that are a local imitation of Urartian pottery have been recorded among the products of local pottery workshops with roots deep in the Iron Age I period.

## STRUCTURES WEST OF S1 AND S10 (SQUARES U15, U16)

Investigations west of building S1 uncovered a relatively large, open space forming a kind of square, surely a marked urban element in this part of the settlement. The “square” was divided by a single-course stonewall (1061), running roughly north–south and evidently dividing the open space into two parts.

The S1 building and the “square” next to it may be assumed to have been part of a dwelling quarter dated to the Iron Age I period. Should this prove to be correct, then further domestic structures in this

area may be anticipated. Consequently, this part of the site can be mapped as the potential site of the Iron Age settlement.

In line with the above, it is also likely that the dividing wall unearthed in the “square” separated the potential dwelling quarters from the outskirts of the settlement (remains of outer walls are hoped to be excavated further west and north) in a move both symbolic and practical: the households inside the stone wall are somehow protected and the area west of the wall is easily accessible to inhabit-



Fig. 2. Two pithoi in unit S1 (University of Warsaw Metsamor Project | photo M. Iskra)





Fig. 3. The floor level inside structure S10 (University of Warsaw Metsamor Project | photo E. Kwiatusińska)



Fig. 4. Circular clay kiln found near structure S10 (University of Warsaw Metsamor Project | photo J. Pawlik)

ants and visitors alike. In that case one should expect a gate or some other form of entrance to the settlement nearby, possibly in the area directly north and west of the trench.

The presumed settlement was abandoned after the early Iron Age II period, but only for a short period of time. The area was later levelled with a relatively thick layer of compacted clay (Jakubiak et al. 2017). The only feature remotely associated with the second phase of the settlement is a large round pit, discovered west of structure S1. It contained rubbish from the village, a deposit of ashes, fossil traces of organic material and some animal bones mixed with pottery material.

Part of another structure (S10) was recorded also north of unit S1 [Fig. 3]. Upon closer examination, this apparently single-phase building turned out to have two phases. The earlier phase was manifested by a longitudinal structure built of middle-sized, roughly rectangular stone blocks. Inside, there was a similarly constructed wall dividing the building into two square rooms. The structure was relatively light in construction, the lowermost parts of the walls not thick enough to support any high or large building. The upper parts of the walls, not higher than 2 m which actually made for quite comfortable living, were made of mud brick. There was also a floor made of compacted clay in the southern part of the structure.

Pottery and other artifacts discovered inside the structure reflect an Iron Age I horizon. Included among them was a fragmentary clay andiron, which could indicate that by this time andirons may have lost their original sacral significance and were being used in ordinary fireplace

arrangements. The northern sector of S10, only partly excavated, was most likely an internal courtyard. Several fragments of stone grinding stones and other characteristic heavy stone kitchen equipment were scattered around inside. A round pit was dug into the clay surface in the southeastern corner of the courtyard. Several fragments of grinding stones were found near the edge of the pit.

Some time after structure S10 was abandoned, still in the Iron Age I, the eastern part of the house was rebuilt and rearranged. A bigger two-faced wall was constructed on top of the remains of an earlier structure. It was made of large cubical stone blocks, the core between the faces filled with compacted earth mixed with ashes and other organic remains. The new structure became wider toward the north. The reason for such an orientation should be clear after further excavations are carried out in this trench.

The second phase of the structure went out of use most probably at the end of the Iron Age I period and was partly destroyed in the end. The core of the stone wall was removed in the northern part of the structure. Inside the newly formed space, a small round kiln was constructed, most likely in the Iron Age II period. The structure stood against the remains of a wall [Fig. 4]. Its form and size appears to determine its purpose, which was most probably the production of small metal artifacts. Another possibility is melting silver or gold. The items made here were small, but possibly of good quality, as indicated by a small melting pot in the shape of a spoon discovered near the circular kiln.

