A pilot archaeometric analysis of the Middle Iron Age pottery from Argištiḫinili

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Abstract: The newly launched Armenian-Polish archaeological project at Davti Blur, a hill located in the western part of the ancient site of Argištiḫinili, presents a valuable opportunity to conduct comprehensive research on the distribution and consumption of pottery within this Urartian city. This article presents the first stage of the study, which focuses on pXRF analysis of a ceramic assemblage comprising 134 potsherds, diverse in terms of ware types, functionality, context, and chronology. The assemblage includes, among others, fragments of high-quality Urartian Red Burnished Ware discovered in the palatial complexes of both citadels, domestic pottery from the lower town, and funerary vessels from a newly identified urnfield cemetery. Most of the fragments date to the Late Urartian period (first half of the 7th century BCE), although the assemblage also contains sherds attributed to the post-Urartian period (late 7th–6th centuries BCE). The article explores the correlations between geochemical compositional variability and the typological as well as spatial diversity of the ceramics under investigation.

Keywords: Urartu, pottery, Armenia, pXRF, Urartian Red Burnished Ware

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INTRODUCTION

The ancient city of Argištiḫinili, situated on the two hills of Davti Blur and Armavir Blur [*Fig. 1*], is considered one of the most prominent Urartian sites in present-day Armenia. Argištiḫinili was most probably founded in 776 or 774 BCE by Argišti I and underwent substantial expansion in the subsequent decades under the reign of his successor, Sarduri II (Martirosyan 1974; Grekyan 2015). During the first half of the 8th century BCE, two fortified palatial complexes (i.e. citadels) were constructed atop both hills, accompanied

Fig. 1. Hills of ancient Argištiḫinili: a – Davti Blur; b – Armavir Blur (Photos M. Iskra, P. Okrajek)

by the so-called "lower city" extending between them (Martirosyan 1974; Ġafadaryan 1984; Karapetyan et al. 2021). While the precise boundaries of the city remain undetermined, the combined area of the two citadels and the lower city suggests that Argištiḫinili was the largest urban center of the Urartian Kingdom in its northeastern, or South Caucasian, provinces (Biscione and Dan 2011).

Archaeological evidence indicates that throughout the 8th and 7th centuries BCE, Argištiḫinili functioned as a major administrative, religious, and economic center of the kingdom, inhabited by diverse social and ethnic groups (Martirosyan 1974; Forbes 1983; Karapetyan 2010; Stone 2012). This differentiation is reflected in both the architecture and material culture. Particularly significant in this context is the pottery assemblage discovered at Davti Blur, which exhibits a considerable degree of typo-morphological and technological variability. The assemblage includes forms characteristic of Urartian pottery, such as Urartian Red Burnished Ware (URBW), alongside several types of local ceramics, primarily Black Burnished Ware (BBW) and Brown Burnished Ware (BW).

During the long-term excavations at Davti Blur, particularly those conducted between 1962 and 1971 by Harutyun Martirosyan, material from four distinct spatial contexts was recorded (Martirosyan 1974: 47–69). The largest amount of pottery was found in the area of the western citadel, particularly in the storerooms belonging to the palatial complex. The second context is associated with eight large residences located in the western part of the upper city (referred to at the time as the "1st Residential Quarter"), approximately 300 m east of the citadel. The third context pertains to the domestic structures in the eastern part of the hill (the "3rd Residential Quarter"), situated over a kilometer from the citadel. Additionally, ceramic material was found in funerary contexts, located to the north of the citadel (Hmayakyan, Tiratsyan, and Hmayakyan 2018).

The pottery assemblage discovered during previous excavations has been broadly dated to the period between the 8th and 6th centuries BCE. Based on stratigraphic data, a division into two chronological groups has been proposed (Martirosyan 1974: 58–59). The first group is primarily represented by vessels belonging to the classical types of Urartian Red Burnished Ware, including trefoil jugs, hemispherical bowls, and goblets. The second group is more diverse, comprising both red-slipped vessels similar to Urartian pottery and types classified as Brown Burnished Ware.

The first group was identified in layers associated with the functioning of the palatial complex and certain residential structures, such as House No. 3. In contrast, the second group is linked to the phase of the citadel's rearrangement and the presence of small domestic structures within it. This group was also recorded in the upper occupational layers of Houses Nos 5, 6, and 8 in post-Urartian burials, and in a stratigraphic test trench dug in the eastern part of the hill (Martirosyan

1974: 58). Unfortunately, despite these significant observations, the majority of material —particularly that belonging to the second group— has not yet been analyzed or published.

A new phase of research on the pottery from Davti Blur commenced in 2024 with the establishment of the Armenian-Polish Archaeological Expedition at Argištiḫinili. One of the main objectives of the project is to conduct a holistic analysis of the organization of ceramic production and its internal distribution within this Urartian city, as well as its responsiveness to socio-political changes, particularly during the late 7th and 6th centuries BCE. In this context, ceramic studies have been directed along two lines: (1) the establishment of a precise ceramic sequence, and (2) archaeometric analyses of the technology and provenance of the discovered pottery.

This article presents the results of the first stage of archaeometric research on ceramics from Argištiḫinili, carried out entirely using a handheld X-ray fluorescence (pXRF) spectrometer. Due to its relatively low cost and rapid measurement capability, the pXRF method is typically employed for the analysis of large ceramic assemblages, with the aim of obtaining a preliminary geochemical classification. Based on the results of pXRF analysis, a sampling strategy can then be developed for more detailed and costly laboratory-based investigations. The use of pXRF is particularly valuable in the early phases of a research project —such as the one at Argištiḫinili— where the analytical dataset must essentially be built from scratch.

The first aim of the study was to assess the applicability of this method in identifying compositional groups within a ceramic assemblage from the site, characterized by functional, cultural, and chronological diversity. The second aim was to examine whether there is a correlation between spatial context and the distribution of specific compositional groups. This analysis seeks to determine whether discernible differences existed in the circulation of pottery between the two palatial complexes located at Davti Blur and Armavir Blur, as well as between these complexes and the residential district.

The analysis is grounded in the provenience postulate, as formulated by Phil Weigand, Garman Harbottle, and Edward Sayre (1977), which assumes that chemical differences between sources exceed the variation within a single source. This framework has been widely adopted in geochemical studies of archaeological pottery. Furthermore, we acknowledge that geochemical variability in pottery may also result from cultural and technological choices during production — such as levigation, tempering, or clay mixing— factors discussed in the literature (e.g. Neff, Cogswell, and Ross, Jr. 2003; Hein and Kilikoglou 2020). Such patterns can, in many cases, be detected using pXRF, even with the known limitations of this method (as outlined in Section 2.2). This has been demonstrated in studies conducted on diverse ceramic assemblages from multiple regions (e.g. Goren, Mommsen, and Klinger 2011; Tanasi et al. 2017; Krueger 2024).

