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IRANIAN AZERBAIJAN PATHWAY FROM THE ZAGROS TO THE CAUCASUS, ANATOLIA AND NORTHERN MESOPOTAMIA: DAVA GÖZ, A NEW NEOLITHIC AND CHALCOLITHIC SITE IN NW IRAN

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ABSTRACT

The settlement of Dava Göz situated about 15km SW of Khoy and 1.5km north of the Dizaj Diz town in NW Iran. Dava Göz is a small site at north of the Lake Urmia, measuring about 100×100m (ca. 1ha). The first season of archeological excavation primarily aimed to clarifying the chronology, settlement organization, and respond to some of the fundamental questions such as the transition process from Late Neolithic to Early Chalcolithic (Hajji Firuz to Dalma) and identifying different cultural horizon including Late Chalcolithic (LC1 and LC2 periods) and also outlining cultural condition of the region during prehistoric periods. The present paper is intended to expose briefly the main stratigraphic, architectural and material data from the site. The stratigraphy of the settlement is now well understood and covers the Late Neolithic/Transitional Chalcolithic (Hajji Firuz/Dalma=Period I) and Chalcolithic (Pisdeli=LC1=Period II and Chaff-Faced Ware horizon=LC2=Period III) phases of the regional culture of north of the Lake Urmia Basin. Actually, Dava Göz is one of the scant well excavated settlements that give new and fresh information on the developments of the Lake Urmia Basin communities between the sixth to fourth millennium BC (5400-3700/3600 BC), and on their relationships with the contemporary Caucasian cultures as well as with those located further west and south, in Eastern Anatolia and in the Syro-Mesopotamian region. The first preliminary result of excavation, suggest special function for Dava Göz. It seems clear that this site could be consider as winter land for some agro-pastoral groups of Lake Urmia Basin who trying to find some pasturelands and preparing some raw materials like obsidian for the settlements of Urmia region. The implications of the findings will discuss along with limitations and future research directions.

KEYWORDS: NW Iran, Neolithic, Chalcolithic, Dava Göz, Excavation and Chronological Table

water springs probably supplies water sources of the inhabitant of this region.

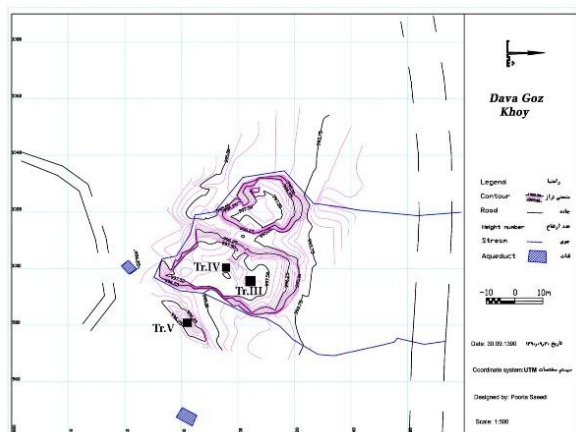


Figure 2: Topographic Map of Dava Göz, Location of Trenches during 2012 Excavation



Figure 3: Dizaj Diz Plain and Dava Göz Location in the Fertile Plain

3.1. FIELD METHODOLOGY

Prior to excavation, the site and parts of the sounding area were surveyed and mapped, and a grid system of 10×10 m squares was superimposed on the site (Fig. 2). One of the first things we did was try to track occupation by looking at the distribution of potsherds in different parts of the site, while also selecting the best places for soundings. Excavations at Dava Göz were conducted from June to August 2012. The initial aims were to establish the periods of occupation and to obtain a stratigraphically controlled ceramic sequence for the Khoy region and the northern part of northwestern Iran. More specifically, Dava Göz was excavated for three main reasons:

- 1) To determine the presence of Late Neolithic followed by Early Chalcolithic occupation levels
- 2) More importantly, to test for the presence of a probable “transition” period between the Late Neolithic and Early Chalcolithic and the existence Transitional Chalcolithic periods.

3) To determine the presence of Middle and Late Chalcolithic for completing of NW Ira prehistoric chronological table.

Excavations of Dava Göz were conducted in three trenches across the site: Trenches III and IV, opened on the center of the mound; and Trench V on the eastern slope of the mound. Trenches III was 5×5 m and IV were small (ca. 2×2 m) deep trench (Figs. 3, 4), and Trench V was a 3×3 m deep trench on the western part of the site (Fig. 4).

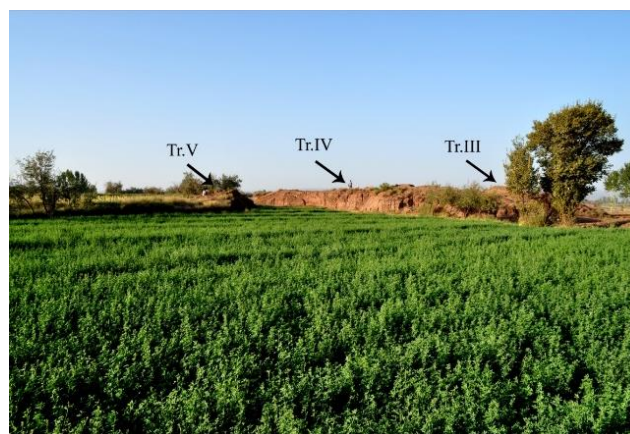


Figure 4: Dava Göz and the Location of Trenches III, IV and V

3.2. EXCAVATION IN TRENCH III (DAVA GÖZ I PERIOD)

On the center of Dava Göz an extensive 5×5 m trench was laid out (Figs. 2, 4). According to surface survey before opening the Trench III it was clear that the larger part of this trench contained a thin accumulation of seasonal camp site belong to Late Neolithic/Early Chalcolithic (Hajji Firuz/Dalma) culture that we called it Transitional Chalcolithic (Dava Göz I Period). The thickness of deposit in Trench III was not more than 50 cm (in deepest part) that suggest short time seasonal occupation in the site during this period. This hypothesis is proven when we are faced with many post-holes, impermanent Saj bread oven along with wattle and daub evidence in different parts of the Trench. During one month fieldworks 12 different Locus have been brought to light with some architectural and occupational deposit evidence.

3.2.1. BUILDINGS

Only one architectural phase and structure was brought to light in these layers, at a depth of 0-50 cm from the radix point of Trench III. It is a circular and semi-subterranean building made of pisé and about 2 m in diameter with many post-holes inside this buildings. The width of this wall is 20 to 25 cm and it seems to be a semi-subterranean building, used during this period (Fig. 5).



Figure 5: Buildings and Structures of Trench III

3.2.2. CERAMIC

Hundreds of sherds and several complete vessels were recovered from Hajji Firuz/Dalma layers at Dava Göz. The pottery constitute a coherent assemblage and may be ascribed to the Late Neolithic (Hajji Firuz)/Early Chalcolithic (Dalma) period (hereafter Transitional Chalcolithic / Dava Göz I). The vast majority of the pottery was painted especially in interiors. Most of the ceramics carry simple geometric designs, but naturalistic animal motifs also appear. Extraordinary pottery assemblages of this period was the appearance of Chaff-Faced ware. This type of pottery is very exotic and strange because we know this ware only in Late Chalcolithic periods of the Near and Middle East (Fig. 7, 9, 10, 11, 12).

3.2.3. LITHICS

Almost all the lithic industry of this period in Dava Göz is in obsidian, though there are rare flint and chert pieces. Obsidian was brought to Dava Göz in the form of nodules, blocks, and blanks and processed locally, as suggested by numerous waste and core fragments. A lot of tools are found; for example, flakes, blades, scrapers, borers and points. Many sickle blades, displaying gloss on one edge, are present. Utilised flakes and blades as well as side-scrapers and sickle blades appear with greatest frequency in chaîne opératoire of Dava Göz.

3.2.4. SMALL FINDS

Bone and ground stone artefacts are found in this period. Because of the limited excavation area, ten bone awl (Fig. 16) and 15 grinding material (quern,

pestle, hand-stones, mortar) were brought to light (Fig. 15). One of the interesting findings of this period is green pendant probably made of Solomon Aqiq (Fig. 8).

