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RESEARCH ARTICLE

Cultural Interactions of Azarbaijan in Northwest Iran and the South Caucasus in Chalcolithic Period Based on Archaeological Data

Ali Karimikiya[1], Reza Rezaloo[2], Akbar Abedi[3], Ardeshir Javanmardzadeh[4]

Abstract

Iranian Azarbaijan and the southern Caucasus have relatively good environmental conditions for the formation of ancient settlements. These include the Lake of Urmia and the coasts of Aras in northwestern Iran and the basins of the Kora River, Mill-Moghan (mountainous areas) in the South Caucasus. The archaeological evidences and recent researches in the two geographical areas provide commonalities and cultural similarities of the period. The main purpose of this article is to introduce traditions of pottery and sites and determine the chronological sequence in the study areas. In order to achieve cultural interactions in the studied geographical area in the Chalcolithic period, the following questions are proposed: What is the status of chronological sequence in the two cultural domains? The main hypothesis in this regard is the existence of chronology is almost identical in the two geographical areas. How do the settlement layers and the sequence of habitation from the Neolithic to the Chalcolithic period in ancient sites show the issue of cultural continuity and transmission? The present writing is done by descriptive-analytical method. As a final result, it can be said that similarities and differences of archaeological data, including the features of pottery, architectural structure, burial etc. point out that by studying areas such as Dalma Tepe, Jolfa's Kul Tepe, Khoy's Dava Göz, etc. in Northwestern Iran and Leila Tepesi, Qalayeri, Poylu Tepe, etc in the South Caucasus region have been obtained and in terms of chronology, the millennium BC includes 5000 BC to 3700-3600 BC.

Keywords: Chalcolithic; Azarbaijan in Northwest Iran; South Caucasus; Cultural Interactions; Chronology.

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Introduction

Northwestern Iran and the Caucasus have long had a special place in archaeological studies due to their proximity to important cultural areas such as Anatolia, Zagros, Mesopotamia and Central Asia. Meanwhile, northwestern Iran (Azarbaijan) alone is an important cultural and geographical area in the interconnected body of the Iranian plateau is considered during the prehistoric period (Talai, 2011: 63-64). During this period, the early rural communities, which were formed in the pre-Neolithic period, reach their peak of prosperity. In this sense, this period indicates a gradual rupture of Neolithic patterns, which results in the emergence of the Chalcolithic culture in a very wide geography (Talai, 2011: 1). Caucasus Archaeology due to ethnic, religious and political issues, a very complex path and in terms of archaeological studies, is divided into the archeological periods of the Russian Empire (before AD 1917) and the Soviet archeological period (AD 1917-1991) (Sagona, 2008: 4-7).

According to studies, the Chalcolithic period in northwestern Iran is divided into three cultural periods: the Early Chalcolithic (Dalma culture), the Middle and late Chalcolithic I / LC1 (Pisdeli culture) and the late Chalcolithic 2-3/ LC2-3/CFW) (Abedi, 2016: 103) (Bakhtiari et al., 2018: 32-31). We know very little about the chronology and its adaptation to neighboring regions, especially the South Caucasus. Fortunately, in the last decade, many excavations have been carried out in the South Caucasus basin and important results have been obtained regarding the Chalcolithic culture and its economic and social structure compared to the northwest of Iran. According to archaeologists, this period coincides with the initial activities of copper metallurgy (Bakhshaliev and Marro, 2016: 5).

In order to achieve cultural interactions in the studied geographical area

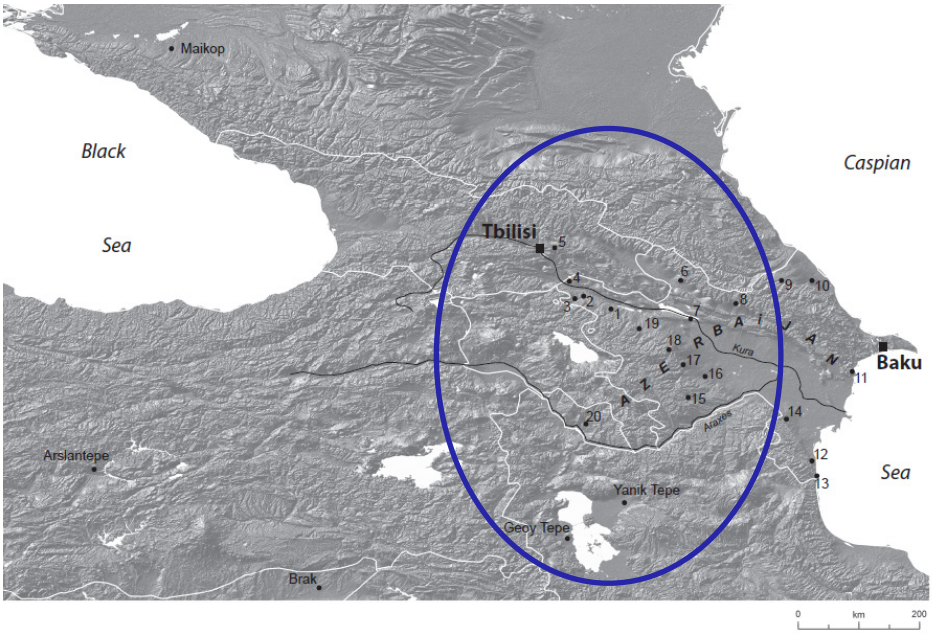


Fig. 1. Map of the Northwestern Iran and the Study Area (Lyonnet et al., 2016: 171)

in the Chalcolithic period, the following questions are asked; 1) What is the status of chronology sequence in two cultural fields? The main hypothesis in this regard is the existence of chronology (the beginning and end of the Chalcolithic period) identical in two geographical points. 2) How do the settlement layers and sequences of habitation from the Neolithic period to the Chalcolithic period in ancient sites show the cultural situation and the subject of cultural continuity and transmission? Most of the archeological sites in the Caucasus region and in the northwest of Iran, which were inhabited during the Chalcolithic period, were also inhabited in the Neolithic period, which shows the human and animal habitation conditions and favorable environmental conditions. However, there are also single-period areas/sites among them. Finally, an attempt is made to study the cultural interactions of the Chalcolithic period in two geographical areas by studying archaeological findings.

Research Method

The present study is based on the descriptive-analytical method of archaeological data and using reliable sources and the occurrence of the geographical area of Northwestern Iran and the South Caucasus region, to study cultural interactions and present chronology during the fifth and fourth millennium BC. By studying the Chalcolithic culture of the above-mentioned areas, ambiguities such as the cultural situation and chronology of the areas in question should be removed as much as possible. In the meantime, the new knowledge of stratigraphy and dating by C14 method, which is available, will be used for comparison and a more detailed study.

Geographical Location

The studied geographical area includes the plateau of Azarbaijan (Northwestern Iran), of which different areas or zones of Urmia Lake have been studied more by archaeologists than other parts. The next study area is the geographical area of the South Caucasus (Fig. 1). These two regions are also referred to as crossroads of tribes and places of mixing and intermingling of cultures. Through these regions, there have long been cultural interactions and connections with the Caucasus, the Anatolian Plateau, Mesopotamia, the Central Plateau of Iran, and the Central Asia.

History of Archeological Activities of Chalcolithic Period in NW Iran and South Caucasus

The basis of prehistoric archeological studies and general appearance is determined by the ancient sites of Lake Urmia. Archaeological excavations in this area are divided into two periods: before the Islamic revolution and after the Islamic revolution. The most excavations have been carried out by Western archaeologists. In addition, Iranian archaeologists have conducted studies after the Islamic revolution and in recent decade.

Around the years 1932-1933, Frenchman Jacques Demurgan entered Azarbaijan from Gilan and studied Archaeology around Lake Urmia (Vandenberg, 1990: 114). Excavations in West Azarbaijan (Lake Urmia) began with excavations in the Göy Tepe under the direction of Burton Brown (Brown, 1951). The investigation of Professor Coon in the caves of Urmia basin in 1949, the Hasanlu research team in areas such as Hasanlu Tepe (Dyson, 1956), Haji Firuoz (Voigt, 1983), Dalma Tepe (Hamlin, 1975), Pisdeli Tepe (Dyson & Young, 1960), Dinkhah Tepe (Muscarella, 1968a, 1974), Aghrab Tepe (Muscarella,

1973), Segardan (Muscarella, 1969, 2003), Qalaat Gah (Muscarella, 1968b), Kramer and Lippert explorations in Kordlar Tepe (Lippert, 1979) and Kearton had also extensive research in the Salmas Plain (Kearton, 1969; 1970). In addition to the aforementioned projects in Azarbaijan, the excavations of Charles Burny in Yaniq Tepe (Burny, 1961; 1962; 1964) and Burton Brown in Göy Tepe (Brown, 1951), and the excavation of Burny in Haftvan Tepe (Burny, 1970), and The German team (Kleiss & Kroll, 1992) surveys around the Lake Urmia added to this.