MATERIALS AND METHODS

DESCRIPTION OF THE ASSEMBLAGE AND SAMPLING STRATEGY

An assemblage of 134 potsherds was selected for analysis, of which 125 originate from the western hill (DB – Davti Blur) and 9 from the eastern hill (AB – Armavir Blur) [*Table 1*]. The assemblage includes finds from the excavations conducted by Rafik Torosyan at Davti Blur in 1976 (*n*=89) and by Inessa Karapetyan at Armavir Blur in 2014 (*n*=9). This dataset is further supplemented by pottery recovered from the recent Armenian-Polish project (*n*=36).

Table 1. Complete list of analyzed sherds

Sample No.	Part	Form	Macroscopic group	Compositional group	Chronology	Context
DB1	rim	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB2	rim	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB3	rim	bowl	URBW III	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB4	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB5	body	restricted	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB6	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB7	rim	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB8	rim	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB9	rim	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB10	rim	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB11	rim	bowl	URBW III	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB12	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB13	body	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB14	rim	bowl	URBW III	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB15	body	restricted	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB16	handle	jug	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macro-scopic group	Compo-sitional group	Chronology	Context
DB17	rim	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB18	rim	jug	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB19	neck	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB20	body	restricted/ possibly jar	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB21	body	restricted/ possibly jug	URBW II/ blackened	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB22	body	goblet	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB23	rim	bowl	URBW II	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB24	rim	jug (46)	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB25	body	restricted	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB26	body	restricted	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB27	body	restricted	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB28	body	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB29	body	restricted	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB30	body	restricted	Black Burnished Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB31	neck with rivet	jug (46)	URBW III	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB32	rim	jug (46)	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB33	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB34	body	restricted/ possibly jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB35	rim	jug (46)	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macro-scopic group	Compo-sitional group	Chronology	Context
DB36	rim	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB37	rim	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB38	body	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB39	body	restricted/ possibly jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB40	body	bowl	URBW III	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB41	body	restricted/ possibly jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB42	body	restricted/ possibly jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB43	body	restricted	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB44	rim	jar	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB45	rim	jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB46	rim	jug (46)	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB47	rim	jug (46)	URBW III/ blackened	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB48	body	jug?	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB49	body	possibly goblet	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB50	rim	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB51	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB52	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB53	body	restricted/ possibly jar	Buff Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB54	rim	jug	URBW III/ blackened	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macroscopic group	Compositional group	Chronology	Context
DB55	body	restricted	Black Burnished Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB56	rim	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB57	rim	jug	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB58	rim	jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB59	body	restricted/ possibly jar	Common Ware	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB60	rim	jug	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB61	neck with rivet	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB62	rim	jug	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB63	body	jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB64	rim	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB65	rim	goblet	URBW I	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB66	rim	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB67	body	restricted/ possibly jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB68	rim	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB69	body	restricted/ possibly jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB70	rim	jug	Brown Burnished Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB71	rim	jug	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB72	body	restricted/ possibly jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macro-scopic group	Compo-sitional group	Chronology	Context
DB73	base	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB74	neck with rivet	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB75	rim	jug	Brown Burnished Ware	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB76	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB77	body	jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB78	body	goblet	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB79	body	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB80	body	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB81	body	jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB82	body	goblet	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB83	body	bowl	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB84	body	jug	URBW III	outlier	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB85	body	jug	URBW II	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB86	body	jug	URBW I	outlier	Late/post Urartian period (7th–6th century BCE)	Western citadel courtyard
DB87	body	restricted vessel	Post Urartian Red Slip Ware	outlier	Late/post Urartian period (7th–6th century BCE)	Western citadel courtyard
DB88	body	restricted vessel	Post Urartian Red Slip Ware	outlier	Post Urartian period (second half of 7th–6th century BCE)	Pottery deposit from the southeastern part of the hill
DB89	body	restricted vessel	Post Urartian Red Slip Ware	outlier	Post Urartian period (second half of 7th–6th century BCE)	Pottery deposit from the southeastern part of the hill
DB90	base	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macro-scopic group	Compo-sitional group	Chronology	Context
DB91	body	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB92	rim	bowl	URBW III	G1a	Late Urartian period (first half of 7th century BCE)	Room No. 3 from the citadel
DB93	rim	juglet	URW	G2b	Late Urartian period (first half of 7th century BCE)	Surface find – eastern part of Davti Blur
DB94	rim	jar/urn	Common Ware	G3	Late Urartian period (first half of 7th century BCE)	Surface find – eastern part of Davti Blur
DB95	rim	jar	Common Ware	G2b	Late Urartian period (first half of 7th century BCE)	Surface find – eastern part of Davti Blur
DB96	rim	bowl	URW	G2a	Late Urartian period (first half of 7th century BCE)	Surface find – eastern part of Davti Blur
DB97	rim	jar/urn	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Surface find – eastern part of Davti Blur
DB98	rim	bowl	Post Urartian Red Slip Ware	G2a	Post Urartian period (second half of 7th–6th century BCE)	Surface – southeastern part of the hill
DB99	base	jar	Post Urartian Red Slip Ware	G2b	Post Urartian period (second half of 7th–6th century BCE)	Surface – southeastern part of the hill
DB100	rim	jug	Common Ware	G2a	Post Urartian period (second half of 7th–6th century BCE)	House 10
DB101	rim	jar	Common Ware	G2a	Post Urartian period (second half of 7th–6th century BCE)	House 10
DB102	body	jar	Common Ware	G2a	Post Urartian period (second half of 7th–6th century BCE)	House 10
DB103	rim	jar	Brown Burnished Ware	G3	Post Urartian period (second half of 7th–6th century BCE)	Davti Blur cemetery
DB104	body	jar/urn	Common Ware	G3	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB105	handle	jug	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macro-scopic group	Compo-sitional group	Chronology	Context
DB106	handle	jug	URW	G2b	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB107	body	jar/urn	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB108	rim	jar	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB109	rim	bowl	Brown Burnished Ware	outlier	Post Urartian period (second half of 7th–6th century BCE)	Davti Blur cemetery
DB110	rim	jar	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB111	rim	bowl	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB112	base	bowl	Common Ware	G3	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB113	body	jar/urn	Common Ware	G2b	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB114	rim	jar	Common Ware	outlier	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB115	rim	jar	Common Ware	G2b	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB116	rim	bowl	Black Burnished Ware	outlier	Early Urartian period (8th century BCE)	Davti Blur cemetery
DB117	rim	jug	URBW II	G2b	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB118	rim	jug	URBW II	G2b	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB119	handle	jug	Black Burnished Ware	G3	Early Urartian period (8th century BCE)	Davti Blur cemetery
DB120	rim	bowl	Common Ware	G3	Post Urartian period (second half of 7th–6th century BCE)	Davti Blur cemetery
DB121	handle	jug	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB122	base	bowl	URW	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB123	rim	bowl	URW	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery
DB124	rim	bowl	Common Ware	G2a	Late Urartian period (first half of 7th century BCE)	Davti Blur cemetery

Table 1. Complete list of analyzed sherds (continued)

