Survey of New Discovered Chalcolithic Sites in Northern Hillside of Alvand Mountains (Eastern Central Zagros Mountains)

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Abstract: 10 Chalcolithic sites were located during survey of Hamedan region which is important for reconstructing the settlement patterns in eastern Central Zagros Mountains (CZM). During this study it was observed that this area was very suitable for Chalcolithic settlements. The change occurred after the late Neolithic in the extensive valley of the Western CZM, were due to increasing the number of settlement in this region and most of the CZM was covered by small villages near the rivers/springs. Analysis of surface data assemblage from archaeological surveys in Hamedan suggests that we have 8000 years of continuous occupation in the Hamedan plain. In the middle chalcolithic, increased the sites are about 11% and in late chalcolithic about 27%. It seems that in all the settlements during chalcolithic from the Early to the late chalcolithic, the number of sites in the recognized vicinity have increased. This survey shows that these settlements had a very suitable place for pasture and agriculture and It seems climatic circumstances is better for chalcolithic settlement.
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Key words: chalcolithic; survey; Hillside of Alvand Mountain

1. Introduction

An archaeological survey was carried out during 2006 to 2007, sponsored by the Iranian Cultural Heritage Organization (ICHO) of Hamedan, Iran. 10 Chalcolithic sites were located during this project which is important for reconstructing the settlement patterns in this area. The area has a unique environment, consisting of an extensive plain adjacent to hillside and continuing to the Kaboodarahang plain in the north, an ecotone which is shared between the Central Zagros Mountains (CZM) and the Central Iranian Plateau. The archaeological study of the CZM indicates that this area has remained suitable for settlement from the Paleolithic to the historic period, and analysis of environmental data indicates that settlement pattern may be affected by environmental conditions.

During this study it was observed that this area was very suitable for Chalcolithic settlement, and investigating this area can perhaps help us to understand the way of living during the Chalcolithic period. Reconstruction of the climatic conditions of the eastern CZM from the 6th millennium BC to the present suggests that the climate has remained relatively constant in the Chalcolithic period. (Stevens et al. 2006:494) This little change also led to anthropogenic change and conversion of the pastures to plains in current period. To produce the names of sites, the following code was used: name of area Hamedan/H.1, H.2, H.3 and Kaboodarahang /K.2. Chronology is based on that of the CZM, produced before by Young& Levine (1974), Henrickson (1985) and Abdi (2003). Despite being an archaeologically important area, there has been no previous research in the region from Hamedan to Kaboodarahang. Previous reports on the adjacent area are from the Royal Ontario Museum (ROM) for Asad-abad, Kangavar, Sahneh, Nahavand and the valley of Broujerd, a small survey from Malayer plain (Howel 1979), south of Hamedan province (Henrickson 1986) and an extended survey south of Hamedan (Swiny, 1975:77-96).

2. Geographical location

The study area includes all of Hamedan city to the south and extends to reach the Kaboodarahang plain. Hamedan city (N 35° 34′, E 48° 31′) is located in the centre of the survey area and altitude is 1813meters. Hamedan city is located between two valleys, Abas-abad valley and the Moradbeig valley and also is located between Bahar and Kaboodarahang from the north and northwest, and Malayer and Toyserkan from the east and south. The location is shown in Figure 1.

2.1 Geomorphology and climate of the region

The highest mountain in this region is Alvand, with a peak height of 3580m, and the lowest point is the Razan plain with height of 1700m .The river networks in this region can be divided into two parts, one ending in the Persian Gulf in the south of Iran and the other part reaching the Qom Lake in the centre of Iran (fig: 1). In the eastern hillside of Alvand, the Qara-chay River has its source in the hillside, and passes Hamedan, ending with its mouth in the Qom Lake. The eastern

hillside has the rivers of Gamasiab, Qara-soo, Seimareh and Karkheh which reach the Persian Gulf.