After the Islamic revolution, Talai has excavated in Aharanjan Tepe (Talai, 1983), Gijler Tepe (Pecorella & Salvini, 1984), and Kul Tepe of Marand (Kroll, 1990) in western Azarbaijan. In addition, it is possible to point out the systematic survey the of Barouj Tepe (Alizadeh & Azarnoosh, 2002), the excavation of Gosha Tepe of Meshkinshahr (Hejabri, Nobari & Poorfaraj, 2006), Idir Tepe of Aslanduz (Hesari and Akbari, 2005), the archeological surveys of Bostanabad (ujan) (Velayati, 2006, 2013), the surveys of Behrouz Omrani in the east of Urmia Lake (Omrani, 1993), Akbar Abedi's excavation in Jolfa's Kul Tepe (Abedi et al., 2014) and Dava Göz (Dəvə Göz) of Khoy (Abedi, 2017), Ms. Maziar's excavation in the kohna pasghah Tepesi (Maziar, 2010), Ali Binandeh's excavation in Lavin Tepe (Hejabri Nobari et al., 2012), Heidarian studies in Meshkinshahr (Heydarian, 2008) and trenches of Mr. Chaichi Amirkhiz in Shiramin Tepe of Azarshahr and Dagirman Tepe of Bostanabad (Chaichi Amirkhiz, 2008), Salmanpour and Abtahi Foroushani surveys in Horand of Qara Dagh area (Salmanpour and Abtahi Foroushani, 2013) and should point out to the archeological studies of Saaed Mocheshi in the Gezel Uzen River of Bija (Saaed Mocheshi, 1392).

But in the geographical area of the South Caucasus, the Chalcolithic archaeological studies are divided into two stages: before and after the twentieth century. For the first time, Chalcolithic studies in this area were started by Iessen and Səlimxanov (Avşarova & Pirquliyeva: 2010). These include the Abibullyev archaeological excavations at Kul Tepe I, in Nakhchivan of Azarbaijan (Abibullayev, 1982), Aratashen (Palumbi, 2007) (Badalyan et al., 2007), and the study of the Mill-Karabakh region of Azarbaijan (Iessen, 1956), the excavation of the Late Chalcolithic Kurgans in Soyuq Bulaq (Museyibli, 2008) (Lyonnet et al., 2008),Shomu Tepe and Alikomak Tepesi (Narimanov, 1987), Tekhot (Torosjan, 1976), Siyoni (Connor & sagona, 2007), Brikil Dibi (Zavarişvili, 1998), Leila Tepesi in Karabakh (Aliyev & Narimanov, 2001), Khatunark-Aknashen (Badalyan et al., 2010), Nakhchivan Tepe (Baxşəliyev et al, 2018), uçan Ağil (Baxşəliyev et al, 2017b), Uzun oba (Baxşəliyev, 2017b), Ovçular Tepesi (Marro et al., 2009), Mentesh Tepe (Lyonnet et al., 2012), Boyuk Kasik (Museyibli & Huseynova, 2004) (Museyibli, 2007) and Yeni Yol site (Baxşəliyev et al, 2017a) have been studied.

Chalcolithic in NW Iran; Periodization, Comparison of Chronology and Cultural Continuity

In recent years, one of the important issues in introducing and studying the culture of Chalcolithic in Northwestern Iran was the ambiguity and darkness in the chronological table of the Chalcolithic period of this region. Because this period was introduced after the late Neolithic period, which was identified in areas such as: Haji Firuoz, Hasanlu, Yaniq Tepe and etc., with an interval of almost a thousand years. Until, Dr. Abedis' recent excavations in Kul Tepe of Jolfa and Dava

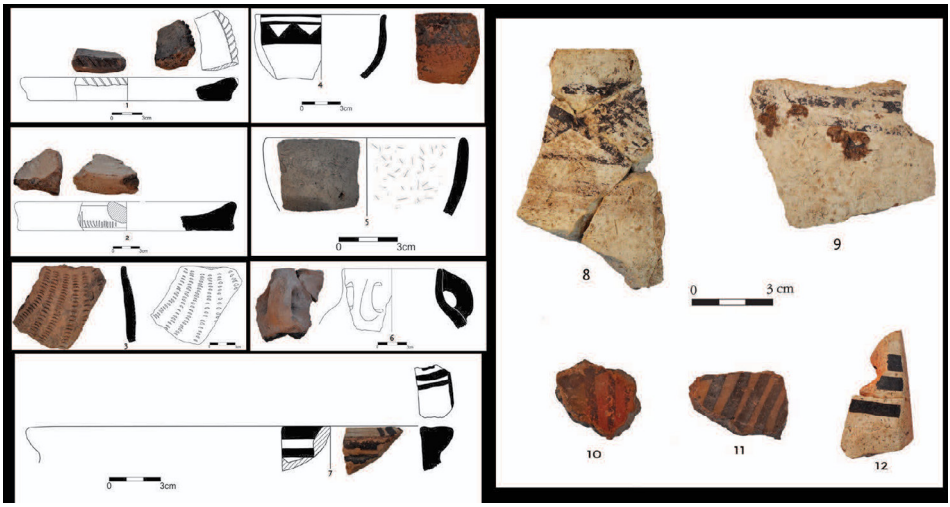


Fig. 2. Dalmaian Type Pottery (Early Chacolithic) from Kul Tepe (Abedi, 2016).

Göz of Khoy the interruption occurred in the chronology of the Chalcolithic period of northwestern Iran (Azarbaijan) was removed (Abedi et al., 2014; Abedi. 2007). In general, the prehistoric chronology of Azarbaijan is explained based on the excavations carried out in the Urmia Lake basin. But the area that represents all the Chalcolithic periods (old, middle and new) in the chronological sequence was not obtained, and among these, the Old Mesolithic period remained unknown.

But no site is known to include all chalcolithic periods (early, middle and latte) in the stratigraphy and chronological sequence and among these, the early chalcolithic period remained unknown. In this regard, the prehistoric periodization is based on the studies and data's from the sites that are located at close and distant distances in this area, and the American archaeologists, as the pioneers of archaeological activities in the region, have generalized the results obtained from an area such as Sulduz to all regions of the North Zagros and beyond in the periodization of prehistoric cultures in northwestern Iran (Aliyari & Talai, 2005).

The excavations and studies conducted in the northwestern of Iran have to some extent identified its cultural periods. Certainly, the most well-known Neolithic and Chalcolithic settlements are Haji Firuoz, Ahranjan Tepe, Qara Tepe, Dalma Tepe, Yaniq Tepe and Pisdeli Tepe hills. These sites have revealed three pottery horizons in the North Zagros, namely:

1. Haji Firuoz and Ahranjan pottery horizon
2. Dalma pottery horizon
3. Pisdeli pottery horizon (Talai, 2011: 104).

Early Chalcolithic (Dalma Culture)

As mentioned above, based on the absolute chronology made from the archaeological data of Kul Tepe and Dava Göz of Khoy, the ambiguity of the early Chalcolithic period chronology in Northwestern Iran has been removed, which will be discussed below. The Dalma pottery tradition, of which is also known as Hasanlu IX, have been obtained from a wider geographical area, including the Iranian Azarbaijan, Central Zagros, Mes-

opotamia, Caucasus, and so on. Solki introduces the nomads as the main cause of the dispersal of these pottery (Hole, 2003: 101). Hamlin points to the wider relationships and connections and mentions Mesopotamia, Kermanshah region and neighboring regions (Hamlin, 1975: 120). According to previous studies, the Dalma pottery tradition in Northwestern Iran dates to the second half of the fifth millennium BC, and only one example of absolute dating for the Dalma period is 4215±84, which is presented by Hamlin is known as Hasanlu IX in the chronological table of the Northwest of Iran (Voigt & Dyson, 1992). For the Dalma cultural tradition, according to Carbon 14 dating and relative chronologies, different dates are presented. Hamlin has dated it between 5000-4000 BC (Hamlin, 1975), and Hole has dated it about late fifth millennium BC (Hole, 2002: 100). Henrikson states that the Dalma pottery tradition flourished in Azarbaijan, East Kurdistan, and Northern Lorestan between 4100 -3700BC (Henrickson, 1985: 70). The dating of carbon 14 from the Dalma layers in Ahranjan Tepe shows the date of 4219±95 BC (Kargar, 1995: 77) and in Soha Chay Tepe of Zanjan between 4038 to 4252 BC (Rahimi Sarkhani, 2008: 93). But the newly proposed absolute chronology eliminates this problem (the chronological interval between late Neolithic and Middle Chalcolithic). Based on the analysis of carbon 14 samples from two newly excavated sites, Dava Göz II, and Kul Tepe VIII, the Dalma period without interval after the Haji Firuoz period (Neolithic), belongs to 5000-4500 BC (Abedi et al., 2014; Abedi, 2017); Therefore, according to the excavations of the mentioned areas, the proposed date of 4100-3700 BC for the Dalma culture in Northwestern region of Iran was incorrect. It should be noted that pottery with compression technique and with a thick red coating of Dalma type has been obtained from Bostan Abad (Velayati, 2006) and also from Lavin Tepe (Binandeh et al., 2012). Similar to the pottery of Lavin Tepe and Dava Göz of Khoy, and also Ghosha Tepe Shahryeri in Meshkinshahr plain some delicate Dalma type potteries with red coating have been obtained from Jalbar Tepe (Razzaghi & Fahimi, 2004), (Hejabri Nobari & Pourfaraj, 2006). On the other hand, Dalma-painted pottery have been obtained from Ider Tepe (Hesari and Akbari, 2005) and Soha Chay Tepe of Zanjan (Rahimi Sarkhani, 2016). The study of archeological data and especially the chronology presented recently shows that it is necessary to review and revise the dating of this culture (Dalma). Dalma-type pottery wares (early chalcolithic) include the prominent pottery of Dalma-patterned types. These types of pottery include the pottery of which painted with straw temper or pottery with mixed temper, among which red-painted pottery are the most prominent types of pottery of this period (Fig. 2) (Abedi, 2016: 101). Dalma-type pottery are divided into four categories:

1. Painted Dalma ware
2. Compression Dalma ware
3. Thick red coating Dalma ware
4. Simple Dalma ware (Hamlin, 1975: 118).

