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Revisiting The Darreh-e Gaz (Dargaz) Plain: Cultural Contacts between Northeastern Iran and Southern Turkmenistan

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Abstract: Central Asia is a key unit of archaeological studies of the Ancient Near East and an issue for important questions such as primary states, Aryan people immigration has a unique role in archaeological activities. Considering the geographical location of Dargaz (Dargaz) Plain at the periphery of Central Asia, it is a vital area in the archaeology of the northeastern part of the Iranian Central Plateau and Central Asia. The region is ideally situated to research regional relationships and inter-regional interactions between those cultural-geographical regions due to its ecological potential and geographic location. Archaeologically, to comprehend Cultural Similarities in Dargaz Plain, many studies and surveys have been done since the beginning of the 20th Century. However, because of the lack of more detailed excavation in this area, the quality of cultural material of Central Asia and the Iranian Central Plateau is reassessing continuously. The first archaeological survey by Kohl and Heskel in 1978 reveals the similarities between Central Asia and this area. The Following works were done for the sake of making known the prehistoric Sites, their interaction with neighboring regions, and their ecosystem but it remains incomplete. Twenty-one prehistoric settlements have remained in the area, dating from the Neolithic to the Iron Age I/III, according to archaeological studies carried out during these years. The majority of the locations that have been found are the ruins of dispersed villages and seasonal camps that were scattered throughout the plain, as well as at inaccessible heights and other locations. With an emphasis on the material culture, particularly the local ceramic traditions and the settlement patterns of the prehistoric site, this current work investigates the connection and interconnectedness of the Dargaz Plain and proposes novel prospects for future works. A study of the Dargaz Plain may shed new light on the social and cultural history of a larger region.

Keywords: *Central Asia, Dargaz Plain, Archaeological Survey, Prehistoric Interaction, Settlement Pattern.*

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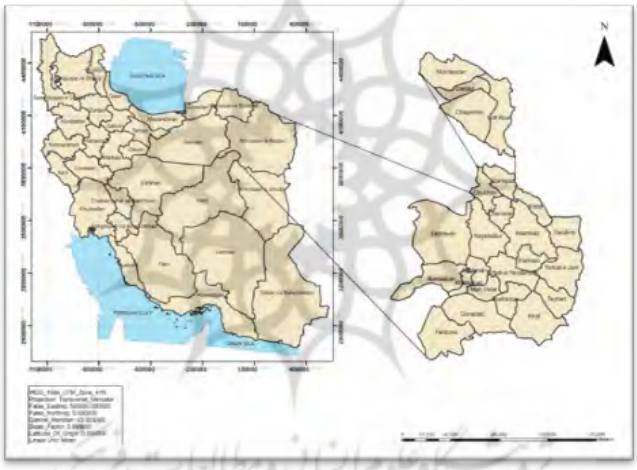
Introduction

One of the main goals of archaeological field investigations is to comprehend how human groups and their ecology interact. Understanding the interactions between surrounding cultural and geographic units is made more accessible by the study of a region's settlement patterns. The objective of an archaeological investigation could be varied between identifying ancient sites, investigating the settlement patterns in different periods, mapping the archaeological settlements, Analyzing the interactions between the sites and the surrounding environment, and lastly, clarifying the interrelations with neighboring lands. The archaeological project provides a comprehensive overview of the region's settlement patterns, which have been shaped by various factors such as environmental conditions, cultural influences, and social dynamics. There has been a considerable amount of archaeological research conducted in West and southwestern Iran, but due to inadequate attention paid to the cultural and historical remnants of East Iran, we do not know much about its ancient cultures. A study of ancient settlements and an evaluation of their characteristics seemed necessary given the region's unique location between three distinct cultural zones of the Iranian central plateau, Eastern Iran and northeastern Iran, and Central Asia, as well as its historical attraction to various human groups. Despite of good climatological, geographical, and strategical position of Dargaz Plain, there is little information about the prehistory of this area. Despite the cultural and historical remnants of this area, prehistoric archaeologists have not given it enough attention (Dana & Hozhabri, 2018; Nami &Mousavi Nia 2019).In particular, it demonstrates the value of doing local archaeological research such as intensive surveys and stratigraphic excavation, particularly absolute chronological dating. So, studying this isolated land can lead us to have a better insight into interactions in Central Asia. Considering the attractive region that it is suited for settling the human groups at different times, many Surveys and a few excavations have been done since the beginning of the 20th Century (Kohl & Heskel 1980; Garazhian 1998; Baghizadeh 2011; Nami &Mousavi Nia 2019). Although many archaeological projects were carried out in this region toanalyze and recognize the ancient settlements of the Dargaz Plain (Ibid), unfortunately, there has been published vague and broken information in these reports. For example, the short reports of Kohl and Heskel (1980) a lack of detailed data about the Site's names, comparing the pottery horizons of this region with neighboring sites one by one, and so on. Thus, a surface survey project was planned for one season in 2010 to follow the previous works (Baghizadeh 2011). A primary objective of this survey season was to (i) identify ancient sites, (ii) explore settlement patterns and locations in different periods, (iii) visualize the settlements archaeologically, (iv) examine inter and intra-site relationships and their interaction with surrounding environments, and (v) determine relationships with neighbors. The study revealed that the region's settlements have undergone several changes over time, with some sites being abandoned and others being continuously occupied. The distribution of the settlements in different periods indicates a changing pattern of settlement that reflects the region's historical and cultural evolution. The results of this investigation have had a considerable impact on our knowledge of the prehistoric cultures in the area, and they have substantial ramifications for our overall understanding of Iran's cultural and historical evolution. Future research in this area could explore further the factors that shaped the region's settlements and their relationships with other regions.

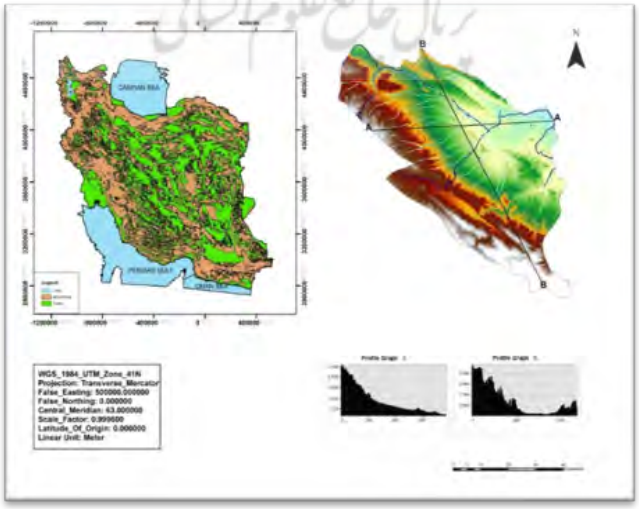
The landscape of Dargaz Plain

Geographically, this plain stretching c. 50-55 km East-West by c. 30-35 km North-South directions is located in the vicinity of borderlands of Iran-Turkmenistan and between mountains of Kopet Dagh (Turkmenistan) and Hizar-Masjid (Iran) (Kohl & Heskel 1980). This plain is about

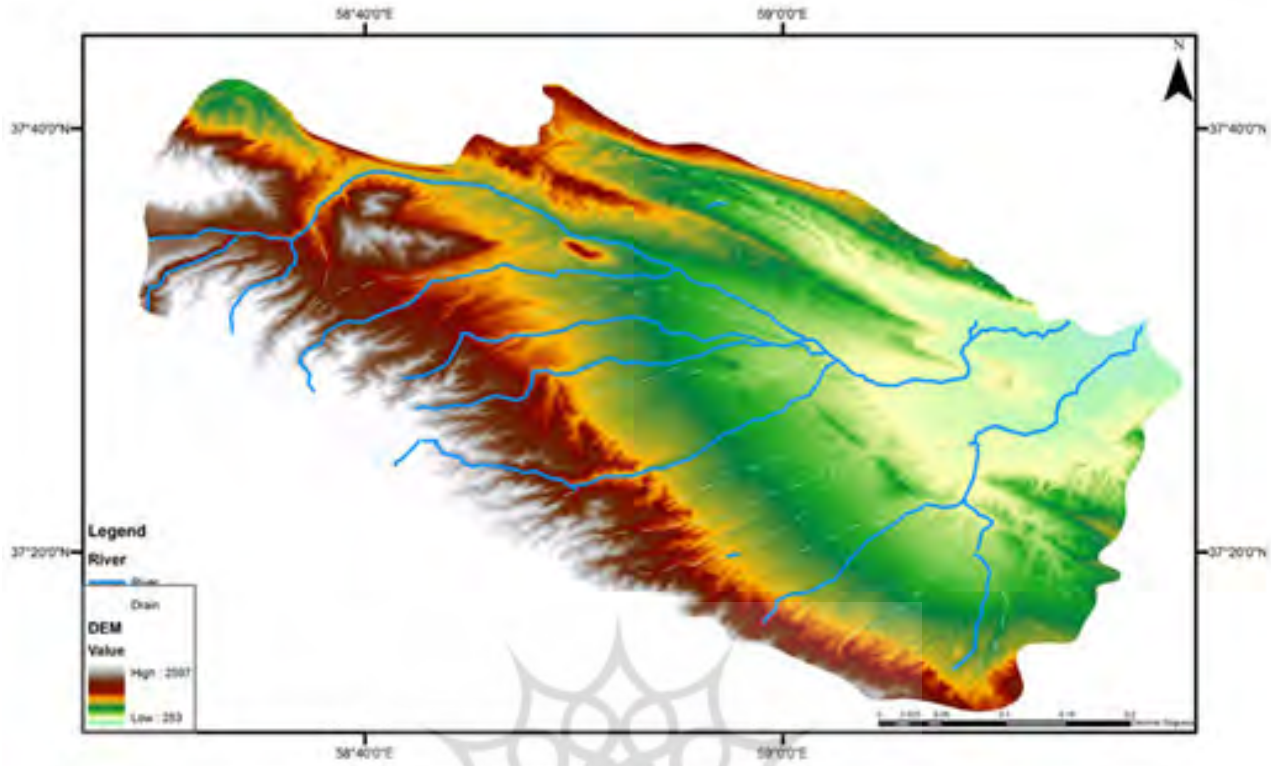
1860 square kilometers including the Dargaz Township with Lotfabad, Dargaz, Chapeshlo, and Nokhandan towns and ten villages (Pic 1). This border was formed by the Zarrin Kuh Mountain and Daroungar River. This landscape spans an area of Northeastern Iran laying between N 37º11" to 37º33" and E 58º33" to 59º11" (Pic 2). As water sources, Dargaz Plain is the sub-basin of Karakum Basin and is fed by subterranean canals, underground water tables, and annual precipitations (Garazhian, 1998; Velayati, 1991; Nami & Mousavi Nia 2019). The rivers that flow through the plain are Daroungar, Zanganlu, Gereni, Duayi, and Layin Su (Garazhian 1998) (Pic 3). The Daroungar River as a main river rises in the Allaho-Akbar mountains of Hizar-Masjid from connecting the Shamkhal and Shahrag tributaries and flows through the Dargaz Plain after passing the 76-kilometer in West/Northwestern to East/Northeastern directions until that it makes a part of Iran-Turkmenistan Borders (Velayati, 1991). The average annual precipitation of Dargaz Plain is 300 mm which according to the west/east elevation is decreased (Velayati1991). In geology, this plain is placed on the sedimentary of the Kopet Dagh basin geologically. The young morphology of Dargaz Plain is formed by three geographical characteristics, i.e., the mountainous, the foothills, and the Plains (Garazhian 1998; Baghizadeh 2011). The major part of the soil of Dargaz Plain is alluvia which was an important factor for agriculture during ancient times. The elevation of Dargaz Plain varies from 217 to 3073 meters ASL.