Sample No.	Part	Form	Macroscopic group	Compositional group	Chronology	Context
DB125	rim	bowl	Post Urartian Red Slip Ware	G2a	Post Urartian period (second half of 7th–6th century BCE)	House 11
AB1	body	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB2	base	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB3	rim	jug	URBW I	outlier	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB4	body	storage jar	Common Ware	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB5	body	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB6	body	bowl	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB7	body	jug	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB8	body	jug	URBW I	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel
AB9	body	bowl	URBW II	G1b	Late Urartian period (first half of 7th century BCE)	Armavir Blur, eastern citadel

The sampling strategy was based on three criteria: stratigraphic, spatial, and typological. The first criterion focused on selecting fragments from reliable stratigraphic contexts. In the case of a site surveyed mainly in the 1970s, this was not a simple matter due to the relatively small amount of source material available and gaps in field documentation. Despite these challenges, the majority of the assemblage consists of finds associated with the usage level of Room No. 3 from the western citadel, excavated in 1976.[1] The material from the 2024 excavations is mainly represented by pottery from the floor layers of the explored Houses Nos 10 and 11, as well as finds associated with urn burials. The latter case is particularly significant, as it concerns fragments of broken vessels recovered from looting pits during rescue excavations of a cemetery located in the eastern part of Davti Blur hill. This pit was located near the only intact urn and contained remains likely belonging to two additional funerary vessels, along with the so-called "closing ritual assemblage". This assemblage includes fragments of bowls, cups, and jugs that were intentionally broken by mourners during the burial ceremony, serving as part of the funerary rite rather than as actual grave goods. The presence

1 Based on the documentation of the ceramic collection stored in the Sardarapat Museum.

Fig. 2. Analyzed pottery from the western and eastern citadels of Argištiḫinili (Photos and drawings M. Iskra)

of such assemblages is, in fact, a characteristic feature of the eastern cemetery of Argištiḫinili.

The spatial criterion involved selecting ceramics from contexts and clusters that differed both functionally and architecturally. As previously noted, the majority of the samples (*n*=90) were found in the western citadel [*Fig. 2*]. Moving eastward along the hill, the next cluster is the "3rd Residential Quarter", specifically Houses 10 and 11 (*n*=4). Further east, approximately 150 m away, lies the cemetery, which yielded 22 potsherds. A set of seven surface finds is associated with the remains of buildings in the southeastern part of the hill. Additionally, a pottery deposit discovered in 2012 (*n*=2) is linked to the residential structures in the easternmost part of the hill, which were destroyed by a modern sand quarry [*Fig. 3*]. Pottery from Armavir Blur was discovered within the citadel, in the courtyard adjacent to the *susi* temple [see *Fig. 2*] (Karapetyan et al. 2021).

Each of these spatial contexts and clusters exhibited a distinct distribution of pottery wares, which is reflected in the analyzed assemblage. An effort was made to obtain the broadest possible diversity in terms of typo-morphology, functionality, and cultural affiliation. As a result, the assemblage can be categorized into four ware groups.

The most distinctive ware is the previously mentioned Urartian Red Burnished Ware (URBW) (Kroll 1976; H. Avetisyan 1999), represented here by three macroscopic types (URBW I, II, III) [*Table 2*].

Table 2. Macroscopic description of Urartian Red Burnished Ware assemblage from the site

Macroscopic group	Description
URBW I	External surface with faceted traces of horizontal hand burnishing. Fabric is usually monochromatic (from 2.5YR, 6/6 to 5YR, 5/6), with well-sorted temper. Slip color is similar to 10R, 5/8.
URBW II	Glossy surface without visible traces of hand burnishing. Fabric (from 2.5YR, 6/6 to 5YR, 5/6) is usually bicolored with a gray core, with well-sorted temper. Slip color is similar to 10R, 5/8.
URBW III	Thick slip layer; glossy surface without visible traces of hand burnishing. Fabric (from 2.5YR, 6/6 to 5YR, 5/6) is usually bicolored with a gray core, with well-sorted temper. Slip color is similar to 10R, 4/8.

In the present analysis, URBW accounts for 56% of the total assemblage (76 fragments). However, it should be noted that this ware type is, in fact, relatively rare, typically constituting no more than 10% of ceramic assemblages. The majority of URBW sherds originate from the small Room No. 3, located adjacent to the Columned Hall within the main palatial complex of the western citadel. This assemblage constitutes only a portion of a rich and, as yet, unpublished collection, which likely comprises over one hundred broken vessels, primarily tableware such as bowls, goblets, and jugs. Given this context, Room No. 3 may have functioned as a small storage space for tableware used by the staff and inhabitants