Middle and Late Chalcolithic

Today, the Middle and late Chalcolithic period in West Asia is divided into 3 phases and in some areas into 5 phases (Helwing, 2012: 204). In all zones of the Lake Urmia in the middle of the fifth millennium BC, Pisdeli culture replaces Dalma culture. Cultural remains and archaeological data of this period have been obtained from Pisdeli Tepe, Hasanlu, Haji Firuoz, Gijler Tepe, Goy Tepe M and N and Yaniq Tepe (Voigt & Dyson, 1992). This

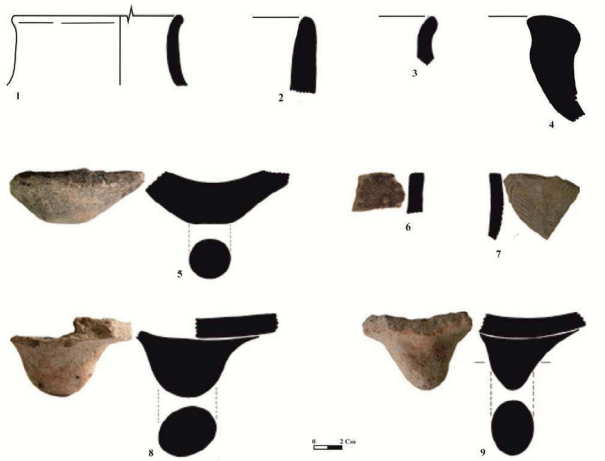


Fig. 3. Pizdeli Type Pottery from Meshkin Shahr (Heidarian, 2017: 14).

period (Middle and late Chalcolithic) in Northwestern Iran has been introduced under the general title of Hasanlu VIII. Recent dating in layer VII of Jolfa's Kul Tepe (Abedi et al., 2014) and layer III of Khoy's Dava Göz area (Abedi, 2017) and besides, dating of Hasanlu VIII (Danti et al., 2004) presented a clear and an extensive chronology for the Pisdeli period. According to excavation reports and carbon 14 samples from the two sites of Dava Göz III and Kul Tepe VII, the pottery of the Pisdeli period a chronology includes a history about 4500-4200 BC. Based on the archeological surveys of Meshkinshahr (Central Meshkin, around Ahmad Beyglou Dam), Pisdeli type pottery and pottery of Goy Tepe M –cream-colored pottery with herbal chamotte and with thick red glaze- have been obtained from two areas numbered 5 and 8 (Fig. 3) (Heidarian, 1396: 14). In terms of similarity, a sample of these pottery from the studies of Horand Qara Dagh region (Salmanpour & Abtahi Foroushani, 1993), from Lavin Tepe (Binandeh et al., 2012); Also from Jolbar Tepe, cream-colored pottery with sand chamotte and with black and dark brown patterns (Razaghi & Fahimi, 2004) and from the studies of Ghezel uzan, areas related to Dalma and Pisdeli culture have been obtained in 76 areas, but the settlement in the area starts from the Middle Chalcolithic period. In the late Chalcolithic period, the number of areas decreases, which probably reminds of the growth of nomadism or villages with herding economy (Saaed Mocheshi, 1993: 25-50), which are also obtained by the samples of Horand Qara Dagh, Kul Tepe and Dava Göz are similar. Therefore, the date of 4500-4200 BC can be considered for the Pisdeli period. The pottery works of the LC1 period include the pottery works painted with straw temperament or pottery with mixed temperament, among which red-painted pottery and pea-colored pottery can be seen, which are the characteristics of this period (Fig. 4) (Abedi, 1395: 101). At present, the LC2-3 pottery works are gray pottery with excised motifs, rail edge pottery, pottery with grooved patterns and pottery known as chaff-faced. The dating of Kul Tepe and Dava Göz removed the ambiguity of the chronological interval between Pisdeli (Hasanlu VIII) and Yaniq (Hasanlu VII) in the chronological table presented in the 1980s and 1990s (Henrickson, 1983; Voigt & Dyson, 1992). It

Table 1. Periodization of Dava Göz, Kul Tepe Jolfa and Idir Tepe (Northwestern Iran).

Absolute Dating C14	Chronology	Period and Stratigraphy of Dava Göz
5400-5000/4900 B.C	Late Neolithic period/ Transitional Chalcolithic	Dava Göz 1
5000-4500 B.C	Early Chalcolithic (Dalma)	Dava Göz 2
4500-4200 B.C	LC1 (Ubaid = Pisdeli)	Dava Göz 3
4200-3800/3700 B.C	LC2 (Chaff faced ware)	Dava Göz 4

Stratigraphy of Dava (Dəvə) Göz, (Abedi, 2016: 46).

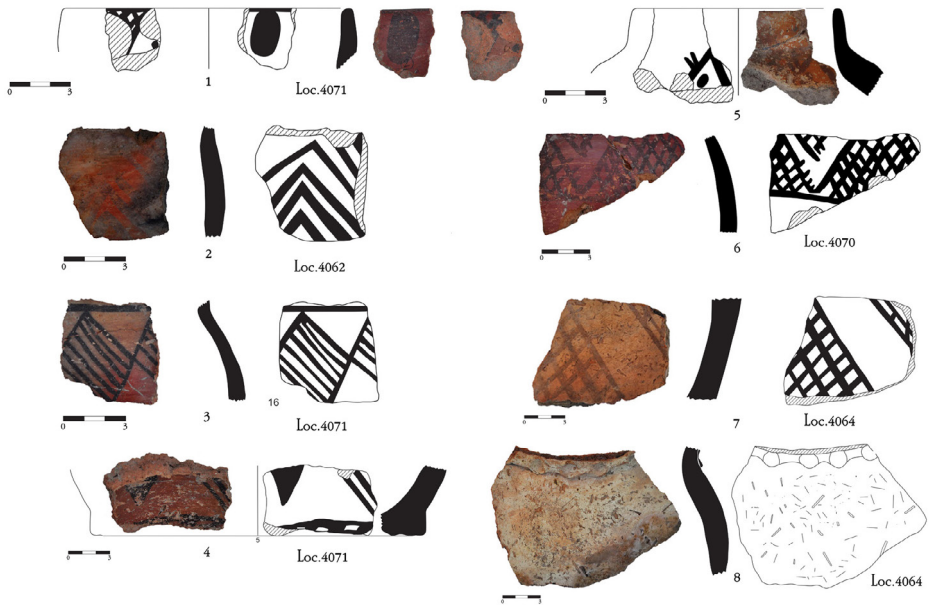


Fig. 4. Late Chalcolithic 1 Pottery from Kul Tepe (Abedi, 2016).

was divided into the following periods: Pisdeli / LC1 Kul Tepe VII, Dava Göz III (4500-4200 BC) and chaff-faced pottery / LC2-3, Kul Tepe VIA, VIB and Dava Göz IV (4200-3700/3600 BC) (Table 1).

Another important issue of the Chalcolithic period, which coincides with the early activities of copper metallurgy, is the issue of continuity and cultural transfer of settlement layers and the sequence of habitation from the Neolithic period to the Chalcolithic period in ancient sites. Most of the ancient sites in the Caucasus region and in the northwest of Iran, which were inhabited in the Chalcolithic period, were also inhabited in the Neolithic period, which shows the favorable conditions for human, animal and environmental habitation. However, there are also single-period areas among them. One of the most important known Neolithic sites with Chalcolithic period in northwest of Iran is Haji Firuoz Hill, Hasanlu Tepe (Voigt & Dyson, 1999), Ah-

ranjan Tepe in the northwest of Urmia Lake (Talai, 1983; Kargar, 1995), Qarah Tepe (hill) of Salmas (Kargar, 1995), Yaniq Tepe (Burney, 1964) and ... as well as areas such as Kul Tepe (Abibullayev, 1959), Göy Tepe (Guliyev & Nishiaki, 2012), (Arimatsu, 2014), Aratashen (Badalyan et al, 2007), Aknashen-khatunark (Badalyan et al, 2010), Shulavri-Shomo (Hamon, 2008), Arekhlo (Hansen & Mirtskhulava, 2012), Kevemo-Kartli (Kiguradze, 1986), Shomu Tepe (Museibli, 2011), Kamil Tepe (Aliyev & Helving, 2009) and ... are in the geographical areas of the South Caucasus. Single-period sites include Yeni Yol, Uzun Oba, Bilöv Qayasi, Nakhchivan Tepe (Kuliyeva & Bahşeliyev, 2018) and cemeteries such as Soyuq Bulaq, Boyuk Kasik (Lyonnet & Quliyev, 2010), and Godedzor (Chataigner et al., 2005) pointed out.

Chalcolithic Culture of the South Caucasus

Archaeological excavations in the South Caucasus are divided into two stages; the first stage of which dates back to the nineteenth century and is known as the Eneolithic (Eneolit) cultural period. Archaeologists in the geographical area of the North Caucasus in the Chalcolithic period have identified two types of cultures, Kura-Araxes and Maikop. Archaeologists such as Kuftin, Iessen, and Salimkhanov (Səlimxanov) have studied the geographical area in the 19th century (Avşarova & Pirquliyeva, 2010: 51-52). Although, today the archeological study of the prehistory of the Caucasus basin has become one of the favorite areas of Western archaeologists (Lyonnet & Quliyev, 2011: 85-98).