Pic 1: The Political Situation of the study area
(Baghizadeh 2011)



Pic 2: The Geographical picture of Dargaz plain
(Baghizadeh 2011)



Pic 3: The Rivers of Dargaz Plain (Baghizadeh 2011)

Archaeological and Historical Background of Dargaz Plain

The evidence of living in the Dargaz plain is dated back to the Paleolithic Period (Sadraei & Azar 2023). But for the first time, this region and plain was known as Parthoveh in the Bisotun relief (Baghizadeh 2011) and in the Arsacid period was selected as the capital (Nami, 2015; Nami& Mousavi Nia 2019). The fire temple of Bandian in the vicinity of Dargaz City was a religious place in the Sassanid Empire led to the conclusion that this region could probably have been settled by the Great farmers of the Sassanid period named Dehghan (Ghaempanah et al. 2020).This plain was visited by Tourists for the first time (Napier& Kazi 1876; Rawlinson 1879), and after that, Henry Frankfort explored this land in 1924 A.D. and recognized similarities and common ceramic industries between these potteries and those of Anau (Kohl & Heskel 1980). E. Negahban from the Iranian Centre of Archaeological Research surveyed this plain in 1966 A.D. but his reports are unpublished until now (Labbaf-Khaniki 2012). A few years later in 1978, Kohl and Heskel visited this Plain to map and date archaeological sites of this plain according to the Aeneolithic and Bronze age materials of Soviet Turkmenistan, so After that, they published a short report in the IRAN journal, Volume of 18 (Kohl & Heskel 1980). After the revolution in Iran, Mehdi Rahbar excavated the Bandian temple in 1994 A.D. (Rahbar, 1998), and afterward, the whole of Dargaz County was surveyed by Mahmoud Bakhtiyari Shahri in 1996 A.D. (Bakhtiyari Shahri 1996).Finally, A supplementary survey was done by O. Garazhian in 1998 A.D. to write his M.A. Thesis (Garazhian 1998). Moreover, the one of authors surveyed Dargaz Plain in 2010 to Create a Settlement Pattern of Dargaz Plain based on ArcGIS Tools to complete an M.A. Thesis (Baghizadeh 2011). In 2012 A.D., Mohammad Sheikh studied Yarim Tepe in a Systematic sampling survey as a key site of Dargaz Plain that led to the recognition and descrip-

tion of the cultural material of Yarim Tepe (Sheikh 2014). Recognizing the Parthian dynasty, The Site of Shahr Tepe was surveyed and excavated by Hasan Nami, and their results were used in his Ph.D. Dissertation (Nami 2015; Nami &Mousavi Nia 2019). Also, this plain is re-surveyed by Mehdi Fallah as a Ph.D. project to identify the Parthian Sites (Fallah &Mohammadi Far 2015). Finally, The Kohne Ghaleh Mir-Ghaleh was systematically surveyed by Zahra Hedayati Minayi to understand and comprehend of Pottery styles of the Iron Age (Yaz culture) (Hedayati, 2017).

Material and Methods

According to the vague archaeological details of Northeastern and Eastern Iran, particularly Dargaz Plain, the key basis for identifying and naming the chronological periods has been supplied by the well-researched chronology and cultural material of Central Asia. The archaeological sequences of Central Asia are known from the findings of the ancient settlements such as Jeitun for the Neolithic period (Harris 2010), Anau for the Transitional Chalcolithic to the Late Chalcolithic periods (Hiebert & Kurbansakhatov 2003), Namazga for the Bronze age cultures (Khlopina 1981) and Yaz as a well-known site for the Iron Age periods (Lhuillier 2019) that had received their names from the above-mentioned sites. Regarding the geographical proximity of Dargaz Plain to Central Asia, the same chronological terminology was used to categorize and date the materials by the researchers (Kohl & Heskel 1980; Garazhian 1998, 2008, 2015; Baghizadeh 2011; Baghizadeh & Yousefi Zoshk 2012; Sheikh 2014; Jafari 2107; Hedayati Minayi 2017).

The spatial structure objectively represents environmental, ecological, and social variables (Saeedi, 1998, 39). One of the effective ways to reconstruct history is to comprehend the geographical characteristics of the ancient sites and the quality of their distribution in their landscape. For this reason, geography is an important factor in better understanding of the sites and Settlement patterns in archaeological analyses (Motarjem 2008).Understanding current environmental patterns between sites, the key elements in the creation of sites, and the grouping of sites are more deeply skilled (Rezaei et al. 2018). In light of this, landscape is seen as an organic entity in which its components interact naturally with both natural and artificial systems. A longstanding experiment in archaeology is using patterns in the distribution of archaeological sites to explain an archaeological landscape. Although settlement pattern has been the subject of statistical concepts and models since the mid-80s, little consideration has been given to the possibility of using these theories and models as an explanatory tool for the investigation of an archaeological landscape (Hodder, Orton 1976; Orton 1982).A strong method in archaeology is the use of Geographic Information Systems (GIS) to save, display, study, and comprehend the geographical interactions between people and their environment (Dell 'Unto& Landeschi 2022). The integration of GIS and spatial technology in archaeological analysis has led to a shift in attitudes and the development of archaeological analysis (Warren and Asch 2000). Archaeological sites, in this example, are spread throughout the environment in a variety of ways, such as groups scattered in a regular pattern or even irregularly without any apparent trend. We were able to precisely map all the necessary archaeological sites and all locations of prehistoric site records employing an exact worldwide positioning system (GPS), which turned out to be a useful instrument for the investigation of the archaeological lands.

The primary aims of this investigation are to analyze the influence and role of geographical conditions and environmental factors on the distribution of settlements in the region and to carry out an evaluation, identification, and analysis of settlement patterns ds in GIS. The descriptive-analytic research methodology is used in this study. After investigating Dargaz Plain, identifying the 21 (Twenty-One) ancient sites dating back to the Neolithic until the Iron I/III Pe-

Table 1: The Geographical Characteristics of Ancient Sites at Dargaz Plain

No	Name	Longitude	Latitude	AMSL	Elevation	Area	Chronology								
							LN/TC	EC	MC	LC	EB	MB	LB	Y	A
1	Taqi	37'23'11.64	59'8'56.70	349m	13.5m	1									*
2	SahebJan	37'27'12.60	59'6'49.14	447m	10m	6.28								*	
3	Yarim	37'28'0.48	59'5'52.50	578m	36m	9.56	*	*	*	*	*	*	*	*	
4	Khakhian	37'29'20.70	59'2'39.42	557m	7.5m	5.98							*		
5	YoukhariQale QarehQoyunlu	37'26'42.30	58'59'11.52	656m	11.5m	4.46		*	*	*	*	*	*		
6	Norouz	37'21'56.58	59'3'26.88	667m	11.5m	0.93	*	*	*	*	*	*	*		
7	Parkan	37'24'7.68	59'3'14.22	615m	20m	1.5					*				
8	Lik	37'20'42.42	59'7'47.76	469m	18m	1.3			*	*	*	*	*	*	
9	Imamzadeh Olia (2)	37'20'34.80	59'5'31.86	641m	2m	0.5							*		
10	KalKelisa	37'31'1.60	58'55'37.90	618m	5.5m	0.6					*				
11	Shahr Tepe	37'21'5.94	59'3'47.28	657m	9m	0.5						*	*		
12	Nokhandan	37'31'16.26	58'59'20.64	632m	6.5m	1.67			*	*	*	*	*		
13	KohnehQaleh	37'30'32.88	59'16'52.26	297m	16m	1.58						*	*	*	
14	Yaste	37'30'44.52	59'14'32.82	322m	6m	0.22							*		
15	Mery Palkanloo	37'33'54.00	58'52'44.76	740m	16m	1.3							*		
16	YoukhariQaleSadabad	37'26'40.32	59'0'20.64	691m	8m	1							*		
17	Ilan Jogh	37'21'31.32	59'9'34.44	550m	16m	2.86	*	*	*	*	*				
18	Qaravol	37'30'51.24	59'15'11.94	316m	20m	5.68							*		
19	JashnAbad	37'28'48.36	58'53'55.62	764m	9m	0.54							*		
20	Nasir	37'27'43.38	59'5'17.70	480m	9.5m	0.7							*		
21	Nazar	37'35'41.04	58'48'35.58	840m	17.5m	2.06								*	

Chronological Period:

Neolithic = Jeitun Culture		Transitional Chalcolithic Period = Anau IA –
Early Chalcolithic Period = Namazga I (Anau IA)	Middle Chalcolithic Period = Namazga II (Anau IB)	Late Chalcolithic Period = Namazga III
Early Bronze Period = Namazga IV	Middle Bronze Period = Namazga V (First Phase of BMAC)	Late Chalcolithic Period = Namazga VI (Second & Third phase of BMAC)
Early Iron Age = Yaz I		Middle and Late Iron Period = Yaz II/III

riod, this project modeled the ancient points concerning environmental factors such as altitude, slope, distance to the river, and geology that affect the formation and distribution of human settlements (Table 1). To attain the desired objectives, documentary research, and spatial analyses were executed using GIS software, specifically ArcGIS10. After creating the necessary databases for the study through regional aerial photography and GIS, ancient maps were constructed, and the spatial distribution of settlements was examined and analyzed about the aforementioned variables. The outcomes of this study give insightful information on how geographic and environmental variables have influenced historical patterns of human settlement. Finally, ArcGIS software was used to evaluate how the ecology contributed to the development of the Dargaz Plains and their settlement patterns.

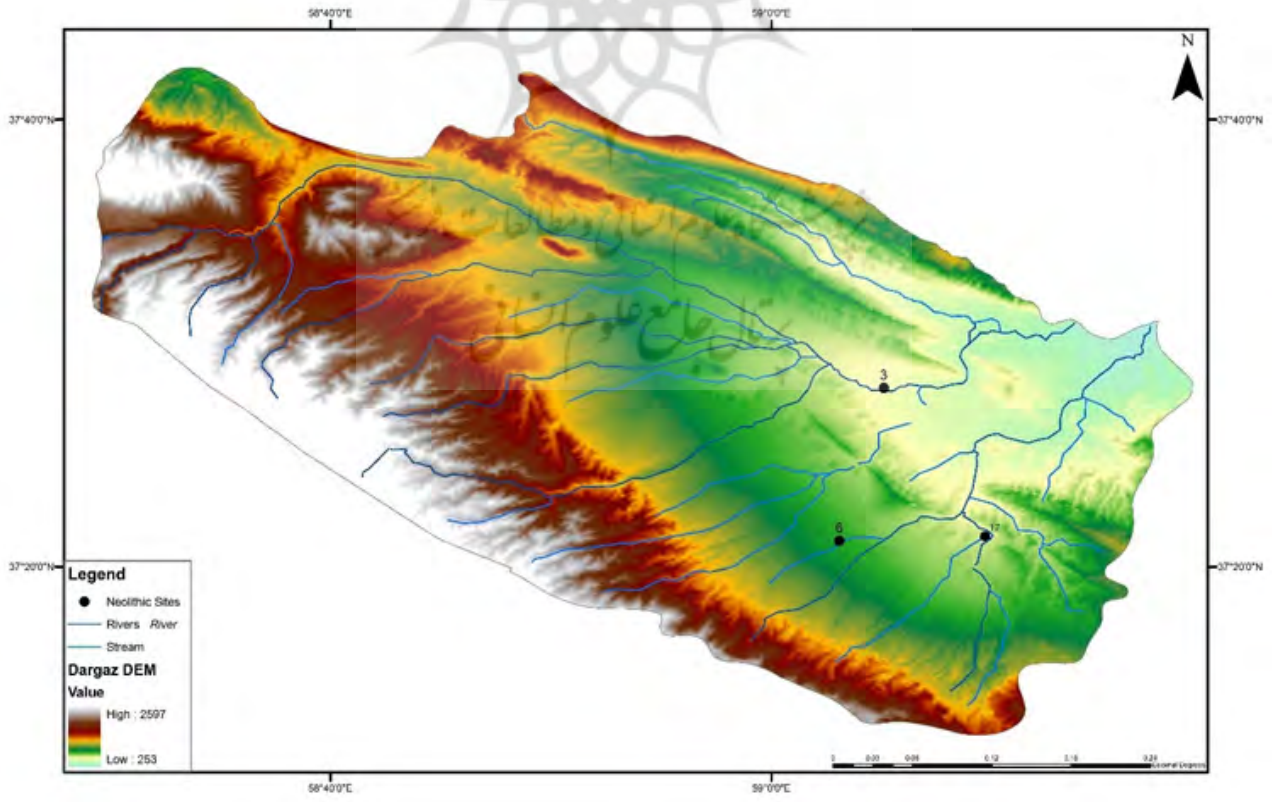
Discussion

Late Neolithic Period

The Neolithic referred to as the Jeitun, was described as the first evidence of Sedentism and the domestication of Animals (Coolidge 2005). Most academics believe that this area received the Neolithic lifestyle via the Iranian plateau and northern Mesopotamia(Kohl 1984). The Neo-

lithic villages of Jeitun comprised about square, similar-sized single-room homes, a fireplace, and often a warehouse container(Bernbeck and Pollock 2016). This Area including the Kopet Dagh mountains and its northern fronts is suitable for agriculture that is done from the ancient times (Berkings et al. 2017). This culture borrowed its name from the site of Jeitun in Southwestern Turkmenistan and their Chronology is placed between thec. 6250–5700 BC (Harris 2010; Garazhian 2015). The potteries of the Neolithic Period are introduced by the plain and painted buff wares its geometrical motifs are decorated by the colors of red or dark brown (Ibid). the Neolithic spread from northern Mesopotamia and the Iranian plateau to this region (Kohl 1984). Villages consisted of more or less square, single-room houses of similar sizes, a hearth, and often a storage bin (Bernbeck and Pollock 2016). This Area including the Kopet Dagh mountains and its northern fronts is suitable for agriculture that is done from the ancient times (Berkings et al. 2017). This culture borrowed its name from the site of Jeitun in Southwestern The wares are handmade, including the chaff and mineral temper and the form of cups, plates, and storage containers (Coolidge 2005; Harris 2010; Bernbeck and Pollock 2016).