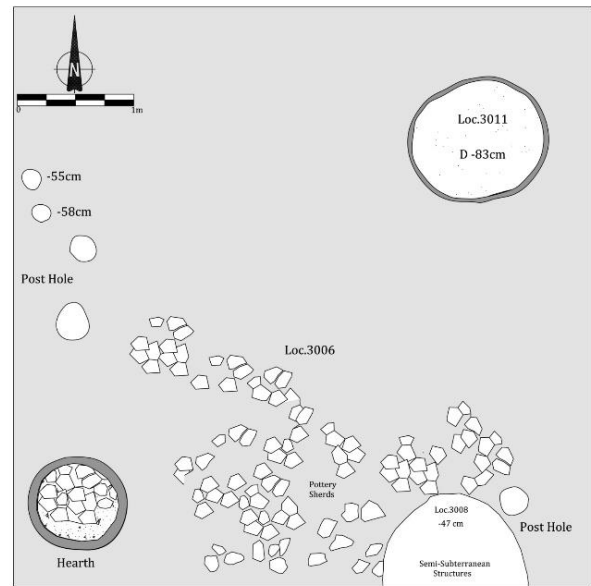


Figure 6: Plan of Buildings and Structures of Trench III

3.3. EXCAVATION IN TRENCH IV (DAVA GÖZ I PERIOD)

On the center of Dava Göz and close to Trench III, 2×2 m deep Trench of IV was opened for covering whole sequence of the site in the Late Neolithic and Early Chalcolithic period (Dava Göz I) (Figs. 2, 4). The larger part of this trench contained an accumulation of Transitional Chalcolithic debris layers. Apparently this part of Dava Göz was used as a dump for a long time. Southern part of this trench was used as dump but at least two structural phases brought to light during excavation in Trench IV. Whole assemblage of Trench IV completely were similar to Trench III and was occupied during Late Neolithic/Early Chalcolithic (Hajji Firuz/Dalma) culture that we called it Transitional Chalcolithic. Unfortunately, due to the limitations of the 2×2 m sounding trench, only few pottery, lithic and bone assemblages were appeared.

3.4. EXCAVATION IN TRENCH V (DAVA GÖZ II AND III PERIOD)

Trench V is a 3×3 m deep trench oriented south-north along the eastern slope of the mound (Figs. 2, 4). According to excavation in Trenches III and IV and surface pottery distribution on the site it demonstrated that the settlement formation was horizontally. Since in Trenches III and IV only Transitional Chalcolithic period brought to light we try to finding the place for testing other periods in the site. According to pottery distribution it seems clear that this

part belong to Late Chalcolithic period. 1.75 metres of excavations revealed Late Chalcolithic 1 (Pisdeli) and Late Chalcolithic 2 (Chaff-Faced Ware) levels. We were able to reach virgin soil in Trench V in the depth of 1.75 m. During one month of fieldworks ten different Locus like some architecture, occupational deposit and... excavated.

4. DAVA GÖZ: STRATIGRAPHY AND SEQUENCE

The first season of excavation established three main occupation periods so far. They correspond to the Late Neolithic/Early Chalcolithic (Transitional Chalcolithic) (Period I), Late Chalcolithic 1 (Pisdeli) and Late Chalcolithic 2 (Chaff-Faced Ware) periods (Table 1).

Table 1: An Updated Chronology of NW Iran and Dava Göz Sequence

Hasanlu Sequence	NW Chronology	Kul Tepe Sequence	Dava Göz Sequence	Date
Hasanlu VII	Kura Araxes II	Kul Tepe IV	-	3000-2500 BC
-	Proto-Kura-Araxes/Kura-Araxes I	Kul Tepe V	-	3400/3300-3000 BC
-	LC 3, CFW	Kul Tepe VIA	-	3900/3800-3700/3600 BC
-	LC 2, CFW Horizon	Kul Tepe VIB	Dava Göz III	4200-3900/3800 BC
Hasanlu VIII (Pisdeli)	LC 1, Black on Buff	Kul Tepe VII	Dava Göz II	4500-4200 BC
Hasanlu IX (Dalma)	Dalma	Kul Tepe VIII	-	5000-4500 BC
Hasanlu X (Hajji Firuz)	Late Neolithic/Transitional Chalcolithic	Kul Tepe IX	Dava Göz I	5400-5000 BC

5. POTTERY ASSEMBLAGE

5.1. DAVA GÖZ I (TRANSITIONAL CHALCOLITHIC) POTTERY

A total of 1746 pot sherds were recovered from the Transitional Chalcolithic layers in Trench III and IV. The great majority of the pottery is hand made (1688=97%). The pottery is characterised by chaff (107=6%) and mixed (1639=94%) temper. In the case of firing most of the pottery are well fired (1665=95%) and few ones are under-fired (80=5%). The surface colour is generally characterised by a red and red-brownish slip (10R 4/6, 4/8) on the external surfaces. The range is from red to brown, but the most common colours are brown, red, buff, pink, gray and reddish yellow. More specifically, the hue of the Transitional Chalcolithic Sherds of Dava Göz falls on Munsell colour charts 10R, 5YR, 7.5YR and 10YR. The core of the wall is dark, ranging from grey to very dark grey. There are three major categories of surface treatment: (1) painted, (2) red-slipped, and (3) plain. The surface-manipulate type (Dalma Impressed) is completely absent in this assemblage of

Dava Göz. Most of the sherds have a slip treatment (ext. 1219=70%; int. 956=55%). Other parts of the vessels of this period have wash exteriors (427=27%), and some have wash interiors (747=43%) as well. Wet-smoothing (ext. 4=0%; int. 11=1.0%) was used to finish the exterior and interior surfaces of the vessels. Wet-smoothed surfaces are matte and have fine ridges as well as fingerprints; the surface was therefore wiped with the hand while it was wet or plastic. Other examples have no surface treatment (ext. 50=3%; int. 31=2%).

Three types of decorative techniques were used: thin paint or wash over the entire surface; geometric design; and incising.

Among the decorated sherds, geometric painted pottery (162=9%), sherds with comb and grooved design (190=11%), and excised decoration (14=1.5 %) are predominant, but the majority of sherds are geometric designs on the exterior and interior surfaces of the vessels. The painted designs are made up of large geometric elements arranged undecorated (1181=68%). In four sherds matt impression are visible in bottom of the pottery.



Dava Göz Khoy 2012 - Late Neolithic/Transitional Chalcolithic Pottery

Figure 7: Late Neolithic/Transitional Chalcolithic Pottery of Dava Göz



Figure 8: Agate Necklace from Transitional Chalcolithic Layers



Figure 9: Late Neolithic/Transitional Chalcolithic Pottery with Mat-Impression of Dava Göz

Brown and black paint was used to apply on vertical axes and repeated in sequence around the vessel wall. The designs are all linear, and include chevrons, parallel oblique lines, parallel lines, diagonal,

crosshatched triangles and plaid. In a rare sample the pattern seems like abstract animal design. Major forms and types of pottery include: bowls, holmouth open bowls, large open shallow bowls, cups, jars with everted rim and short neck and small jarlet (Figs. 7, 9, 10).

5.2. DAVA GÖZ II (LATE CHALCOLITHIC 1/PISDELI) POTTERY

A total of 683 pot sherds were recovered from the Late Chalcolithic 1 (Pisdeli) layers in Trench V. The great majority of the pottery is hand made (641=94%). The pottery is characterised by chaff (13=2%) and mixed (670=98%) temper. In the case of firing most of the pottery are well fired (598=89%) and few ones are under-fired (72=11%). The pottery is mostly buff coloured. The colours of the monochrome ware range from pink, grey and buff, to red, brown, black/blackish, light grey, plum, orange and blackened.

The section can be monochrome (brown or buff) but in some cases it shows grey cores. Most of the sherds have a slip treatment (ext. 521=78%; int. 487=73%), although a wet-smoothed (ext. 0=0%; int. 1=0%) surface that has been treated with either an orange or a brown wash (ext. 145=22%; int. 178=26%) was applied in most cases. Other sherds have no surface treatment (ext. 4=0%; int. 4=1%). Of the decorated pottery from this period, sherds with comb and groove design (100=15%), high chaff-faced (70=10%) and excised (3=0%) and incised designs (4=1%), as well as geometric painted pottery (15=2%)

are predominant in the assemblage, but most of the sherds are undecorated (461=69%). Unfortunately, due to the limitations of the 3x3 m sounding trench, few complete wares were brought to light and mainly sherds were collected for this period. Open and closed shapes are both present, and among the open ones, hemispherical bowls seem to be the most common form. Together with the hemispherical bowls, pierced jars are probably the most typical shape of the LC1 in the Dava Göz repertoire; they are characterised by a row of small holes running

immediately below the rim. A globular jar with knobbed or annular decoration in relief, sometimes arranged in snake-like motifs under the rim, represents the other form of this period. Holemouth jars are also part of the assemblage. Broad categories and forms are distinguishable: bowls, bowls with knob decoration under the rim, jars, jars with everted rims and short neck, jars with everted rim, jars decorated with an annular coil around the shoulder, jars with vertical comb design bases, beaker, cups and miniature bowls (Fig. 11).