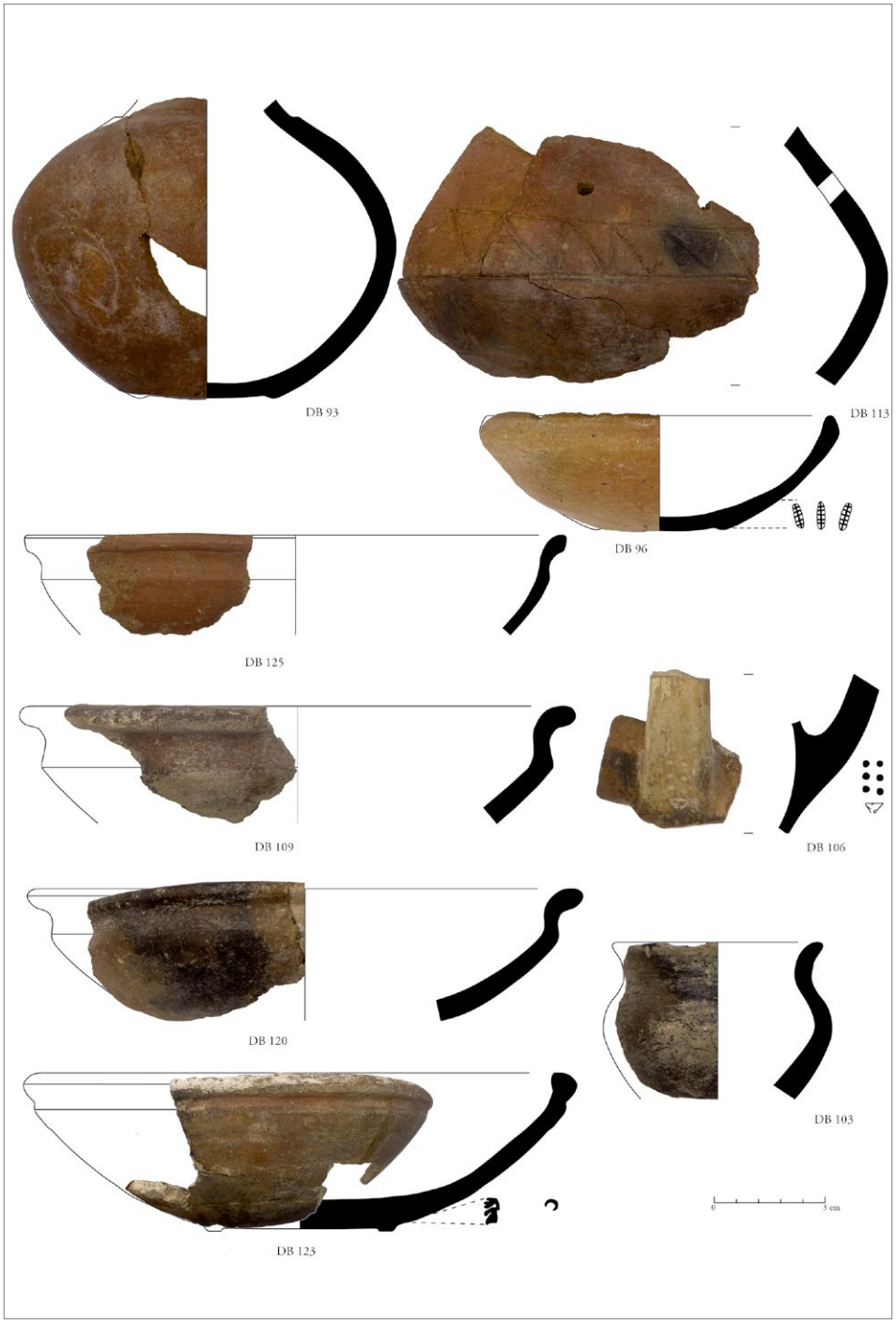

Fig. 3. Analyzed pottery from the lower town and cemetery at Davti Blur (Photos and drawings M. Iskra)

of the palatial complex. The URBW ceramic assemblage from Room No. 3 shows numerous parallels with counterparts discovered at Karmir Blur, Bastam, and Ayanis, allowing for a preliminary dating to the first half of the 7th century BCE.

A separate group —though typologically close to the URBW— is represented by the so-called Unburnished Red Ware (URW) (*n*=5). This ceramic type, known from sites dated to the first half of the 7th century BCE (e.g. Kozbe, Sağlamtimur, and Çevik 2001), consists of vessels that resemble URBW forms in shape but differ in several key aspects: the absence of surface burnishing, a lighter shade of red slip, and a distinct fabric characterized by a coarser matrix and a higher proportion of temper, including vegetal inclusions. The fabric of this group shows affinities with utilitarian wares such as Common Ware and Brown Burnished Ware. This group has been described as a more utilitarian or alternative version of the luxury Urartian vessels (Stone 2012: 97).

The third ware in the assemblage (*n*=39) is the so-called Common Ware, an unslipped pottery with smoothed surfaces characterized by colors ranging from buff to light pink. It is primarily represented by utilitarian, medium-walled forms, including jars, bowls, jugs, and also urns. Numerous analogies to these forms are known from other Urartian sites dated to the 7th century BCE (Kozbe, Sağlamtimur, and Çevik 2001: 91–93).

The fourth group (*n*=8) consists of local ceramic wares, namely Black Burnished Ware and Brown Burnished Ware. Typologically, the analyzed vessels belong to the final stage of the local pottery tradition (the so-called Lchashen-Metsamor 6), which dates primarily to the 7th century BCE (P. Avetisyan 2009; P. Avetisyan and Bobokhyan 2012; H. Avetisyan et al. 2021). All examined fragments, mainly bowls and small restricted vessels, were discovered in the Eastern Cemetery and were largely part of the "closing ritual assemblage".

The fifth group in the analyzed assemblage consists of fragments of post-Urartian Red Slip Pottery (*n*=6), generally dated to the 6th century BCE (Karapetyan 2003). This group is chronologically distinct from the others and is associated with the residential architecture of the eastern part of the hill. Technologically, post-Urartian Red Slip Pottery exhibits similarities to Urartian Red Burnished Ware (URBW) but differs in its lower firing quality and less refined surface burnishing or polishing. Another distinguishing feature is the slightly different vessel shapes, including carinated bowls, which reflect influences from the local pottery tradition.

XRF ANALYSIS

Elemental composition analysis of ceramic samples was conducted using a handheld X-ray fluorescence spectrometer (XRF), Bruker Tracer III SD, equipped with a silicon drift detector (SDD) and a rhodium anode. The analysis was carried out at the Faculty of Archaeology, Adam Mickiewicz University in Poznań. The spectrometer was operated using mains power, with no batteries. Handheld spectrometers are characterized by lower precision compared to destructive analyses. In non-destructive analysis, results are often affected by the heterogeneous structure of ceramics, particularly due to coarse-grained inclusions (Mecking

2021). Other known issues include measuring time, low sensitivity, and the limited representativeness of a single measuring point for the entire sample (Bergman and Lindahl 2016; Holmqvist 2017). To address these limitations, a destructive method of pXRF analysis was undertaken. Samples weighing no more than 2.5 g were collected from selected potsherds. Prior to analysis, the samples were ground using a manual mortar to increase the homogeneity of the material. This approach aimed to reduce the selectivity of measurement results, a limitation commonly associated with non-destructive methods. In this procedure, the results do not depend on a single point of measurement but rather reflect the homogenized elemental composition of the sample.

The analyses were conducted under laboratory conditions, with the spectrometer positioned vertically and equipped with a mounted sample stage. The powdered samples were placed on a plastic film approximately 8 microns thick. The central part of each sample, where loose material was most abundant, was analyzed. Two analytical modes were employed: MajMudRock (primarily for determining major elements) and TrMudRock (for trace elements). These modes allow for the automatic selection of parameters suitable for geological and archaeological ceramic samples. In MajMudRock, the voltage was set at 15 kV, current at 25 μA, and a vacuum pump was used. In TrMudRock, the parameters were 40 kV and 15 mA. Measurement time was 15 seconds per analysis. The distance between the spectrometer and the sample was kept constant. A ceramic reference sample with known elemental composition was used to verify measurement accuracy. A total of 320 measurements were conducted. The obtained results are qualitative and semi-quantitative, with a relatively low level of accuracy, and should therefore be treated as indicative. Statistical analyses were conducted using PAST 5 software (Hammer 2025). PCA and Ward's hierarchical cluster analysis were employed to interpret the results, supplemented by the K–Ti test.

LOCAL GEOLOGY

The Cenozoic intermontane Ararat Plain (Ararat Depression), where the site is located, lies south of the Lesser Caucasus. It formed following the Late Cretaceous closure of the Neotethys Ocean and the onset of the Arabia–Eurasia collision. At the base of the Ararat Plain (Ararat Depression) lies a thick sequence of Neoproterozoic crystalline basement (as indicated by borehole data), overlain by Palaeozoic sedimentary, Mesozoic ophiolitic, Upper Cretaceous sedimentary, and Cenozoic sedimentary, volcano-sedimentary, and volcanic deposits. The depression was primarily shaped by tectonic activity, controlled by oblique-slip reverse and thrust-segmented faults that became active in the post-Oligocene–Miocene period. These compressional faults led to the formation of segmented asymmetric folds and fault-related structures (Avagyan et al. 2024).