## “LARGE BUILDING” A

A large stone building was partly unearthed east of structure S<sub>1</sub> [Fig. 5]. Sections of the walls of this structure had already been uncovered earlier, but neither the layout nor the extent of the unit were traced. Extending the trench east and southeast cleared a large structure, the first of such size in the settlement. Its development seems to have followed the same course as in the case of structures S<sub>1</sub> and S<sub>10</sub>; it was abandoned and rearranged, perhaps even several times. It became clear that single units excavated earlier: S<sub>12</sub>, S<sub>13</sub>, S<sub>14</sub> and S<sub>15</sub>, belonged to this large house. An architectural structure, which can be dated to an early phase of Iron Age I, preceded it. It was almost

completely destroyed by the later building, but a small fragment apparently survives in the southwestern part of the trench extension.

The remains of this earlier structure, S<sub>9</sub>, are represented by fragments of a single wall (1062). A pivot stone at the southern edge could indicate the position of an entrance. Objects found in 2017: a small clay oven filled with ashes and a large flat grinding stone together with a round clay bread stamp discovered by the east wall of the building, suggest its function (Jakubiak et al. 2018). “Bread seals”, as already attested by other finds of this kind from Armenia, are commonly associated with religious activity (Badalyan et al. 2014:



Fig. 5. Aerial photo of the “large building” (University of Warsaw Metsamor Project | photo O. Bagi)



183, 184). In Metsamor, similar objects (but much older) were recorded inside small shrines discovered on the southern slopes of the citadel mound (Khanzadyan, Mkrtch'yan, and Parsamyan 1973: 131, 132). Similar artifacts were discovered also in places not connected to any “holy bread” production. The said seal was found near a bread oven inside this chamber. Tempting though it may be to postulate the existence of a small shrine in this place, associating the seal with the presence of an ordinary bakery would be more plausible. Of course, the breads which were produced and stamped inside building S9 may have been used in sacral activities of this kind.<sup>1</sup>

Different stone tools (grinders and pestles) and large fragments of kitchen jars were also unearthed in the fill excavated from the S9 structure in 2017.

It cannot be excluded that part of wall 1062 was somehow incorporated into the latter structure, the “large building”. All of the chambers discovered so far were built of relatively large stones or rocks. The building technique resembled that of the S10 structure, i.e., a two-faced wall made of big stones with the space between the wall layers filled with rubble, clay, and other material, such as ashes mixed with fragmented pottery. Structures constructed in this technique would have been relatively massive and at the same time flexible enough to withstand potential earthquakes, which were and still are quite common in the region.

The most important part of the structure, as it is known now, is made up of chambers S12 and S8. The rooms are rectangular in layout and, at first glance, both look like storage facilities. However, a simple reading of the layout can be misleading, since no traces of storage jars were brought to light during the exploration. The function of the rooms may have changed in the course of time, but this can be verified only by further excavations. A small oven possibly for bread baking was found inside chamber S12, in the northwestern corner, on the uppermost floor level. There was a large flat grinding stone next to it. Two other rooms, S14 and attached S15 (northern part poorly preserved), were unearthed north of S12. The latter room, like other parts of the building, was supposedly in use until the end of the Iron Age II (Urartian) period.

A human skeleton was discovered near the threshold leading into chamber S14 (Jakubiak et al. 2018). Two typical Urartian dress fibulae (e.g., Merhav 1991: 186–187) were found with the bones, as well as a “Scythian” arrowhead. The latter indicates that the corpse was of a man killed here, whose body was never properly buried. Other artifacts from this context point to the domestic character of the architecture in this sector. The structure was ultimately abandoned at the end of the Urartian period, when nomadic tribes invaded the Ararat plain. The pottery discovered inside room S14 seems to attest to these events.

1 Ethnographic sources from Central Asia (especially Turkmenistan) and Turkey show that traditional communities are still stamping bread to enhance air circulation in the dough or pastry. This shortens the baking process compared to bread that has been stamped. The present discovery suggests that bread-stamping was part of an ordinary technological process that developed into religious practice over time.