Dargaz Plain has been influenced by the same culture of southwestern Turkmenistan. Three sites of Dargaz Plain had the Neolithic materials, Yarim Tepe (DG 3), Norouz Tepe (DG 6), and IlanJogh (DG 17) (Garazhian 1998; Baghizadeh 2011; Sheikh 2014) (Pic 4). The wares of Yarim Tepe are characterized by the painted ones with geometric motifs including horizontal and vertical lines, dots, and zigzagged decorations as well as the Jeitun ones (Sheikh 2014) (Table 2). Yarim Tepe is beside the Daroungar River and Norouz Tepe is beside a drain as well as the IlanJogh Tepe. All ancient sites, located at the center of the Plain, are characterized by a soil type of Alluvium, and the middle elevation, Yarim Tepe at 534 ASL, IlanJogh at 550 ASL, and Norouz Tepe at 664 ASL are suitable for irrigated agriculture (Baghizadeh 2011).



Pic 4: The Map of Neolithic Sites (Baghizadeh 2011)

Table 2: The Description of the Late Neolithic Potteries in Dargaz Plain's Sites

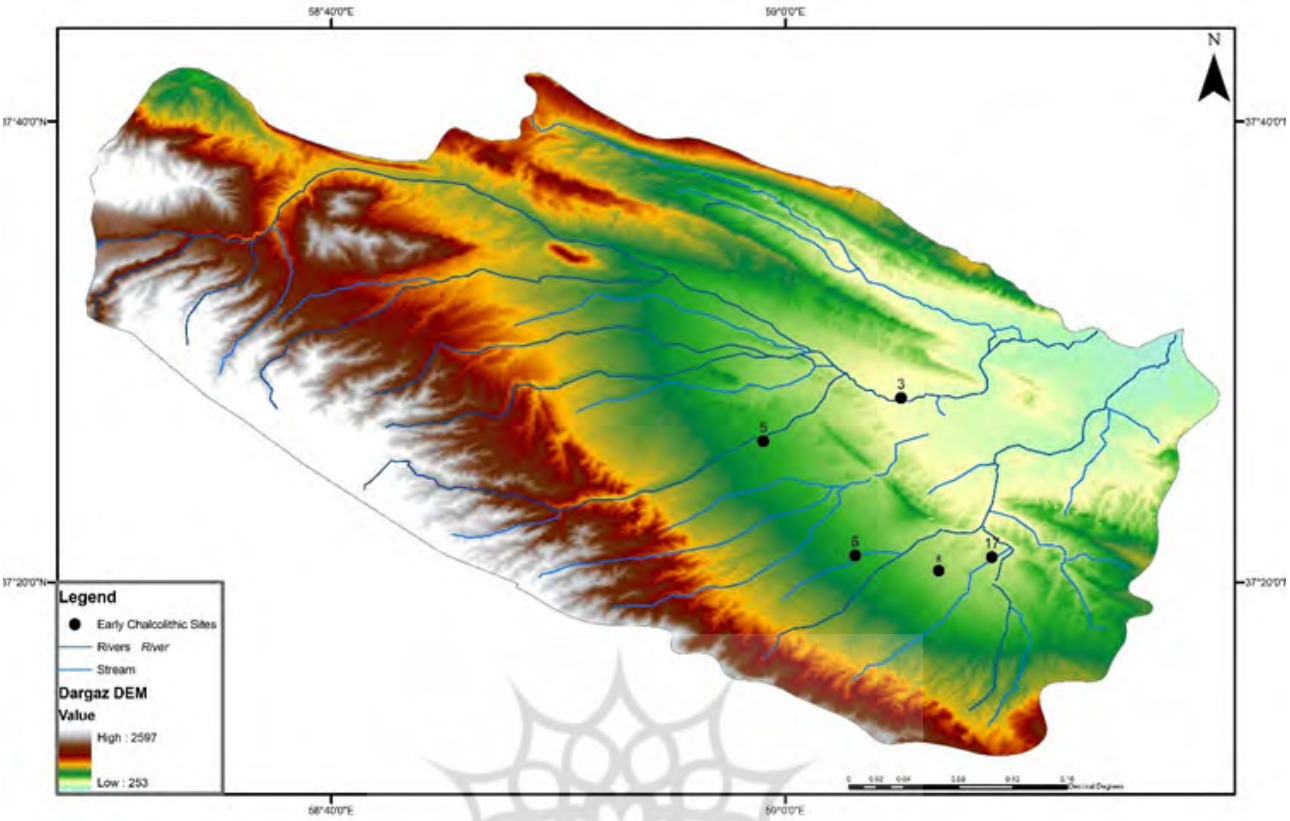
Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 6	Norouz Tepe	C	The Buff ware, Tapered rim, thick Chaff temper, SlipWash on both surfaces (7.5YR, 7/4)		Late Neolithic Jeitun Phase	Garazhian 1998 Sheikh 2014: p. 9
DG 6	Norouz Tepe	H	The Buff ware, tapered rim, thick chaff temper, Washed on the exterior and pale brown color on the interior (10YR, 7/3)		Late Neolithic Jeitun Phase	Garazhian 1998 Sheikh 2014: p. 9
DG 17	IlanJoq Tepe	J	The buff ware, chaff temper, pale yellow Wash(2.5Y, 8/3), the dots motifs, and the motif's color: reddish yellow (5YR, 7/6)		Late Neolithic Period Jeitun	Garazhian, 1998 Sheikh, 2014: fig 6

Transitional Chalcolithic Period

The transitional Chalcolithic Period, locally named as Aeneolithic or Anau IA, show the intriguing shifts in material culture, such as the increase of villages and complexity, the production of pottery, the appearance of a few copper implements, and other factors (Garazhian 1998). Houses occasionally included many rooms, and where large enough portions of the site were revealed, it appeared that villages were planned around a main axis(Bernbeck & Pollock 2016). The period is dated to 4350–3800 BC (Hiebert & Kurbansakhatov 2003). The dominant styles of pottery in these periods are the Anau IA-IB/Namazga I-III that appear in the whole of Southwestern Central Asia (Heibert & Kurbansakhatov 2003; Masson& Sarianidi1972). The ceramic is Fine, Painted, and Red and the style of motifs includes geometric patterns, wavy lines, and floral designs (Baghizadeh 2011).The Pottery is thin-walled and high-fired painted by cross-hatched lines in dark brown and black and their Forms are bowls with concave bases (Hiebert & Kurbansakhatov 2003; Bernbeck & Pollock 2016).The cultural material of Anau IA like the wares and other small finds have been discovered at many settlements of the Iranian Central Plateau, Northeastern Iran, and in Southern Turkmenistan. In Iran, similar artifacts have been reported from the Khorasan and the Atrak valleys, Especially from Tepe Yam and XA6 (Rezaei et al. 2018). This horizon in Dargaz Plain is following the previous period and has been shown in the Yarim Tepe, IlanJogh, and Norouz Tepe findings. The samples have a thin wall and fine firing methods like the Anau IA and Sialk II (Sheikh 2014).

Early Chalcolithic Period

This period that is identified by the Namazga I dates back to 4100-3650 B.C. and Anau IA phases (Kircho, 2019) have fine handmade buff pottery with floral tempers and painted geometric patterns with black and brown colors (Heibert & Kurbansakhatov 2003). The major changes have begun in this period with more establishing the settlements in Kopet Dagh foothills, complexity, metallurgy, pottery making, and others (Garazhian 1998, Heibert & Kurbansakhatov 2003; Sheikh 2014).



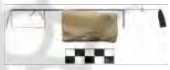
Pic 5: The Map of Early Chalcolithic Sites (Baghizadeh 2011)

There are five sites including Yarim Tepe and Norouz Tepe (from the previous period), Ilan Jogh (DG 17), Tepe Lik (DG 8), and YoukhariQaleh of QarehQoyunlu village (DG 5) that its soil includes alluvium type, and these sites are located among the middle part of the plain (Baghizadeh 2011) (Pic 5). The Settling extension of Yarim Tepe as a main Site is about 1.25 ha around the southern and eastern sections of Yarim Tepe (Sheikh 2014). Regarding the Early Chalcolithic of Dargaz Plain, the pottery horizon includes handmade, fine, and buff ware with a floral temper that is painted black and brown color. Its motifs are geometric such as the horizontal triangles rows, diagonal zigzagged lines, and V-shape patterns below the rims (Sheikh 2014) (Table 3).

Middle Chalcolithic Period

This period is distinguished by the Namazga II (Yalangach Period) and Anau IB in Southwestern Central Asia dated back to ca. 3700/3600–3200/3100 BCE (Heibert & Kurbansakhatov 2003; Kircho, 2019). During this phase, the system of settlement changes, and the population becomes concentrated in large centers (Kircho, 2019). The main wares classes are divided into two groups geographically: A) Buff ware painted by the red and brown motifs in the Kopet Dagh, B) The black (patterns) on the red (surface)potteries in the eastern parts and the Geoksyur Oasis, C) the painted wares associated with grey wares in the western piedmont (Bonora and Vidale 2013).This ceramic is Fine and painted, and the style of motifs includes geometric patterns, wavy lines, and floral designs (Ibid). Two key points can be distinguished about this horizon: 1) In the Middle Eneolithic period, the appearance of unpainted red-polished pottery with mineral inclusion marks the beginning of the firing process in two-chambered kilns; 2) the appearance of pottery with bichrome ornamentation in the Geoksyur style (Kircho 2019).