The Sardarapat structure, which includes Davti Blur hill, is located in the northwestern part of the Ararat Plain (Ararat Depression). Its origin —whether

volcanic, tectonic, or volcano-tectonic—was debated for a long time. However, since the 1990s the tectonic component has become increasingly evident, particularly during seismic safety assessments for the Armenian Nuclear Power Plant, when the structure was first examined as a fault.

The Sardarapat fault zone, striking at N108°, appears in the relief as a 40–70 m wide range of hills within the Ararat Plain (Ararat Depression) [*Fig. 4*]. The Sardarapat hill range consists of andesite-basalts, tuffs, and alluvial and deluvial deposits (Karakhanian et al. 2004; Avagyan 2019). The structure is most clearly expressed over a length of approximately 20 km. The eastern segment, which extends for 3 km, is the most distinct in the relief, the central segment (6 km) is less pronounced, and the western segment (4 km) is poorly expressed and largely covered by Araxes River deposits.

Analysis of lateral profiles of the relief reveals that, contrary to expectations, the depression north of the structure is approximately 20 m lower than the near-Araxian section to the south. In general, the southern slopes of the Sardarapat structure are steeper (Avagyan 2019).

The geological formations surrounding the structure present an erosional and partially anthropogenic scarp in the northern section of the profile area, which has been exploited as a clay and sand quarry [*Fig. 5*]. Here, clays with thin sand interlayers are exposed at the base, overlain by Araxes River sediments and fine gravels. The visible thickness of the clay layer exceeds 3 m, while the overlying sand and fine gravel layers do not exceed 1.5 m. Compositional analysis confirms their origin from the Araxes River. Additionally, alluvial deposits are observed on the northern slopes of the Sardarapat structure (Avagyan 2019).

The fault depicted in [*Fig. 5*] lies beneath the surface clay-sand sediments. This interpretation is supported by the anomalously high position of near-horizontal lacustrine sediments (Upper Quaternary in age), a weakly developed

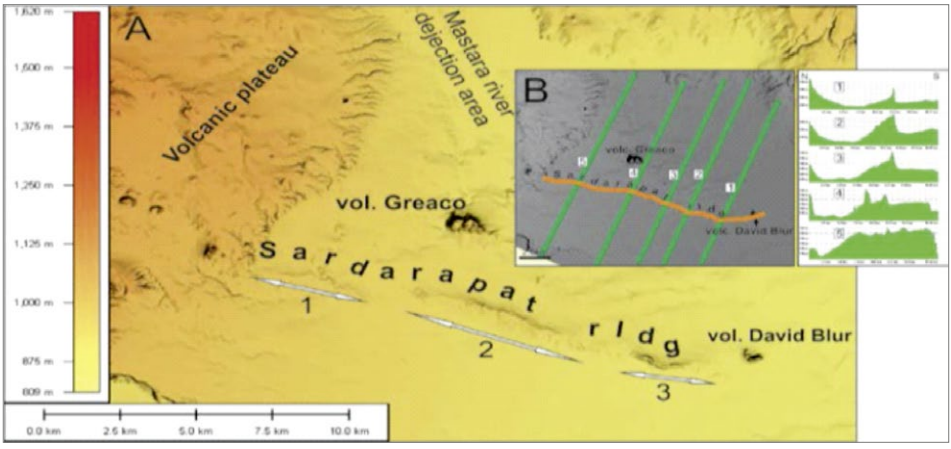

Fig. 4. a – Segments of the Sardarapat structure; b – Relief profiles and their corresponding planimetric lines (After Avagyan 2019; processing A. Hovhannisyan)

anticlinal fold within these sediments, and the hypsometric heights of exposed tuff outcrops. Lavas in this region have been dated to 0.9 Ma using the Ar/Ar method (*Volcanic hazard…* 2016; Avagyan 2019).

RESULTS OF THE ANALYSIS

The device in MajMudRock analysis mode detected the elements Na, Mg, Al, Si, P, S, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, and Ba (Iskra 2025). The elements detected in TrcMudRock mode did not show sufficient differentiation; therefore, the tests are limited to those detected in MajMudRock mode.

During interpretation of the results, elements particularly susceptible to post-depositional processes, such as S and P, were omitted (Lemoine et al. 1981; Picon 1985; 1991; Schwedt, Mommsen, and Zacharias 2004; Buxeda i Garrigós et al. 2005; Schwedt et al. 2006; Maritan 2020). Sodium (Na) was excluded because the use of a helium cylinder was not possible.

When PCA was performed with Mg, Al, Si, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, and Ba, the results were inaccurate (Iskra 2025). Low Ca content and differences in Mg created an unreliable

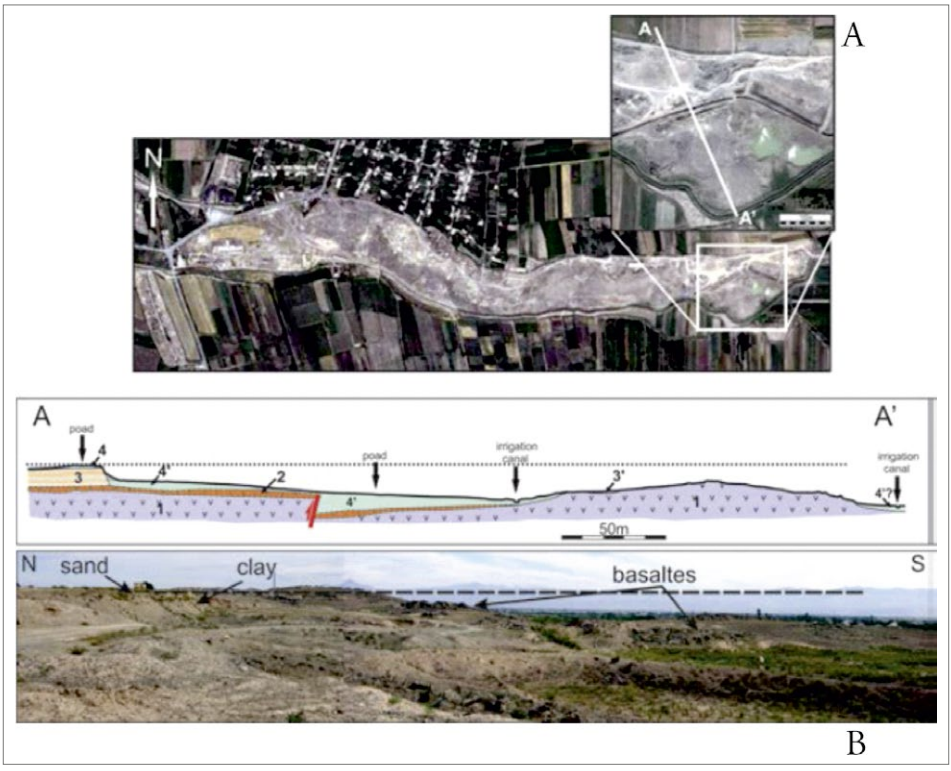

Fig. 5. a – Geological profile line in the eastern part of the Davti Blur hill; b – Geological section scheme of the eastern part of the Davti Blur hill (After Avagyan 2019; processing A. Hovhannisyan)

grouping, separated primarily by in these elements. Disturbances in Ca and Mg are most likely due to post-depositional factors (Picon 1985; 1991; Maritan 2020; Zubin Ferri et al. 2020).

