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Absolute (^{14}C AMS) and Relative Chronologies of Barveh Tepe in the Upper Lesser Zab Basin and a Study of Painted Bronze Age Ceramics (Based on the Second Season Excavation)

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Excavations in Tepe Barveh were conducted with the aim to shed further light on the period of painted Bronze Age wares and to refine the existing chronology for the Lesser Zab Basin in the first half of the 3rd millennium BC. Thanks to its location in the upper valley of the Lesser Zab, the Barveh region served as a natural pathway for interaction between the Zagros foothills zones with the Rania and Peshdar Plain in Sulaimaniyah province in Iraqi Kurdistan, and the southern basin of Lake Urmia. By its overlapping Bronze Age sequence, the site offers a strong potential to fill the existing gap of information for the Early Bronze Age occupation in northwestern Iran. A foremost purpose of this paper is to situate Barveh within northwestern Iran, and to explore intra- and inter-regional interactions. The stratified occurrence of Painted Orange Ware (POW) is helpful to establish a sequence for the region and to fill the existing lacuna. EBA sites in northwestern Iran beyond the Kura Araxes zone remain understudied, and few sites offer deposits of considerable depth. The Early Bronze Age is generally associated with the burnished black pottery, while the orange pottery, a coeval and equally important cultural hallmark, has attracted less attention and remains a little known tradition. Hence, in light of the material culture excavated at Barveh, this paper seeks to gain an insight into the ways in which Tepe Barveh interacted with other regions dominated by the orange pottery culture. The ca. 8-meter deep EBA deposit at Barveh built up over c. 300 years and represents this period of POW in an uninterrupted sequence, attesting to cultural continuity over an extended period of time. The culture shows parallels with EBA sites in the southern Urmia Lake Basin and in the Rania and Peshdar plains in Iraqi Kurdistan.

Keywords:

Northwestern Iran, lesser Zab Basin, Early Bronze Age, absolute chronology (^{14}C AMS), Tepe Barveh.

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1. Introduction

As a natural pathway from the Zagros foothills up to the highlands, the valley of the Lesser Zab witnessed alternating forms of contacts and conflicts, as is evidenced by the varying patterns in the distribution of recorded sites. Unlike what is characteristic of Mesopotamia and southern Iran in the fourth and third millennium BC, this region has not yet revealed any traces of extended settlement hierarchies and social complexities. This situation may well result from geographic constraints: in Luristan, Bronze Age settlements are generally of small size and this has been related to the regional geography (Wright 1975) . A similar pattern may also apply to the Lesser Zab Basin. Previous studies have illustrated that cultures in northwest Iran were related to South Caucasia and the valleys of the Araxes and Kura rivers to the north, to the Central Zagros to the south, and westwards to eastern Anatolia and north Mesopotamia via mountain passes (Binandeh 2008) .Recent archaeological data from the neighboring regions has corroborated this observation (Eidem 2015). Therefore, systematic investigation in the region has the potential to shed light on broad cultural interactions and evolutions in the northern Zagros and its neighboring regions. The data from Barveh are thus of considerable importance and can improve our understanding of regional and inter-regional interactions.

An important Iranian region for the Bronze Age archaeology is the northwest, where investigations have specified signs of cultural transformations arising out of and in the course of population movements. The Bronze Age stands as a pivotal period in northwest Iran thanks to tremendously important cultural developments associated with it (Palumbi 2017; Piller 2012; Rothman 2015; Sagona 1984). The genesis and expansion of the Kura-Araxes culture is a major transformation in the cultural horizons of South Caucasia, with strong impacts on vast and various geographic extents including East Anatolia, and Northwest and West Iran (Sharifi 2020). Yet, concomitant with the Kura-Araxes, another culture flourished in the southern Lake Urmia Basin. Termed as Hasan Ali and Hasanlu VII, this second culture seems to have shared affinities to northern Mesopotamia. As a particularly important area in the southern Lake Urmia region, the Zab River Basin has experienced several archaeological excavations (Sharifi 2021;2022). Its proximity to South Caucasia, East Anatolia, and North Mesopotamia has imparted an obvious place to it in regional cultural interactions, enabling it to serve as a hub and crossroads for the transfer of both cultural attributes and populations. The two seasons of excavations at Tepe Barveh brought to light deposits from the Early Bronze Age in the Zab Basin of the southern Lake Urmia region.

Scholarship on the Bronze Age of Northwest Iran is indispensable in that the period exhibits distinct cultural traits. Splitting this vast region into smaller zones will facilitate distinguishing the existing cultural traditions. With respect to history of scholarship, the Lake Urmia Basin was among the points of particular interest both to foreign and domestic archaeologists in the early days of archaeology in Iran (Danti 2017; Voigt and Dyson 1992; Dyson and Young 1960), a trend still underway today. Too limited Bronze Age exposures have so far been excavated in the Zab Basin, e.g. at Silveh (Ebrahimi 2021), and this state of affairs makes pertinent excavations in the region critically important.

2. Geographic Location

The Lesser Zab Basin hosts the modern cities of Piranshahr and a small part of Sardasht. The river rises from the northwest highlands of Piranshahr and, after receiving

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many branches, crosses the highlands of Alan in Iran to enter Iraq. Descending from an elevation of c. 3000 meters asl, the upper course of the river is determined by the alignment of the major mountain chains that make up the Zagros (**fig 1**). Thus, the river flows through valleys that are predominantly aligned along a northwest–southeast axis, parallel to the major range of the Zagros, only to change its direction abruptly where it cuts through these chains in narrow gorges. The archaeological site of Barveh is located above these steep gorges in the wider river valley in Sardasht, at an altitude of ca. 1,056 m. Comprising a total area of about 2 hectares, the mound lies close to the Lower Lesser Zab River.

3.Objectives and Questions

The foremost goal of the paper is the relative and absolute dating of Barveh in light of radiocarbon determinations so as to ascertain the chronology of the Little Zab basin. The paper seeks to answer the following questions: What was the cultural pattern of the third millennium BC societies in the Little Zab Basin? And, how one can reconstruct the advent of the Early Bronze Age horizon and the related settlements at Tepe Barveh? Our results indicate that the site was occupied by groups associated with the painted orange pottery tradition, and that inhabitants of the south Lake Urmia Basin lived within the territory dominated by this pottery tradition. A major hypothesis of this research is that the residents of Tepe Barveh were most strongly influenced by the cultures of the Rania and Peshdar plains (Eidem 2015) as well as the south Lake Urmia region and northern Mesopotamia.