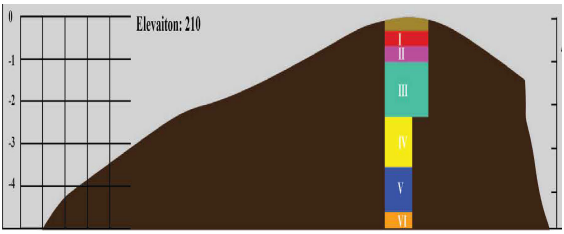
Mentesh Tepe consists of four cultural periods: Neolithic (I), Early Chalcolithic (II), Middle and late Chalcolithic (III) and Early Bronze Age (IV). The early chalcolithic period, which begins after the Neolithic period, had a circular and slightly oval architecture with narrower walls pounded with mud, and the foundation was built on rubble. But in the middle and late Chalcolithic periods, buildings were rectangular in plan, with single-row brick walls with mud foundations (without stone foundations). The architectural remains of the right-hand corner of the late Chalcolithic period were dismantled by the Kurgans and tombs of the early Bronze Age (Lyonnet Quliyev, 2010: 119-228). Inside the build-

Table 2. Periodization of Dava Göz, Kul Tepe Jolfa and Idir Tepe (Northwestern Iran).

Kul Tepe Periods	Cultural Phases	Rang (Cal B.C)
VIII	Early Chalcolithic (Dalma)	5000-4500/4400
VII	LC1: Pisdeli/Hasanlu VIII-post Ubaid period	4500/4400-4350
VI A	LC2 (Chaff - faced)	4350-4000
VI B	LC2 (Chaff -faced)	4000-3750
V	Kura-Araxes 1	3400/3350-3000/2900
IV	Kura-Araxes II-III	3000/2900-2600/2500
III	Middle Bronze Age (Urmai Ware)	2600/2500-2200
II	Iron Age III (Urartian)	8th – 6th C.
I	Achaemenid	5th – 2th C.

Stratigraphy of Kul Tepe Jolfa, (Abedi, 2016: 103).

Table 3. Periodization of Dava Göz, Kul Tepe Jolfa and Idir Tepe (Northwestern Iran).



Cultural Phases	Rang (Cal BC)
Islamic period	I
Bronze age	II
Late Chalcolithic	III
Middle Chalco-lithic	IV
Early Chalcolithic	V
Late Neolithic	VI

Stratigraphy of Idir Tepe, (Hesari, 2019: 46).

ing, a number of jars, open circular stoves with a diameter of 60 to 100 cm were obtained, along with pyramidal stoves with a perforated shape. The late Chalcolithic period begins uninterruptedly after the early bronze age (Lyonnet et al., 2012: 86-92). In addition, data's such as mortar, pestle and ground stone are obtained from basalt and lime stone and plant data residues including barley, wheat and lentils in charcoal (Guliyev & Lyonnet, 2011: 353-359). 138 metal objects from the late Chalcolithic period have been obtained from the mentesh Tepe, and isotopic experiments have identified copper mines in the Alaverdi and Vandazor regions of eastern Armenia, Madnoli in southern Georgia, and the Qosha and Gadabay mines in western Azarbaijan (Courcier et al., 2008: 26). excavation the site of Leyla Tepesi, which was first excavated in 1985 by Narimanov, it has two cultural periods, the late chalcolithic and the early bronze age. One of the most important cultural features of LeylaTepesi is having pottery with symbols such as eye-shaped, parallel lines, triangular and arched motifs, which are similar to these motifs obtained from Tel Borak, Arslan Tepe, Tekhot, Boyuk Kasik, Poylo and Qalayri (Museyibli, 2016: 284-294). Metal objects obtained from Leyla Tepesi, such as axes, plates, knives / swords, and unidentified objects from the late chalcolithic period that were experimentally made of pure copper (Courcier et al., 2008: 28). Absolute chronologies of Leyla Tepe, Boyuk Kasik, and Soyuq bulaq kurgans reveal LC2-3 period of the first half of the fourth millennium BC (Lyonnet Quliyev, 2011: 85-98).

As well as, the excavations from 2006 to 2010 at Ovçular Tepesi have also revealed two cultural periods of the middle and late chalcolithic and the early bronze age. Its architectural remains are in rectangle forms and semi-circular basements (Fig. 5), which were made of raw clay and stone. The same has been obtained from the site of Babadarvish (Babadərviş) (Nərimanov & Ismayilov, 1962: 149) and from the Alikomak Tepesi (Nərimanov, 1987: 59). The pottery obtained from this area has been dated to the late chalcolithic period by both carbon 14 method and based on the pottery motifs (Fig. 6).

The pottery motifs are similar to "V", rope and comb-shaped, and the comb-shaped motifs are similar to the pottery motifs of the Georgian Sioni area (Baxşəliyev et al., 2010: 1-153). Based on the excavation of the second quarter of 2010, data's related to metallurgy including furnace and slag (Fig. 7) were obtained and similar ones were found from the area of kul Tepe of Nakhjavan and tekhot in

Fig. 5. Architectural Remains with Rectangle and Eemi-circular Basements Forms from Ovçulartepesi (Bax-şəliyev et al., 2010: 34)

Armenia, which are used from the Kafan, Medzor or Marneuli mines (Marro et al., 2011: 53-100). Godedzor site in Armenia from the late chalcolithic, has a circular architectural structure with a single-row stone wall with coarse pottery with a pressure motif and well-baked with overlapping triangles on top of objects such as a spindle of the type bones, Stove bases and Stone tools (Chataigner et all, 2005 381-398) and the Boyuk-Kasik site, located in the Ganjeh-Qazzakh (Gəncə-Qazax) region of western Azarbaijan, has the right-angled and circular architectural remains, such as those obtained from Leyla Tepe and etc., and the most archaeological data, fragments were the pottery that are divided into five groups in terms of decoration (Fig. 8). One of the most important finds of this area are a sword and 15 copper objects, which are rarely obtained from the chalcolithic sites in the South Caucasus. Carbon 14 dating (Table 3) marks the first half of the fourth millennium BC.

The archaeological data, including stone, metal, mud, pottery, and bone tools, indicate that the establishment in the Boyuk-Kasik area was permanent (Museyibli & Huseynov, 2005: 1-238). Among the sites where carbon 14 analysis and absolute dating of its cultural data have been performed are the Şorsu and Uçan Ağil sites in Azarbaijan (Fig. 9), which have the chalcolithic and kura-Arax cultural classes, and obtained copper pieces from the chalcolithic class (Fig. 10), the analysis of the findings and the analysis of coal determine the date of 4690-4450 BC and coincides with the

Fig. 6. Architectural Remains with Rectangle and Semi-circular Basements Forms from Ovçulartepesi (Bax-şəliyev et al., 2010: 34)

Table 3. Carbon 14 Dating of the Boyuk-Kasik (Museyibli & Huseynov, 2005: 46).

Context	Laboratory No.	Measured Radiocar-bon Age	13c/12 C Ratio	Conven-tional Radiocar-bon Age	2 sigma 95% probability	1 sigma 68% probability
Kv7d 1.6m	Beta 226242	4960±40 BP	-25.2 0/00	4960±40 BP	Cal BC 3900 to 3800 and Cal BC 3800 to 3650	Cal BC 3780 to 3700
Kv8c 1.4m charcoal	Beta 218217	5030±60 BP	-25.0 0/00	5030±60 BP	Cal BC 3960 to 3670	Cal BC 3940 to 3720
Kv8d char-coal	Beta 218216	5260±60 BP	-25.4 0/00	5250±60 BP	Cal BC 4240 to 3960	Cal BC 4150 to 4120 and Cal BC 4070 to 3980
Kv6 charcoal Outside roundhouse	Beta 200403	5090±60 BP	-25.5 0/00	5090±60 BP	Cal BC 3970 to 3780	Cal BC 3960 to 3910 and Cal BC 3880 to 3800

Stratigraphy of Dava (Dəvə) Göz, (Abedi,2016: 46).

oldest layer of Ovçular Tepesi. The most important achievement based on the analysis of archaeological data's is the continuation of the Kura-Araxes culture from within the chalcolithic culture (Museyibli & Huseynov, 2005: 77-81). Shorsu cultural classes have Neolithic and Chalcolithic periods and its architectural remains have a rectangular plan, stoves and storage jars. The main occupation of the inhabitants of this period (Chalcolithic) was agriculture, animal husbandry, herding and to a lesser extent metalworking (Museyibli & Huseynov, 2005: 81-82). In this period, cattle-breeding (Bos Taurys) was especially important. The advantage of cattle breeding during the chalcolithic period can be attributed to the favorable climatic conditions (Bakhshaliyev & Marou, 2016: 8). According to recent

Fig. 7. Metallurgy furnace and Slag from Ovçulartepesi (Marro et al.,2011: 72).