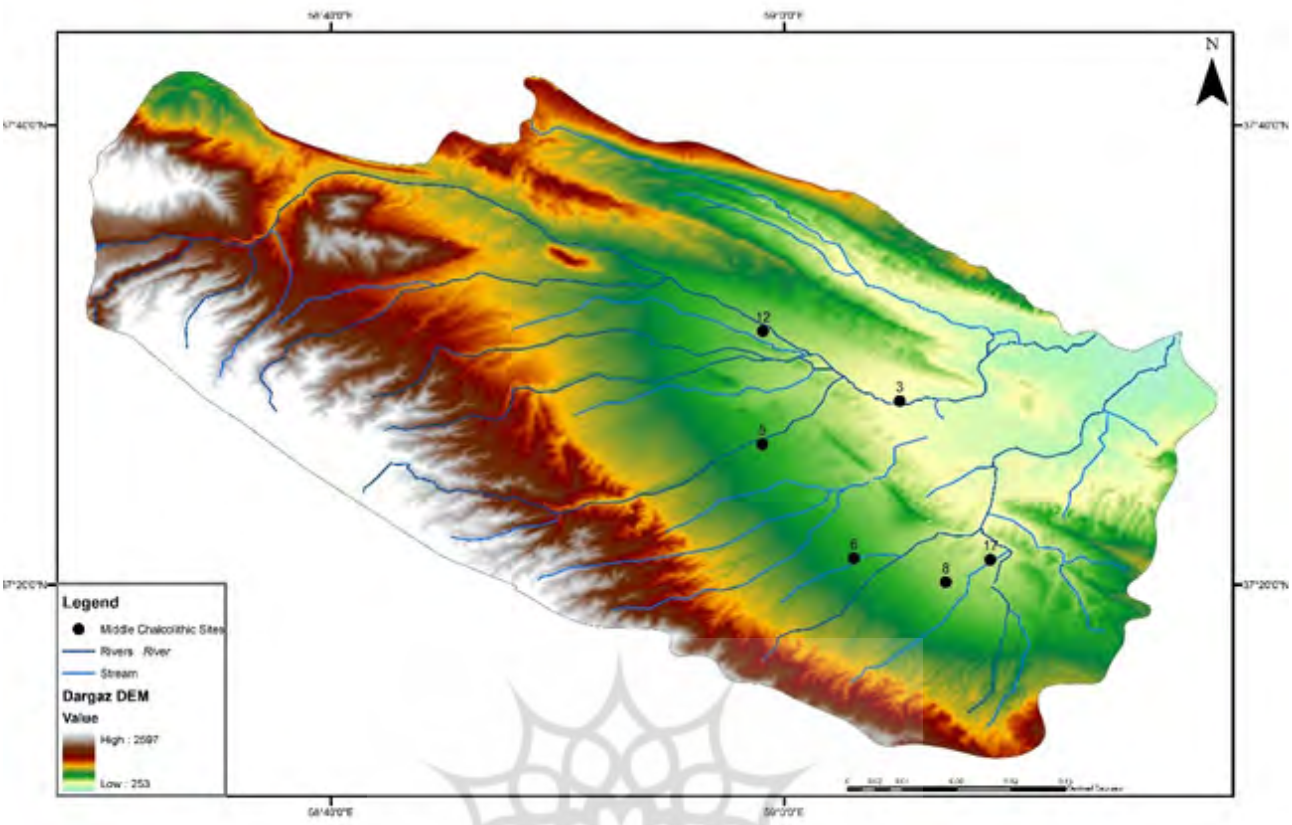
Table 3: The Description of the EarlyChalcolithic Pottery

Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 8	Tepe Lik	P	The red ware, carinated body, fine Sand temper, red Wash color on the exterior and interior (10R, 4/8), the geometric motifs and lines, and the motif's color: black to brown (10R, 4/1)		Early Chalcolithic Period Namazga I/Anau IA	Garazhian, 1998 Sheikh, 2014: f. 6
DG 8	Tepe Lik	Q	The redware, carinated body, chaff temper, pale brown color on both surfaces (10YR, 7/4), the lines, and the motif's color: dark grey (10YR, 4/1)		Early Chalcolithic Period Namazga I/Anau IA	Garazhian, 1998 Sheikh, 2014: f. 9
DG 3	Yarim Tepe	J	The Buff ware, tapered rim, sand temper, Washed on the exterior and pale yellow on the interior (5Y, 8/3), the geometric vertical lines below the rim, the motif's color: blur red (2.5YR, 3/2)		Early Chalcolithic Period (Namazga I)	Garazhian 1998
DG 6	Norouz Tepe	B	The Buff ware, tapered rim, Chaff temper, Washed on the exterior and pale brown color on the interior (10YR, 7/4), the geometric triangles below the rim, the motif's color: light Red (2.5YR, 6/6)		Early Chalcolithic Period Namazga I	Garazhian 1998 Sheikh 2014: p. 9
DG 17	IlanJoq Tepe	H	The red ware, body, chaff temper, red Wash color on the exterior (10R, 5/6), the geometric motifs, the motif's color: reddish black (10R, 2.5/1)		Early Chalcolithic Period Namazga I	Garazhian, 1998 Sheikh, 2014

Concerning the Dargaz Plain, the sites increased to six; five sites from early Chalcolithic and onesite which were occupied newly (Pic 6). This new site is Nokhandan Tepe (DG 12). The pattern is the same previous period but Tepe Lik is far away from the water sources (about 1 kilometer). All locations are in the middle part of the plain and have the same range of elevation (Baghizadeh 2011). The Pottery is handmade, floral Tempered, and ranging from Red to light Red. The paintings include diagonal lines, cross-hatched triangles, and ladder bands. The bi-chrome wares are decorated with dark and light red and brown colors on the Buff or Red. Also, its motifs are horizontal and vertical lines with bands (Sheikh 2014) (Table 4).

Late Chalcolithic Period

The late Chalcolithic Period was introduced by the Culture of Namazga III (=Geoksyur Period) dated to ca. 3200/3100–2800/2700 BCE. The remains of this culture in a wide geographical sphere in southern Turkmenistan denote remarkably widespread intra-regional communication. During the Late Chalcolithic period, Altyn-Depe had become a large center with an area of about 25 ha (Kircho 2019). The Namazga III wares include handmade, buff, and bichrome, chaff-added material, and polished external surfaces (Rezaei et al. 2018). This cultural periodhas been identified from the ancient site in Northern Khorasan, and Gorgan Plain (Garazhian 2008). Soviet archaeologists concluded that a huge migration and interaction existed between



Pic 6: The Map of the Middle Chalcolithic Sites (Baghizadeh 2011)

Southern Turkmenistan and the Iranian Central Plateau during the period of Hissar IB-IIA and Sialk III4-7, IV Also, this region contacted with Southeastern Iran and Southern Afghanistan by the similar wares found at Shahr-e Sokhte I and Mundigak III (Masson & Sarianidi, 1972; Kohl, 1984;).

In Dargaz Plain, the Namazga III wares were founded from Yarim Tepe, YoukhariQaleh, Norouz Tepe, Tepe Lik, Tepe Nokhandan, and IlanJogh Tepe. The pattern is the same and all of the sites are located in the middle part of the plain and have the same range of elevation (Pic 6). Exception Tepe Lik, others are in the near of water sources. The soil identified that the sites are located in a suitable region for Agriculture (Baghizadeh 2011). The settlement extension of Yarim Tepe in this period is limited to 1.6 ha on its southern and eastern fronts (Sheikh2014) (Table 7).

Early Bronze Period

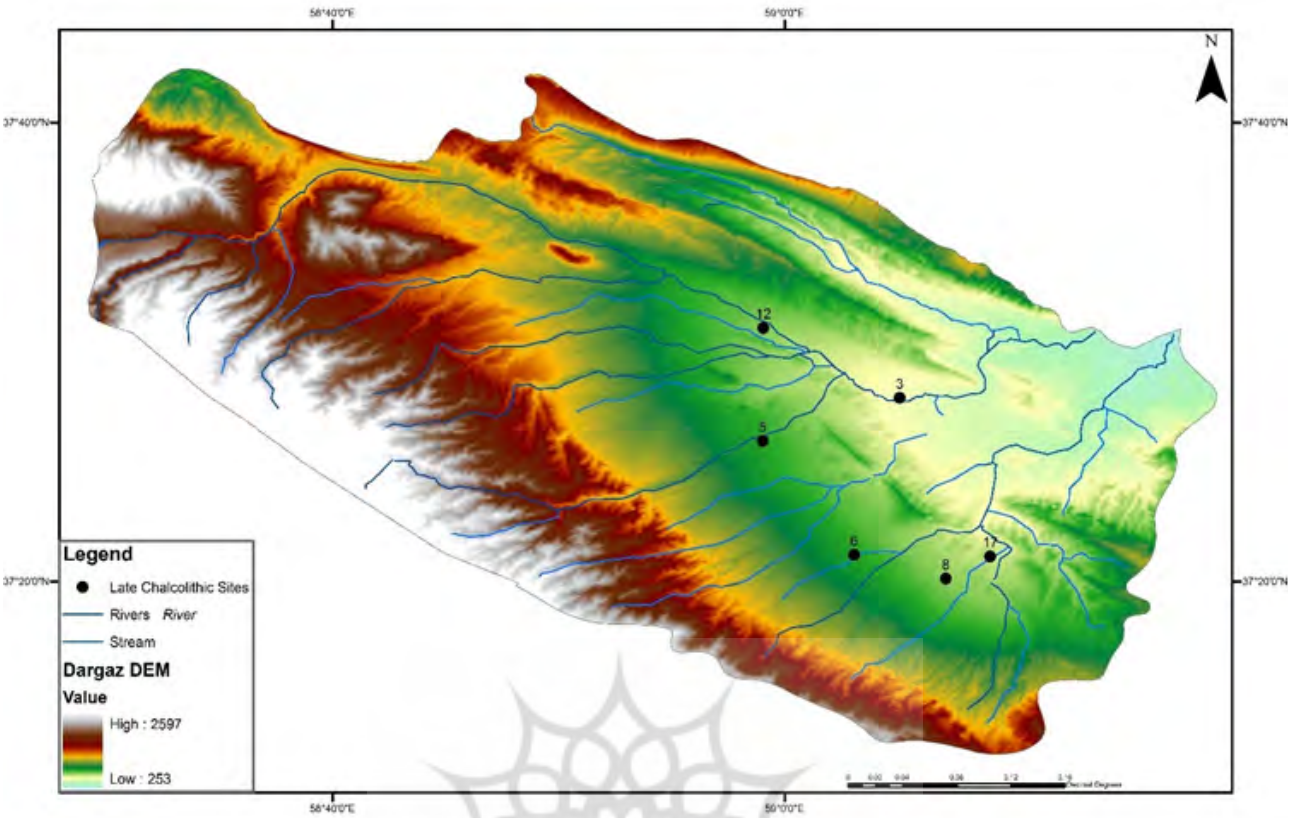
The Bronze periods in Central Asia have important characteristics like the development of Urbanism, the invention of the pottery wheel, and the mass production of pottery and different styles of pottery. Although Namazga IV with its beautiful pottery type appeared in the early bronze period (Kircho 1988), a new culture including the Grey Ware distributed in the middle and late bronze periods in the western part of Central Asia named Namazga V and VI (Khlopina1981).The Early Bronze period is identified by the materials of the lower strata of Anau III and Namazga IV dated to 3200–2700 B.C. (Kircho, 2019). This is represented by fine-painted wares with stunning geometric patterns that demonstrate the peak of a style that began in the early Chalcolithic (Dupont-Delaleuf 2013). During the Late Chalcolithic period, the ware corpses included the 10 forms of pottery, but the forms extended to 22 classes consisting of table-