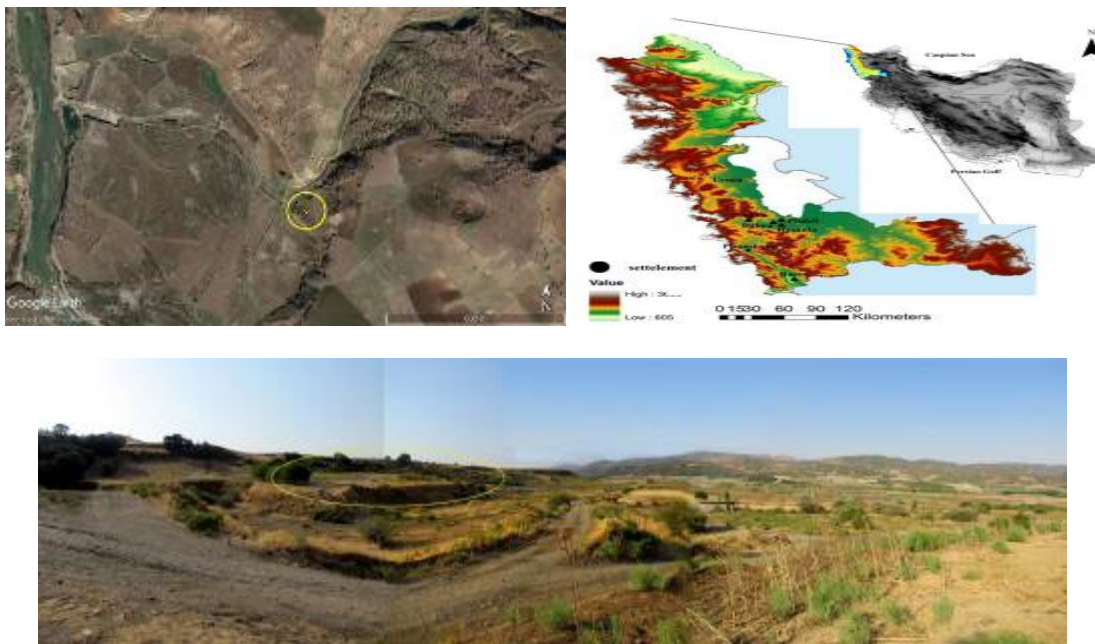


Fig 1: Satellite image and Location of Barveh Tepe in northwest Iran.

4. Background of Scholarship

Various kinds of painted ceramics have previously been mentioned from sites located south of Lake Urmia, but these remain to be further differentiated. The two main groups

are known as Hasan Ali Ware, which is polychrome, and as Painted Orange Ware (POW), which has a monochrome dark paint applied rather carelessly to a fabric of orange color. Painted Orange Ware was first observed by the Hasanlu Expedition in phase Hasanlu VII (Dyson 1957), whereas polychrome wares had first been collected together with Chalcolithic sherds by Aurel Stein in Gird-i Hasan Ali in the Chadar Valley (Stein 1940, 377-381 with fig 24 for site map and pl. XXIII). As summarized by Stephan Kroll when introducing the name "Hasan Ali Ware" (Kroll 2004), Donald McCown recognized the Hasan Ali Ware sherds as Bronze Age materials and compared these with Ninevite 5 and Billa materials (Mc Cown 1942).

A tentative chronological distinction between Hasan Ali Ware and POW became possible on the basis of observations from Hasanlu phase VII. POW was first recorded in one operation on the low mound and in the so-called well sounding dug through the high mound (Danti 2004). A further distinction of three subphases VII C-A became possible in Hasanlu on the basis of the U22 sounding. In this, polychrome ware only occurred in the lowermost level VIIC, and POW in VIIB-A, together with other typical EBA materials (Kroll 2004; Danti 2004; Dyson 1967).

The association of POW with other known ceramic groups is also indicated from the Hasanlu U22 results. In Hasanlu VIIB and Geoy Tape K, POW occurs together with some late Kura Araxes sherds, and POW is attested in Haftavan VIC after a substantial Kura Araxes occupation (Kroll 2017; Burney 1976; Edwards 1983), (Kroll 2017: 206 with reference to Burney 1976, 137; published in Edwards 1983, figs. 12-14).

The geographical extension of painted Bronze Age wares is largely the zone west, south, and southeast of Lake Urmia. On the basis of his own surveys together with Wolfram Kleiss, Stephan Kroll noted a distribution from the Salmas Plain to the Simineh Rud, with very little extension on the eastern shore. More painted materials were collected by the Swiny survey in the northern highlands (Swiny 1975). POW and one isolated fragment of polychrome pottery was documented in a systematic site surface collection at Gol Tape a large site located at the western foot of Mount Sahand (Tala'i 1984).

The state of research here summarized has previously been stated in the ARCANE Interregional volume I (Helwing 2014) in which the painted wares of the Urmia region were assigned to phases 2-3 of the ARCANE sequence. With the new excavations like Tepe Barveh and Tepe Silveh (Ebrahimi 2021) and related radiocarbon dating, we are now in a better position to review the evidence.

5. Tepe Barveh

The first season of excavations at Tepe Barveh was carried out in 2014 under the direction of the authors with the aim of understanding the Hasanlu VII culture. Trench T.C.10 was opened and taken down to a depth of 8 m, at which virgin soil was reached. To answer the arisen questions, in the second season Trench T.B, measuring 2 x 2 m, was laid out 1.5 m away from the previous trench. It intended to trace a wall that was partially exposed in Trench T.C.10 of the first season. At the last days of the first season, in the westernmost point of the trench where the site had been cut, were detected remains from a packed clay structure, which appeared to have been extended towards the southern side of the trench. Therefore, the second reason for opening a trench in this part was to locate the potential southward extension of this wall.

Within Trench T.B, 11 loci and 2 features were recorded. The loci were of cultural deposits type, and features consisted of a hearth and a lengthwise packed clay wall, a

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segment of which had been encountered in the first season. Loci 201 to 211 had a silty-clay, dense, and consistent texture that lacked stickiness, and consisted of clay, and fine and coarse sand (fig 2-3). Among the recorded strata, the two loci 207 and 208 were the richest in cultural material, and yielded highly distinctive finds.