The corner of another room was discovered east of chamber S14. It is still premature to determine the character and function of this unit, but it cannot be excluded that both S14 and this unit originally formed the northern wing of the large building.

Traces of the last phase of the extension and rearrangement of the “large building” were discovered in the southern section. Chamber S13 at the southernmost end was built of big stones. It was most probably rectangular in plan, just like the other chambers forming this architectural complex. Taking into consideration the building technique, it must have belonged to the last stage of the enlargement process. The large stone blocks forming the walls of chamber S13 were evidently attached to and not interlaced with the outer faces of the walls of chamber S12. The pottery evidence from inside chamber S13 traces a long history of use with two distinct levels, both from the Early Iron Age I/II period (Iskra and Zaqyan 2019, in this volume).

In the case of chamber S13, the most important finds, numerous fragments of

Uartian Red Polished Ware, come from the uppermost occupation layer. Pottery of this kind is of very high quality. Significantly, however, the pottery does not seem to represent occupation of the house, but rather dumping of pottery in an abandoned space. The presence of this kind of exclusive “palace pottery” (usually recorded in Uartian administrative centres like Teishebaini and Argishtikhinili, see Piotrovskij 1952: Figs 15, 16; Martirosyan 1974: Fig. 61) demonstrates that in the Uartian period there was more than just a local community inhabiting Metsamor. And if there were no actual “Uartians” present among the settlers of Metsamor from that period, then the inhabitants of this settlement were rich enough apparently to afford fine pottery manufactured in the best pottery workshops, working under the aegis of the royal administration. Generally, the coexistence of local pottery dated to the Iron Age I and especially Iron Age II pottery with formal features characteristic of the Uartian Kingdom has been attested in other parts of the Metsamor site.

## GRAVES FROM THE ROMAN PERIOD

Three inhumation burials were explored [Fig. 6]. A detailed anthropological analysis is presented in the appendix below. The first burial (N9) belonged to an adult male, who was buried in a shallow pit, dug against a wall of structure S16. The only grave equipment discovered was a pale-green glass unguentarium, placed by the face of the deceased. It is a fairly standard piece, dated to the 2nd century AD (Isings 1957: 82A1), whereas

parallels are from the end of the 1st century AD to the 3rd century AD (Corning Museum Collection, Whitehouse 1997: No. 249), and from the end of the 1st and the 2nd century AD (Louvre, Arveiller-Dulong, and Nenna 2005: No. 304). Thus the burial can be placed in the first half of the 2nd century AD.

A child burial (N10) in a stone cist grave was recorded in the corner of structure S12, east of burial N9. The sex of



Fig. 6. Burials from the late Roman period: top left, glass and stone beads from burials N8 and N9; top right, glass bottles from burial N9; center, top views of the burials, from left, N8, N9 and N10; bottom left, blow-up of area with graves (University of Warsaw Metsamor Project | photos O. Bagi, J. Pawlik, S. Manas Jolis, drawing R. McClenaghan, digitizing M. Iskra)

child burials cannot be assessed on the grounds of anthropological indicators, but in this case, the exceptionally rich set of grave goods might contain some clues. For example, a bone hairpin with flat disk-like decoration on top could have belonged to a girl. Moreover, the child was equipped with a necklace, made of glass and golden beads, originating most probably from Syrian or Levantine workshops, which yet again may be indicative of the female sex. Several of the bicolored, black and white beads resemble specimens from Sardes (von Saldern 1980: Pl. 19, Fig. 832). The spherical golden beads, however, seem to be of local production. The grave goods in this case included also a small clay goblet of local make, probably of 2nd century date, decorated with relief projections at mid-height. Of similar date are two glass containers. One is an unguentarium of the same kind as the one discovered in grave N9, while the other is a very rare type of amphoriskos of dark aubergine to black color. The manufacturing technology of this form and the color confirm the postulated dating for that object and by extension, for the grave.