Table 4: The Description of the Middle Chalcolithic Pottery

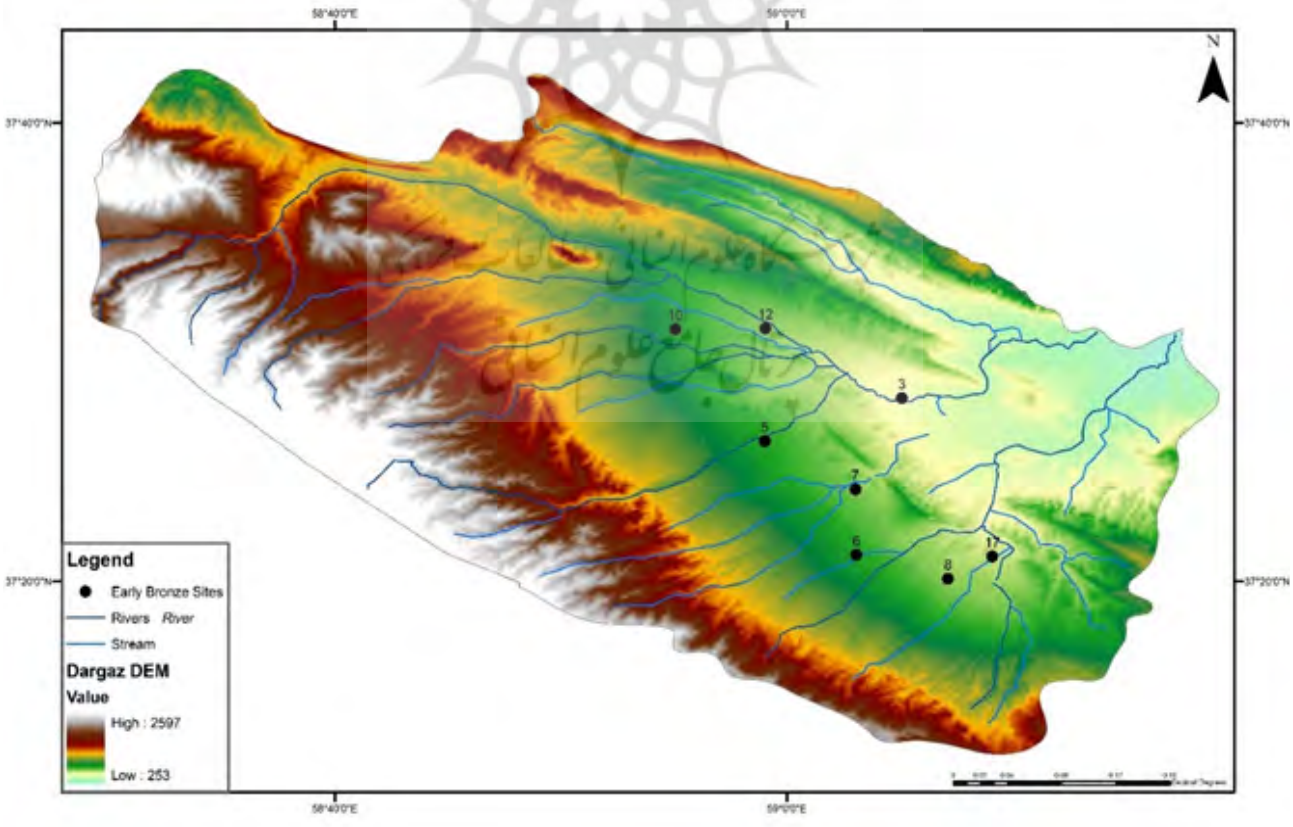
Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 3	Yarim Tepe	F	The Buff ware, Chaff temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/2), the horizontal lines below the rim, the motif's color: dark brown (7.5YR, 3/2)		Middle Chalcolithic Period Namazga II	Garazhian 1998: p Sheikh 2014: pic.
DG 3	Yarim Tepe	T	The Buff ware, body, Chaff temper, Washed on the exterior and pale yellow on the interior (2.5Y, 3/2), the triangles between Lines, the motif's color: dark reddish brown (5YR, 2.5/2)		Middle Chalcolithic Period (Namazga II)	Garazhian 1998: p. Sheikh, 2014: pic
DG 6	Norouz Tepe	A	The Buff ware, slightly thickened rim, Sand temper, Washed on the exterior and pink color on the interior (7.5YR, 8/3), the horizontal lines below the rim and neck, the motif's color: dark Red (10R, 3/4)		Middle Chalcolithic Period Namazga II	Garazhian 199 Sheikh 2014: p.
DG 8	Tepe Lik	A	The red ware, tapered rim, chaff temper, Washed on the exterior and reddish yellow color on the interior, the horizontal lines on the rim, the motif's color: dark brown		Middle Chalcolithic Period (Namazga II)	Garazhian, 199 Sheikh, 2014: P.
DG 8	Tepe Lik	C	The grey ware, tapered rim, Sand temper, grey Wash on the exterior and interior (7.5YR, 6/1), the diagonal lines below the rim, the motif's color: dark brown (7.5YR, 2.5/2)		Middle Chalcolithic Period (Namazga II)	Garazhian, 199 Sheikh, 2014: P.
DG 8	Tepe Lik	D	The Buff ware, tapered rim, chaff, yellow slip on the surfaces (2.5Y, 8/3), the geometric motifs below the rim, the motif's color: brown (7.5YR, 4/2)		Middle Chalcolithic Period (Namazga II)	Garazhian, 199 Sheikh, 2014: P.
DG 8	Tepe Lik	S	The polychrome buff ware, tapered rim, Chaff temper, pale yellow Wash color on the exterior and reddish yellow interior (2.5 Y, 8/3), the geometric motifs and lines, the motif's color: dark reddish to brown (2.5YR, 3/4)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014: f.
DG 12	Nokhandan Tepe	C	The buff ware, tapered rim, Sand, pale yellow (2.5Y, 8/1), the geometric motifs and lines, the motif's color: dark blur red (2.5YR, 2.5/2)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014: pic
DG 12	Nokhandan Tepe	G	The red ware, body, chaff, yellow color on the exterior and Dark red on the inside(2.5Y, 3/6), the geometric motifs and lines, the motif's color: dark grey (5YR, 3/1)		Middle Chalcolithic Perio Namazga II	Garazhian, 199 Sheikh, 2014: pic
DG 17	IlanJoq Tepe	A	The buff ware, tapered rim, Chaff temper, pale yellow Wash color on the exterior (2.5Y, 8/3), the geometric motifs and lines, the motif's color: reddish brown (5YR, 2.5/2)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014: pic
DG 17	IlanJoq Tepe	B	The buff ware, tapered rim, chaff, pale yellow(2.5Y, 8/3), the geometric motifs and lines, the motif's color: dark reddish to brown (2.5YR, 3/3)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014: pic
DG 17	IlanJoq Tepe	D	The red ware, tapered rim, chaff, pink color (7.5YR, 8/3), the geometric motifs and lines, the motif's color: black (7.5YR, 2.5/1)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014
DG 17	IlanJoq Tepe	F	The buff ware, tapered rim, chaff, pale yellow external surface (2.5Y, 8/2), the line motifs, the motif's color: dark brown (7.5YR, 3/2)		Middle Chalcolithic Period Namazga II	Garazhian, 199 Sheikh, 2014: pic

ware, household items, and cooking pots(51 variants of proportions) in the Early Bronze Age (Kircho, 2019).

In Dargaz Plain, eight sites from the Early Bronze Period (EC) were founded. Two new sites added to former sites (DG 3, 5, 6, 8, 12, and 17) are Tepe Parkan (DG 7) and Tepe KalKelisa (DG 10) (Pic 8). Tepe KalKelisa is far away from water sources but Tepe Parkan is near to a river. In addition, Tepe KalKelisa is suitable for dry farming but Tepe Parkan has the features of irrigated agriculture (Baghizadeh 2011). This increase in settled area is shown at Yarim Tepe, which is more than from the previous phases and is limited to the south, east, and west sides of Yarim Tepe (Sheikh 2014).



Pic 7: The Map of the Late Chalcolithic Sites (Baghizadeh 2011)



Pic 7: The Map of the Early Bronze Age Sites (Baghizadeh 2011)

Table 5: The Description of the Late Chalcolithic Pottery

Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 3	Yarim Tepe	C	The Buff ware, the everted rim, Chaff temper, Washed on the exterior and pale yellow on the interior (5Y, 7/3), the geometric motifssuch as vertical lines, the motif's Color: Black (10YR, 2/1)		Late Chalcolithic Period (Namazga III)	Garazhian 1998: p.169 Sheikh 2014: Plate III
DG 3	Yarim Tepe	K	The Buff ware, flaring rim, Chaff temper, Washed on the exterior and pale yellow on the interior (5Y, 8/2), the geometric horizontal and vertical lines, the motif's color: Black brownish (7.5YR, 3/2)		Late Chalcolithic Period (Namazga III)	Garazhian 1998 Sheikh, 2014: pic 16
DG 3	Yarim Tepe	S	The Buff ware, Carinated Body, Sand temper, Washed on the exterior and pink color on the interior (7.5YR, 7/4), the diagonal meander lines, the motif's color: dark brownish (7.5YR, 3/8)		Late ChalcolithicPeriod (Namazga III)	Kircho, 1988: p. 54 Sheikh 2014: pic 16
DG 8	Tepe Lik	B	The Buff ware, tapered rim, Sand temper, Washed on the exterior and pale-yellow color on the interior (2.5Y, 8/4), the triangle motifs, the motif's color: reddish black (10R, 2.5/2)		Late Chalcolithic Period Namazga III	Garazhian, 1998 Sheikh, 2014: P. 16
DG 12	Nokhandan Tepe	A	The red ware, tapered rim, Sand temper, Wash color on the exterior and red on the interior (2.5Y, 5/6), the geometric motifs and lines, the motif's color: pale brown		Late Chalcolithic Period Namazga III	Garazhian, 1998 Sheikh, 2014: pic 16

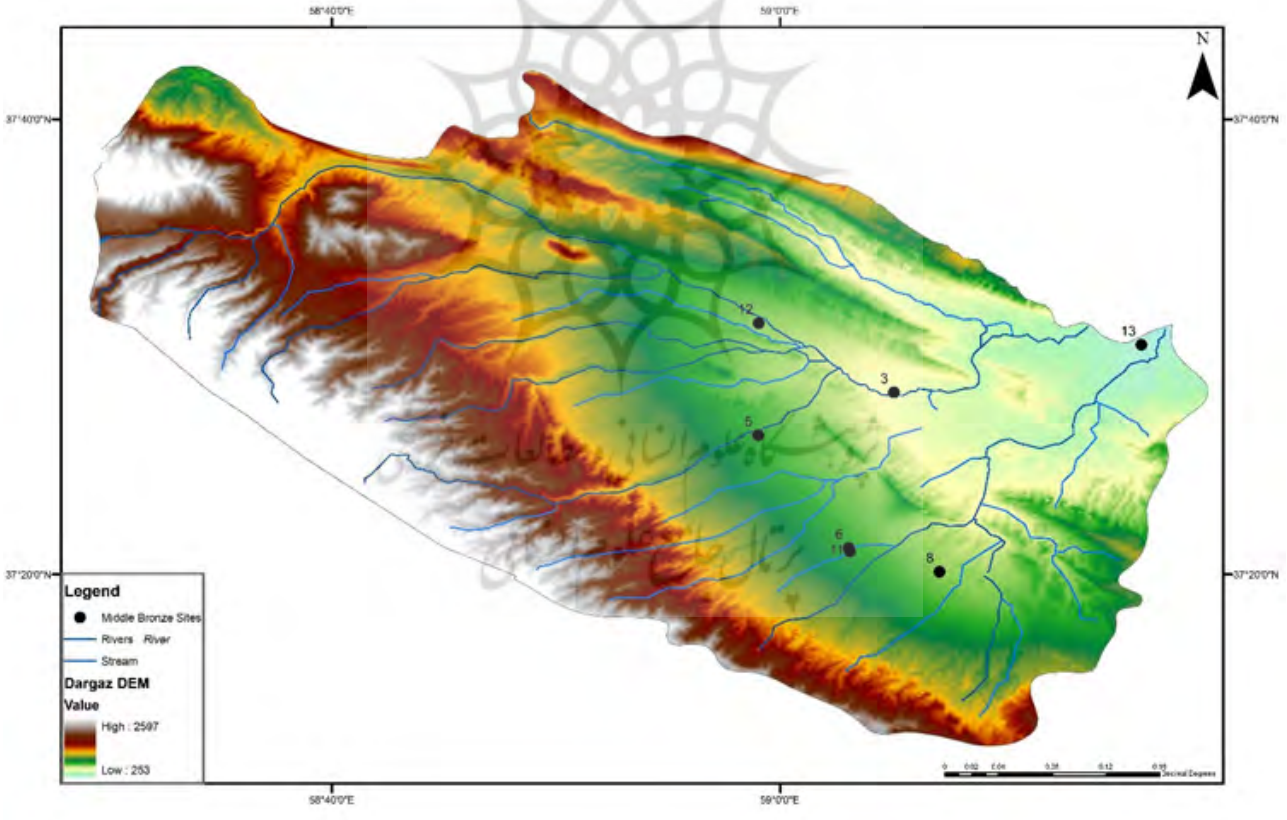
Table 6 The Description of the Early Bronze Pottery

Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 5	Yarim Tepe	A	The Buff ware, the rim, Chaff temper, Washed on the exterior and pale yellow on the interior (5Y, 8/3), the geometric motifs,such as vertical diagonallines and triangles, the motif's color: reddish Black (2.5YR, 2.5/1)		Early Bronze Period (Namazga IV)	Garazhian 1998: p.168 Sheikh 2014: Plate IV
DG 5	Yarim Tepe	B	The Buff ware, the rim, Chaff temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/3), the geometric motifsuch as vertical lines, the motif's color: pale Red (2.5YR, 3/2)		Early Bronze Period (Namazga IV)	Garazhian 1998: p.169 Sheikh 2014: Plate IV
DG 5	Yarim Tepe	D	The Buff ware, the rim, Chaff temper, wash slip on the exterior and pale grey on the interior (2.5Y, 7/2), the geometric pattern including vertical diagonal wavy lines beneath the rim in color ofdark reddish brown (5YR, 3/3)		Early Bronze Period (Namazga IV)	Masson, 1989; p. 72 Garazhian 1998: p.167 Sheikh 2014: Plate III
DG 5	Yarim Tepe	G	The Buff ware, tapered rim, Chaff temper, Washed on the exterior and pale yellow on the interior (5Y, 8/3), the geometric Motifs, the motif's color: the blurred(2.5YR, 2.5/2)		Early Bronze Period (Namazga IV)	Mason, 1981: Plate XXV Garazhian 1998: p.170 Sheikh 2014: pic. 21
DG 5	Yarim Tepe	H	The Buff ware, tapered rim, Chaff temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/3), the geometric horizontal lines below the rim, the motif's color: reddish Black (2.5YR, 2.5/2)		Early Bronze Period (Namazga IV)	Garazhian 1998: p.169 Sheikh 2014: pic. 21
DG 5	Yarim Tepe	I	The Buff ware, tapered rim, Sand temper, Washed on the exterior and pale brown on the interior (10YY, 8/3), the geometric diagonal lines, the motif's color: blur red (10R, 3/3)		Early Bronze Period (Namazga IV)	Garazhian 1998: p.169 Sheikh 2014: pic. 21
DG 5	Yarim Tepe	L	The Buff ware, vertical rim, Sand temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/2), the triangles below the rim, the motif's color: pale red		Early Bronze Period (Namazga IV)	Mason, 1981: Plate IV Garazhian 1998 Sheikh, 2014: pic 21
DG 5	Yarim Tepe	M	The Buff ware, body, Sand temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/4), the sported Motifs, the motif's color: reddish Black (10R, 2.5/1)		Early Bronze Period (Namazga IV)	Garazhian 1998 Sheikh, 2014: pic 21
DG 12	Nokhandan Tepe	D	The buff ware, tapered rim, Sand temper, pale yellow Wash color on the exterior (2.5YR, 8/3), the geometric motifs and lines, the motif's color: dark brown (2.5YR, 2.5/2)		Early BronzePeriod Namazga IV	Garazhian, 1998 Sheikh, 2014: pic 21
DG 12	Nokhandan Tepe	F	The buff ware, carunated body, Sandaddied material, pale yellow color on both surfaces(2.5Y, 8/3), the geometric motifs and lines, the motif's color: blur red (7.5YR, 2.5/2)		Early BronzePeriod Namazga IV	Garazhian, 1998 Sheikh, 2014: pic 21
DG 17	Ilanfoq Tepe	G	The buff ware, tapered rim, chaff temper, pale brown Wash color on the exterior (10YR, 8/3), the line motifs, the motif's color: dark brown (7.5YR, 3/2)		EarlyBronze Period Namazga IV	Garazhian, 1998 Sheikh, 2014

Middle Bronze Period

The Middle Bronze Age, or i.e., Namazga V, dated back to ca. 2700–2100 B.C., was stratified by only a few sites in Southwestern Turkmenistan including Namazga V and Anau III (Garazhian, 2008). The number of Namazga V settlements had decreased significantly compared to the preceding Namazga IV period (Kohl, 1981). During this period, practically all the ceramic ware at Altyn-Depe was produced on the fast potter's wheel. The set of forms and the diversity of details of the vessel shapes sharply increased (Kircho, 2019).

Regarding its Settlement Pattern analysis of Middle Bronze period in Dargaz Plain, three sites of the previous period were abandoned (Tepe Parkan, Tepe KalKelisa, Ilan Jogh) and two new sites were occupied newly that are Shahr Tepe (DG 11) and KohnehQaleh of MirQaleh (DG 13) (Pic 9). Their characteristics are the same but the site of KohnehQaleh which is near to Iran-Turkmenistan border has been placed on a lower elevation than other sites. The dimensions of this period in Yarim Tepe decreased to 1.5 ha. which is the same as Central Asia's settlement Pattern (Sheikh 2014).These wares were identified in Six sites with the type of buff and light red wares in the forms of jars with pedestal bases and carinated bowls (Baghizadeh 2011, Sheikh 2014) (Table 7).



Pic 9: The Map of the Middle Bronze Sites (Baghizadeh 2011)

Table 7: The Description of the Middle Bronze Pottery

Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 1	Tepe Taqi	A	The Buff ware, Sand temper, Washed on the exterior and pale yellow on the interior (5Y, 8/2), Everted rim		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.3 Jafari, 2017: Plate 9 Sheikh, 2014: Plate VI
DG 1	Tepe Taqi	B	The Buff ware, the everted rim, Sand temper, pale yellow on the interior and exterior surfaces (5Y, 8/3),		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.5 Jafari, 2017: plate 12 Sheikh 2014: plate VI
DG 1	Tepe Taqi	C	The Buff ware, the simple rim. Sand temper; Washed on the exterior and white on the interior (5Y, 8/1)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.5 Lhuillier 2010: fig. 55 Jafari, 2017: plate 11 Sheikh 2014: plate VI
DG 1	Tepe Taqi	D	The Buff ware, Bases, Sand temper, Washed on the exterior and pale yellow on the interior (5Y, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.12 Jafari, 2017: plate 19 Sheikh 2014: plate VI
DG 3	Yarim Tepe	N	The Buff ware, Vertical neck with rim, Sandadded,Material, pale yellow on the external surface (5Y, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig 4.8 Sarianidi 1986: fig 16 Jafari, 2017: Plate 1
DG 5	Yukhari Qaye Qoyunlu	C	The Buff ware, tapered rim, Sand temper, pale yellow slip on all surfaces (2.5YR, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig 4.19 Jafari, 2017: Plate 18
DG 5	Yukhari Qaye Qoyunlu	D	The Buff ware, cut rim, Sandtemper, pale yellow slip on all surfaces(2.5Y, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig 4.5 Jafari, 2017: Plate 11
DG 6	Norouz Tepe	D	The Buff ware, inverted Club rim, Sandtemper, pale yellow slip on all surfaces(5YR, 8/3)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.36 Masson 1988: Plate XXXIV Jafari 2017: plate 15
DG 6	Norouz Tepe	F	The Buff ware, body, chafftemper, and pale yellow slip on all surfaces(5YR, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig 4.5 Jafari, 2017: Plate 11
DG 6	Norouz Tepe	N	The Buff ware, base, Sand temper, Washed on the exterior and pale-yellow color on the interior (5YR, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Amiet 1977: Fig 2: 3, 4, 6 Jafari, 2017: Plate 10
DG 13	Kohneh QalehMirQaleh	A	The buff ware, tapered everted rim, Sandtemper, pale yellow slip on all surfaces (5Y, 8/2)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig. 4.9 Sarianidi 1986: fig 15 Jafari, 2017: Pl. 14
DG 14	Yasta Tepe	A	The buff ware, ledge rim, Sandtemper, pale yellow slip on all surfaces (2.5Y, 8/3)		Namazga V/VI First Phase BMAC (Kellali Phase)	Lhuillier, 2010 Jafari, 2017: Pl. 10

DG 14	Yaste Tepe	E	The buff ware, base, Sand temper, pale brown Wash color on the exterior (10YR, 7/3)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 10 Amiet, 1977: fig 2.3,4,6
DG 14	Yaste Tepe	F	The buff ware, base, Sand temper, pale brown Wash color on the exterior (10YR, 7/3)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 10 Amiet, 1977: fig 2.3,4,6
DG 16	Yukhari Qalek SaadAbad	A	The red ware, tapered rim, Sand temper, pale yellow Wash color on the exterior (5Y, 5/8)		Namazga V/VI First Phase BMAC (Kellali Phase)	Sheikh, 2014: 26 Jafari, 2017: Pl. 4 Hiebert 1992: fig 4.8
DG 16	Yukhari Qalek SaadAbad	D	The red ware, tapered rim, Sand temper, pale yellow to red Washon the exterior (5YR, 5/6)		Namazga V/VI First Phase BMAC (Kellali Phase)	Sheikh, 2014: 26 Jafari, 2017: Pl. 4 Sarianidi 1993: Fig 5
DG 18	Qaravol Tepe	C	The buff ware, channel rim, Sandtemper, pale yellow slip on all surfaces(5Y, 8/6)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 13 Sarianidi, 1986: fig 11 Sheikh, 2014: 26
DG 18	Qaravol Tepe	H	The buff ware, base, Sand temper, pale brown Washon the exterior (10YR, 8/3)		Namazga V/VI First Phase BMAC (Kellali Phase)	Hiebert 1992: fig 4.22 Jafari, 2017: Pl. 7
DG 19	Jaskn Abad	A	The buff ware, out-bevelled rim, Sand temper, pale Yellow Washon the exterior (10Y, 7/4)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 6 Hiebert 1992: fig 4.9
DG 19	Jaskn Abad	C	The buff ware, tapered rim, Sand temper, reddish yellow Washon the exterior (7.5YR, 7/6)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 19 Hiebert 1992: fig 4.1
DG 21	Nazar Zeydanlu	A	The red ware, tapered rim, fine Sand temper, pale red Washon the exterior (2.5R, 5/6))		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 4 Hiebert 1992: fig 4.8
DG 21	Nazar Zeydanlu	B	The grey ware, tapered rim, Sand temper, pale grey Wash on the exterior (7.5YR, 5/1)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 4 Hiebert 1992: fig 4.8
DG 21	Nazar Zeydanlu	C	The red ware, tapered rim, Sand temper, pale reddish to yellow Washon the exterior (5YR, 6/6)		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 4 Hiebert 1992: fig 4.8
DG 21	Nazar Zeydanlu	E	The grey ware, tapered rim, Sand temper, reddish to grey Wash color on the exterior (5YR, 5/2).		Namazga V/VI First Phase BMAC (Kellali Phase)	Jafari, 2017: Pl. 4 Hiebert 1992: fig 4.8

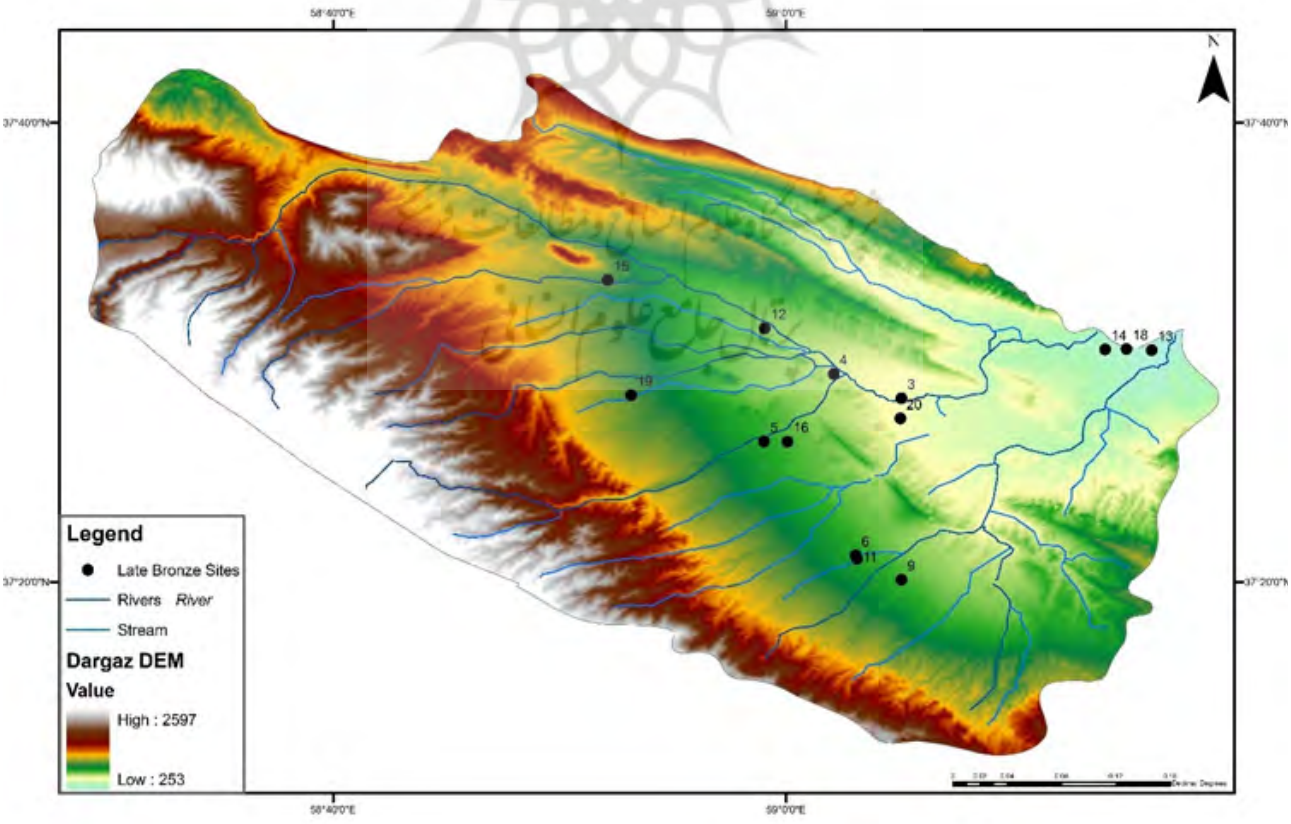
Late Bronze Period

The settlement increases in the Late Bronze Age marked a general model in Central Asia (Zadneprovsky 1995). The late Bronze Age is defined with the terms of Namazga VI and newly BMAC Culture that came back to ca. 1800/1700–1500/1400 BCE (Bendezu-Sarmiento and Lhuillier, 2019; Rezaei et al. 2018; Dana, 2020; Tahmasbi Zave& Falaki, 2022). It has been a crisis and a transformation at the end of Middle Bronze and the Beginning of the Namazga VI. The Altyn Tepe and Namazga Tepe, the two major centers (Altyn Tepe is about 25 ha and Namazga is around 50 ha), attained their greatest area during the latter phase of Namazga V and early Namazga VI. Around 1800–1500 BCE, during the Late Bronze Age, the Oxus Civilization witnessed sociopo-

litical and cultural change (Bendezu-Sarmiento & Lhuillier 2019). Thirteen sites in southwest Turkmenistan have been found to contain Namazga VI's remains (Khlopina, 1981, 44).