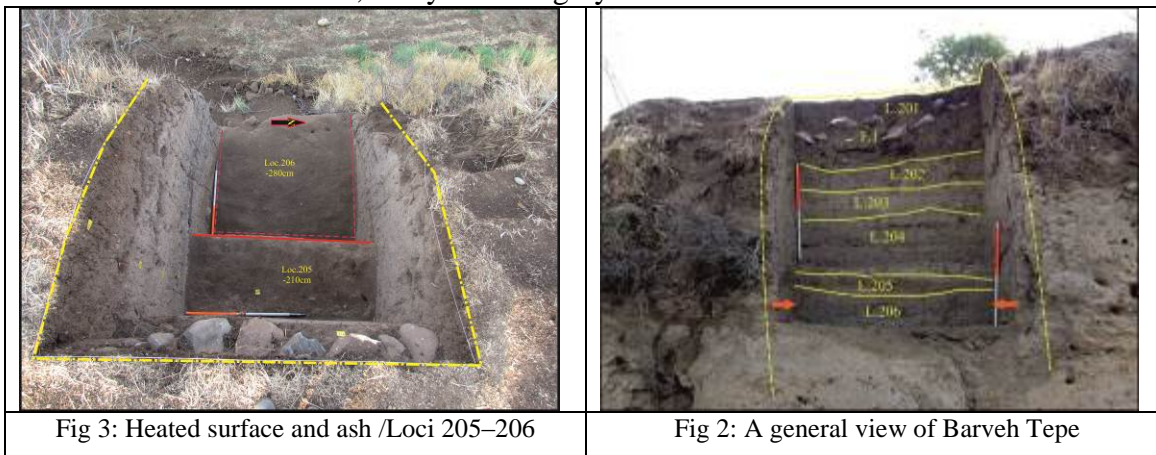


Fig 3: Heated surface and ash /Loci 205–206

Fig 2: A general view of Barveh Tepe

5.1. Find Assemblage

The Barveh excavations yielded assemblages of ceramics and architecture remains, from T.B stratified deposits.

The Painted EBA Ceramics from Barveh and their Context Some of the whole collection was made up of Painted Orange Ware (POW), the remainder was divided between Buff Ware and Grey Ware. The Orange Ware showed up in both a monochrome version, decorated with patterns in black, or with polychrome paint. Made by hand in a medium or fine paste containing mineral temper, the POW material shows a smoothed or even polished surface. Accounting for the most part of the pottery assemblages from Barveh, these varieties are simply distinguished by their monochrome and polychrome designs. The bichrome examples are of Black and on Orange Ware. Painted bichrome wares have black and red paint applied to an orange color ground. The uniquely geometric motifs are highly varied, appearing in six types: as parallel horizontal and vertical bands, crisscrosses, and zigzags; annular bands; concentric circles and spirals; bands of densely packed lozenges and squares; bands of hatched triangles (lozenges); and ladder-like motifs (Sharifi 2020).

5.2. Hearth

A circular hearth was found cut into Locus 205, extending down from a depth of 2.1 m to 2.2 m (fig 4). Measuring 35 cm in diameter, its walls were completely burned and turned red from constant exposure to heat. A layer of soft ash covered its bottom. Judging from the fact that it was cut into Locus 205, the surface of this layer presumably served as an occupation surface. In the course of the first season, evidence of strata having been turned red as a result of heat was observed in the trench's section.



Fig 4: Feature 3, circular oven, locus 205

5.3. Architectural structure

The second season of fieldwork cleared remains from a wall of packed clay, a segment of which was discovered in the excavations of the first season. The structure consisted of a solid, consistent and compacted pise tempered with fine straw. As the wall was partially exposed by the aforementioned cut, the precipitations had severely damaged its structure, causing several part of it to collapse. The wall was erected directly on virgin soil and oriented north-south. Running a length of about 2 m, it was of a maximal diameter of about 3.5 m. Including the 2 m extent recovered in the first season's trench and given the distance of about 1.5 m that separated the two trenches, the total length of the wall is estimated to be about 5.5 m in the Early Bronze Age contexts (fig 5-6-7).



Fig 5: view of the chineh wall

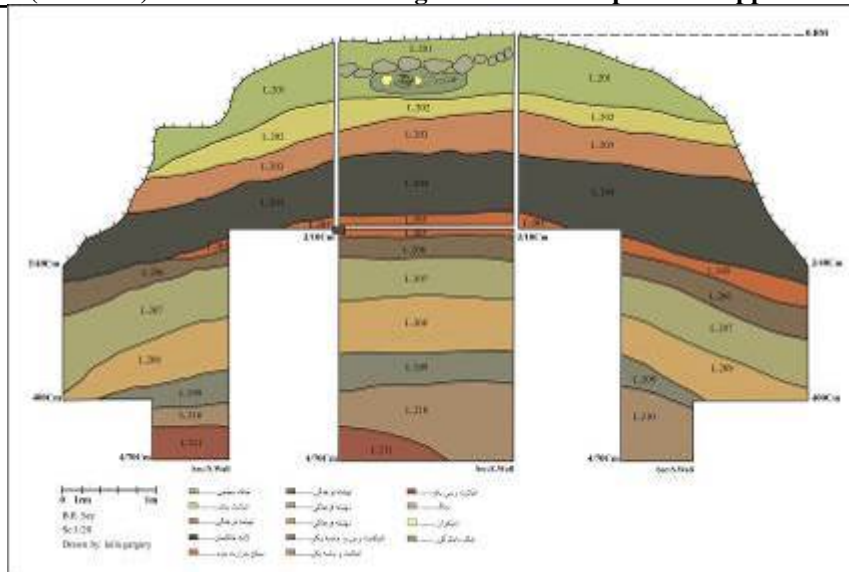


Fig 6: Final plan at the end of the excavation.

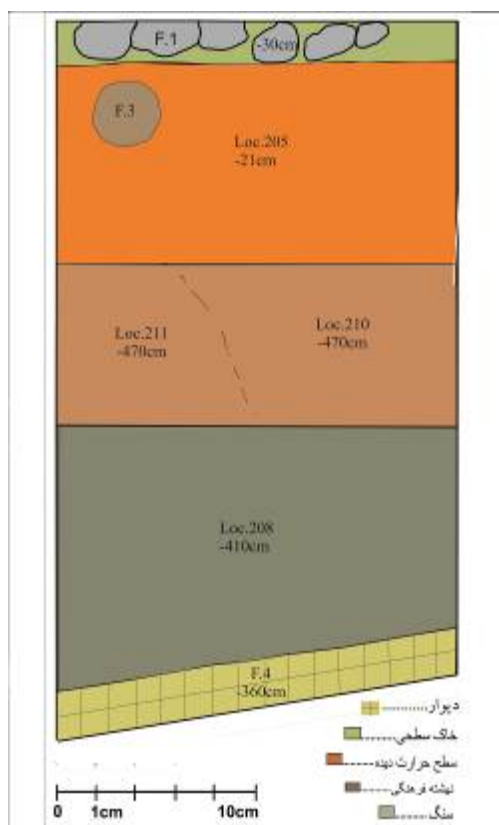


Fig 7: Sections of Trench

6. Attributes of Barveh’s Early Bronze Age (Hasanlu VII) Pottery Tradition

Exhibiting an intriguing diversity in motifs and forms, the assemblages from Barveh have the potential to shed light on interactions of the local community with the Hasanlu VII and Hasan Ali populations. The earliest strata at Barveh are characterized by the

monochrome orange pottery, while from layer 204 the painted orange pottery emerges in abundance, and continues up to the latest strata. From chronological perspective, the painted pottery of Barveh falls more broadly into the Early Bronze Age, between Hasanlu VII and Sulaimaniyah.