The third grave (Burial N11) was discovered near the southwestern corner of

structure S12. The shallow pit contained the skeleton of an older adult male, most probably severely injured judging by the marks preserved on the bones and the long arrowhead found between the ribs. The only furnishing of the grave was a large, globular glass bottle with twin handles attached to a cylindrical neck; the rim is missing. The glass recalls that of the amphoriskos described above and its color in the body is also black to aubergine, the coloring of the handles is unique, one being green and the other blue. Considering the dating of both the bottle and the arrowhead, one can assume that the burial occurred in the end of the 3rd century AD or, more probably, at the beginning of the 4th century AD, which seems to comply with the dating of parallels: a flask, similar to a bottle described by Isings, dated to the late 3rd/early 4th century AD (Isings 1957: 129). This latter artifact, however, has only one handle. Double-handled bottles can be found in the Louvre collection and in the Art Museum in Princeton (Arveiller-Dulong and Nenna 2005: 1071; Antonaras 2012: No. 114). The specimen in the Princeton University Art Museum, however, has been dated to the late 4th–early 5th century AD.

## SMALL FINDS

Of particular interest among the small finds, especially with regard to the chronology, are two heavy and massive bronze bracelets (SF 266, SF 267) discovered at the bottom of a large pithos installed inside structure S1 [Fig. 7:a,b]. One is circular in shape with a fine smooth surface, the other crinkle-cut, decorated on the

outside. Each weighs exactly half a kilogram, which may indicate that they were not only valued items, but possibly also weight standards.

Two other finds may also be associated with the process of metal production. A small crucible or rather melting spoon was found in the northern part of





Fig. 7. Selected small finds: a, b – bronze bracelets found in a pithos; c – bone pin; d – clay melting spoon (University of Warsaw Metsamor Project | photos S. Manas Jolis, digitizing M. Iskra)

the excavated sector, between structures S10 and S14 [Fig. 7:d]. This is a standard tool for melting metal (Martirosyan 1964: Table XIX), very small, hence used most probably for precious metals like silver and gold; small quantities of the metal would have been melted inside the spoon and then poured into a mould for manufacturing jewellery. Fragmentary moulds have also been recorded from the site, confirming production of elements of personal adornment inside the settlement, most probably

not far from dwelling houses. A mould made of an oblong stone, carved with a shallow circular or discoid shape, implied the making of flat discoid pendants or other half-products for further processing.

Last but not least, there is a bone pin, 10 cm long, its top in the shape of a duck [Fig. 7:c]. It was found in a trash deposit, among ashes and pieces of pottery from the Iron Age III period. It is highly likely that it should be dated to the post-Urartian, maybe Achaemenid period.

## APPENDIX

### HUMAN REMAINS FROM THREE LATE ROMAN BURIALS

Three primary burials of late Roman date were discovered in 2018 in the northeastern part of the northern lower town of Metsamor. The burials were located in sector IX, squares D15 (N10) and 16 (N8 and N9) (for the location and description of the context, see above, pages 320, 322 and Fig. 6)

Measurements were taken of cranial and post-cranial bones applying the set recommended by R. Martin (Martin and Saller 1959) [Tables 1, 2]. Paleopathological changes (trauma, fractures, *cribra orbitalia*, caries, dental abscess, etc.) were recorded for each skeleton. A spreading caliper and a mandibulometer were used for the measurements and the length of long bones was recorded using an osteometric board.

The long bones of the individuals were preserved well enough to allow stature estimation based on the Trotter and Gleser formulas (1958). Sex assessment was based on cranial and pelvis morphology and age was assessed from dental eruption pat-

terns (N9) (Buikstra and Ubelaker 1994) and obliteration of cranial sutures (N8 and N10) (Meindl et al. 1985).