Climatically the area towards the south has precipitation on average between 350 to 450 mm per annum, and can reach 650mm per annum. It can be referred to as favorable steppe mountains. The region usually has a cold winter with temperatures being less than -20° and the summers are cool. The climate makes this place a very suitable place for pasture in Iran and has most potential for the production of cereals, but the northern region is limited between the dry lands of central plateau and we know the steppe land is very tender with irregular beneficiary and welter (Qobadian, 1990). In the north, the climate becomes drier with less precipitation in the summer and spring, which can often lead to a water shortage for vegetation, and possible drought. This condition accrued in CZM during 6th millennium until now and we know that 10000 to 6500 BP was drier than the late Holocene (Stevens et al, 2006:494-500).

3. The settlement pattern of the Chalcolithic period in the CZM

Settlement pattern can be defined as the distribution of human activity in the landscape and the relationship between these activities and the natural and social environments (Schreiber, 1996). By this definition we hypothesize that the settlement pattern is related to ecological and environmental factors, and this research aims to examine the relationship between the settlement pattern and these factors. Thus, environmental approach show that Prehistoric cultural similarities drive from environmental similarities, at least in general features (Jochim, 2000)

In CZM, we can point at environmental changes that influence on food sources. By beginning of dry periods or increasing population, or competition between social groups –critical period begins and leads to agriculture, on the other hand by increasing population and shortage of land for agriculture another type of – cultural change through the production of food sources (smith & young, 1983:145)

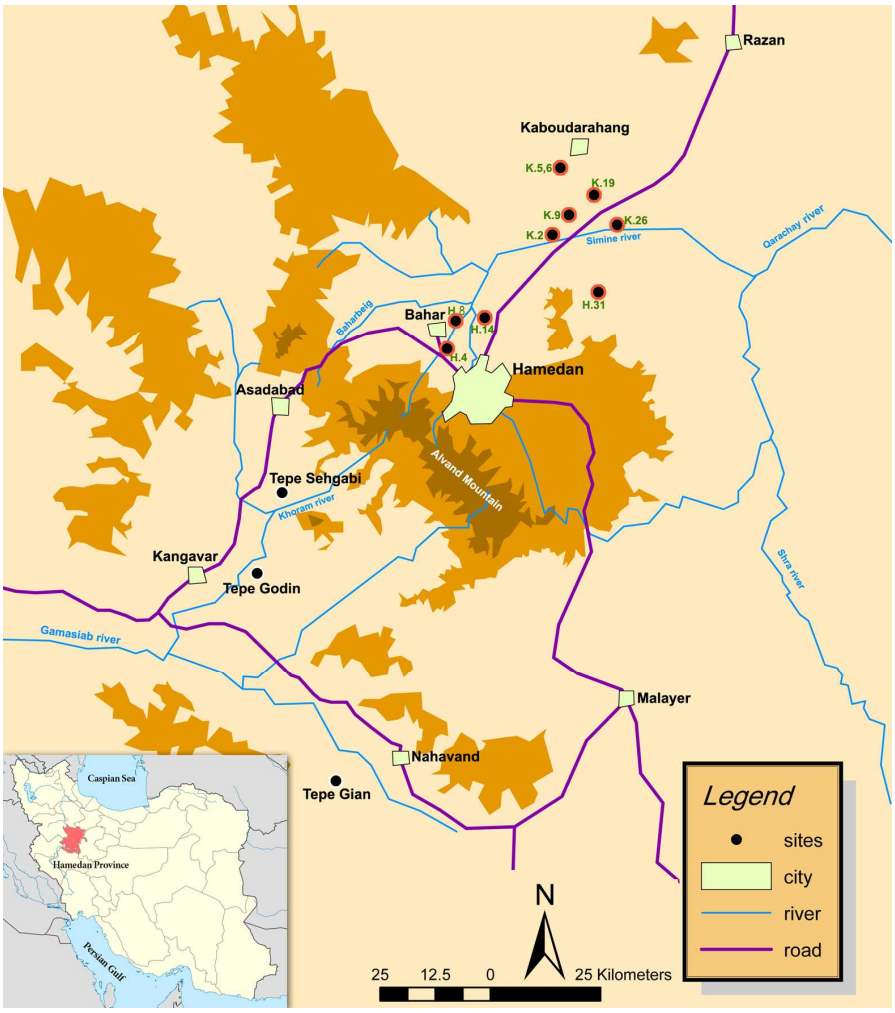

Figure 1. The location of new discovered chalcolithic sites in region and Hamedan Province in map of Iran