Early Bronze Age scholarship in northwest Iran tends to be biased in favor of the Kura-Araxes culture and against the orange ware tradition, as the latter tradition's sites are less known. Thus, study of the orange pottery is vital. The second season of excavation at Barveh produced a total of 480 pottery pieces. These split into the two classes of common and fine in quality. In terms of the exterior color, light orange sherds are the most abundant in the recovered assemblage. Recorded surface colors include orange, light brown, and gray. The pieces are generally wheel-made, though a few handmade instances occur. The orange pottery is coated in a thin slip and is sufficiently fired. In terms of shape, several categories are present: closed jars, closed bowls, open jars, closed vessels with a globular body, and base fragments. The only non-pottery small finds from Barveh are four flint beads that were recovered from Locus 208.

6.1. Painted Orange Ware

The pottery collection from Barveh exclusively belongs to the EBA culture (fig 9-10). The pieces are invariably fine, adequately fired, mineral-tempered, and in an orange paste. As regards decoration, they split into two plain and painted categories.

6.2. Plain orange ware

In terms of quality, the related pieces range from fine to common. In fine examples, body is moderately polished and quite consistent. Small bowls are the most common form.

6.3. Painted orange ware

It is exactly identical to the plain variety in manufacturing technique and quality, only distinguished from it by the painted decorations on the body. Both monochrome and polychrome decorations are attestable. On the polychrome pieces, black and red-brown paints were used. The patterns are all of geometric type, several categories of which are noticeable: parallel horizontal and vertical lines, concentric circles, curved lines, bands of lozenges or squares filled with crosshatching lines, resembling a checkerboard (fig 11-12-13).

Some general observations can be made about the relative chronology of the Barveh pottery: The Painted Orange pottery reported from Swiny's surveys of Bukan and Mahabad (Swiny 1975) shares strong affinities to the material from Barveh. Comparable motifs reportedly occur at Kani Shaie in Sulaymaniyah (Tomé 2016). Barveh's concentric circles (Nos. 56-70 in Fig. 10) parallel those on 12-13 of Swiny's Fig. 1.2, nos. 12-13. The flame-like motifs in Fig. 15, no. 72 resemble Swiny's Fig. 1.2, nos. 9-17 (Swiny 1975) and are paralleled at Hasan Ali No. 11 and 12 (Kroll 2004, nos. 11-12). Also, the bases at Barveh (Fig. 14, nos. 48-51) are reminiscent of the tradition of Tepe Hassan Ali (Kroll 2004, no. 19).

In general, the painted orange pottery of the southern Lake Urmia basin of Hasanlu Periods VIIA/VIIC represents a local tradition that occurs exclusively in the Ushno-Solduz valley and the southeastern Lake Urmia region. The most recent publications divide Hasanlu VII into the three sub-periods of VIIA, VIIB and VIIC. The discovery of short-necked, out-turned rim vessels bearing decorative lozenges and crosshatchings points to the presence of a Hasanlu VIIA deposit. The fine bowls marked with vertical and circular lines, and polychrome painted vessels are the most important comparison

141 Absolute (^{14}C AMS) and Relative Chronologies of Barveh Tepe in the Upper Lesser Zab Basin linking Barveh to Hasanlu Period VIIa. Hasanlu VIIC corresponds to the beginning of the 3rd millennium BC, and the related material is attested at the satellite mounds around Tepe Hasanlu. The pottery from this period shows inspirations from the Early Transcaucasian culture. The subsequent two sub-periods, VIIB and VIIa, are completely at odds with Period VIIC in pottery typology, in that they are characterized by Painted Orange Ware (Danti 2016). Danti distinguishes between five phases when classifying the Hasanlu VIIC pottery (Danti et al., 2004).

Drawing on similarities in technology and painted motifs, one may surmise that strong affinities occur between Barveh's material cultural and Hasanlu VIIA/B. The painted concentric circles and zigzag motifs, as the most popular patterns at Barveh, attest to a stylistic connection between Barveh's orange pottery and Hasan Ali Tepe (Helwing & Neumann 2014), Hasanlu, the Rania plain, and Kani Shai. Yet, the assemblage from Barveh contains no evidence of bird motifs, which Dyson conceived of as diagnostic of Period VIIB.