#### Burial N8

The individual was lying on the right side in flexed position, the head to the east, facing north, the legs flexed W-shaped and the right arm up to the face [see Fig. 6 center left]. The bones were generally well preserved with the exception of some of the long bones [Fig. 8:a]. The ossification of cranial sutures, the length of long bones and tooth wear patterns indicated an adult (age 25–35). The skull and pelvis morphology were those of a male.

The individual had suffered from serious dental diseases [Fig. 8:c]. The right first molar of the mandible was lost antemortem, the tooth socket becoming almost wholly obliterated by the time of death. Multiple neck dental caries were observed on both the maxilla and the mandible: lower left



Fig. 8. Skeleton from Burial N8 (University of Warsaw Metsamor Project/photos T. Zakyan)



Fig. 9. Skeleton from Burial N9 (University of Warsaw Metsamor Project | photos T. Zakyan)

M1, both M2 and the upper right M3 (enamel caries). Porotic hyperostosis (*cribra orbitalia*), degree 0.5 according to Stuart-Macadam's scoring system (1985), is present on the roots of both orbits [Fig. 8:b].

### Burial N9

The individual was lying on the left side in flexed position, the head to the west, facing north, the legs flexed V-shaped, the left hand at the left cheekbone, the right arm up to the face [Fig. 6 center].

Table 1. Individual cranial measurements (H. Simonyan, based on Martin and Saller 1959)

No. (Martin)	Measurements	Skeleton	N8	N10	N9
		Sex/age	M/25–35	M/40–50	Child/10
1	Maximum length		193	190	188
8	Maximum breadth		135	135	144
17	Basion-bregma height		128	124	132
20	Porion-bregma height		111	108	118
9	Minimum frontal breadth		99	93	97
10	Maximum frontal breadth		118	111	125
11	Auricular breadth		119	120	109
12	Occipital breadth		106	113	110
45	Bizygomatic breadth		132	127	–
48	Upper facial height (pr.)		69.5	68	54
	Upper facial height (al.)		73	72	57
43	Upper facial breadth		101.5	105.5	97
60	Alveolar length		53	53	43
61	Alveolar breadth		62	56	60
55	Nasal height		55	53	44
54	Nasal breadth		25	23	23
51	Orbital breadth (mf.)		41	42	39
52	Orbital height		36	35	34
70	Height of ramus (left)		50	66	–
71	Minimum breadth of ramus (left)		29.5	25	–
65	Bicondylar breadth		121	107	–
66	Bigonial breadth		101	95	–
69	Height of mandibular symphysis		33	36	–
8:1	Cranial Index		69.9	71.05	76.6
9:10	Frontal Index		83.9	83.8	77.6
20:1	Cranial Length–Height Index		57.5	56.8	62.7
45:8	Facio-Cerebral Index		97.8	94.07	–
54:55	Nasal Index		45.4	43.4	52.3
52:51	Orbital Index		87.8	83.3	87.2
48:45	Upper Facial Index		55.3	56.7	–
66:45	Mandible–Zygomatic Index		76.5	74.8	–



The bones were well preserved except for some of the long bones of the left side [Fig. 9:a]. The remains were of a child; the overall morphology and state of dentition are indubitable indicators of a young age, no more than 10 years old according to the state of the dentition (emerging permanent teeth).

*Cribrra orbitalia* are present on the roots of both orbits, degree 2 according to Stuart-Macadam's scoring system (1985) [Fig. 9:b].

### Burial N10

The individual was lying on the right side in flexed position, the head to the east, facing north, the legs flexed V-shaped [see Fig. 6 center right]. The bones were well preserved except for some of the long bones and the right ribs [Fig. 10:a]. The ossification of cranial sutures and long bone length, as well as tooth wear, indicate an adult (age 40–50), a male judging by the skull and pelvis morphology. An arrowhead, pre-



Fig. 10. Skeleton from Burial N10 (University of Warsaw Metsamor Project | photos T. Zakyan)

Table 2. Individual post-cranial measurements (H. Simonyan, based on Martin and Saller 1959)