research, the copper mines have been found in the Ordubad region and the summer of Göy Göl. Laboratory analysis of copper objects in Ovçular Tepesi has revealed that the copper used was from local mines, including Göy dərə, əlincə Qala, and Vayxir (Baxşəliyev et al., 2017: 1-164). According to the analysis of cultural data's in Nakhchivan Tepe, the livestock profession was common in that community, because very little data was obtained on agricultural work and the bones of small and large animals, including dogs and horses, were found. In terms of architectural remains, we can mention the storage pits and the right corner structure of mud brick. Pottery data's similar to Dalma culture data's were obtained and the Nakhchivan Tepe pottery works are divided into eight groups: the first group of simple wares (Fig. 11: 5, 3, 8 and 16), the second group of painted wares (Fig. 11: 4-17, 12 and 14-15), the third group of wares which are colored red without motifs (Fig. 11: 5), the fourth group of wares with pressure ornaments (Fig. 11: 1 and 9), the fifth group of wares with comb-pressure motifs (Fig. 11: 2), the sixth group of linear ornaments (Fig. 12: 3-4), the seventh group of earrings-like decorations (Fig. 13: 13) and the eighth group of wares with excised decorations (Fig. 11: 10-11) (Kuliyeva & Bahşeliyev, 2018: 30-36). But from the excavation of Kul Tepe of Jolfa, except for painted pottery, the wares with pressure decorations have not been obtained (Abedi et al., 2014: 38). The pottery wares such as Nakhchivan Tepe from the sites of Uzun Oba, Uchan Aghil and Bulöv Qayasi (Baxşəliyev, 2017: 117-124) as well as from the Se Gabi (Henrickson, 1983: 153-159), Godin Tepe (Young, 1974: 80-90; Henrickson, 1983: 72-193) and Mahidasht (Levin & Mcdonald, 1977: 39-50) South Zagros. Studying pottery reveals undeniable similarities between pottery in northwestern Iran and the South Caucasus region. (Table 4)

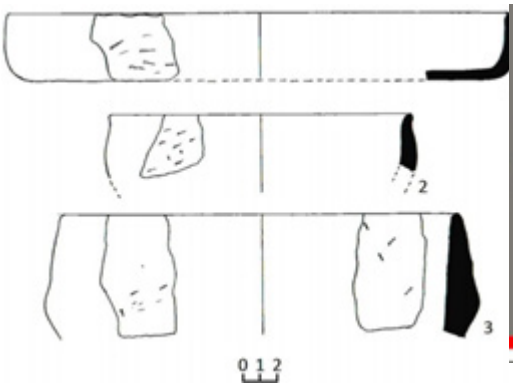
One of the sites related to the late chalcolithic period is the newly excavat-

Boyuk Kasik Pottery decoration 1-5 painted, 6-7 Cone shaped moulded decoration, 9 burnished, 12-16 Pierced

Fig. 8. Pottery of the Boyuk-Kasik Site (Museyibli & Huseynov, 2005: 99).

ed site of Yeni Yol, which is located at the confluence of two rivers of Nakhchivan Chai and Sirab Chai. Its cultural data include architectural remains and rectangular structures, stone, bone, pottery and storage pits (Baxşəliyev, 2017a: 49) (Kuliyeva & Baxşəliyev, 2018: 39-44), such as the storage pits from Ovçular Tepesi (Baxşəliyev, 2010: 6) as well as from the Boyuk Kasik site (Museyibli, 2007: 10). Babadrvish, Tekhot and Sioni (Connor & Sagona, 2007: 31) and like the remnants of rectangular architecture have been obtained from ovçular Tepesi (Baxşəliyev, 2010: 31-87), Şorsu (Baxşəliyev et al., 2017b: 83-95), Leyla Tepesi (Museyibli, 2007) and Alikomak Tepesi.

One of the most important issues of chalcolithic culture of the south Caucasus basin is the continuation of the chalcolithic period without interruption after the neolithic period. This continuity is seen in the Mentesh Tepe, Aratashen, Khatunark-Aknashen and in these areas after the neolithic period, the chalcolithic period begins without interruption/gap. But in Kul Tepe of Nakhchivan after the neolithic period, the early Bronze age begins. In the South Caucasus, the early chalcolithic phase has been dated 5000/4800-4600 BC and the Middle and late Chalcolithic phase have been dated 4600-3200 BC, and in this regard the new areas including Nakhchivan Tepe, Uchan Aghil, and Uzun Oba is related to the early Chalcolithic period that is closely related to Dalma culture (Kuliyeva & Bahşeliyev, 2018: 30). The existing gap between the late neolithic period and the late chalcolithic period in areas such as: Kul Tepe I, Aratashen and Khatunark - Aknashen, etc. in the South Caucasus



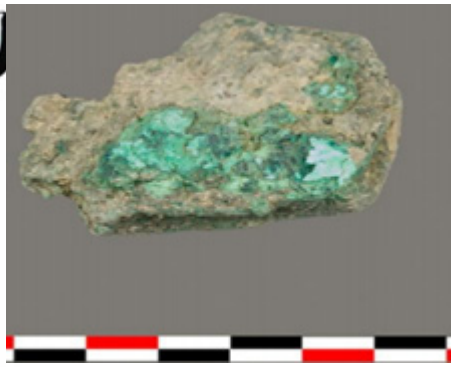


Fig. 9. Pottery of the Uçan Ağil in Azerbaijan (Baxşəliyev et al., 2017: 28).
Fig. 10. Copper Pieces Obtained from Uçan Ağil, (Baxşəliyev et al., 2017: 79).

basin, has been eliminated according to recent studies in newly excavated sites in Nakhchivan (Baxşəliyev et al., 2017b: 4). Scientists believe that the main cause of cultural disruption is climate change and unfavorable environmental conditions (Helwing et al., 2012: 67). The early and middle chalcolithic period were not found in the mentioned areas, because, after the late neolithic period, the late chalcolithic period begins. The interval created by excavation and study of areas such as Mentesh Tepe, Nakhchivan Tepe, Yeni Yol, etc. was completed and the culture of the early and middle chalcolithic period was clarified and explained (Lyonnet et al., 2012: 6-45). Three chapters of excavations in the mentesh Tepe have revealed the circular stoves, architectural remains of right-hand corners and barns/silos created in virgin soil from the second half of the fifth millennium BC, and architectural remains such as those of Leyla Tepesi and Alikomak Tepe and like stoves and silos, it can be seen in Shulaveri-Shomo. 95% of the discovered artifacts belong to the middle and late chalcolithic period. The remnants of ingot molds, Blacksmith crucible (Fig. 14), pottery data with red-embellished ornaments, carvings and sparrow-head-shaped (Pellet-shaped) ornaments, and the pottery known as "Manqal" can be seen (Lyonnet & Guliyev, 2011: 85-97). In recent years, the studies of the chalcolithic period of the South Caucasus have become more concentrated. Increasing the large number of dates presented by Radiocarbon (C 14), before the advent of the Kora-Aras culture, which marks the beginning of the early bronze age, from the fifth millennium to the middle of the fourth millennium BC (5000-3500 BC). The chalcolithic period can be divided into internal phases, the early chalcolithic phase (5000-4000 BC), which is well documented in the Mentesh Tepe, Aratashen and the Late Chalcolithic phase (4000-3000 BC) in which the number of ancient sites increase substantially (Table 5) (Sagona, 2008: 182-183).

Burials of the chalcolithic period are more diverse than the neolithic period. Pit burials are the most repetitive among types of burials in the chalcolithic period, but recently two other types of burials, burials in pottery (Vat tombs) and kurgani have been obtained. Burials in pottery have been found from Alkhan Tepe, Berikil dibi, Boyuk kasik, Chinar Tepe, Kamil Tepe, Leyla Tepe, Ovçular Tepesi, Poylu II; and pit burials have been found from Mentesh Tepe, Poylu II, Godedzor, Alkhan Tepe and Akna-

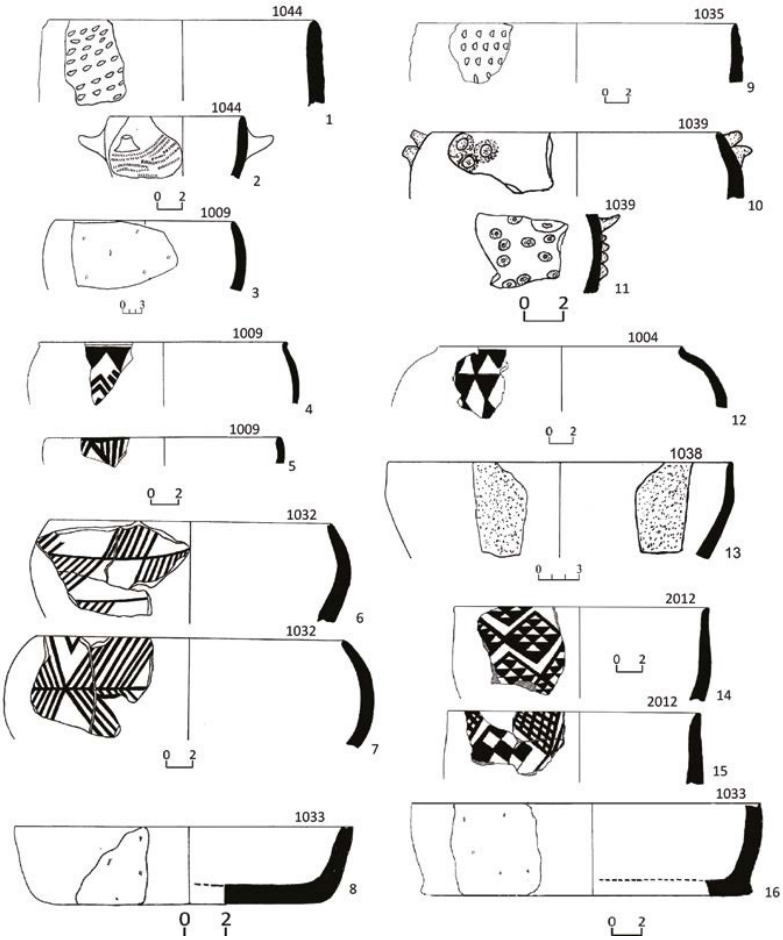


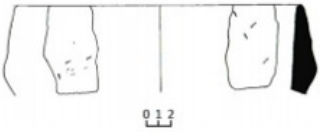
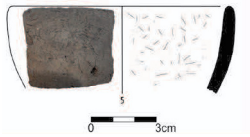
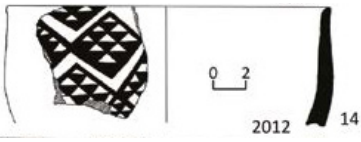
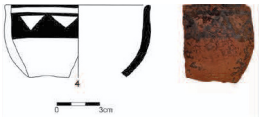
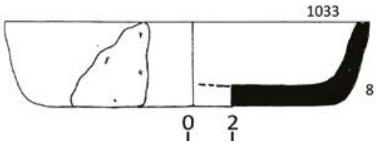
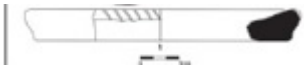
Fig. 11. Pottery of the Nakhchivan Tepe (Kuliyeva & Bahşeliyev, 2018: 34).