Fig 8: Decorative beads

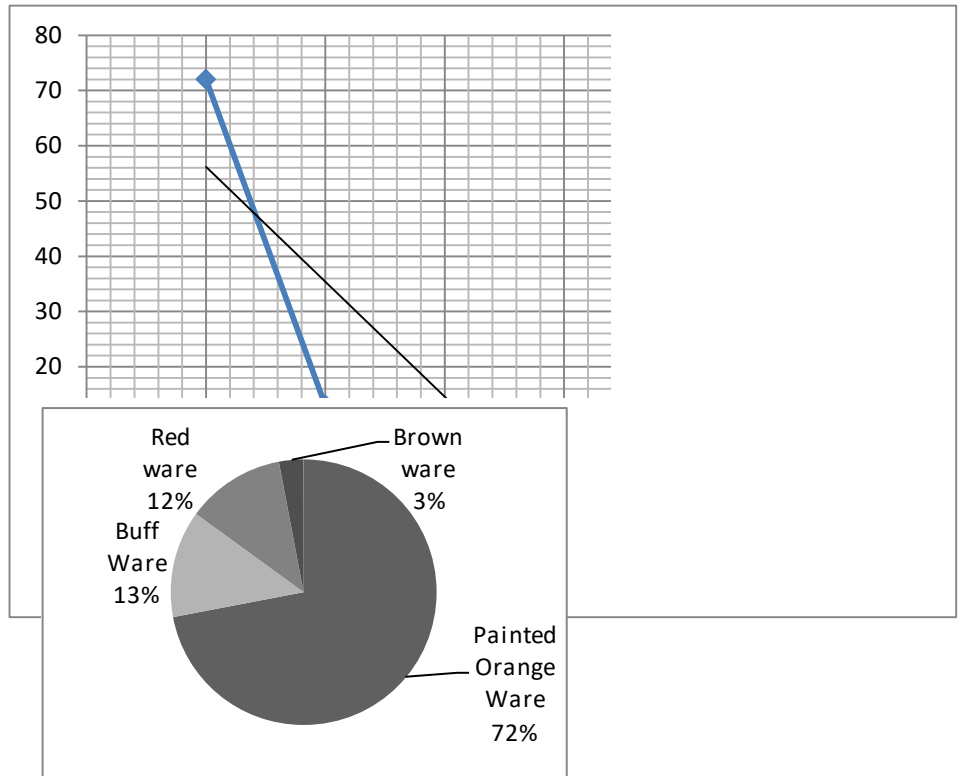
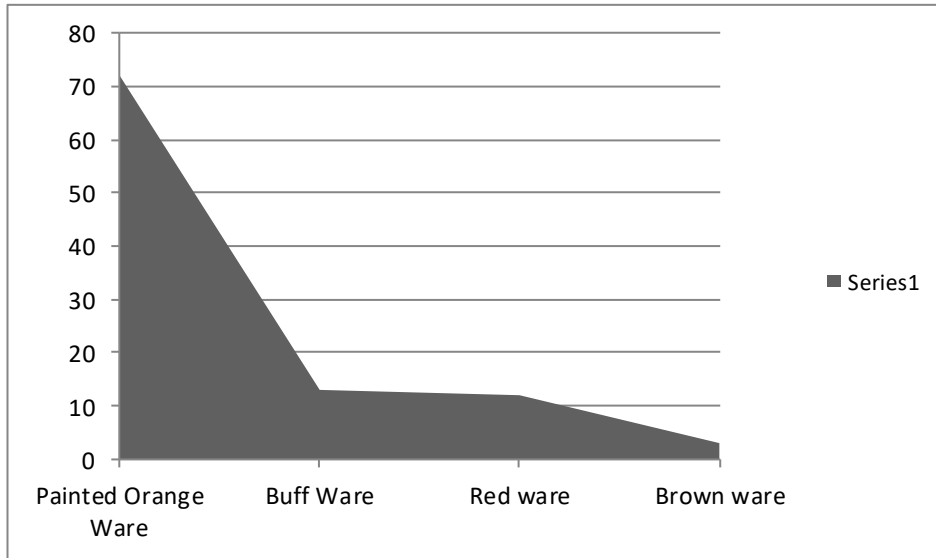


Diagram 1: Distribution of the sherds based on slip color (Authors)