Figure 10: Late Neolithic/Transitional Chalcolithic Chaff-Tempered/Chaff-Faced Pottery of Dava Göz



Figure 11: Dava Göz II (Late Chalcolithic 1/Pisdeli) Pottery

5.3. DAVA GÖZ III (LATE CHALCOLITHIC 2/CHAFF-FACED WARE) POTTERY

A total of 1012 pot sherds were recovered from the Late Chalcolithic 2 (Chaff-Faced Ware) layers in

Trench V. The great majority of the pottery is hand made (926=92%). The pottery is characterised by chaff (12=1%) and mixed (1000=99%) temper. In the case of firing most of the pottery are well fired

(943=93%) and few ones are under-fired (69=7%). The pottery is mostly buff coloured. The colours of the monochrome ware range from pink, grey and buff, to red, brown, black/blackish, light grey, plum, orange and blackened. The section can be monochrome (brown or buff) but in some cases it shows grey cores. Most of the sherds have a slip treatment (ext. 778=77%; int. 438=73%), although a wet-smoothed (ext. 0=0%; int. 1=0%) surface that has been treated with either an orange or a brown wash (ext. 226=22%; int. 265=26%) was applied in most cases. Other sherds have no surface treatment (ext. 5=1%; int. 5=1%). Of the decorated pottery from this period, sherds with comb and groove design (85=8%), high chaff-faced (51=5%) and excised

(5=1%) and incised designs (13=1%), as well as geometric painted pottery (29=3%) are predominant in the assemblage, but most of the sherds are undecorated (804=79%). Broad categories and forms are distinguishable: bowls, bowls with knob decoration under the rim, jars, jars with everted rims and short neck, jars with everted rim, jars decorated with an annular coil around the shoulder, jars with vertical comb design bases, beaker, cups and miniature bowls (Fig. 12). One of the interesting findings of this period's pottery was potter marks sign on the upper part of the bowl. This type of potter marks is characteristic of Late Chalolithic 2 period in Anatolia and the Caucasus (Fig. 14).



Figure 12: Dava Göz III (Late Chalolithic 2/ Chaff-Faced Ware) Pottery

6. LITHIC

During the first season of the Dava Göz, 1240 lithic artefacts were recovered from Trenches III-IV (736 specimens), V (504 specimens). Of these samples,

1218 artefacts were obsidian and 22 artefacts were chert/flint. The 1218 obsidian artefacts include 727 specimens from the Transitional Chalcolithic period (Dava Göz I) and 491 specimens related to the Late

Chalcolithic 1 and 2 (Dava Göz II and III). According to a typological classification, all of the specimens were divided into three main groups: utilised tools, blanks and debitage. All utilised flakes, blades, and microblades, as well as drills, scrapers, end-scrapers, points, knives, and cleavers were placed in the category of utilised tools. Blanks included all simple

flakes, blades and microblades with signs of retouch. The remaining artefacts were classified as debitage (Fig. 13).

250 samples of obsidian artefacts were submitted to the Archaeometry Laboratory at the University of Lyon 2 and CNRS in France for non-destructive analysis by energy dispersive XRF (Fig. 13).



Figure 13: Lithic Obsidian Artifacts of Dava Göz I, II and III Periods



Figure 14: Potter Mark from Dava Göz III/Late Chalcolithic 2 Period

7. C14 RADIOCARBON DATING

Seventeen dating samples were collected during the excavation in order that an outline 14C chronology might be determined for the sequence of occupation at the site. Four samples from the Transitional Chalcolithic and Late Chalcolithic 1 and 2 periods were submitted to the Università del Salento, Dipartimento di Ingegneria dell’Innovazione, Centro di Datazione e Diagnostica (CEDAD) laboratory. Two samples also submitted to Lyon. A total of six dates have been obtained till now and processing of the other samples is in progress. All the radiocarbon samples were dated using Accelerator Mass Spectrometry (AMS). These dates are of great value in interpreting the material record from Dava Göz and illustrate well the potential of this new method for addressing problems in archaeological research of northwestern Iran and the Southern Caucasus. The AMS dates are plotted in stratigraphic order in Fig. 17. The AMS dates themselves form a good series in

the correct sequence. The standard deviations for the CEDAD dates are ± 40 years, indicating that conventional 14C techniques can still offer a tightly defined determination. The standard deviations for the AMS dates are calculated on a different basis, and are intended to be largely inclusive. CEDAD assures the accuracy of its services by the standard measurements provided by international normative organisations (like IAEA) and by comparing its own results with those obtained in other countries. The CEDAD laboratory is now able to quote standard deviations equivalent to an error of ± 40 years. These dates indicated that Dava Göz was occupied from ca. 5400 BC to 3700/3600 BC. Details are shown in Fig. 17.

8. DISCUSSION

The site of Dava Göz is located in very fertile plain of Dizaj Diz that is intermountain intensive plain it is surrounded by high mountains from several sides. Qareh Su seasonal river flow in the plain was one of

the main factor of Dava Göz settlement formation here It is about 50 km from the famous site Kül Tepe of Jolfa (west of Kul Tepe) and Kul Tepe of Nakichevan (south-west). Dava Göz is located next to a broad valley, at the core of the highlands and the crossroads of major routes linking the Iranian plateau to Anatolia and the Caucasus to Northern Mesopotamia (Fig. 1:2). This part of the Khoy region is only way to passing from the Caucasus to northern parts of the Lake Urmia to west of the Lake Urmia. This strategic location is further enhanced by the region's wealth in natural resources, which include rich salt deposits (Douzdagi Mine is 10 km NW of the site). The location of Dava Göz between the Southern Caucasus and the Lake Urmia in the lowlands give very special position for some agropastoral groups to spend seasons here as a winter

lands. Existence of very fertile agricultural land on one hand Existence of very fertile agricultural land on one hand and vast mountainous pasturelands for livestock and animal husbandry on the other hand doubled the importance of this settlement. Another important thing about Dava Göz is why the local villagers called it Dava Göz? Dava Göz in Azeri Turkish mean camel eyes and they use this phrase because of abundance of obsidian in the site. They use this phrase for obsidian and it is important because one of the probable reason for creating this site was transferring some raw material from the Lake Urmia to the Southern Caucasus and vice versa. It seems clear that during Late Neolithic and Chalcolithic periods they have close relation with South Caucasian people in local and long-term trade especially in obsidian.

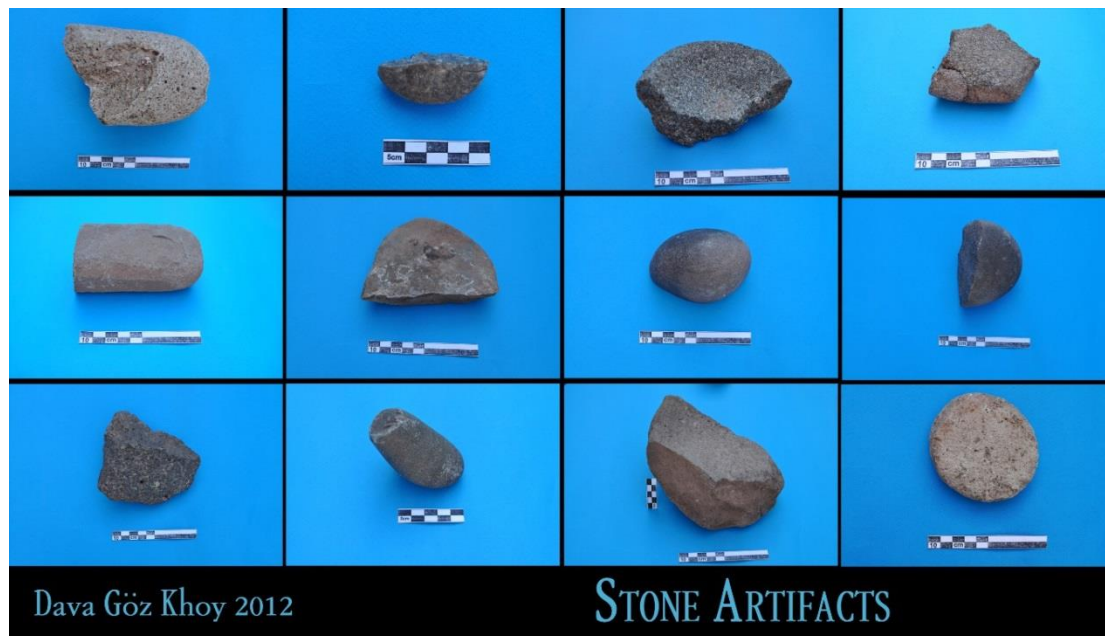


Figure 15: Stone Artifacts of Dava Göz from Late Neolithic to Late Chalcolithic 2

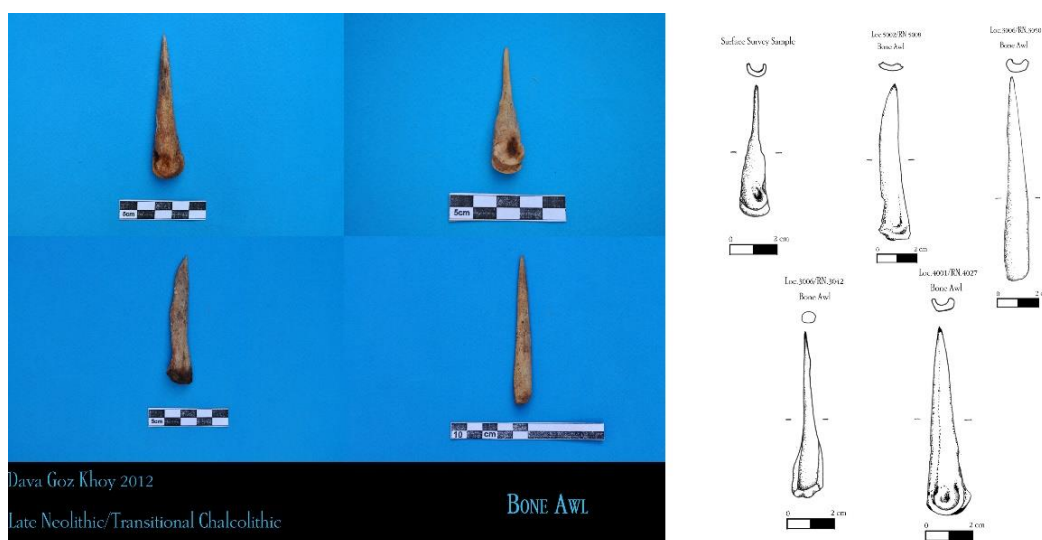


Figure 16: Different Bone Awls of Dava Göz from Late Neolithic/Transitional Chalcolithic Period

The time period between the end of the Hajji Firuz and the beginning of the Kura-Araxes phenomena is one of the least known, yet most important eras in the ancient history and chronological table of NW Iran. With respect to previous studies in NW Iran (Hamlin, 1975; Dyson and Young, 1960; Burney 1964; Pecorella and Salvini, 1984, Voigt, 1983), it demonstrated that the Chalcolithic period (fifth to the first half of the fourth millennium) remains among the least understood phases of development in the pre-history of the region.