The change occurred after the late Neolithic in the extensive valley of the Western CZM, were due to increasing the number of settlement in this region and in the early Chalcolithic, most of the CZM was covered by small villages near the rivers/springs (Levine & Mcdonald,1977:45). This pattern during the late Neolithic, was the reflection of the peoples gradual adaptation to their environment and living in extensive valleys (Smith & young, 1983). With the development of agriculture in the extensive valley regions, the mountainous regions become unfavorable for permanent settlement and are seen more as offsite areas to the permanent settlements of the low lying areas. So the mountainous areas may remain used for immigrant groups in Chalcolithic period, A land that has been used for start of sedentism in the late Neolithic (Ibid, 1983).

In the early and middle

Chalcolithic it is observed that the size of villages increases in the Islamabad, whilst in the later Chalcolithic the opposite happens and the village decreases dramatically, only 14 sites remain (Abdi, 2003). In the Mahidasht Plain most of the settlement from the Chalcolithic period increased from the late Neolithic to the Chalcolithic period. (Levine & Mcdonald, 1977)

When the Mahidasht plain has large populations, there are villages also in Kangavar valley that the environmental circumstances are worse than the Mahidasht plain. Young and Levine (1974) believe that this process occurs because most of the region is now suitable for occupation, and the development of agriculture and therefore increased food resources has allowed populations to increase, and the populations migrate toward Hamedan plain, this route shown in Figure 2.

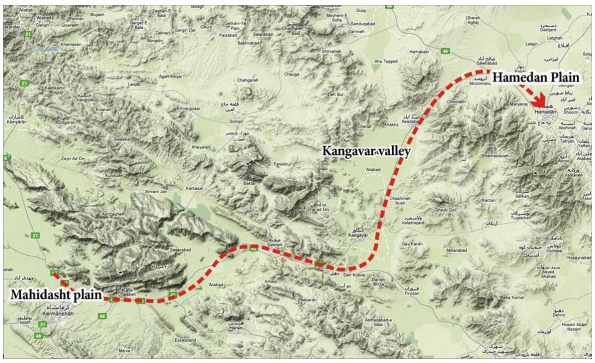

Figure 2. The route of movement of populations in CZM

4. Result of survey of chalcolithic period in the eastern CZM (Northern Hillside of Alvand Mountain, Hamedan)

Analysis of surface data assemblage from two separate archaeological surveys in Hamedan suggests that we have 8000 years of continuous occupation in the Hamedan plain (Table 1), (Figure 1). The earliest period is the Early Chalcolithic at the H.12, K.5and K.6 site. Here diagnostic fragments of the early Chalcolithic i.e. Early Chalcolithic evidences, pottery and chipped stone that we can compare with Godin XI (Phase Shahnabad) (Levine & Young 1986) some of these findings shown in Figure 4, 5. Some findings in these sites are similar to Husking tray wares in Tell Hassuna (Lioyd et al. 1945: Plate XVIII) (Figure: 3, 9). After this period there is evidence for middle Chalcolithic occupation at the K.9 (Balmaki et al. 2006), H.4, H.12, H.14 and H.31site (Figure. 6, 8, 11).

present day climatic data shows that there is lots of precipitation in this region in the cold seasons, but in spring and summer the rate of evaporation is higher than precipitation, leading to a net decrease in the amount of