Fig 9: Barveh Tepe: Early Bronze Age ceramics, Loc:206

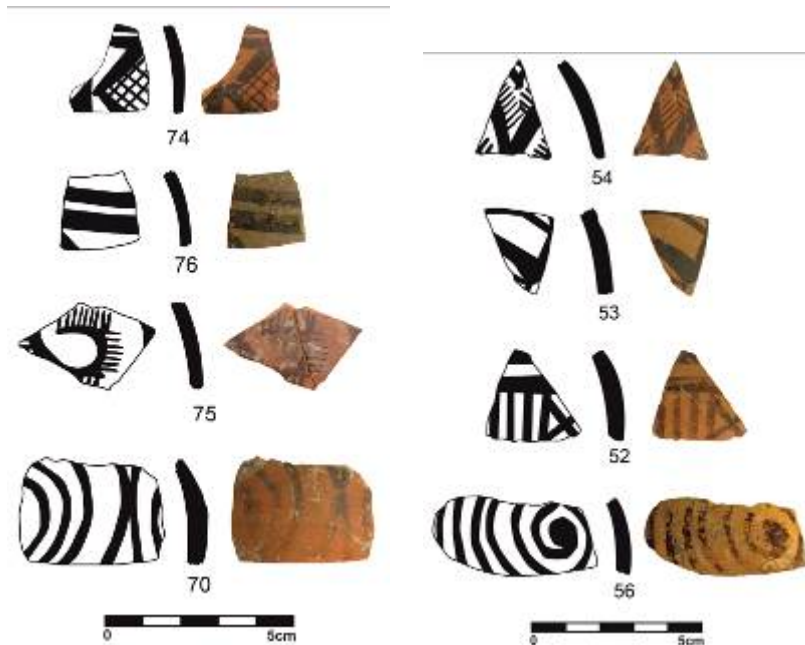


Fig 10: Barveh Tepe: Early Bronze Age ceramics, Loc:207

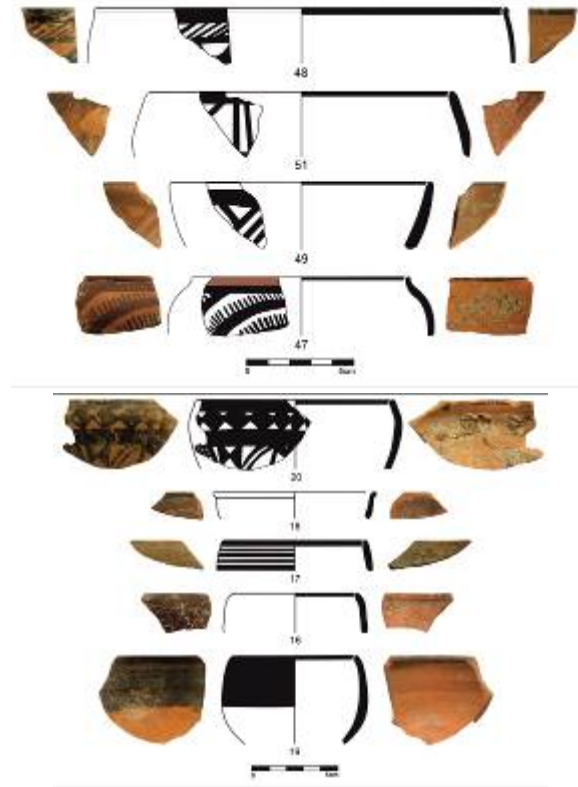


Fig 11:Barveh Tepe: Early Bronze Age ceramics, Loc:207. 208

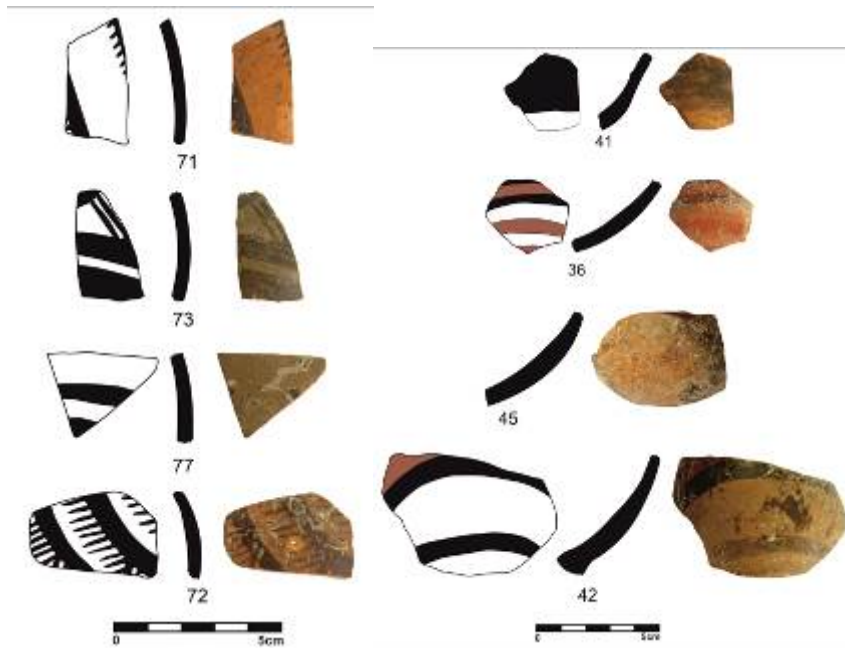


Fig 12:Barveh Tepe: Early Bronze Age ceramics, Loc:208

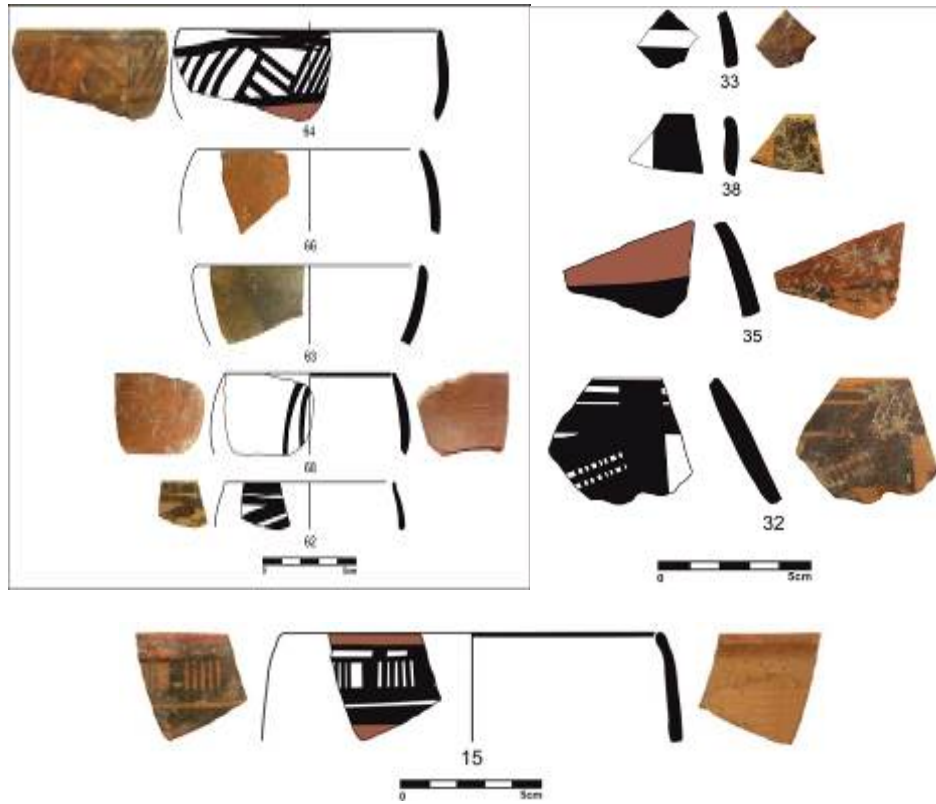


Fig 13: Barveh Tepe: Early Bronze Age ceramics, Loc:208

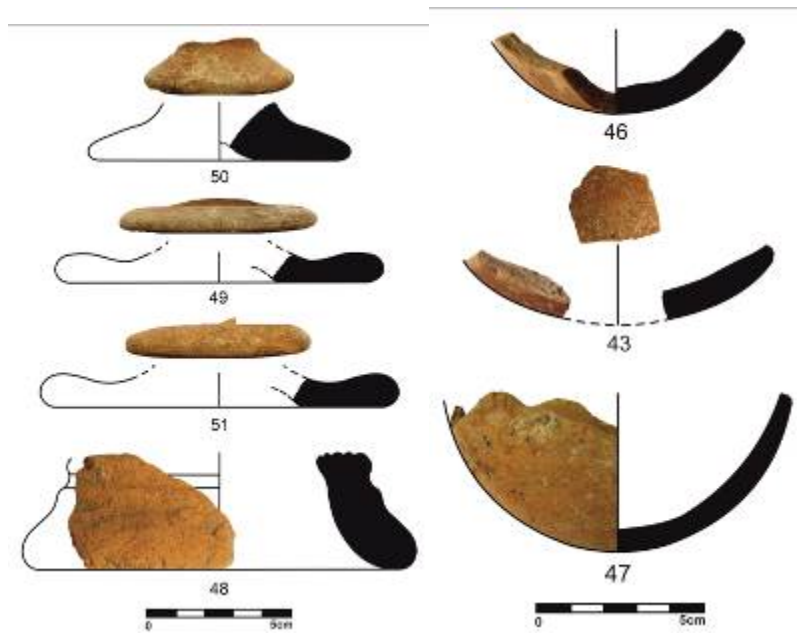


Fig 14: Barveh Tepe: Early Bronze Age ceramics

7. Faunal Remains

The faunal assemblage is dominated by goats and sheep (Caprinae), which is followed in frequency by domestic cattle. From morphological characteristics (Boessneck 1963; Grigson 1974) and comparison with reference collections, Barveh's cows belong to the subgenus European-Asian cattle (*Bos taurus*). A single piece of pig bone at Barveh represents a wild variety. Also attested in the assemblage is a piece of antler. As with boar, deer prefers humid and forested landscapes. Thus, the representation of deer and boar in the assemblage, albeit each by a single instance, suggest that a wet environment characterized the region in the Early Bronze Age. Quite remarkable is a piece of brown bear tibia, recovered from layer 201. All the five pieces of bird bones from Barveh, judging from their size and morphological characteristics, belong to the pelican family that used to frequent the region as a migration destination (fig 15).