In the 5th and 4th millennium BC, complex societies developed in Eastern Anatolia, Northern (Upper) and Southern (Lower) Mesopotamia. This era, which is often referred to as the "Post-Ubaid" period, is marked by major structural changes such as the rise of social hierarchies, technological innovations and economic reorganization that eventually led to the emergence of proto-states and cities (Frangipane, 2001; Marro, 2012; Stien, 2012). During this time span (5th millennium) some archaeological cultures and traditions have been brought to light in NW Iran. According to last data and material it is impossible to draw obvious picture about archaeology of the region during this period. The real obstacle is therefore the dramatic lack of absolute datings (with some exception) which makes it impossible to define the chronological extension of the Chalcolithic and build up a solid internal periodization and properly articulated timeline for the regional developments in this phase.

Recent excavations located beyond the Southern Mesopotamia provide a welcome opportunity to rethink the significance of the Post-Ubaid horizon from a different angle: several sites located in the Caucasus (Achundov, 2007, 2011; Müseyibli, 2007; Lyonnet, 2007; Lyonnet et al., 2008; Lyonnet and Guliyev, 2012; Marro, 2010; 2012; Helwing, 2012), central Anatolia or Cilicia (Caneva et al., 2012) have indeed yielded a number of features that are traditionally associated with the Post-Ubaid horizon: interestingly enough, however, these findings come from settlements whose cultural sequence seemingly develops from a totally different, that is non-Ubaid, background. We would rather to use the modified important LC1-5 chronological terminology (Rothman, 2001: 5-9) in our discussions put forward by Stein and Marro (Stein, 2012; Marro, 2012), and specific local sequences in order to avoid projecting a south Mesopotamian chronology and modes of organization onto northern regions that developed social complexity through processes that were largely, if not completely indigenous and different from those that characterized southern Mesopotamia.

Previous studies put Dalma period in the second half of 5th millennium BC (Hamlin, 1975; Hole,

1987). Only one dating was available from Dalma period (Hole, 1987). Scant scientific excavation carried out concerning Dalma period in its homeland (NW Iran) with only one ¹⁴C date, brought about some limits for concluding about solid chronological table throughout Dalma period. Same limitation has also risen for the Pisdeli period, where, only rare radiocarbon dates are available with inexact and faulty time span for it (late fifth to early fourth millennium BC). Prior to Kul Tepe Jolfa and Dava Göz Khoy excavations, appropriate and precise period and chronology didn't practice between Hasanlu VIII and VII and this is a gap in chronological table of NW Iran (Table 1).

The 5th millennium considered as the largest lacuna in our understanding of the developmental sequence of NW Iran although new excavation with absolute radiocarbon dates, shed some new lights on Chalcolithic period of the region.

8.1. DALMA PERIOD IN NW IRAN (5000-4500 B.C.)

In the first half of the 5th millennium B.C. (Early Chalcolithic), the remarkably homogeneous Dalma ceramic assemblage spread throughout much of the northwest and western Iran. Dalma is an unusual ceramic phenomenon or this time range: a widespread but technically and stylistically homogeneous material cultural tradition, at home in a topographically severe highland region. The Dalma period is particularly interesting because of the extremely large geographic spread of its ceramics, ranging from the "widely separated mountain plains as the Urmia basin and the Mahidasht and the Kangavar regions" to the Hamrin region of eastern Iraq, where it occurs in combination with typical Halaf and Ubaid pottery. Similar ceramic types have also been mentioned in the Caucasus Mountains. The first evidence of the Dalma culture was found in the southwest end of the Lake Urmia, at the site of Tepe Dalma and Hasanlu in 1958. Dalma materials have also, reported from Hajji Firuz, Pisdeli and Tepe Seavan. Apart from mentioned excavations, different surveys have been carried out by different expeditions (Dyson, 1962; Hamlin, 1975; Henrickson and Vitali, 1987; Hole, 1987; Levine and Young, 1984; Solecki and Solecki, 1973; Vandiver, 1985; Voigt and Dyson, 1992; Young and Levine, 1974; Pecorella and Salvini, 1984; Kroll, 1984, 1994; Tonoike, 2009; Henrickson and Vitali, 1987; Hamlin, 1975; Hole, 1987; Oates, 1983: 261; Voigt and Dyson, 1992).

The series of radiocarbon dates available now from Kul Tepe Jolfa, Tepe Dava Göz and one calibrated date from Tepe Dalma makes it clear that the often mentioned date of 4215 ± 84 BC from Tepe Dalma (second half of 5th millennium), and suggest-

ed dates of 4100-3700 BC for Dalma culture said to date the Middle Chalcolithic, is much too new in NW Iran and should now be revised (Hamlin, 1975; Voigt and Dyson, 1992; Henrickson, 1985: 70). New radiocarbon dates from Kul Tepe Jolfa and Dava Göz suggest first half of the 5th millennium BC for the Dalma period in NW Iran (5000-4500 BC) (Abedi et al., 2015; Abedi et al., 2014; Abedi and Omrani, 2013; Abedi, 2012). Available dates argued that Dalma tradition flourished during first half of the 5th millennium BC in NW Iran and then spread to south to the Central Zagros in second half of 5th millennium BC.

Valuable works have been carried out concerning to prehistoric archeology at Iranian Azerbaijan in the form of archaeological excavations, surveys and data, recovered in the aftermath of Iran's Islamic Revolution. Recent excavations at Kul Tepe Jolfa (Abedi et al., 2014), Tepe Ahranjan (Talai, 1983, Kargar, 1995), Tepe Lavin (Nobari et al., 2012), Qosha Tepe (Nobari and Purfaraj, 2005), Tepe Idir (Hesari and Akbari, 2007), and Tepe Baruj (Alizadeh, 2001, Alizadeh, 2003a, 2003b) have yielded fascinating new information about the Dalma culture. Apart from these excavated sites, more than 100 Dalma and Dalma-related sites have been brought to light from old and recent surveys in NW Iran.

Recently scholars have suggested a combination of factors such as trade and exchange, the movement of material goods and information, migration of population, diffusion, and local emulation of foreign style to explain this cultural phenomena (Voigt, 1983; Tonoike, 2009). Settlement pattern and distribution of Dalma sites in NW Iran suggests it can be divided into two types: 1) permanent settlements in fertile inter-mountain valley; 2) temporary seasonal camp sites in highland of Zagros, the Caucasus and other highlands of northwest Iran. Tonoike (Tonoike, 2009) concluded that a village-based form of seasonal migration (transhumant pastoralism) was the most likely scenario, where small groups of nomads moved between villages that they maintained relationships with, possibly through kinship. Transhumant pastoralism is a specialized form of mobile pastoralism that is still based on settlements but involves seasonal movement of the herd between pastures with some use of campsites (Abdi, 2003).

The Dalma culture is one of the most intriguing phenomena of the NW and Western Iran. The broad outlines of Dalma material culture are well-known by now and it is renowned for its elaborately decorated pottery. Other aspects of Dalma society, however, are still poorly understood. The chronology and the origin of Dalma society is a matter of much debate, and likewise our insights into Dalma eco-

nomic or social organization are generally based on sheer speculation.

In the light of the available data specially pottery repertoire and recent radiocarbon dates it demonstrates that Dalma phenomena or tradition has emerged subsequent to Hajji Firuz period (ca. 6000-5400 BC) with a short gap in NW Iran. From this point on, two scenarios are possible for the spread of Dalma in NW Iran; first, we can surmise it as foreign (alien) imported tradition from outside of the NW region (western or southern region), or it can be proposed as local derivative of previous culture (Hajji Firuz). In this respect, it is felt that Dalma in the Urmia Basin of NW Iran is the ultimate results of a long and locally founded sequence of late Neolithic (Hajji Firuz) development. As mentioned above with new radiocarbon dates for Dalma tradition (ca. 5000-4500 BC) it likely seems that some sites can fill this 400 years gap between this two periods which we called transitional period. A similar conclusion can be reached from the survey results in the region. Provenance analysis has also showed that all Dalma ceramics produced locally (Vitali and Henrickson, 1987; Tonoike, 2009). It seems clear that only pottery production changed during Dalma period in comparison to preceding Hajji Firuz but, all Dalma excavated sites does not clearly suggest any strong discontinuity in other aspects of the material culture.