Fig. 12. Oinear Ornaments from Nakhchivan Tepe (Kuliyeva & Bahşeliyev, 2018: 44).

Table 4. Chronology Table

NW of Iran		Caucasus Region	
Period	Site	Period	Site
Dalma	Dalma Tepe	LC 1	Ovçular Tepesi
Dalma	Kul Tepe	LC 1	Boyuk Kesik
Pisdeli	Kul Tepe	LC 1	Uçan Ağil
Pisdeli	Ahmad Beyglu	LC 1	Nakhjavan Tepe

Table 5. Comparison Table of Pottery of Chalcolithic Period of NW Iran and the Caucasus Region

Caucasus Region	NW of Iran
 (Baxşəliyev et al., 2010: 27)	 (Abedi, 2016: 109)
 (Baxşəliyev et al., 2017: 28)	 (Abedi, 2016: 109)
 (Kuliyeva & Bahşeliyev, 2018: 34)	 (Abedi, 2016: 109)
 (Kuliyeva & Bahşeliyev,2018: 34)	 (Abedi,2016: 109)
 (Baxşəliyev et al., 2010: 27)	 (Abedi, 2016: 109)
 (Baxşəliyev et al., 2010: 27)	 (Abedi, 2016: 109)

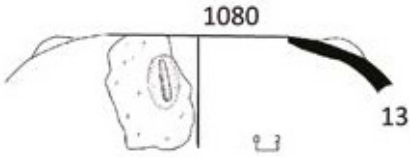


Fig. 13. Earrings-like Decoration from Nakhchivan Tepe (Kuliyeva & Bahşeliyev, 2018: 35).

lich which were mostly used in the late chalcolithic period. The kurgani burial has been obtained from the excavations of Kavtiskhevi, Berikil dibi in Georgia, and Soyuq bulaq from Azarbaijan. The Kurgani-type burials have been created for the first time in the South Caucasus, in the Chalcolithic period. The diameter of the studied Kurgans varies from 5 to 15 meters and their burial chambers are rectangular and horseshoe shaped (Poulmarch & Lemort, 2015: 1-10). One of the newly studied sites related to the Chalcolithic culture is Aknashen-Khatunark site in Armenia, which was excavated in 2004-2009 with the cooperation of Armenian and French archaeologists. Its cultural data's are related to the Neolithic and the Chalcolithic periods are divided into five horizons. Among these, the horizon I belongs to the Chalcolithic period and the horizons II-V also belong to the Neolithic period. Most of the findings are related to the Chalcolithic period, are obsidians and pottery. 68% of the obtained pottery works were with chaff temper (Badalyan et al., 2013: 187-220). Similar wares have been obtained from the Tesitli Gorebi site of Georgia (Varazashvili, 1992) and with painted pottery (Badalyan et al., 2013: 187-220).

Conclusion

The Northwest of Iran and the plateau of Azarbaijan are continuously one of the most important areas for the study of prehistoric Archaeology in Iran. Among these, the most important region studied before the Islamic revolution is the Urmia Lake basin, of which Dalma Tepe, Pisdeli Tepe and Yaniq Tepe are the most important, and the results obtained from this region have been extended to other parts of Northwestern Iran. After the Islamic revolution, especially in the resent decade, important excavations and archaeological studies in the areas such as Kul Tepe of Jolfa and Dava Göz of khoy, as well as the archaeological surveys conducted and became able to eliminate the transition from the late Neolithic to the Chalcolithic period and the gap/interruption between the late Neolithic and the middle chalcolithic periods, which is about 1000 years, and reveal the phases of the Chalcolithic period which is divided into the following periods: Pisdeli / LC1 Kul Tepe VII, Dava göz III (4500-4200 BC) and the Chaff-faced ware (the late Chalcolithic 2-3)/ LC2-3, Kul Tepe VIA, VIB and Dava göz IV (4200-3700/3600 BC). According to the extensive research in the geographical area of the South Caucasus compared to the northwest of Iran, the culture of the Chalcolithic period in all aspects including the data's of livelihood, burial, architecture, social structure etc. have been studied extensively. According to the recent studies and by obtaining the Carbon 14 analysis a parallel history has been obtained in the Northwest of Iran and the South Caucasus basin. One of the most important issues of the Chalcolithic culture of the South Caucasus basin is the continuation of the Chalcolithic period without interruption

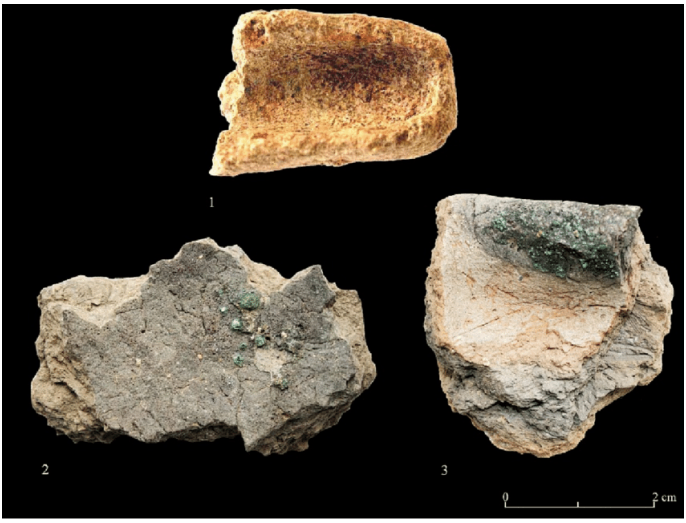


Fig. 14. Mentesh Tepe. Fragments of Ceramic Finds Related to Metallurgy. 1 Ingot-mold, Met-09-2008; 2 Crucible, Met-11-2009; 3 Mold, Met-21-2010 (Lyonnet, et al, 2012: Fig. 155)

after the Neolithic period. This continuity is seen in most sites of the Northwest of Iran and South Caucasus, including Yaniq Tepe, Hasanlu, Ahranjan Tepe and Idir Tepe, Mentesh Tepe, Aratashen, Khatunark - Aknashen and in these areas, after the Neolithic period, the chalcolithic period begins without interruption / gap. In the South Caucasus, the early Chalcolithic phase 5000/4800-4600 BC and the middle and the late Chalcolithic phase 4600-3200 BC have been dated, and in relation to this, some new sites including Nakhchivan Tepe, Uöan Ağil and Uzun Oba, related to the early chalcolithic that is closely related to the Dalma culture have been found. However, there are also single-period sites such as Yeni Yol, uzon oba and Soha chai Tepe. Dalma culture pottery with ear / eye-like motif, pressure pattern, painted pottery with thick red coating of Leyla Tepesi, Nakhjavan Tepe, Aratashan, Aknashan-Khatoon Ark, Yeni Yol and also the middle and late chalcolithic period pottery with excised motifs, comb, dot-like, basket motif and simple and polished pottery, sometimes with red coating, were obtained from Nakhchivan Tepe, Ovçular Tepesi, Alikomak Tepesi, Yeni Yol and Ozon Oba, That Both in terms of form and especially in terms of motifs, it shows similarities with the pottery of the northwest of Iran, and the formal similarities in the late chalcolithic period are mostly seen with the advent of shallow trays. The sites of the late chalcolithic period were used seasonally and temporarily by nomadic tribes. Scientists believe that the main cause of cultural interruption (cultural discontinuity) between periods is unfavorable environmental conditions and climate change.

One of the most important cultural data related to the early chalcolithic period are circular or semi-oval, semi-underground and rectangular architectural structures made of mud brick and stone in a single row. Inside the structure, large jars, food storage wells and a large number of stoves, along with data's such as mortars, pestle and ground stone, and plant data's residues including barley, wheat and lentils in charcoal have been obtained. Also, remains of Middle and late chalcolithic architecture, the shape of the structures were rectangular and

in some cases circular, made of by mud brick, clod and stone. Like these, it has been obtained from the sites of Babadarvish, Alikomak Tepesi, Ovçular Tepesi and etc. According to the analysis of cultural data's, the chalcolithic communities were mostly engaged in livestock profession, because very little data's was obtained on agricultural works. The burial of the chalcolithic period seems to be more diverse than the Neolithic period. Among the most repetitive types of burials in the Chalcolithic period is pit burials, but recently two other types of burials have been found: burials in pottery (Vat grave) and Kurgani burials.

Bibliography

Abedi, A., (2016). "New Evidence from Neolithic to Achaemenid Periods in North-Western Iran: Excavations at Kul Tepe (Hadishahr), Second Preliminary Report (2013)".Iranian Journal of Archaeological Studies, Vol. 6, (1): 59-82.