No. (Martin)	Skeleton/sex/age/ ➡  Measurements ↓	N8/M/ 25–35		N10/M/ 40–50		N9/child/10/ with epiphysis		N9/child/10/ without epiphysis	
		right	left	right	left	right	left	right	left
Humerus (I)									
1	Maximum length	311	306	321	329	–	–	200	–
3	Maximum breadth of the head	49	47	54	50.5	–	–	33	–
4	Bicondylar width	62	64	68	66	–	–	35	–
5	Maximum diameter midshaft	24	22	26	24	–	–	–	–
6	Minimum diameter midshaft	20	20	20.5	19	–	–	–	–
7	Least circumference of the shaft	62	60	59	59	–	–	–	–
7a	Midshaft circumference	69	65	72	66	–	–	–	–
7:1	Robusticity Index	19.9	19.6	18.4	17.9	–	–	–	–
Radius (R)									
1	Maximum length	244	242	260	246	–	–	147	–
2	Physiological length	228	225	244	233	–	–	–	–
4	Maximum breadth of diaphysis	15	15	13	12	–	–	10	–
5	Sagital breadth of diaphysis	12	12	15	15	–	–	7.5	–
3	Least circumference of the shaft	36	34	38	37	–	–	25	–
3:2	Robusticity Index	15.7	15.1	15.5	15.9	–	–	–	–
Ulna (U)									
1	Maximum length	262	262	277	265	–	–	162	–
2	Physiological length	232	229	248	239	–	–	–	–
3	Least circumference of the shaft	34	33	31	35	–	–	18	–
3:2	Cliber Index	14.6	14.4	12.5	14.6	–	–	–	–
Clavicle (CL)									
1	Maximum length	144	149	143	146	–	–	100	103
6	Circumference at middle of bone	34	34	37	37	–	–	18	18
6:1	Robustness Index	23.6	22.8	25.8	25.3	–	–	18	17.5
Femur (F)									
1	Maximum length	–	–	461	463	309	–	275	–
2	Physiological length	–	–	457	461	307	–	274	–
21	Bicondylar width	–	80	82	–	58	–	–	–
6	Midshaft anterior–posterior diameter	–	29	28	27	18	–	–	–
7	Midshaft mediolateral diameter	–	27	30	29	16	–	–	–
9	Subtrochanteric mediolateral diameter	–	32	31	31	19	–	–	–

Table 2. (continued)

No. (Martin)	Skeleton/sex/age/ ➡  Measurements ↓	N8/M/ 25–35		N10/M/ 40–50		N9/child/10/ with epiphysis		N9/child/10/ without epiphysis	
		right	left	right	left	right	left	right	left
10	Subtrochanteric anterior– posterior diameter	–	24	28	29	18	–	–	–
8	Circumference of the midshaft	–	86	88	85	49	–	–	–
8:2	Robustness Index	–	–	19.2	18.4	15.9	–	–	–
10:9	Platymeric Index	–	75	90.3	93.5	94.7	–	–	–
Tibia (T)									
1	Maximum length	340	345	–	372	239	–	212	–
5	Maximum width of upper epiphysis	76	76	–	77	52	–	–	–
6	Maximum width of lower epiphysis	52	52	55	54	37	–	–	–
8	Midshaft anterior–posterior diameter	27	–	–	29	17	–	–	–
8	Anterior–posterior diameter at the nutrient for.	33	–	–	33.5	21	–	–	–
9	Midshaft mediolateral diameter	21	–	–	21	15	–	–	–
9a	Mediolateral diameter at the nutrient for.	25	–	–	23.5	17	–	–	–
10	Circumference of the midshaft	78	–	74	76	47	–	–	–
10	Least circumference of the shaft	–	70	70	67	45	–	–	–
9a:8a	Platycnemic Index	75.7	–	–	70.1	80.9	–	–	–
10a:1	Robustness Index	–	20.2	–	18.01	18.8	–	–	–
Fibula (Fi)									
1	Maximum length	–	–	371	368	–	–	–	–
Sacrum (S)									
1	Maximum anterior height	100		114		–		–	
5	Maximum anterior breadth	118		134		–		–	
Innominate (In)									
1	Maximum length	–	206	214	216	–	–	–	–
12	Maximum breadth	–	157	162	160	–	–	–	–
Proportions									
$\frac{H1 + R1}{F2 + T1}$	Intermembral Index	–	–	–	69.03	–	–	–	–
T1 : F2	Tibia–Femural Index	–	–	–	80.7	77.9	–	–	–
R1 : H1	Radio–Humeral Index	78.5	79.1	81.0	74.8	–	–	–	–
H1 : F2	Humero–Femural Index	–	–	70.2	71.4	–	–	–	–
R1 : T1	Radio–Tibial Index	71.8	70.1	–	66.1	–	–	–	–
Stature									
After Trotter and Gleser 1958		168.1		172.6		–		–	