Obsidian analysis in NW Iran (Khademi Nadooshan et al., 2013) indicated that during Chalcolithic period extensive and local obsidian trade have been practiced by some transhumant or pastoral groups between the Lake Urmia Basin and highlands of Caucasus. Local regional and inter-regional trade has played important role in distribution of Dalma culture to adjacent region. In addition to trade, easy access to main roads, exploitation of various resource, interaction between lowlands (Settlement) and highlands (pastorals) by some transhumant or pastoral groups and ... can be consider as key factors in Dalma culture distribution.

What is important in this respect, is the chronological differences between northwestern Iran (Dalma homeland?!) and Central Zagros regions where Dalma period is ranged 4100-3700 BC whereas this time coincidence with LC 2 and 3 (Chaff-Faced Ware Cultures) periods in northwestern Iran.

8.2. PISDELI (HASANLU VIII/ LC1 POST-UBAID) PERIOD DAVA GÖZ II (4500-4300/4200 BC)

During mid-fifth or slightly later (LC1, Post-Ubaid: 4500-4200 B.C) black on buff so-called Pisdeli culture was gradually replaced in the whole southern, western and northern regions of the Lake Urmia

Basin. Pisdeli known as Hasanlu VIII or middle Chalcolithic, and have been defined first at Pisdeli (Dyson and Young, 1960) and have been reported from Hajji Firuz (Voigt, 1983) and Hasanlu (Dyson, 1958). Interestingly Voigt and Dyson (1992:174) according to Pisdeli Tepe materials and its sequence suggest a transition between Dalma and Pisdeli with no time gap between these two periods and proposed a local development for Pisdeli culture. Most studies regarding to Pisdeli period is mainly related to scant famous typical sites including: Pisdeli (Dyson and Young, 1960), Geoy Tepe (Burton-Brown, 1951), Yanik Tepe (Burney, 1961a, 1961b, 1962, 1964), and Tepe Gijlar (Belgiorno et al., 1984). Apart from mentioned excavations, different surveys have been brought to light prominent data concerning to Pisdeli period (Belgiorno et al., 1984; Kroll, 1984, 1990, 2005).

Recent discoveries in the NW Iran have yielded fascinating new information about the Pisdeli culture. Excavation at new well stratified sites of Kul Tepe Jolfa (Abedi et al., 2014) and Tepe Dava Göz Khoy (Abedi et al., 2015; Abedi, 2012) give us new information about Pisdeli period with new radiocarbon dates. Excavation at Kul Tepe Jolfa unearthed 3 m materials concerning this period. Kul Tepe VII related to this phase with both painted and unpainted pottery. New radiocarbon dates from Kul Tepe VII demonstrate date around 4500-4300/4200 BC (Calibrated) for Pisdeli period. Excavation at Dava Göz Khoy has also yielded very strong materials related to this period with complete typical Pisdeli ware. C14 absolute dating from Dava Göz V suggests the same date for this time span. Between recent works that took place, Tepe Ahranjan (Kargar, 1995) and Tepe Lavin (Nobari et al., 2012) have provided new information about this period. Apart from mentioned recent excavation new surveys have produced new insights and perspectives on chronological enigma of NW Iran during Pisdeli period.

Helwing (2004) suggests threefold chronological breakdown for Late Chalcolithic period in NW Iran and put Pisdeli Tepe in LCH1 period as oldest assemblage (=Hasanlu VIII) preceding to both Yanik Tepe M, and Geoy Tepe phases N and M and even Gijlar C. She also proposed Grey Burnished Ware of Geoy Tepe N for early stage of LCH2 and eventually Chaff-faced/Chaff-tempered ware for developed stage of LCH 2. This division was later approved by Danti et al., (2004).

Excavation at Kul Tepe Jolfa and Dava Göz Khoy shed some new light on Pisdeli dates in NW Iran. This dates accompanied by new recalibrated old samples from Hasanlu project (Ibid) led us to a comprehensive chronology for Pisdeli period. New radiocarbon calibrated dates from all Pisdeli-related sites

are suggested a date 4500-4300/4200 BC for Hasanlu VIII (LC1, Pisdeli, Kul Tepe VII, Dava Göz II) period.

8.3. LC2; CHAFF-FACED/CHAFF-TEMPERED WARE; DAVA GÖZ III (4300-3800/3700 BC)

At present, the Chaff-faced Ware (CFW) or LC2 period is the largest lacuna in our understanding of the developmental chronological sequence in NW Iran. This period is opening in chronological table of the region (Voigt and Dyson 1992), why, it does not present comprehensive view between Hasanlu VIII and VII. Excavation and published material concerning CFW or after Pisdeli material in NW Iran is fairly scant, and raises many questions. Recently fresh data have been yielded from Kul Tepe Jolfa (Abedi et al., 2014), Dava Göz Khoy (Abedi et al., 2015; Abedi, 2012), Köhne Pasgah Tepesi (Maziar, 2010), Dagimentepe Bostanabad (Chaichi and Omrani, 2010) excavations shed some new lights on LC2-3 CFW period in NW Iran. Apart from excavations, old and new surveys have provided consequential results regarding to distribution and expansion of CFW phenomena in NW Iran. More than 100 sites brought to light from all surveys in Iranian Azerbaijan from different district (Jolfa, Marand, Khoy, Shabestar, Salmas, Urmia, Ushnaviyeh, Naqadeh, Piranshahr, Mahabad, Bukan, Shahin Dezh, Tekab, Malekan, Bonab, Maragheh, Ajabshir, Azarshar, Tabriz, Ahar, Heris, Bostanabad, Hashtrud, and Sarab).

Prior to Kul Tepe Jolfa and Dava Göz Khoy excavations only scant materials related to this period have been reported and published (Burton-Brown, 1951; Burney, 1964; Kroll, 1990, 2005; Helwing, 2005; Maziar, 2010). Recent 14C radiocarbon dates from Kul Tepe Jolfa VIB and VIA and Dava Göz Khoy III suggest a date ca. 4200-3700 BC for LC2-3 CFW tradition in NW Iran. Recently fresh dates from adjacent region- Southern Caucasus and Northern Mesopotamia- have confirmed this date for CFW (Marro, 2010, 2012; Stien, 2012; Helwing, 2012).

Stratigraphic section of Kul Tepe revealed that two and five meters of strata belong to LC1 and LC2-3 respectively. Kul Tepe VII exposes both black on buff painted and unpainted assemblage. Painted samples include scant percent of pottery repertoire. This situation happen same at Dava Göz, where, unpainted ware encompass main percentage of the assemblage.

Excavation at Kul Tepe Jolfa and Dava Göz Khoy unravel the problem of Chalcolithic of NW Iran after Dalma period and divided it into two main periods: - Pisdeli (LC1=Kul Tepe VII; Dava Göz II) (4500-4200 BC) with typical painted pottery (black on buff); and Chaff-Tempered/Chaff-Faced Ware tradition (LC 2 and 3= Kul Tepe VIB and VIA; Dava Göz III) (4200-3700BC). Recent discoveries in NW Iran make possible to conclude about final phases of the Late Chal-

colithic, precisely. The new excavations have been carried out in the last decade in the Southern Caucasus (Ovcular Tepesi, Leyla Tepe, ...) (Achundov, 2007, 2011; Müseyibli, 2007; Lyonnet, 2007b; Lyonnet et al., 2008; Lyonnet et al., 2012; Marro, 2010; 2012; Helwing, 2012), Eastern Anatolia (Frangipane, 2012)

and Northern Mesopotamia (Stient, 2012) concerning Chalcolithic period, enable scholars to define the chronological extension of the Chalcolithic and build up a solid internal periodization and properly articulated timeline for the regional developments in this phase (Marro, 2012).

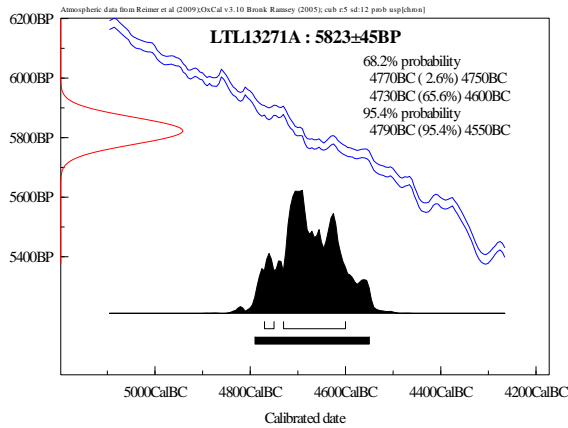


Figure 17 (1). DAVA GÖZ 2012-LOC3002; Calibration of the radiocarbon age of the sample LTL13270A.