As regards subsistence patterns, the presence of domesticated cattle and indications of sheep breeding evince an advanced pastoral practice in this period. Acquaintance with the behavioral and biological characteristics of these species enabled the local residents to arrange for the required conditions for their raising. This body of evidence somehow suggest that in the Early Bronze Age we are dealing with a sedentary society characterized by a subsistence system relying on animal husbandry at Barveh, where goats and sheep and, to a lesser extent, cattle provided the main sources for nutrition of the local population in the third millennium BC (fig 16).



Fig 15a: A piece of deer antler, pieces of dog bones 15b: Bones of The lower end of the brown bear tibia



8. Results of Absolute Chronology (C14 AMS) dating Of Barveh

Several bone samples from the lower and middle layers of the section were selected for absolute dating and submitted for AMS ¹⁴C-dating to the Curt Engelhorn Center for Archaeometry in Heidelberg, within the framework of the research project “ChronIran”, funded by a grant from the Fritz Thyssen Foundation to Barbara Helwing.

All archaeological interpretation requires a robust ordering of material assemblages and observations in time and space, and the reliable dating of archaeological layers and contexts is a prerequisite for successful work. In the beginning, dating was based on observing relative orders of stratigraphic layers or typological series. The advent of chronometric dating methods since the mid 20th century significantly altered the deeper understanding of dynamics and processes in the evolution of human societies. The most important of these procedures applied since the 1950s is radiocarbon dating, a method based on counting the decay rates of radioactive ¹⁴C atoms in samples of organic matter and calculating these according to known half-life times to reconstruct a potential starting moment for the decay process. In the early days of radiocarbon dating, the method required large samples and error margins were wide, therefore radiocarbon dating was not immediately accepted. But accuracy improved when scholars recognized the necessity to calibrate ¹⁴C data against data from another independent method, dendrochronology; with this methodological advance, and with the improvement of lab facilities, ¹⁴C dating became the most widely used method for the dating of archaeological materials. The next decisive advance for accuracy and applicability was the introduction of Accelerator Mass Spectrometry (AMS) since the 1970s. Instead of counting decay rates over time as in conventional radiocarbon dating, AMS dating allows for the direct calculation of the ¹²C/¹⁴C ratio in a sample. This method requires much smaller samples and is much more accurate. Therefore, AMS dating has replaced conventional radiocarbon dating as the standard procedure since the 1980s. In combination with Bayesian modeling, state-of-the-art AMS dating can now provide highly detailed datum points for archaeological stratigraphies.

Some samples of Barveh had to be excluded due to low collagen content, leaving three samples for dating. These three samples were tested by accelerator spectroscopy (AMS) and readings have previously been published [4]. The three samples provided here as individual calibrated readings cover a 2 sigma range from 2879 to 2578 BC (OxCal 4.4 with IntCal 20). These dates bracket the Barveh sequence for Painted Orange Ware in the first half of the 3rd millennium BC. This is consistent with data from other regions of northwestern Iran, in particular with Tapeh Silveh (Ebrahimi, 2021).

Table 1: Calibrated radiocarbon dates(C14) for Barveh

Lab-No MAMS	Sample name	Context	CAL 1-sigma	CAL 2-sigma	Material	Excavator's dating, pottery tradition
29969	Barveh-2	Loc. 205, D: -3.50m, T.C.10	2886- 2763 cal. BC	2894 -2699 cal BC	Animal bone	EBA Painted Orange Ware
29970	Barveh-5	Loc. 206, D: -4m, T.C.10	2839- 2584 cal. BC	2857-2578 cal BC	Animal bone	EBA Painted Orange Ware
29971	Barveh-11	Loc. 209, D: -6.09m	2879- 2710 cal. BC	2887-2680 cal BC	Animal bone	EBA Painted Orange Ware

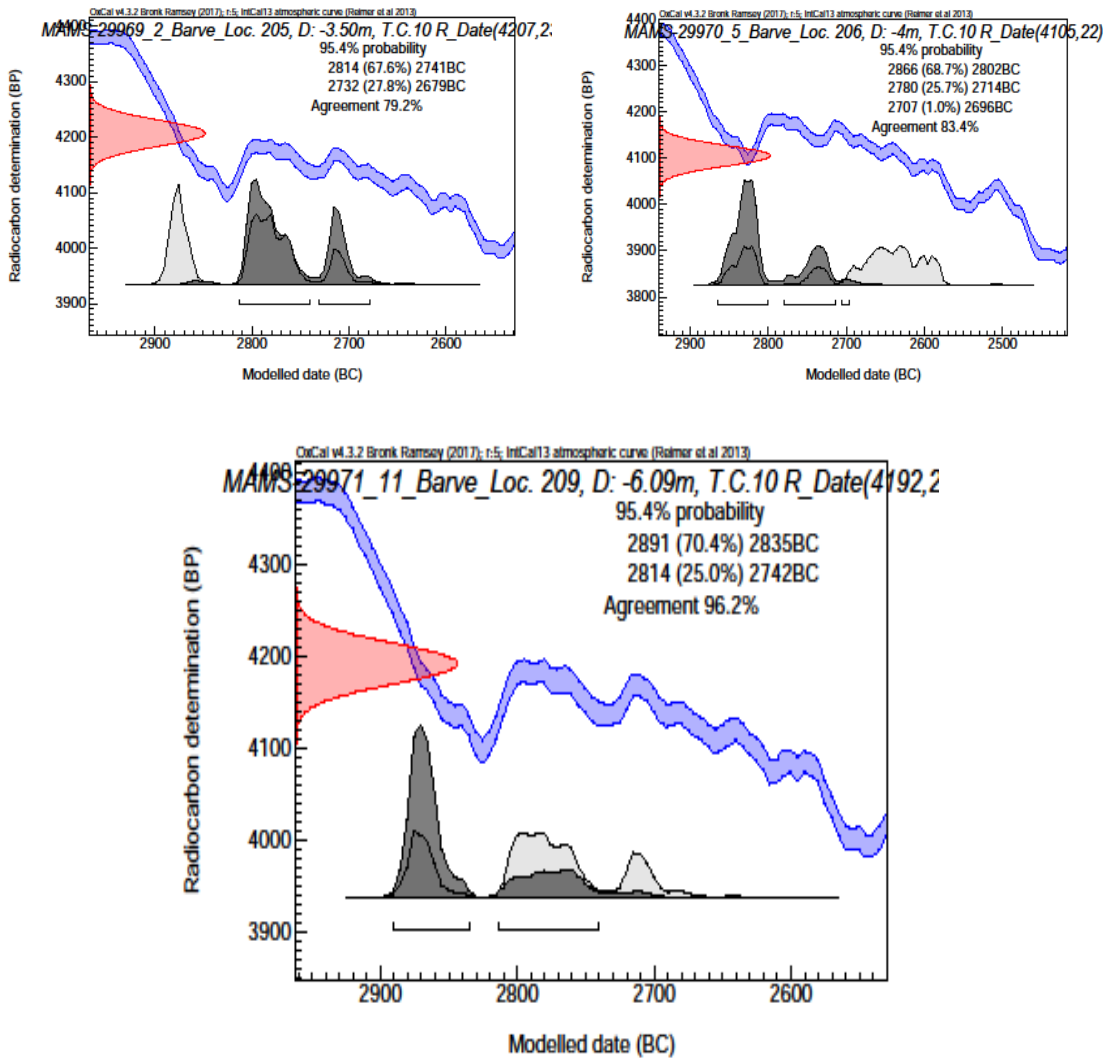


Diagram 2. Individual ¹⁴C dates from Tappeh Barveh, calibrated with OxCal 4.3.2.