sumed cause of death, was detected in the inner part of the chest on the right. The poor state of rib bone preservation excluded any observation of traumatic cut marks.

The individual had suffered from serious dental diseases [Fig. 10:b,c]. The antemortem tooth loss of the left first molar of the mandible, both M2, M3 of the maxilla was observed, the teeth sockets becoming completely obliterated by the time of death. Multiple neck dental caries were noted on the lower left M2, M3, right M3 of the mandible. Traces of a dental abscess can be seen on the left upper canine.

Evidence of a healed vertical cut, 510 mm long, on both the dorsal and frontal surfaces of the body of the left scapula is suggestive of a blade strike [Fig. 10:e, f]. Visible traces of healed fractures [Fig. 10:d] were noted on the lower shafts of the ulna and the radius close to the epiphysis. Traces of damage are

present on the epiphyses of the clavicles. The ossification of the left clavicle and a cavity on the right clavicle [Fig. 10:g] were observed.

## Summary

Based on craniometrical data [Table 1], the two adult skeletons (N8 and N10) from late Roman burials in the urban quarter excavated in 2018 turned out to be long-headed (8:1), narrow-faced (45) and with small and middle-sized upper facial height (48). Their stature, calculated with the Trotter and Gleser formulas, was 168.1 cm for N8 and 172.6 cm for N10. They presented numerous dental pathologies (N8 and N10) as well as *cribra orbitalia* (N8 and N9). In the case of N10, the cause of death may have been traumatical as indicated by an arrowhead found in the inner chest; the individual also had evidence of trauma on the scapula and healed fractures on the wrist bones.

### Assist. Prof. Krzysztof Jakubiak

<https://orcid.org/0000-0003-3123-7564>

Institute of Archaeology, University of Warsaw  
00-927 Warsaw, Poland,  
ul. Krakowskie Przedmieście 26/28  
[jakubiakk@interia.pl](mailto:jakubiakk@interia.pl)

### Ruzan Mkrtchyan

Yerevan State University, Department of Cultural  
Studies, Armenia, Yerevan, Alek Manukyan 1, 0025  
[ruzanrop55@mail.ru](mailto:ruzanrop55@mail.ru)

### Hasmik Simonyan

Service for the Protection of Historical Environment  
and Cultural Museum-Reservations NCSO  
Armenia, Yerevan, Tairov 15, 0082  
[hassimonyan89@gmail.com](mailto:hassimonyan89@gmail.com)

**How to cite this article:** Jakubiak, K. (2019). Metsamor (Armenia): the sixth season of fieldwork in 2018. *Polish Archaeology in the Mediterranean*, 28/2, 287–308. <https://doi.org/10.5604/01.3001.0013.6889>