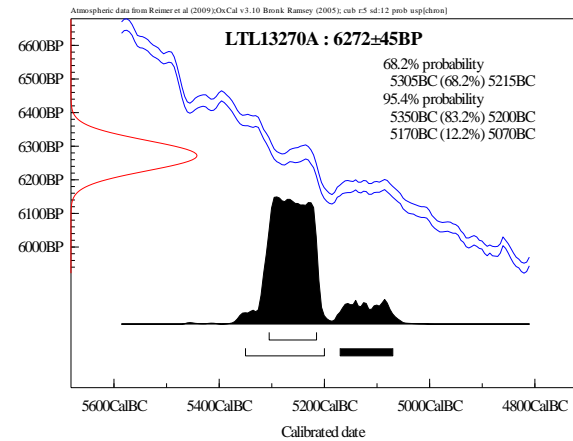


Figure 17 (2). DAVAGÖZ 2012-LOC3005; Calibration of the radiocarbon age of the sample LTL13271A.

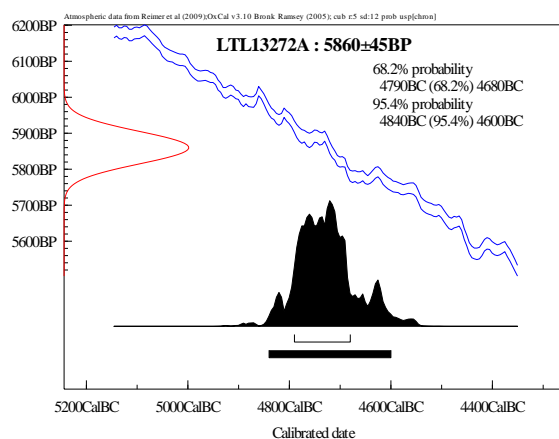


Figure 17 (3). DAVA GÖZ 2012-LOC4006; Calibration of the radiocarbon age of the sample LTL13272A.

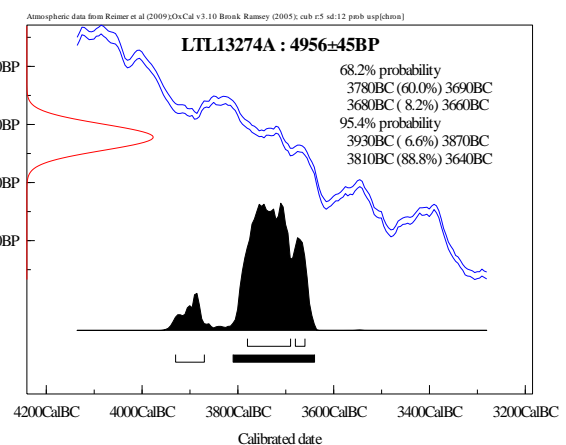


Figure 17 (4). DAVA GÖZ 2012-LOC5005; Calibration of the radiocarbon age of the sample LTL13274A.

Lab Reference	Trench/Loc	Depth (m)	BP	Cal. BC (95.4 %)
(Lyon-11538/SacA-38687)	Locus 3004	0,40 m	5860 +/- 40 BP	4831-4612 cal BC (95.4%)
(Lyon-11539/SacA-38688)	Locus 5007	1,20 m	5570 +/- 35 BP	4461-4345 cal BC (95.4%)

Recent excavations in NW Iran substantiate that Post-Ubaid findings come from settlements whose cultural sequence seemingly develops from a totally different, that is non-Ubaid, background. C. Marro (2012) in last publication used the term "Post-Ubaid" for time period 4500-3800 BC. She divided this phenomena to "Ubaid" and "non-Ubaid" land. She fo-

ocusing on the interactions between the Lowlands and the Highlands, with a reassessment of the available data from a non-Mesopotamian perspective. She used different terms for this spreading phenomena - Chaff-Faced Ware oikoumene (Marro, 2010), "Standardized ware oikoumene" (Marro, 2012) - for a period after Ubaid as a result of both break and continui-

ty. She suggests that this wide spread expansion of CFW can be the results of or belong to economic and production sphere (Marro, 2012). According to available data, Post-Ubaid CFW cultures in the Southern Caucasus and NW Iran is indeed related to Mesopotamia but it is not a Mesopotamian culture per se. Rather, the center of gravity of this culture probably lies between the Upper Euphrates, the Kura Rivers and the Lake Urmia Basin. The CFW cultural horizon encompasses the highlands and Upper Mesopotamia, which are thus part of the same oikoumene. However, it should be stressed that the CFW sites attested over this vast territory probably had different functions and were constituents of a complex economic system (Marro, 2010).

For Post-Ubaid horizon six major “ceramic province” or “cultural province” grouped by Marro (2012): 1) The South Caucasus; 2) The Upper Euphrates province; 3) The western Euphrates province; 4) The Khabur cultural province; 5) The Balikh region; 6) The Cilician province. With fresh excavation in NW Iran (Kul Tepe Jolfa, Tepe Dava Goz Khoy and Kohne Pasgah Tepesi), seventh group can be suggested to this groups with typical Pisdeli (LC1= Kul Tepe Jolfa VII and Dava Goz II) and CFW (LC2 and 3=Kul Tepe Jolfa VIB and VIA and Dava Goz III) materials. I think this group is alike to Southern Caucasus group and homogeneous in many aspects, but it seems that this is the case took place only during LC 2 and 3 periods and LC1 is absent in most parts of the Southern Caucasus. During LC1 close relation can be clearly seen with the Upper Euphrates (Norsun Tepe, Korucu Tepe and Tulin Tepe), Khabur (Gawra XII) and Balikh region (Tell Zeidan LC1 and LC2 and Hammam et-Turkman IVD and VA). Throughout LC2, tied relation increased with sites in Southern Caucasus (Ovcular Tepesi, Leyla Tepe, Mentesh Tepe ...), Upper Euphrates (Norsun Tepe IIA), Khabur (Gawra XI-IX) and Balikh region (Tell Zeidan LC2 and Hammam et-Turkman).

Recent excavation show that the development from Pisdeli (LC1= Kul Tepe Jolfa VII and Dava Goz II) to CFW (LC2 and 3=Kul Tepe Jolfa VIB and VIA and Dava Goz III) took place without interruption in NW Iran, that is the case in Balikh and Khabur “Cultural Province”.

After LC 3 period onward, CFW tradition superseded in NW Iran by a widespread expansion of famous Kura-Araxes phenomena, flourished from highlands of Transcaucasia and NW Iran. Well sequence and stratigraphy accomplished with new radiocarbon dates from Kul Tepe Jolfa show that period V (Proto-Kura-Araxes-Kura-Araxes I) with 3400/350 BC launch into this period without any interruption. According to pottery and other materials it seems probable that a transition occurred be-

tween the ends of the Chalcolithic and beginning of Kura-Araxes culture (Marro, 2009). I think this is the case that occurred the same in most parts of NW Iran. Only some parts of the southern of the Lake Urmia (Little Zab River ...), introduced different scenario with new materials from middle or late Uruk periods.

However, the Zagros highland region (including the Urmia Basin) was clearly not a monolithic “Ubaid-related” culture area throughout most of the 5th and the beginning of 4th millennium BC, but rather an environmentally and culturally diverse mosaic with its own strong local ceramic and presumably cultural tradition (Henrickson, 1983: 379).

9. CONCLUSION

The first season of excavation at Dava Göz were carried out at June-August 2012 (Abedi et al., 2015; Abedi, 2012; Abedi and Omrani, 2013). At this site, the first season of archeological excavation primarily aimed to clarifying the chronology, settlement organization, and respond to some of the fundamental questions such as the transition process from Late Neolithic to Chalcolithic, identifying different cultural horizon including Transitional Chalcolithic, Early, Middle and Late Chalcolithic periods and also outlining cultural condition of the region during prehistoric period. The initial aims were to establish the periods of occupation and to obtain a stratigraphically controlled ceramic sequence for the Khoy region and the northern part of northwestern Iran and the Lake Urmia Basin.

The settlement of Dava Göz situated about 10 km southwest of Khoy and 1.5 km north of the Dizaj Diz town. Dava Göz is a small site, measuring about 100×100 m (ca. 1 ha). The site completely damaged by modern agricultural activities by villagers, so it doesn't enable us to draw whole topography of Dava Göz. The stratigraphy of the settlement is now well understood and covers the Late Neolithic/Transitional Chalcolithic (Hajji Firuz/Dava Göz I=Period I) and Chalcolithic (Pisdeli=LC1=Period II and CFW horizon=LC2=Period III) phases of the regional culture of the north of the Lake Urmia Basin. The first season of excavation at Dava Göz lasted from June to August 2012. Dava Göz is horizontal site that related to Hajji Firuz, Dava Göz (Transitional Chalcolithic), Pisdeli and CFW Culture. Hajji Firuz materials mainly located on the center of the site. It seems clear that the settlement of Dava Göz during Hajji Firuz Period was seasonal camp site because the thickness of layers is not more than 0.5 m. But the Pisdeli materials distributed mainly at the western part of the site with about 2.5-3 m cultural materials.

Actually, Dava Göz is one of the scant well excavated settlements that give new and fresh information on the developments of the Lake Urmia Basin communities between the sixth to fourth millennium BC, and on their relationships with the contemporary Caucasian cultures as well as with those located further west and south, in Eastern Anatolia and in the Syro-Mesopotamian region.