Three main types may be distinguished among the Namazga VI period pottery found in southern Turkmenistan: 1) Food-serving utensils are constructed of fine clay with a red or rose fabric and a layer of red slip on the surface. Vases, Cups, Small Pots, Pitchers, and Bowls (hemispherical and conical bodies with everted or inverted rims) are the main shapes; 2) Large storage jars, pots, basins, cauldrons, pedestals, and other forms are used as product storage containers; and 3) the homemade cooking ware with huge and very fine sand inclusions including five different varieties of Pots, pot-like containers, Bowls, little pots, and cauldrons (Khlopina 1981; Garazhian 1998). Additionally, the Namazga VI period is typically linked to a particular form found in Ulug-depe: a grey ceramic (Bendezu-Sarmiento & Lhuillier, 2019).

These trends occurred in Dargaz Plain as well. The Seventeen sites were distributed throughout the whole Dargaz Plain. Eight sites have been occupied newly (DG 4, 9, 14, 15, 16, 18, 19 and 20). The newly occupied sites were formed in the vicinity of the oldest sites. All of the sites are beside the seasonal stream of rivers. Only, three sites (DG 13, 14, and 9) are suitable for dry farming but the others are suitable for irrigated farming. Two sites (DG 15 and 19) are located at higher elevations than other sites. In addition, those three sites that were occupied in the eastern part of the plain are placed at the lowest elevation (Baghizadeh 2011) (Pic 10). Also, the size of this phase at Tepe Yarim rises to more than 2 ha. Which is limited to the western and northern sections of it (Sheikh 2014).In the Dargaz Plain, these known types were made as buff-colored wares with mineral temper, and by wheels as well as the well-known Grey Ware (Table 8). These Grey wares sometimes have incised motifs and their forms are Bowls, Jars, pedestal Bowls, cups, funnel wares, pitchers, and so on (Garazhian 1998).



Pic 10: The Map of the Late Bronze Sites (Baghizadeh 2011)

Table 3. The Description of the Late Bronze Pottery

Number of Sites	Name of Site	Plate No	Description	Picture Drawing	Chronology	References
DG 2	Tepe Saheb Jan	A	The Buff ware, rim, Sand temper, Washed on the exterior and pale grey on the interior (5Y, 7/1)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Lhuillier 2012: fig 136 Jafari, 2017: plate 22 Sheikh 2014: plate VI
DG 3	Yarim Tepe	O	The Buff ware, club rim, Sand temper, dark Brownish on the exterior (10YR, 8/3)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Hiebert 1992: fig 4.15 Khlopina, 1981: 48-9 Jafari, 2017: Plate 37
DG 3	Yarim Tepe	P	The grey ware, tapered rim, Sand temper, and Grey Washed on the exterior and interior (7.5YR, 5/1)		Late Bronze Period (Namazga VI)	Jafari, 2017: Plate 37 Sheikh 2014: pic 26
DG 4	Khakhuru	C	The Buff ware, interior Beveled rim, Sandinclusion, pale yellow surfaces (2.5Y, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Garazhian 1998: Pic Jafari, 2017: Plate 22
DG 5	Yukhari Qare Qoyunlu	B	The Buff ware, rolled rim, Sand temper, Wash on the exterior, and pale yellow on the interior (2.5Y, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Hiebert 1992: fig 4.16 Jafari, 2017: Plate 38
DG 6	Norouz Tepe	E	The Buff ware, band rim, Sand temper, pale Yellow Wash on the exterior, and light red color on the interior (2.5YR, 6/6)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Hiebert 1992: fig 4.8 Jafari 2017: plate 25
DG 8	Tepe Lik	G	The Buff ware, collared rim, Sand temper, Washed on the exterior and pale-yellow color on the interior (5Y, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Hiebert 1992: fig 4.15 Jafari, 2017: Plate 37 Sheikh, 2014
DG 8	Tepe Lik	N	The Buff ware, tapered rim, Sand temper, pale yellow on the exterior, and pale reddish-brown color on the interior (2.5Y, 5/6)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Plate 22 Sheikh, 2014 Lhuillier, 2013: F. 136
DG 9	Imamzadeh Olia 2	D	The buff ware, bases, Sand temper, Wash color on the exterior, and pale yellow on the interior (2.5Y, 8/2)		Namazga V/VI Third Phase BMAC (Togolok Phase)	Jafari, 2017: Pl. 57 Askarov & Sirinov 1991: Fig 8
DG 11	Shahr Tepe	A	The buff ware, ledge everted rim, Sandinclusion, Pink Wash color on the exterior (7.5YR, 7/4), and reddish yellow on the interior (5YR, 6/8)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 22
DG 12	Nokhandan Tepe	E	The buff ware, band rim, Sand temper, and Wash color on the exterior (10YR, 8/3)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 38

DG 13	Kohneh QalehMirQaleh	D	The buff ware, everted rim, Sandinclusion, and pale yellow color on the surface (5Y, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 31 Sheikh, 2014: Fig 26
DG 13	Kohneh QalehMirQaleh	G	The grey ware, everted rim, Sand temper, grey Wash color on the exterior (5Y, 6/1)		Late Bronze Period Namazga VI Second Phase BMAC (Gonur Phase)	Sarianidi, 1986: fig 11 Jafari, 2017: Pl. 33
DG 14	Yaste Tepe	D	The red ware, base, thick Sand temper, dark reddish brown Wash color on the exterior (5YR, 3/3)		Namazga V/VI Third Phase BMAC (Togolok Phase)	Sarianidi, 1986: fig 11 Jafari, 2017: Pl. 56 Sheikh, 2014: fig 26
DG 15	Meri Palkanlu	F	The red ware, cut-beveled rim, Sand temper, and red Wash color on the exterior (2.5YR, 5/6)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 22 Sheikh, 2014: fig 26
DG 16	Yukhari Qaleh, SaadAbad	C	The buff ware, plain rim, Sand temper, pale yellow Wash color on the exterior (2.5Y, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Sheikh, 2014: 26 Jafari, 2017: Pl. 21 Lhuillier 2010: fig 24
DG 18	Qaravol Tepe	A	The buff ware, ledge rim, Sand temper, pale yellow Wash color on the exterior (2.5Y, 8/3)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Vahdati, 2012: fig 6 Jafari, 2017: Pl. 39
DG 20	Tepe Nasir	A	The buff ware, horizontal exterior rim, Sand temper, pale brown Washon the exterior (10YR, 8/2)		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 38 Hiebert 1992: fig. 4.16 Sheikh 2014: 26
DG 21	Nazar Zeydanlu	G	The grey ware, base, Sand temper, pale brown to grey Washon the exterior (2.5Y, 6/2),		Namazga V/VI Second Phase BMAC (Gonur Phase)	Jafari, 2017: Pl. 49 Hiebert 1993: fig. 6 Garazhian, 1998 Sheikh 2014

Iron age Periods

Ending the Bronze Period, a new horizon appeared in Central Asia named the Iron Age (Askarov 1992; Boucharlet et al 2005), marked by two different wares cultures; 1) A painted pottery Culture in some regions of southern Turkmenistan and Eastern Khorasan, named Yaz I/ III (derived from Yaz Tepe), and 2)the Grey ceramic of Dehisan culture in southeastern of Caspian Sea, Northeastern of Iran (Atrak Plain), accompanied by the Iron materials differentiated from the previous period (Ricciardi 1980; Vahdati 2015, Sheikh et al. 2023).The Bactria-Margiana Archaeological Complex (BMAC) vanished and the Iron Age began in southern Central Asia around 1500 BCE as a result of a significant cultural, economic, and intellectual upheaval. One of its most striking effects was a dramatic shift in the settlement pattern, with tiny villages replacing huge proto-urban sites and communities expanding to new locations (Lhuillier 2019; Basafa & Hedayati 2020). During this time, settlements dramatically proliferated, with a significant dispersion towards Khorasan's southern and western regions (Rezaei et al. 2018). The Yaz I, i.e., early Iron Age dated back 1400–900 B.C., recognized by the rural and scattered

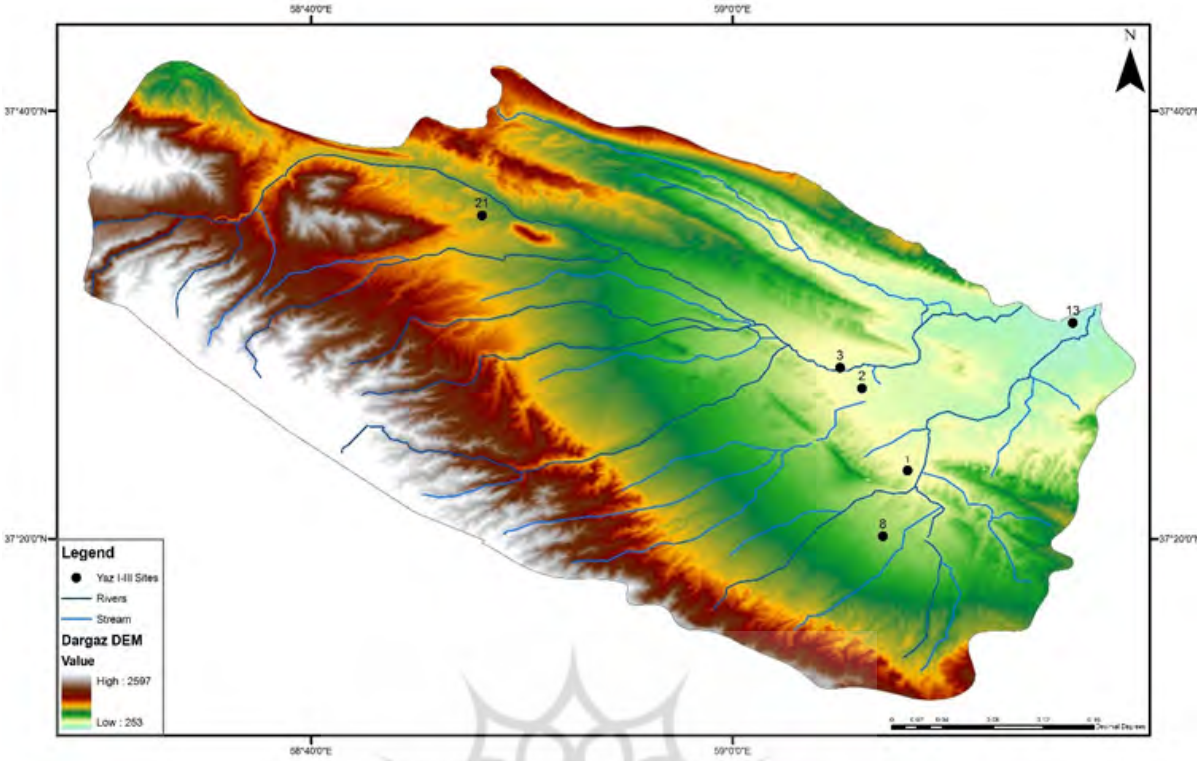
settlements with the Fortifications, Yaz II known by wheel-made pottery and large settlements from 1100/900–700/550 B.C., and Yaz III with the previous pieces of evidence from 700/550 to 400/300 B.C. (Seyyed Sajjadi, 2015; Cattani& Genito 1998; Kuzmina 2007; Basafa & Hedayati 2020). The pottery's forms includeopen bowls with straight or opened walls and sharpened, flattened, or everted rims and probably a flat or slightly concave bottom (Lhuillier et al., 2013). The shreds of evidence of Yaz culture found at the central plain of Khorasan such as Roshtkhar Plain (Rezaei et al. 2018), Nishabur Plain (Basafa & Rezaei 2018; Basafa Masih Nia 2022), Mashhad Plain (Basafa et al. 2022) and Dargaz Plain (Baghizadeh 2011; Basafa & Hedayati 2020).