Abedi, A., (2017). "Iranian Azerbaijan pathway from the Zagros to the Caucasus, Anatolia and northern Mesopotamia: Dava Göz, a new Neolithic and Chalcolithic site in NW iran". *Mediterranean Archaeology and Archaeometry* 17 (1), 69-87.

Abedi, A, H. Khatib Shahid, C. Chataigner, N. Eskandari, M. Kazempour, A. Pirmohammadi, J. Hosseinzadeh and G. Ebrahimi, (2014). "Excavation at Kul Tepe (Hadishahr), North-Western Iran, 2010: First Preliminary Report". *ANES* 51, 33-167.

Abibullayev, O.A., (1959). "Археологические раскопки в Кюльтепе. Издательство АН Азербайджанской ССР". Баку.

Aliyari, A and H. Talai, (2005). "Structural analysis of Neolithic pottery motifs in northwestern Iran". *Journal of the Faculty of Literature and Humanities, University of Tehran, University of Tehran* 56 (173), 61-73.

Alizadeh, K and M. Azarnoosh, (2003). "Methodical study of Barouj hill: cultural relations between Aras". *Archeology and History* 17 (2), 2-22.

Aliyev, N., (2001). Kul'tura severnogo Azerbaidzhana v epokhu pozdnego eneolita, baku.

Aliyev, T and B. Helwing, (2009). "Kamiltepe in der Milebene. Archa ¨ologische Untersuchungen 2009". *AMIT, Iran und Turan* 41, 23-45.

Badalyan, R and P. Avetisyan, (2007). "Bronze and Early Iron Age Archaeological sites in Armenia". mount aragats and its surrounding region. BAR 1, 16-97.

Badalyan, R, A. Harutyunyan, A. Chataigner, L. Francoies, Ch. Jacquese, L. Jacquese, B. Adrian, R. Valentin and R. Hovsepyan, (2010). "The settlement of Akhnashen – khatunarkh, A neolitic site in the Ararat plain (Armenia), Excavation results 2004-2009". *TUBA – AR* 13,185-218.

Bakhshaliyev, V and M. Katherine, (2016). *The Archeology of Nakhchivan*, Translated by Karimikia, A. M. Mirzaei, Tehran: Kamal Andisheh publication.

Bakhtiari, S, R. Shirazi, B. Omrani, and F. Musa Pournegari, (2018). "Cultural evolution of Qara Dagh region during the sixth to fourth millennia BC based on Horand survey data's". *Iranian Archaeological Research. Department of Archeology*, Faculty of Art and Architecture, Bu Ali Sina University, Volume 8 (18), 43-25.

Baxşəliyev, V., (2017a), *I kul təepe və onun ətrafında araşdırmalar*, Baki.

Baxşəliyev, V, C. Marro and S. Aşurov, (2010). *Ovçulartəpəsi*, Baki, Elm.

Baxşəliyev, V, Z. Quliyeva and R. Rezayeva, (2017a). "Yeni yol yasayis yerinde arxeoloji arasdirmalar". *Azerbaycan milli elmiler akademiyasi xabarlari, sosiyal elmilerseriyasi* 1, 49-56.

Baxşəliyev, V, C. Marro, R. Berthon, Z. Quliyeva and S. Sarialtun, (2017). *Kultəpədə Arxeoloji Tədqiqatlar* (2016-2013), Nurlan, Baki.

Baxşəliyev, V, Z. Quliyeva, T. Həşimova, K. Mehbaliyev and E. Baxşəliyev, (2018). *Naxçivan təpə yerində arxeoloji tədqiqatlar*, Naxçivan, Əcəmi.

Binandeh, A, A. Hejabri Nobari, J. Neyestani and H. Vahdati Nasab, (2012). "A new archaeological research in northwestern Iran: prehistoric settlements Zab river basin". *Humanities*19 (2), 27-42.

Burney, C.A., (1962). "The Excavations at Yanik Tepe, Azerbaijan, 1961 Second Preliminary Report". *Iraq* 24 (2) 134–152.

Burney, C.A., (1964). "The Excavations at yanik tepe, Azerbaijan, 1962: Third Preliminary Report". *Iraq* 26, 54-61.

Burney, C. A., (1973). "Excavation at Haftavan Tepe 1971: Third Preliminary Report".*Iran* 11, 153–172.

Burney, C. A., (1976). "The Fifth Season of Excavations at Haftavan Tepe: Brief Summary of Principal Results". in Firouz Baqherzadeh (ed.), Proceedings of the IVth Annual Symposium on Archaeological Research in Iran, 1975, edited by F.Baqherzadeh, 257–271. Tehran: Iranian Centre for Archaeological Research.

Brown, B., (1951). Excavation in Azarbaijan, 1948, London.

Connor, S and A. Sagona, (2007). "Environment and society in the late prehistory of southern Georgia, Caucasus, les cultures du caucase (VI-III millenaires avant notre ere)". Paris, 21-36.

Chaichi Amir Khiz, A., (2008). "The Origin and analysis of the distribution motifs of prehistoric Obsidian manuscripts in the east of Lake Urmia". PhD Thesis, Tehran: University of Tehran (unpublished).

Chaichi Amir khiz, A., (2008). *Layering report for speculation of Dagirman Tappeh of Bostanabad* (*first season of winter 2008*). East Azerbaijan: Archive of the General Directorate of Cultural Heritage, Handicrafts and Tourism of Tabriz, (unpublished).

Courcier, A, A. Gasanova and B. Jalilov, (2008). "Ancient metallurgy in the Caucasus during the chalcolithic and early bronze age: recent result from excavations in western Azerbaijan". *Metalla* 15 (1), 21-34.

Danti, M, M. Voigt and R.H. Dyson, (2004). "The Search for The Late Chalcolithic/Early Bronze Age Transition in The Ushnu- Solduz Valley, Iran". In: *A View from The Highlands*, A. Sagona (Ed.), 583-616.

Dyson, R. H and T.C. Young, (1960). "The Solduz Valley, Iran: Pisdelitepe" *Antiquity* 40, 19–27.

Dyson, R.H., (1965). "Problems of Protohistoric Iran as seen from Hasanlu". *JNES* 24, 193-217.

Hamon,C., (2008). "From Neolithic to Chalcolithic in the Southern Cauca sus: Economy and macrolithic implements from Shulaveri-Shomusites of Kwemo-Kartli (Georgia)". *Paléorient* 34 (2), 85-135.

Hamlin, C., (1975). "Dalma tepe". *Iran* 13, 111-127.

Hansen, S and G. Mirtskhulava, (2012). "The Neolithic settlement of Aruchlo: Report on the excavations in 2009-2011 (in B. Lyonnet, F. Guliyev, B. Helwing, T. Aliyev, S. Hansen and G. Mirtskhulava, Ancient Kura 2010-2011: the first two seasons of joint field work in the southern Caucasus)". *Archäologische Mitteilungen aus Iran und Turan* 44, 58-86.

Hejabri Nobari, A, A. Binandeh, J. Neyestani, and H. Vahdati Nasab, (2012). "Excavation at Lavin Tepe in north west Iran". *Ancient Near Eastern Studies* 49, 95-117.

Heidarian, M., (2017). "Archaeological Evidence of Ahmad Beigloo Dam Basin, Meshkinshahr". *Iranian Archaeological Research* 7 (13), 7-24.

Hejabri Nobari, A and A. Pourfaraj, (2006). "Explanation of Neolithic and Chalcolithic Studies in Ardabil Region Based on the Archaeological Data of Ghosha tepe shaharyeri". Journal of the Faculty of Humanities 2, 1-26.

Helwing, B., (2012). "Late Chalcolithic Craft Traditions at The Northeastern 'Periphery' Of Mesopotamia: Potters Vs. Smiths in The Southern Caucasus". *Origini XXXIV*, 201-220.

Helwing, B, T. Aliyev and A. Ricci, (2012). "Mounds and Settlment in Lower Qrabakh – Mill Plain, Azerbaijan", Band 207, 67-78.

Henrickson, E.F., (1985). "An Updated Chronology of the Early and Middle Chalcolithic of the Central Zagros Highlands, Western Iran". *Iran XXIII*, 63-108.

Henrickson, E., (1983). *Ceramic Styles and Cultural Interaction in The Early and Middle Chalcolithic of the Central zagros*. Ph.D. Dissertation, Department of Anthropology, University of Toronto.

Hesari, M and H. Akbari, (2005). "The Speculation Report of Idir tepe of Aslanduz", Archaeological Reports 4, 13-29.

Hull, F., (2003). *Themes and problems of Iranian archeology, in Western Archeology*, under the supervision of Frank Hull, translated by Zahra Baasti, Tehran: Samt Publications, third edition

Iessen, A.A., (1965). "Iz istoricheskogo proshlogo Mil sko – Karabakhskoj stepi, Materiali I Issledvanija po Arkheologii". *SSSR* 125, 3-10.

Kargar, B., (1995). *Investigation and Speculation in Ahranjan and Qara Tappeh of Salmas*, Master Thesis, Tehran: University of Tehran (unpublished).

Kearton, R. R. B., (1969). "Survey in Azerbaijan," In Survey of Excavations in Iran, 1967–8, *Iran* 7, 186–187.

Kearton, R. R. B., (1970). *A Study of Settlement in The Salmas Valley, West Azerbaijan, Iran. Manuscript in the Files of the Hasanlu Project. Philadelphia*: University Museum, University of Pennsylvania.