When PCA excluded Mg and Ca, the results were more reliable. Both elements were omitted from statistical analyses due to their susceptibility to post-depositional alteration and high mobility in soils (Stoner and Shaulis 2021). Based on significant differences in most of the elements detected in MajMudRock mode, three main groups were distinguished [*Fig. 6:a*]. Within these groups, internal variations in Al and Si content were observed, but these differences were not substantial enough to define additional groups. Therefore, subgroups 1a, 1b, 2a, and 2b were identified within the main groups. Outliers that differed significantly from other samples (DB23, DB34, DB39, DB42, DB43, DB45, DB53, DB58, DB63, DB84, DB86–DB89, DB109, DB 114, DB116, AB3) were excluded.

The largest group, (G1), consists of 86 fragments (70 URBW, 12Common Ware, 4 Brown/Black Burnished Ware). Samples from this group came from two spatial contexts: the western citadel (*n*=78) and the eastern citadel (*n*=8). Compared with the other two groups, G1 is characterized by the highest average concentrations of K (avg. 1.71±0.05%), Cr (avg. 117±5 ppm), Mn (avg. 668±45 ppm), Fe (avg. 2.87±0.11%), Co (avg. 18±0 ppm), and Ni (avg. 58±12 ppm). Conversely, it shows the lowest concentrations of Ti (avg. 0.29±0.01%), Cu (avg. 17±1 ppm), Zn (avg. 61±1 ppm), and Ba (avg. 0.33±0.03%). Al (avg. 4.78±0.23%) and Si (avg. 18.43±0.30%) occur at a medium levels compared with the other groups. Notably, this group is distinguished by very high Ni content and low Cu content. In ten samples, a small average concentration of V was observed.

Group G1 was further divided into subgroups G1a (42 fragments) and G1b (44 fragments) [*Fig. 6:b*]. Group G1a has higher average concentrations of Cr (avg. 121±6 ppm), Fe (avg. 2.91±0.11%), and Zn (avg. 61±0 ppm), but lower concentrations of Al (avg. 4.42±0,22%), Si (avg. 17.42±0.28%), K (avg. 1.68±0.05%), Ti (avg. 0.26±0.01%), Mn (avg. 609±41 ppm), Co (avg. 18±0 ppm), Ni (avg. 18±0 ppm), Cu (avg. 10±1 ppm), and Ba (avg. 0.30±0.03%) compared with Group G1b.

Group G1b, on the other hand, has higher concentrations of Al (avg. 5.13±0.24%), Si (avg. 19.43±0.31%), K (avg. 1.74±0.05%), Ti (avg. 0.31±0.01%), Mn (avg. 726±48 ppm), Co (avg. 19±5 ppm), Ni (avg. 61±11 ppm), Cu (avg. 26±2 ppm), and Ba (avg. 0,35±0.03%), while showing lower levels of Cr (avg. 114±52 ppm), Fe (avg. 2.82±0.12%), and Zn (avg. 61±1 ppm).

Group G2 consists of 24 samples (14 Common Ware, 5 URW, 3 post-Urartian Red Slip Ware, 2 URBW). The fragments assigned to this group come from three spatial contexts: the Davti Blur cemetery (*n*=14), the surface of the eastern part of Davti Blur hill (*n*=6), and Houses 10 and 11 (*n*=4). Compared to the other groups, it has the highest average concentration of Zn (avg. 85±0 ppm). The elements with the lowest concentrations relative to the other two groups are Al (avg. 3.74±0.20%), Si (avg. 15.65±0.27%), K (avg. 0.85±0.03%), Cr (avg. 71±6 ppm), Co (avg. 14±0 ppm), and Ni (avg. 17±9 ppm). Meanwhile, Ti (avg. 0.35±0.01%), Mn (avg. 433±28 ppm),

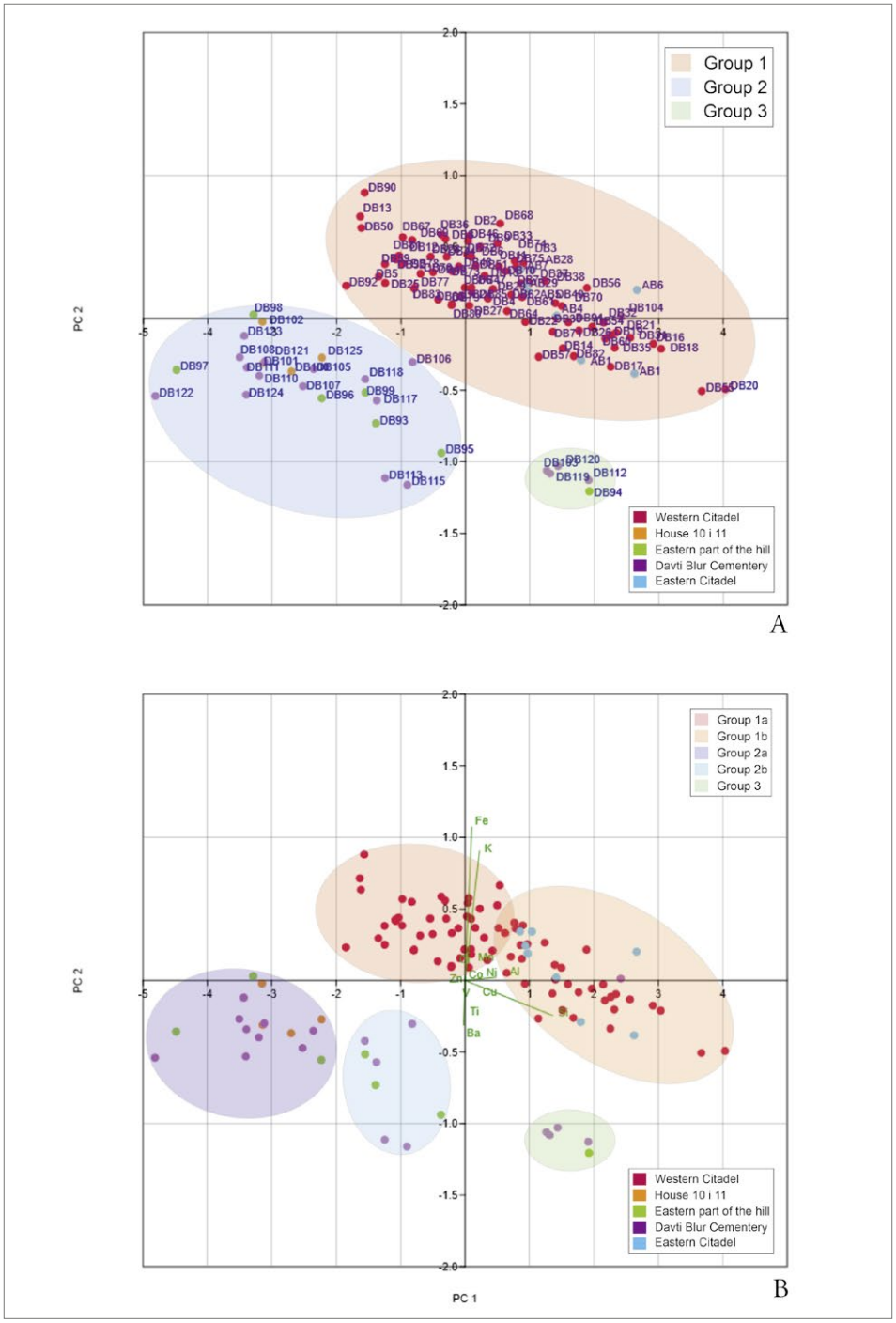

Fig. 6. PCA results: a – Division into geochemical groups; b – Internal subdivision of geochemical groups into subgroups (Processing M. Sobczak)