Table 2: Absolute Chronology of Early Bronze Age sites

Tepe	Absolute Chronology	references
Has. VIIA-B, Has. Tepe, op. V, Str. 21	2877-2039	Danti et al. 2004: 587
Has. VIIA-B, Has. Tepe, op. VI, Su. 6	2883-2039	
Has. VII C	2829, 2822	
Silveh	2780/2620	Ebrahimi et al. 2021:67
Has. VIIA-B	2889-2142 3018-2237	Danti et al. 2004: 587
Barveh	2894–2699 cal 2857–2578 cal 2887-2680 cal	Sharifi 2020

9. Conclusion

Given its location in the southwest quarter of West Azerbaijan province, Tepe Barveh is of particular importance because of its impending contribution to the understanding of regional and extra-regional interactions, e.g. with northern Mesopotamia. The pottery assemblage from the site stands as a very important study material given our extremely limited knowledge of the orange pottery tradition, which is thus far known only from a handful of sites in the entire northwestern Iran, including Hasanlu, Hasan Ali, and Silveh. Therefore, Barveh can play an important role in defining the cultural tradition of Hasanlu VII. Barveh produced the first body of new excavated evidence on the so-called Hasanlu VII culture, several decades after its initial identification at Tepe Hasanlu.

Excavations of Barveh revealed a deposit of c. 8 m cultural sequence and confirm the importance of this EBA site in a region of northwestern Iran where only few EBA sites are known altogether. The impressive depth of the EBA deposits most probably evinces an uninterrupted occupation for an extended period and is vital to the study of internal regional developments in the EBA. Barveh yielded a stratified sequence with monochrome and polychrome pottery, representing the so far scarcely known and published ware groups called Hasan Ali Ware and Painted Orange Ware, and thus supplements the limited dataset at hand for Hasanlu VII. The origin of these wares. The existing evidence from Hasan Ali, Hasanlu, the Zab River basin, and Kani Shaie points to a possible distribution of POW or Hasan Ali Ware from Lake Urmia to Iraqi Kurdistan. Barveh reveals links between northwest Iran and Iraqi Kurdistan in that the forms in orange fabric typical of northwest Iran in the EBA were produced by the potters at Kani Shaie in buff or cream paste. Barveh thus fills a gap between recent excavations in Iraqi Kurdistan and the Hasanlu region in Iran.

An important point about Tepe Barveh is the absence of Kura-Araxes related materials. It remains to be tested if this represents a real boundary of extension for Kura Araxes material that may not have entered the Lesser Zab basin. It can however not be excluded at the current state of research that Kura Araxes materials have perhaps simply gone unnoticed so far and therefore remain unexcavated, so that future research might still identify it in the region.

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چکیده

حوضه رودخانه زاب یکی از مناطق مهم در ادبیات باستان‌شناسی شمال غرب است که کمتر مورد پژوهش قرار گرفته است. تپه بروه از محوطه‌های مهم استقرار منطقه است که مورد کاوش باستان‌شناسی قرار گرفت. پژوهش‌های این ناحیه نشان می‌دهد که این منطقه از منظر فرهنگی در هزاره سوم پ.م در حوضه نفوذ سنت سفال نارنجی رنگ قرار می‌گیرد. این مقاله به بررسی عصر مفرغ قدیم در حوضه رودخانه زاب کوچک می‌پردازد، با این تفاوت که این دوره نه متعلق به فرهنگ کورارس بلکه دارای فرهنگ حسنلو VII است. در این مقاله بر آن هستیم تا فرهنگ عصر مفرغ را به تفصیل تبیین نماییم، فرهنگی که در آغاز با تغییرات بنیادین در همه زمینه‌های فرهنگی همراه بود. در این راستا بروه به عنوان یکی از کانون‌های حوزه نفوذ سفال نارنجی، مورد مطالعه قرار گرفت. عصر مفرغ قدیم با سفال‌های سیاه داغدار شناخته می‌شود و گونه سفال نارنجی که یکی از مؤلفه‌های فرهنگ مفرغ قدیم است، کمتر مورد توجه قرار گرفته و شناخت محدودی نسبت به این سنت فرهنگی وجود دارد، بنابراین این نوشتار تلاش می‌کند با توجه به مطالعه‌ی مواد فرهنگی بروه به این پرسش پاسخ دهد که نحوه تعاملات فرهنگی بروه با دیگر مناطق حضور این فرهنگ چگونه بوده است؟ در این راستا گاه‌نگاری نسبی و مطلق انجام شد. تعداد سه نمونه آزمایش C14 در نمونه‌های استخوانی انجام شد. هدف این پژوهش این است که با آزمایش C14 و مطالعه سنت‌های سفالین مفرغ قدیم، گاه‌نگاری حوضه رودخانه زاب کوچک مشخص گردد و با مطالعات تطبیقی بتوان گامی در جهت روشن نمودن وضعیت فرهنگی حوضه جنوبی دریاچه ارومیه فراهم نمود. همچنین این مقاله به بررسی گونه سفال منقوش حسنلو VII بر اساس یافته‌های فصل دوم بروه می‌پردازد. نتایج کاوش منجر به استقرار عصر مفرغ و شناسایی سفال نارنجی منقوش گردید. آنچه اهمیت این محوطه را نشان می‌دهد انباشت ضخیم عصر مفرغ قدیم است که نشانگر استقرار طولانی مدت در بروه است. نتایج این پژوهش نشان داد که محدوده زمانی اولین استقرار این محوطه در ۲۸۷۹ پ.م بوده است.

واژه‌های کلیدی: شمال غرب، رودخانه زاب کوچک، عصر مفرغ قدیم، سفال منقوش حسنلو VII، سال‌یابی C14، تپه بروه.