Kiguradze, T., (1986). *Neolithsche seidlungen von kvemo-kartli*, Georgien, munchen, velag.

Kiguradze, T., (2000). "The Chalcolithic - Early Bronze Age Transition in The Eastern Cauca-

sus" In Chronologies des pays caucase et de leuphrate aux Iv^{e}-Iii^{e} millenaires, Catherine Marro Et Harald Hauptmann(Eds.), 321-328.

Kleiss, W and S. Kroll, (1992). "Survey in Ost Azarbaidjan 1991". *Archäologische Mitteilungen aus Iran* 25, 1–46.

Kroll, S., (1990). "Der Kul tepe bei Marand eine Chalkolithische siedlung in İranisch-Azarbaidjan". *Archaeologist Mitteilungen aus Iran* 23, 59–71.

Kuftin, B. A and H. Field, (1946). "Prehistoric Culture Sequence in Transcaucasia". *Southwestern Journal of Anthropology* 2 (3), 340-360.

Kuliyeva, Z and V. bahşeliyev, (2018). "Nahçivanin Kalkolitik çağ kulturu (Azerbaycan)". *TUBA – AR*, 29-52.

Levine, L.D., (1974). "Archaeological Investigations in The Mahidasht, Western Iran". *Pal'Eorient* 2, 487–490.

Levine, L.D and M.M.A. mcdonald, (1977). "The Neolithic and Chalcolithic Periods in the Mahidasht". *Iran* 15, 39-50.

Lippert, A., (1979). "Die Österreichischenausgrabungen Am Kordlartepe in Persisch- West Aserbaidschan (1971-1978)". *Archäologischemitteilungenaus Iran Bd* 12, 25-51.

Lyonnet, B, T. Akhundov, K. Almamedov, A. Bouquet, B. Courcier, F. Jelilov, S. Huseynov, Z. Loute, and S. Reynard, (2008). "Late Chalcolithic Kurgans in Transcaucasia. The cemetery of soyuq bulaq (Azerbaijan)". *Iran und Turan* 40, 27-44.

Lyonnet, B and F. Guliyev, (2010), "Bati Azerbaycanda Neolitik ve Kalkolitik doneme ait yeni bulgular". *TUBA-AR* 13, 219-228.

Lyonnet, B. F. Guliyev, B. Helwing, T. Aliyev, S. Hansen and G. Mirtskhulava, (2012). "Ancient Kura 2010–2011: The first two seasons of joint field work in the Southern Caucasus". *Iran und Turan* 44, 1-195.

Marro, C, V. Bakhshaliyev and S. Ashurov, (2011). "Excavations at Ovcularteperi (Nakhchivan, Azerbaijan). Second Preliminary report: The 2009 - 2010 Seasons". *Anatolica Antiqua* 19, 53-100.

Maziar, Sepideh, 2010, "Excavation at Kohne pasgah Tepesi, Araxes valley, Northwest Iran: First Preliminary Report". *Ancient Near Eastern Studies*, Vol.47, Pp. 165-193.

Maziar, S., (2015). "Settlement dynamics of the kura-Araxes culture: A overview of the late chalcolithic and early bronze age in the Khoda Afarin plain, north-western Iran". *Pluridisciplinary journal of prehistory and protohistory of southwestern and central asia*, 25-36.

Muscarella, O.W., (1968a). "Excavation at Dinkhatepe 1966, Metropolitan Museum of Art". *Bulletin* 27 (3), 96-187.

Muscarella, O.W., (1968b). "Qalatgah: at Urartian Site in Northwestern Iran". *Expedition* 13 (3-4), 44-49.

Muscarella, O.W., (1969). "The Tumuli at Se Gridan: A Preliminary Report". *Metropolitan Museum Journal* 2, 5-25.

Muscarella, O.W., (1973). "Excavation at Aghrab tepe". *Metropolitan Museum Journal* 8, 47-76.

Muscarella, O.W., (1974). "The Iron Age at Dinkha tepe, Iran". *Metropolitan Museum Journal* 9, 35-90.

Muscarella, O.W., (2003). "The Chrnology and Culture of Se Gridan: Phase III". *Ancient Civilizations from Scythia to Siberia* 9, 31-117.

Museyibli, N and M. Huseynov, (2005). *Excavation of Boyuk Kasik Settlement*, Azerbaijan, Baku.

Museyibli, N., (2007). *Böyük Kəsik Eneolit dövrü yaşayiş məskəni*, Baki, Nafta-press.

Museyibli, N., (2011). "Leylatəpə arxeoloji mədəniyyəti: On Asiya kokləri və Qafqaz eneolitində yeri" [Leylatepe archaeological culture: On roots in Asia and place in Caucasus Chalcolithic]. *Azərbaycan arxeologiyası və etnoqrafiyası* [*Azerbaijan Archaeology and Ethnography*] 2, 5-10.

Narimanov, i. G., (1987). *Kul'tura drevnejshego zemledel'chesko-skotovodcheskogo naselenija Azerbaidzhana* (*epokha Eneolita VI-IV tys. do n. e.*), baku.

Narimanov, I and G.S. Ismayilov, (1962). Акстафачайское поселение близ г. Казаха, Советская археология, baku.

Nərimanov, İ, H., (2003). "Naxçivan erkəm əkinçi-maldar əhalisinin tarixindən". *Azərbaycan Arxeologiyasu və Etnografyasi* 1, 32-33.

Omrani, B., (1993). *Archaeological features of East Urmia Lake from the Neolithic period to the Iron Age*, Master Thesis, Tehran: University of Tehran (unpublished).

Palumbi, G., (2007). A Preliminary Analysis On The Prehistoric Pottery From Aratashen(Armenia), *In Les Cultures Du Caucase* (*Vie-Iiiemillenairesavantnotre Ere*) *Leurs Relations Avec Le Proche-Orient, Bertillelyonnet* , 63-76.

Poulmarc'h, M and L.M. Françoise, (2015). "Diversification of the funerary practices in the Southern Caucasus from the Neolithic to the Chalcolithic". *Quaternary International* xxx: 1-10.

Quliyev, F and B. Lyonnet, (2012). "Menteş qədim

yaşayiş yerində Arxeoloji tədqiqatlar". *Azərbaycanda Arxeoloji tədqiqatlar*, Baki, Xəzər Yuniversteti Nəşriyati.

Quliyev, F and Y. Nishiaki, (2012). "Excavations at the Eolithic of Göy tepe, the middle Kura valley". *Azerbaijan* 2008–2009, 71-83.

Rahimi Sarkhani, R, K. Niknami and M. Eslami, (2016). "Non-Dalma ware in the Dalma bed: Archaeological diagnosis and laboratory explanation. Case study: Saha Chai Tappeh of Zanjan", *Archaeological Studies* 8 (2), 51-70.

Razzaghi, H and H. Fahimi, (2014). "Preliminary Report of Jalbar Tappeh (Khanbaba), West Azerbaijan, August 1996". *Archeology and History* 18 (2), 52-59.

Sagona, A., (2008). *The Archeaology of the Caucasus from earliest settlement to the iron age*, Cambridge.

Saaed Moucheshi, A., (2013). "Ghezel Uzan River Basin in the Chalcolithic period: Based on Archaeological Surveys of Bijar", *Archaeological Research of Iran* 3 (5), 25-50.

Salmanpour, R and S.Z. Abtahi Foroushani, (2013). *Final Report on Archaeological Survey and Identification of Horand County, East Azerbaijan*, Archive of the General Directorate of Cultural Heritage, Handicrafts and Tourism of Tabriz, (unpublished).

Talai, H., (2011a). *Eight thousand years of Iranian pottery*, Tehran: Samt pub, first edition.

Talai, H., (2011b). *Prehistoric Iran: Chalcolithic Age*, Tehran: Samt pub, first edition.

Talai, H., (1983). "Pottery Evidence from Ahranjan tepe, A Neolithic Site in The Salmas Plain (Azerbaijan, Iran)". *AMI*, Band 16, 7-18.

Torosjan, R.M., (1976). *Rannezemledel'cheskoe poselenie Tekhuta* (*IV tys. do n. e.*). *Arkheologicheskie Raskopki v Armenii*, 14, erevan.

Varazashvili, v.v., (1992). *Rannezemledel'cheskaja kul'tura Ioro-Alazanskogo Bassejna,* tbilisi.

Vital.V and E.F. Henrickson, (1987). "The Dalma tradition: Prehistoric Inter-Regional Cultural Integration in Highland Western Iran". *Paléorient* 13 (2), 37-45.

Velayati, R., (2013). *Report of Archaeological Survey of Bostanabad Region, second phase, in cooperation with the Cultural Heritage Organization of Handicrafts and Tourism of East Azerbaijan Province and the Archaeological Institute of the University of Tehran*, East Azerbaijan: Archive of the General Directorate of Cultural Heritage, Handicrafts and Tourism Tabriz, (unpublished).

Vandenberg, L., (2000). *Archeology of Ancient Iran*, translated by Eissa Behnam, Tehran: University of Tehran Press, third edition.

Zavarišvili, A.I., (1998). "ausgrabungen in berikldeebi (Šida Kartli): in Georgica". 21, 7-20.

Velayati, R., (2006). *Archaeological Survey Report of Bostanabad Region, Second Phase, in Cooperation with the Cultural Heritage, Handicrafts and Tourism Organization of East Azerbaijan Province and the Archaeological Institute of the University of Tehran*, East Azerbaijan: Archive of the General Directorate of Cultural Heritage, Handicrafts and Tourism Tabriz, (unpublished).