Dava Göz overlaps in the LC1 and 2 periods with Kul Tepe VII, VIB and VIA (ca. 4500-3900 BC). Like Kul Tepe, Dava Göz pottery repertoire divided in two painted and unpainted through LC 1 and 2. Pottery assemblage is as same as Kul Tepe and encompasses unit cultural *horizon* or *province*.

The 2012 field season at Dava Göz accomplished all its primary archaeological goals and made significant progress toward better understanding the structure of the settlement and its occupational history from the end of sixth to the fourth millennium B.C. The results of our first field season of excavation

and surface survey suggest that Dava Göz can play a key role in defining for the Late Neolithic, Early Chalcolithic (Dalma), LC1-2 (Pisdeli and Chaff-Faced Cultures) cultures and chronology for the Khoy plain and Northern parts of NW Iran.

Dava Göz is located next to a broad valley, at the core of the highlands and the crossroads of major routes linking the Iranian plateau to Anatolia and the Caucasus to Northern Mesopotamia. This strategic location is further enhanced by the wealth in natural resources of the region, which boasts rich copper and salt deposits. A comparative analysis of data demonstrates that Dava Göz had broad interregional relations with Northern Mesopotamia, the Jezireh region, the Upper Euphrates, Eastern Turkey and the Caucasus on the one hand and Zagros region of Iran and the Lake Urmia Basin on the other during the Late Neolithic/Transitional Chalcolithic periods.

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REFERENCES

- Abdi, Kamyar. (2003) The early development of Pastoralism in the Central Zagros Mountains, *Journal of World Prehistory*, Vol. 17, No. 4. pp. 395-445.
- Abedi, A., Khatib Shahidi, H., Chataigner, CH., Niknami, K., Eskandari, N., Kazempour, M., Pirmohammadi, A., Hoseinzadeh, J. and Ebrahimi, GH. (2014) Excavation at Kul Tepe of (Jolfa), North-Western Iran, 2010: First Preliminary Report", *Ancient Near Eastern Studies*. Vol. 51. pp. 33-167.
- Abedi, A. (2012) *Dava Göz Khoy Excavation: First Preliminary Report*, Unpublished report prepared for ICHHTO (In Persian).
- Abedi, A. and Omrani, B. (2013) 5th Millennium B.C. in NW Iran: Dalma and Pisdeli Once Again, in *A new look at old routes in Western Asia: Rethinking Iran in the 5th millennium BCE*, Berlin: May 31- 2 June.
- Abedi, A., Omrani, B. and Karimifar, A. (2015). Fifth and fourth millennium BC in north-western Iran: Dalma and Pisdeli revisited, *Documenta Praehistorica XLII*. pp. 321-338.
- Achundov, T. (2007) Sites des migrants venus du Proche-Orient en Transcaucasie, in *Les cultures du Caucase (VIe - IIIe millénaires avant notre ère). Leurs relations avec le Proche Orient*, B. Lyonnet ed., Éditions Recherche sur les Civilisations, CNRS Éditions: Paris: 95-122.
- Achundov, T. (2011) Archaeological sites of the Mugan Steppe and prerequisites for agricultural settlement in the South Caucasus in the Neolithic- Eneolithic", *Stratum plus* (2). pp. 219-236.
- Alizadeh, K. and Azarnoush, M. (2003a) Systematic survey of Tepe Baruj: Sampling method and statistical results (Barresi-ye Raveshmand-e Tappe-ye Baruj: Ravesh-e Numunebardari va Natayej-e Amari)," *Iranian Journal of Archaeology and History* 33. pp. 4-25 (In Persian with English summary).
- Alizadeh, K. and Azarnoush, M. (2003b) Systematic survey of Baruj Tepe: Cultural relationship between the south and the north of the Araxes River (Barasiy-e Raveshmand-e Tappeh Baruj: Ravabet-e Farhang-e do soye Rood-e Aras)," *Iranian Journal of Archaeology and History* 34. pp. 3-21 (In Persian with English summary).

- Belgiorno, M. R., Biscione, R. and Pecorella, P. E. (1984) Il Saggio E I Materiali Di Tappeh Gijlar," in *Tra Lo Zagros e L'Urmia: Ricerche Storiche ed Archeologiche Nell'Azerbaijano Iraniano*, edited by P.E. Pecorella and M. Salvini, pp. 240-299. Rome: Edizioni dell'Ateneo.
- Burton-Brown, T. (1951) *Excavations in Azerbaijan 1948*. John Murray, London.
- Burney, C. A. (1961a) Excavations at Yanik Tepe, north-west Iran, *Iraq* 23. pp. 138-153.
- Burney, C. A. (1961b) Circular buildings found at Yanik Tepe, in north-west Iran, *Antiquity* 35. pp. 237-240.
- Burney, C. A. (1962) The excavations at Yanik Tepe, Azerbaijan, 1961 Second Preliminary Report, *Iraq* 24. pp. 134-152.
- Burney, C. A. (1964) The excavations at Yanik Tepe, Azerbaijan, 1962: Third Preliminary Report, *Iraq* 26. pp. 54-61.
- Burney, C. A. (1970a) Excavations at Haftavan Tepe 1968: First preliminary report, *Iran* 8. pp. 157-171.
- Burney, C. A. (1970b) Haftavan Tepe," in "Survey of excavations in Iran during 1968-69, *Iran* 8. pp. 182-183.
- Burney, C. A. (1972) Excavations at Haftavan Tepe 1969: Second preliminary report, *Iran* 10. pp. 127-142.
- Burney, C. A. (1973) Excavation at Haftavan Tepe" 1971: Third preliminary report, *Iran* 11. pp. 153-172.
- Burney, C. A. (1974) Report on the 1973 season of excavations at Haftavan Tepe, in *Proceedings of the 2nd Annual Symposium on Archaeological Research in Iran, 1973*, edited by F. Bagherzadeh, pp. 102-111. Tehran: Iranian Center for Archaeological Research.
- Burney, C. A. (1975) Excavations at Haftavan Tepe 1973: Fourth preliminary report, *Iran* 13. pp. 149-164.
- Burney, C. A. (1976a) The Fifth Season of Excavation at Haftavan Tepe: Brief Summary of Principal Results, in Firoozeh Bagherzadeh (ed.), *Proceedings of the IVth Annual Symposium on Archaeological Research in Iran, 1975*, edited by F. Bagherzadeh, pp. 257-271. Tehran: Iranian Center for Archaeological Research.
- Burney, C. A. (1976b) Haftavan Tepe," in "Survey of excavations in Iran: 1974-75, *Iran* 14. pp. 157-158.
- Burney, C. A. (1979a) Haftavan Tepe," in "Survey of excavations in Iran: 1978, *Iran* 17. pp. 150.
- Caneva, I., PALUMBI, G., and Pasquino, A. (2012) The Ubaid Impact on the Periphery: Mersin-Yumuktepe During the Fifth Millennium BC., In Marro, C., 2012 (ed.) "The "Post-Ubaid" Horizon in the Fertile Crescent", *Varia Anatolica*, Istanbul.
- Dyson, R. H. and Young, T. C. Jr. (1960) The Sulduz Valley Iran: Pisdeli Tepe, *Antiquity* 34. pp. 19-28.
- Edwards, M. R. (1981) The pottery of Haftavan VIB (Urmia ware), *Iran* 19. pp. 101-140.
- Edwards, M. R. (1983) *Excavations in Azerbaijan (North-western Iran), Vol. 1. Haftavan, Period VI* (British archaeological reports, International series, 182). Oxford: B.A.R.
- Edwards, M. R. (1986) 'Urmia Ware' and its distribution in north-western Iran in the second millennium B.C.: A review of the results of excavations and surveys," *Iran* 24. pp. 57-77.
- Frangipane, M. (2012) "Transitions" As an Archaeological Concept. Interpreting the Final Ubaid - Late Chalcolithic Transition in the Northern Periphery of Mesopotamia, In Marro, C., 2012 (ed.) "The "Post-Ubaid" Horizon in the Fertile Crescent", *Varia Anatolica*, Istanbul.
- Hamlin, C. (1975) Dalma Tepe, *Iran* 13. pp. 111-127.
- Heidari, R. (2002) *Archaeological Survey of Salmas Plain*, Unpublished Report on ICHHTO of West Azarbaijan.
- Helwing, B. (2004) The Late Chalcolithic Period in the Northern Zagros, A Reappraisal of the Current Status of Research, in *Proceedings of the International Symposium on Iranian Archaeology: Northwestern Region* (ed. Azarnoush, M).Urmia: pp. 11-24.
- Helwing, B. (2012) "Late Chalcolithic craft traditions at the North-Eastern "periphery" of Mesopotamia: Pottery vs. Smiths in the Southern Caucasus". *Origini* 24. pp. 193-212.
- Hojeabri Nobari, A., Binandeh, A., Nestani, J. and Vahdati Nasan. H. (2012) Excavation at Lavin Tepe North-west Iran, *Ancient Near Eastern Studies*, Vol. 40. pp. 95-117.
- Hejabri Nobari, A. and Purfaraj, A. (2005) The investigation of cultural relationships of Ardebil province with north and northeastern Iran in Neolithic and Chalcolithic periods: Based on archaeological data of Ghosha Tepe in Shahar Yeri," in *Abstracts of the International Symposium on Iranian Archaeology: Northern and Northeastern Regions*, p. 304. Tehran: Iranian Center for Archaeological Research.
- Henrickson, E. F. (1985) An updated chronology of the early and middle Chalcolithic of the central Zagros highlands, western Iran, *Iran* XXIII. pp. 63-108.
- Henrickson, E. F. and Vitali, V. (1987) The Dalma Tradition: Prehistoric Inter-Regional Cultural Integration Highland Western Iran, *Paleorient*, Vol. 13, No. 2. pp. 37-45.
- Hole, F. (1987) *Archaeology of the Village Period. In The Archaeology of Western Iran: Settlement and Society from Prehistory to the Islamic Conquest*. F. Hole, (ed.) pp.29-78. Washington, D.C.: Smithsonian Institution Press.