Fe (avg. 2.16±0.11%), Cu (avg. 30±1 ppm), and Ba (avg. 0.53±0.03%) occur at moderate levels. Notably, this group is characterized by a very low Ni content.

Group G2 was further divided into subgroup G2a, consisting of 16 fragments, and subgroup G2b, consisting of 8 samples [see *Fig. 6:b*]. When comparing the two subsets, subgroup G2a has a higher average Fe content (avg. 2.19±0.10%) but lower concentrations of Al (avg. 3.51±0.20%), Si (avg. 15.00±0.26%), K (avg. 0.85±0.03%), Ti (avg. 0.35±0.01%), Cr (avg. 70±6 ppm), Mn (avg. 428±28 ppm), Co (avg. 14±0 ppm), Ni (avg. 15±9 ppm), Cu (avg. 27±1 ppm), Zn (avg. 84±0 ppm), and Ba (avg. 0.51±0.03%).

Conversely, subgroup G2b has higher average concentrations of Al (avg. 4.19±0.21%), Si (avg. 16.96±0.27%), K (avg. 0.87±0.03%), Ti (avg. 0.36±0.01%), Cr (avg. 72±6 ppm), Mn (avg. 444±29 ppm), Co (avg. 15±0 ppm), Ni (avg. 19±9 ppm), Cu (avg. 34±1 ppm), Zn (avg. 86±1 ppm), and Ba (avg. 0.57±0.03%), but a lower Fe content (avg. 2.09±0.11%).

Group G3 is the smallest but stands out the most. This group consists of four fragments of Common Ware and two of Brown/Black Burnished Ware. The samples were collected from the Davti Blur cemetery (n=5) and the surface of the eastern part of Davti Blur hill (n=1). G3 is characterized by high average

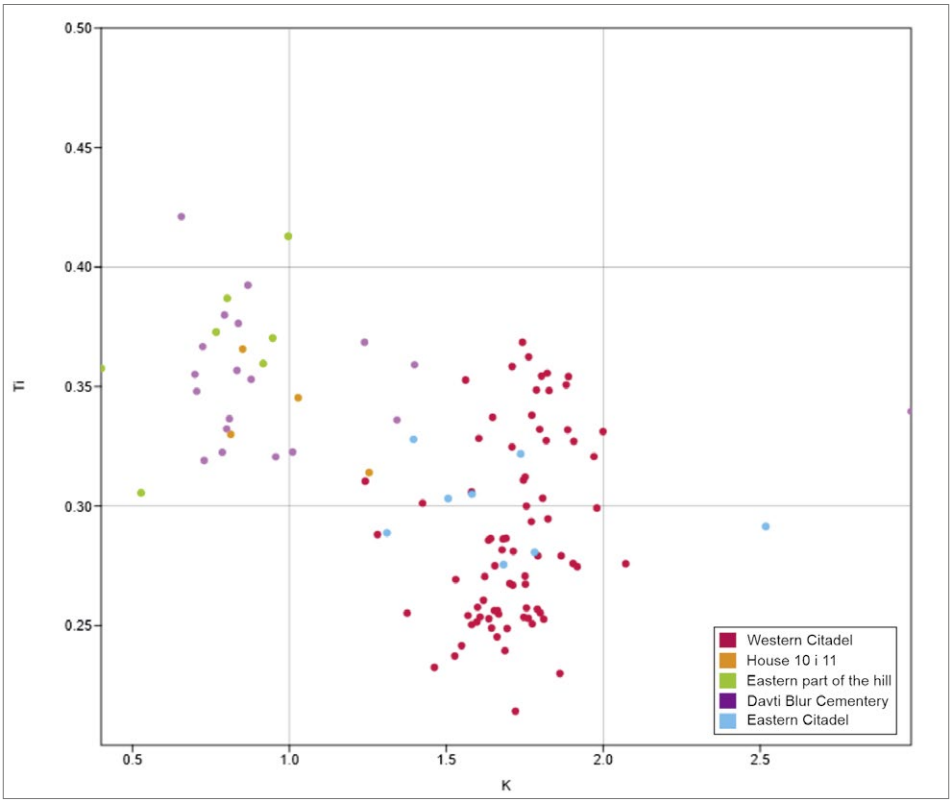

Fig. 7. K-Ti test of the samples (Processing M. Sobczak)

concentrations of Al (avg. 5.06±0.23%), Si (avg. 19.66±0.30%), Ti (avg. 0.36±0.01 %), Cu (avg. 52±2 ppm), and Ba (avg. 0.58±0.03%). However, compared to the other groups, it has the lowest concentrations of Mn (avg. 488±31 ppm) and Fe (avg. 2.05±0.11%). In relation to the other groups, Group G3 has moderate concentrations of K (avg. 1.31±0.03%), Cr (avg. 93±6 ppm), Co (avg. 15±0 ppm), Ni (avg. 25±9 ppm), and Zn (avg. 82±1 ppm). A key observation is that, unlike the other groups, Cu content is significantly higher in this group.

The clustering outlined above is further supported by the K–Ti biplot. Groups 2 and 3 differ significantly from G1 in their potassium (K) content, while their average Ti concentration remains similar [*Fig. 7*].