## References

- Antonaras, A. (2012). *Fire and sand: Ancient glass in the Princeton University Art Museum*. Princeton, NJ: Princeton University Art Museum
- Arveiller-Dulong, V. and Nenna, M.-D. (2005). *Les verres antiques du Musée du Louvre II. Vaisselle et contenants du I<sup>er</sup> siècle au début du VII<sup>e</sup> siècle après J.-C.* Paris: Musée du Louvre
- Badalyan, R.S., Smith, A.T., Lindsay, I., Harutyunyan, A., Greene, A., Marshall, M., Monahan, B., and Hovsepyan, R. (2014). A preliminary report on the 2008, 2010, and 2011 investigations of Project ArAGATS on the Tsaghkahovit Plain, Republic of Armenia. *Archäologische Mitteilungen aus Iran und Turan*, 46, 149–222
- Buikstra, J.E. and Ubelaker, D.H. (eds). (1994). *Standards for data collection from human skeletal remains: Proceedings of a seminar at the Field Museum of Natural History, organized by Jonathan Haas (=Arkansas Archeological Survey Research Series 44)*. Fayetteville, AR: Arkansas Archeological Survey
- Isings, C. (1957). *Roman glass from dated finds (=Archaeologica Traiectina 2)*. Groningen: J.B. Wolters
- Iskra, M. and Zakyan, T. (2019). Bronze and Iron Age pottery from Metsamor (2018 season). *PAM*, 28/2, 309–326
- Jakubiak, K., Iskra, M., Piliposyan, A., and Zaqyan, A. (2017). Preliminary report on the 2016 season in Metsamor (Armenia). *PAM*, 26/1, 557–569
- Jakubiak, K., Piliposyan, A., Iskra, M., and Zakyan, A. (2018). Metsamor (Armenia) after five seasons of excavations. *PAM*, 27/1, 429–444
- Khanzadyan, Ė.V., Mkrtch'yan, K.H., and Parsamyan, Ė.S. (1973). *Metsamor: usumnasirut'yun 1965–1966 t't'. peghumneri tvyalnerov* (Metsamor: excavations in 1965–1966). Yerevan: Haykakan SSH GA Hratarakch'ut'yun (in Armenian)
- Martin, R. and Saller, K. (eds). (1959). *Lehrbuch der Anthropologie: In systematischer Darstellung mit besonderer Berücksichtigung der anthropologischen Methoden II* (3rd ed.). Stuttgart: G. Fischer
- Martirosyan, A.A. (1964). *Armenia v èpohu bronzy i rannego železa* (Armenia in the Bronze and Early Iron Age). Yerevan: Izdatel'stvo Akademii Nauk Armânskoj SSR (in Russian)
- Martirosyan, A.A. (1974). *Argišťihinili* (Argishtikhinili). Yerevan: Izdatel'stvo Akademii Nauk Armânskoj SSR (in Russian)
- Meindl, R.S., Lovejoy, C.O., Mensforth, R.P., and Carlos, L.D. (1985). Accuracy and direction of error in the sexing of the skeleton: implications for paleodemography. *American Journal of Physical Anthropology*, 68(1), 79–85
- Merhav, R. (ed.). (1991). *Urartu. A metalworking center in the first millennium B.C.E.* Jerusalem: The Israel Museum
- Piotrovskij, B.B. (1952). *Karmir-Blur II (=Arheologičeskie raskopki v Armenii 2)*. Yerevan: Izdatel'stvo Akademii Nauk Armânskoj SSR (in Russian)
- Saldern, A. von (1980). *Ancient and Byzantine glass from Sardis (=Archaeological Exploration of Sardis Monographs 6)*. Cambridge, MA: Harvard University Press

- Stuart-Macadam, P. (1985). Porotic hyperostosis: representative of a childhood condition. *American Journal of Physical Anthropology*, 66(4), 391–398
- Trotter, M. and Gleser, G.C. (1958). A re-evaluation of estimation of stature based on measurements of stature taken during life and of long bones after death. *American Journal of Physical Anthropology*, 16(1), 79–123
- Whitehouse, D. (1997). *Roman glass in the Corning Museum of Glass* I. Corning, NY: Corning Museum of Glass