- Kargar, B. (1995) Excavation and Sounding at Ahranjan and Qareh Tepe, Salmas Plain, MA Dissertation, University of Tehran (Unpublished).
- Khademi Nadooshan, F., Abedi, A., Glascock, M. D., Eskandari, N. and Khazaee, M. (2013) Provenance of prehistoric obsidian artefacts from Kul Tepe, northwestern Iran using X-ray Fluorescence (XRF) analysis, *Journal of Archaeological Science* 40, no. 4. pp. 1956–1965.
- Kleiss, W. (1972) Ausgrabungen in der urartäischen Festung Bastam (Rusahinili) 1970, *AMI* 3, pp. 7–65.
- Kleiss, W. and Kroll, S. (1979) Ravaz und Yakhvali, Zwei Befestigte Plätze des 3. Jahrtausends, *Archäologische Mitteilungen aus Iran (AMI)* 12. pp. 27–47.
- Kleiss, W. and Kroll, S. (1992) Survey in Ost-Azarbaidjan 1991, *Archäologische Mitteilungen aus Iran (AMI)* 25. pp. 1–46.
- Kroll, S. (1970) Die Keramik aus der Ausgrabung Bastam 1969, *Archäologische Mitteilungen aus Iran (AMI)* 3.
- Kroll, S. (1972) Die Keramik aus der Ausgrabung Bastam 1970, *Archäologische Mitteilungen aus Iran (AMI)* 5.
- Kroll, S. (1984) Archäologische Fundplätze in Iranisch-Ost-Azarbaidjan, *Archäologische Mitteilungen aus Iran (AMI)* 17. pp. 13–133.
- Kroll, S. (1990) Der Kultepe bei Marand: Eine chlkolithische Siedlung in Iranisch-Azarbaidjan, *Archäologische Mitteilungen aus Iran* 23. pp. 59–71.
- Kroll, S. (1994) *Festungen und Siedlungen in Iranisch-Azarbaidjan. Untersuchungen zur Siedlungs- und Territorialgeschichte des Urmia-See-Gebietes in vor-islamischer Zeit*. Prof. Thesis, Ludwig-Maximilians-Universität München (Munich 1994).
- Kroll, S. (2005) Early Bronze Age settlement patterns in the Orumiye Basin,” in Mountains and Valleys. A symposium on highland-lowland interaction in the Bronze Age settlement system of Eastern Anatolia, Transcaucasia and Northwestern Iran (*AMIT* 37), edited by B. Helwing and A. özfirat, pp. 115–121.
- Levine, Louis D. and, Cuyler Young, T. (1984) A Summary of the Ceramic Assemblages of the Central Western Zagros from the Middle Neolithic to the Late Third Millennium B.C. *Colloques internationaux CNRS: Préhistoire de la Mésopotamie* 1984, Paris, pp. 15–53.
- Lyonnet, B. (2007) La culture du Maikop, la Transcaucasie, l’Anatolie orientale et le Proche- Orient: relations et chronologie, in *Les cul- Late Chalcolithic craft traditions at the North-Eastern ‘periphery’ of Mesopotamia: Potters vs. Smiths... tures du Caucase (VIe - IIIe millénaires avant notre ère). Leurs relations avec le Proche Orient*, Lyonnet B. ed., Éditions Recherche sur les Civilisations, CNRS Éditions, Paris, pp.133–162.
- Lyonnet, B., Achundov, T., Almamedov, K., Bouquet, L., Courcier, A., Jellilov, B., Huseynov, F., Loute, S., Makharadze, Z., Reynard, S. (2008) Late Chalcolithic Kurgans in Transcaucasia. The cemetery of Soyuq Bulaq (Azerbaijan), *Archäologische Mitteilungen aus Iran und Turan* 40. pp. 27–44.
- Lyonnet, B., Guliyev, F. (2012) Recent Research on the Chalcolithic Period in Western Azerbaijan”, in Proceedings of the 7th ICAANE, London 2010, Matthews R., Curtis J.
- Malekpour, F. (2010) Study and Analyzing of Settlement Patterns of Khay and Salmas Plains Chalcolithic and Bronze Age Site, MA Dissertation, Islamic Azad University of Abhar, Zanjan.
- Marro, C. (2007) Upper-Mesopotamia and Trancaucasia in the Late Chalcolithic Period (4000-3500 BC) » in B. Lyonnet (ed.) *Les Cultures du Caucase (VIème- IIIème Millénaires av. n. è.). Leurs relations avec le Proche-Orient*. CNRS Editions. ERC. Paris. pp. 77–94.
- Marro, C. (2009) Late Chalcolithic Ceramic Cultures in the Highlands (4000-3500 BC) ». In K. Rubinson and A. Sagona, *Ceramics in transitions: Chalcolithic through Iron age in the Highlands, Ancient Near Eastern Studies*, Peters Press, Louvain.
- Marro, C. (2010) Where did Late Chalcolithic chaff-faced ware originate? Cultural dynamics in Anatolia and Transcaucasia at the dawn of urban civilization (ca 4500-3500 BC), *Paléorient* 36(2). pp. 35–55.
- Marro, C. (2012) (ed.) *The “Post-Ubaid” Horizon in the Fertile Crescent*, Varia Anatolica, Istanbul.
- Maziar, S. (2010) Excavations at Kohne Pasgah Tepesi, the Araxes Valley, Northwest Iran: First Preliminary Report, *Ancient Near Eastern Studies*, No.47: 165–193.
- Müseiyibli, N. (2007) *Böyük Kəsik. Eneolit dövrü yaşayış məskəni*, Bakı.
- Oates, Joan. (1983) Ubaid Mesopotamia Reconsidered. In *The Hilly Flanks and Beyond: Essays on the Prehistory of Southwestern Asia*. T.C. Young, P. E. L. Smith, and P. Mortensen, (eds.), pp. 251–282. Chicago: The Oriental Institute of the University of Chicago.
- Pecorella, P. E and Salvini. M. (1984) *Tra Zagros eL Urmia*: Rome.
- Rothman, M. (ed.) (2001) *Uruk Mesopotamia and Its Neighbors: Cross-Cultural Interactions and Their Consequences in the Era of State Formation*. Santa Fe, School of American Research.

- Solecki, R. S. (1969) Survey in Western Azerbaijan, *Iran* 7. pp. 189–190.
- Solecki, R. L. and Solecki, R. S. (1973) Tepe Sevan: A Dalma period site in the Margavar valley, Azerbaijan, Iran, *Bulletin of the Asia Institute of Pahlavi University* 3. pp. 98–117.
- Stein, G. J. (2012) The Development of Indigenous Social Complexity In Late Chalcolithic Upper Mesopotamia In the 5th-4th Millennia BC - An Initial Assessment, *ORIGINI*, Vol. XXXIV. pp. 125-151.
- Talai, H. (1983) Pottery evidence from Ahrendjan Tepe, a Neolithic site in Salmas plain, Azerbaijan, Iran. *AMI* (16). pp. 7-17.
- Talai, H. (1984) Notes on New Pottery Evidence from the Eastern Urmia Basin: Gol Tepe, *Iran* XXII, pp. 151-156.
- Tonoike, Yukiko. (2009) *Beyond Style: Petrographic analysis of Dalma ceramics in two regions of Iran*, PhD Dissertation, University of Toronto.
- Vandiver, Pamela B. (1985) *Sequential Slab Construction: A Near Eastern Pottery Production Technology, 8000-3000 BC*. PhD Dissertation, Massachusetts Institute of Technology.
- Voigt, M. M. (1983) *Hajji Firuz Tepe: The Neolithic Settlement (Hasanlu Excavation Reports, Vol. 1; University Museum Monograph 50)*. Philadelphia: University of Pennsylvania.
- Voigt, M. M. and Dyson, R. H. Jr. (1992) The Chronology of Iran, ca. 8000-2000 B.C. In R. W. Ehrich, (ed.), *Chronologies in Old World Archaeology*. 3rd edition, Chicago: University of Chicago Press, pp. 122–178.