DISCUSSION

The PCA results and the division into three distinct geochemical groups reveal certain relationships within the pottery assemblage from Argištiḫinili. The most striking of these is the relationship between spatial context and affiliation with a given geochemical group [*Fig. 8*]. This is particularly evident in Group G1, which is clearly distinguished from the other two groups by its elemental composition, including elevated levels of Fe, Zr, and especially K. The latter may be particularly significant in the context of this analysis. Variations in potassium content could be related to the high presence of feldspars in the temper (Mecking, Hohle, and Wolfram 2017; Krueger 2024) or to potassium-rich minerals in the clay matrix, such as montmorillonite, smectite, or illite (Darab 1972). High potassium levels may also result from the addition of wood ash to the clay (Mirti and Davit 2001: 25). Group G1, characterized by high potassium content, consists of vessel fragments with a relatively low proportion of temper, especially in comparison to the low-potassium groups G2 and G3. The latter include cooking vessels that contain a significant amount of temper. Therefore, the elevated potassium levels observed in the samples may not be associated with the use of temper but rather with the mineralogy of the clay itself. The results of the K–Ti test suggest that the ceramics assigned to Group G1 may have been produced from a different type of sediment than those in Groups G2 and G3. In this regard, it is worth noting that preliminary SEM-EDS analyses of sediments from the sand quarry area indicate a low presence of potassium-rich minerals in local clay sources.[2]

Group G1 is composed exclusively of fragments from the palatial complexes located in the western and eastern citadels. The majority are fragments of serving vessels —thin-walled bowls, cups, and jugs of Urartian Red Burnished Ware (URBW)— with a smaller proportion of Common Ware, which

2 Personal communication with Prof. Barbara Woronko, who leads the geological project at the site. The analyzed thin sections derive from sediments collected during the geological survey conducted in October 2024 and are currently held by Prof. Woronko.

was likely also used as tableware. The internal division of Group G1 into two subgroups is particularly interesting, as it partially corresponds to the classification based on vessel forms. Subgroup G1a is composed mainly of bowls (*n*=22), whereas subgroup G1b is dominated by restricted vessels (jugs, jars) (*n*=24). Although the elemental differences between the subgroups are relatively minor, they may indicate slight variations in recipes used for specific URBW vessel forms. This is further supported by the analysis of a similar set of URBW vessels from Metsamor, which also revealed subtle differences in the ceramic fabric at the petrographic level (Iskra et al. 2024). The geochemical similarity observed between URBW sherds from both citadels suggests the use of raw materials with similar characteristics and likely a shared provenance. This implies that the inhabitants and staff of both palatial complexes may have acquired high-quality pottery from the same production locale. However, whether this refers to a single workshop or multiple workshops employing similar raw materials remains unclear. It should also be noted that the sample from the eastern citadel is significantly smaller than that from the western one. Combined with the difficulty in establishing a clear chronological relationship between the two assemblages, these factors prevent any firm conclusions about the scale or dynamics of relations with this production locale.

Groups G2 and G3 consist of various types of pottery generally found in the eastern sector of Davti Blur hill, within the area of the 3rd Residential Quarter, as well as the adjacent cemetery. Similarly to Group G1, the internal division of group G2 into bowls and pots also corresponds to its subdivision into subgroups G2a and G2b. The samples classified into G2 and G3 exhibit a similar fabric, characterized by a large quantity of poorly sorted temper, including andesite-basalts and feldspar grains ranging from 0.5 to 1 mm in

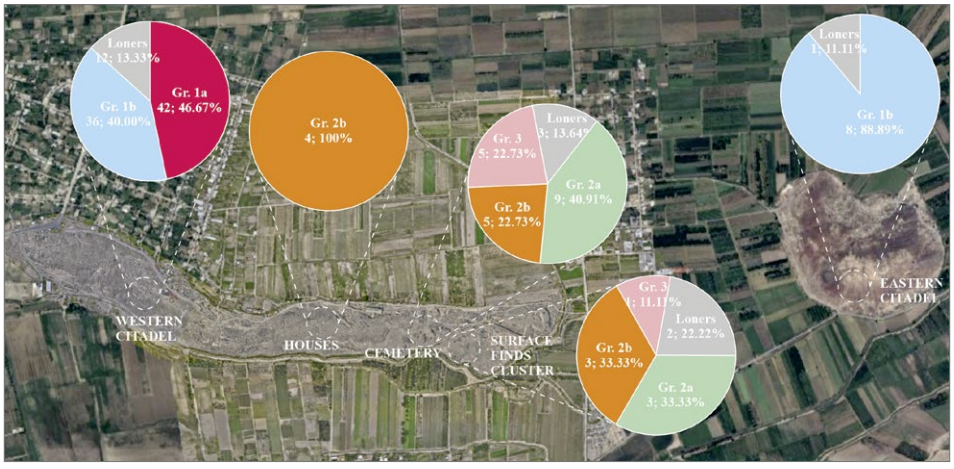

Fig. 8. Spatial distribution of geochemical groups within the site (Processing M. Iskra)

size. This fabric contrasts significantly with the fine-grained texture typical of Urartian Red Burnished Ware (URBW). Particularly noteworthy is the case of Unburnished Red Ware (URW) from Group G2, which, despite sharing features with URBW such as vessel shapes, potter's stamp impressions, and capacity marks, stands out both macroscopically and chemically. The results from Argištiḫinili thus preliminarily confirm earlier observations from Ayanis, which suggested that URW and URBW, despite superficial similarities, are in fact technologically distinct types made from different raw materials (Speakman et al. 2004; Stone 2012). Geochemically, URW is much closer to various types of utilitarian pottery, including examples found in the cemetery. In light of the K-Ti test, this may indicate that URW was locally produced, while URBW was imported.

Another noteworthy aspect observed in groups G2 and G3 is the co-occurrence of pottery dated to both the Late Urartian period (the first half according to different production standards of the 7th century BCE) and the post-Urartian phase (second half of the 7th–6th century BCE). Within Group G2, a particularly close relationship is noted between post-Urartian Red Slip Ware (PURSW) and Urartian Red Ware (URW). Both types are characterized by a thin, light red slip, with differentiation primarily based on typological criteria. In Group G3, connections can be seen between local Brown Burnished Ware (BBW) and Urartian Common Ware (CW). Although their co-occurrence is documented in Late Urartian layers at Erebuni (Fichet de Clairfontaine and Deschamps 2012), BBW gradually replaces CW as the predominant kitchenware type at other sites during the following decades. The geochemical similarity between PURSW and URW, as well as between BBW and CW, may point to a continuation of ceramic production with similar visual or functional traits across the Urartian and post-Urartian transition. This could reflect the use of the same raw material sources, although continuity in certain stages of the chaîne opératoire, as observed in the Metsamor assemblage dated to the 8th–6th centuries BCE (Iskra et al. 2024), cannot be ruled out. However, confirming such continuity requires a more integrated approach, including detailed petrographic analyses.

CONCLUSIONS

While pXRF analysis constitutes only the initial phase of the broader interdisciplinary investigation into the pottery from Argištiḫinili, its preliminary results already yield valuable insights. The method has proven effective in analyzing various pottery types, particularly when a destructive approach is employed. The data produced by pXRF are comparable with the results of geochemical studies conducted at other Urartian sites, such as Ayanis and Metsamor.

The observed correlation between geochemical groups and spatial context points to a structured ceramic distribu-

tion network within Argištiḫinili. Although no significant differentiation was observed in ceramic circulation between the two palatial complexes at Davti Blur and Armavir Blur, potential differences in the provenance of ceramic materials between the western citadel and the lower town were identified.

It should be noted, however, that the pilot study was subject to sample selection biases, particularly with respect to museum-held materials from the western citadel. Consequently, the results should be viewed as promising yet still preliminary, offering an incomplete picture of ceramic distribution patterns at Argištiḫinili.

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