The settlement pattern of the Yaz I in Dargaz Plain is scattered, i.e., Tepe Lik, Tepe Nazar, Saheb Jan, and Kohneh Qaleh are far from rivers as well and Tepe Nazar is in a mountainous area and far away from the river but situated at higher elevations geographically. Also, the model of Central Place was dissolved during this period (Baghizadeh 2011). In Yarim Tepe, the material culture of Yaz I is founded on the top ranging from the East to West sides extending to less than 1 ha (Sheikh 2014).Regarding the settlement pattern of this period II-III, it should be mentioned that it is completely similar to the previous period and the ancient sites continue to exist as the same as the previous period. Also, the extension of Yaz II has gone up more than the last phase and included the mid-part of Yarim Tepe (Sheikh2014). In Dargaz Plain, the only site that certainly has these marks of the Yaz III/Achaemenid period is Tepe Taqi of Komajkhor village (DG 1). This site is not near a river and regarding the soil, it is suitable for dry farming. There may be more sites (Baghizadeh 2011) (Pic 11).

In Dargaz Plain, the Yaz I wares are handmade, simple, reddish brown or brown motifs on a buff or red background including simple geometric such as Zigzags, diamonds, and triangles drawn (Sheikh 2014; Basafa & Hedayati 2020). These potteries were found in Five sites of Dargaz Plain, DG 13, 8, 2, 3, and 21. Another type of founded pottery is grey ware which has been recognized at a few sites in a small quantity (Baghizadeh 2011; Sheikh et al. 2023). During the next periods, the Yaz II and III (the latter compared to Achaemenid material Culture) were accompanied by new changes in material culture, changing the Pottery tradition, the development of Iron metallurgy, the emergence of large fortified settlements, the same funerary practice (Lhuillier et al., 2013), and increase in the extension of Settlement (Sheikh 2023). By the end of the second millennium B.C., the ceramic tradition changed suddenly; the handmade painted pottery tradition disappeared and a type of Wheel-made red and grey plain pottery wares occurred during the following centuries (Basafa & Hedayati 2020). The pottery forms of Yaz II and III pottery are similar to the boat- and tulip-shaped which is typical in Achaemenid and includes the carinated bowls, jars, and plates with everted rims that appeared from the Iron Age and lasted until the Arsacid Period (Zadneprovsky 1995; Ricciardi 1980; Ataeeand Abbasi, 2009;Basafa & Hedayati 2020; Basafa & Masih Nia 2022) (Table 9). So, the pottery tradition of Yaz III is the continuation of the last period so closely that led to the name of this period as a general title of Yaz II/III (Boucharlat, Frankfort & Lecomte 2005).

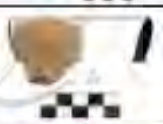
Results

This article has focused on the archaeological surveys and investigations done at Dargaz Plain that consisted of worthwhile information about their prehistoric cultures. Through the survey results, it can be shown that there are connections between the material cultures of this area and those of Central Asia. Unfortunately, to lack of sufficient information and scientific excavations led to the date of the sites through a typological comparison with contemporaneous neighboring areas. Regarding the influential geographic characteristics, habitation at the settlements of Dargaz Plain during all of the ancient times



Pic 11: The Map of the Early-Late Iron Age/Yaz I-III Sites (Baghizadeh 2011)

Table 9: The Description of the Early-Late Iron Age/Yaz I-III Potteries

Number of Sites	Name of Site	Plate No.	Description	Picture/Drawing	Chronology	References
DG 3	Yanin Tepe	E	The Buff ware, the flaring neck, Chaff temper, Washed on the exterior and pale yellow on the interior (2.5Y, 8/2), the geometric motifs, the motif's color: red (2.5YR, 2.5/2)		Early Iron Age Yaz I	Cattani & Genito,1998; p. 80 Sheikh 2014: Plate VII
DG 5	Yukhari Qare Qoyunlu	A	The red ware, blunt rim, Sand temper, pale reddish Wash on the exterior and interior (10Y, 6/6)		Early Iron Age Yaz I	Hedayati, 2017: p. 85
DG 8	Tepe Lik	E	The Buff ware, vertical concave rim, Sand temper, pale yellow Washed on the exterior (2.5Y, 8/3), and pale brownish color on the interior(7.5YR, 4/2)		Early Iron Period Yaz I	Hedayati, 2017: 4-13
DG 8	Tepe Lik	R	The grey ware, body, thick Sand temper, and black Wash color on the exterior and interior (10YR, 2/1)		Early Iron Period Yaz I	Hedayati, 2017: f. 4-12
DG 8	Tepe Lik	V	The buff ware, carinated body, fine Sand temper, Wash color on the exterior and pale yellow on theinterior (2.5YR, 8/2), the geometric motifs and lines, the motif's color: reddish brown (5YR, 3/2)		Early Iron Period Yaz I	Garazhian, 1998 Sheikh, 2014: f. 30
DG 13	Kohneh QalehMirQaleh	B	The grey ware, tapered rim, thick Sand temper, and pale grey Wash color on the exterior (5YR, 7/2)		Early Iron Period Yaz I	Lhuillier, 2010 Hedayati, 2017: p. 4-12
DG 13	Kohneh QalehMirQaleh	C	The grey ware, tapered rim, Sand temper, and Light grey Wash color on the exterior (7.5YR, 6/6)		Early Iron Period Yaz I	Lhuillier, 2010 Hedayati, 2017: p. 4-12

DG 7	Tepe Parkan	A	The Buff ware, exterior ledge rim, Sand temper, reddish-yellow(5YR, 7/6), and light red color on the interior(2.5YR, 6/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-9
DG 7	Tepe Parkan	B	The Buff ware, tapered rim, Sand temper, and red Wash on the exterior (10R, 5/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-11
DG 7	Tepe Parkan	C	The Buff ware, blunt rim, Chaff temper, light red Wash on the exterior (10R, 6/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-13
DG 7	Tepe Parkan	D	The red ware, band rim, Sand temper, dark red to brown Wash on the exterior(2.5YR, 3/3) and red color on the interior(10R, 6/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-13 Sheikh, 2014: p. 33
DG 8	Tepe Lik	F	The red ware, tapered rim, Sand temper, Washed on the exterior, and yellowish red color on the interior (5YR, 5/6)		Middle/Late Iron Period Yaz II-III	Hedayati, 2017: 4-11 Lhuillier, 2010
DG 8	Tepe Lik	I	The red ware, tapered rim, Sand temper, red colored Wash on the exterior and interior (2.5YR, 4/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2013 Hedayati, 2017: p. 4-13 Sheikh, 2014: p. 33
DG 9	Imamzadeh Ojja 2	A	The red ware, body; Sand temper, Wash color on the exterior and pale brown on the interior (10Y, 8/3).		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-11 Sheikh, 2014
DG 9	Imamzadeh Ojja 2	B	The red ware, body; Sand temper, Wash color on the exterior, and pale yellow on the interior (7.5YR, 7/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-11 Sheikh, 2014
DG 11	Shahr Tepe	B	The grey ware, Cut-Bevelled rim, Sand temper, Washon the exterior, and grey color on the interior (5YR, 5/2)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2013 Hedayati, 2017: p. 4-9 Sheikh, 2014
DG 11	Shahr Tepe	E	The buff ware, slightly interior beveled rim, Sand temper, Wash color on the exterior, and pale brown on the interior (10YR, 7/3)		Middle/Late Iron Period Yaz II-III	Sheikh, 2014: pic 33
DG 11	Shahr Tepe	H	The red ware, body; Sand temper, Washon the exterior, and red color on the interior (2.5YR, 4/6)		Middle/Late Iron Period Yaz II-III	Lhuillier, 2010 Hedayati, 2017: p. 4-11

has been continuous and uninterrupted. The Zarrin Kuh Mountain as the natural obstacle in the north and east of the plain has led to isolating this area from the extreme climatic fluctuations. The Daroungar River and other rivers and their tributaries flow in the general direction of northwest-southeast in the Dargaz plain. The distribution of new towns and cities shows a proximity to the ancient sites implying that the accessibility to the Water sources and settling area are vital. Also, the settlement pattern of this plain shows the dependency on water sources. Most likely, the subsistence economy of the people of Dargaz Plain was based on agriculture in the alluvial lands in the middle of the plain and animal husbandry and livestock in their foothills. The Landscape of this Plain shows that the only southeastern passage is

the simple way to connect and travel. So geographically, this plain is more easily accessible to the Kopet Dagh ancient cultures than the Iranian Central Plateau by the Allah-o Akbar mountainous Passages. Due to this readily accessible, this plain has been influenced by the pottery horizons of prehistoric cultures of Kopet Dagh foothills. The diversity of their pottery and the rise and fall of settlement patterns indicate a dynamic and mutual relationship same and parallel to the developments of the Kopet Dagh foothills and Central Asia.

The settlement distribution of Neolithic sites has been discovered in three sites, one of which is located near of water source. It is also likely that more Neolithic sites are buried under natural sediment. As mentioned above, the Chalcolithic sites are more common in the center of the plain, possibly due to the suitable environmental conditions. Concerning the location of these settlements above 500m ASL, and also their proximity to the Daroungar Branches, it is apparent that ancient subsistence was focused on irrigated agriculture during this Period. Bronze Age cultures in Central Asia can be divided into three areas: 1. the western sphere with handmade and shiny Grey Pottery, 2. the central realm with painted pottery and grey pottery, and 3. the eastern scope of Geoksyur Oasis (Vahdati, 2015). In the south of Kopet Dagh, both Painted and Grey pottery traditions exist. The Painted pottery, similar to Namazga IV, was found in the Atrak (Tepe Yam, ...) and Sabzevar (Tepe Damghani) Plains. Also, the culture of Grey pottery occurred in Samalghan (Ghaleh Khan), Armadlo (Tepe Malek), and Jajarm Plains (Tepe Chalow) (Vahdati, 2015). The number of sites in Dargaz Plain increased and was dependent on water sources more than in the Chalcolithic period. In this period, the Daroungar River had a vital effect on the patterning of the sites. Most prehistoric sites were single settlements (non-multiperiod), and this pattern shows a hierarchy (Garazhian, 2008). In the late Bronze Period, a significant socio-cultural Crisis was documented (Vahdati, 2015).

During the Iron Age I/III and following the Achaemenid age, locally named Yaz I/III, in comparison with other regions of Central Asia, a significant decrease in settlements was observed (Dana & Hozhabri 2013; Vahdati 2015). During this time, the central location patterns, as observed in the rest of Central Asia, were disrupted (Vahdati 2015). The painted pottery horizon was discovered in all regions including Central Asia, Northeastern Iran, and so on (Dana & Hozhabri 2013; Kohl et al. 1981; Vahdati 2015). The grey pottery of the Iron Age was also discovered in the northern extension of the Iranian Plains but some pottery sherds were identified in the Dargaz Plain (Ibid). On the Dargaz plain, six sites were occupied during the Yaz I-III period (Baghizadeh 2011). Based on current research, it is believed that the Achaemenid period corresponds with the end of the Yaz culture (Yaz III) (Frankfort 2005).

Based on the Archaeological studies done at Dargaz Plain, the data derived from the ancient Settlements show continuous evidence of occupation from the Neolithic until to the late Iron Age. The Settlement pattern was influenced by geographical features, which had a decisive impact on the development and distribution of settlements in this region. The archaeological information shows same developments occurred in Dargaz Plain, comparable to those of Southern Turkmenistan. We hope that Our brief visits to the Dargaz Plain only helped write the introductory paragraph to the prehistory of Iranian Khorasan; a complete volume on the development process of communities in this fertile and politically important area should be waiting for future investigations.

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