Figure 3. Pottery findings in site K.6

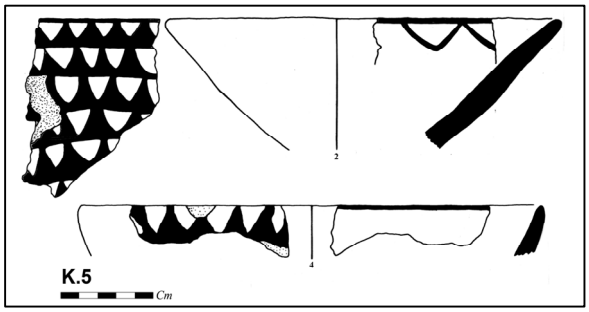

Figure 4. Pottery findings in site K.5

Figure 5. chipped stone from site K.5

water available for crops (N.G.O. 2001: 27). So we have no water source and none of the requirements for permanent occupation.

In the middle chalcolithic, increased the sites are about 11%. The diagnostic pottery for this period in the Hamedan region, known as Impress Dalma ware that can be compared with Godin X in the CZM (Henrickson, 1985: fig 8). It seems that in all the settlements during chalcolithic from the Early to the late chalcolithic, the number of sites in the recognized vicinity have increased, so that the number reach to 10 sites in late chalcolithic period. This increase from early to late chalcolithic is shown in Figure 12. The diagnostic assemblages of late chalcolithic collected from K.2, K.5, K.6, K9, K.19, K.26 and also from H.4, H.12, H.14 and H.31.

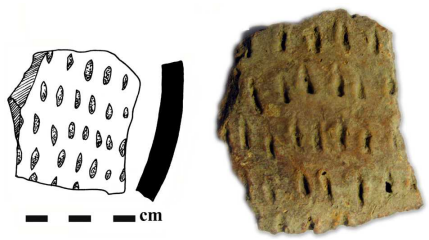

Figure 6. Pottery from H.4, Godin X (Henrickson 1985: fig 8, 9)

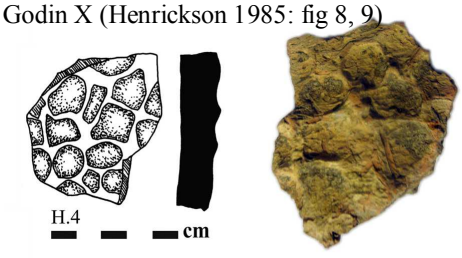

Figure 8. Pottery from H.4, Godin X (Henrickson 1985: fig 8, 9)

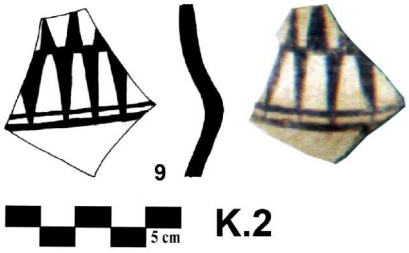

Figure 10. Pottery from K.2, Godin VI, VII (Young 1969, fig7:15)

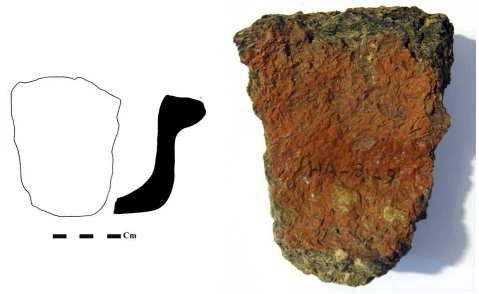

Figure 7. Pottery from H.31, Godin VII (Levine & young 1986: fig16)

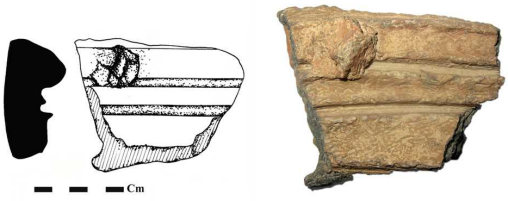

Figure 9. Pottery from H.31, Fragment like a Husking Tray Ware (Lioyd et al. 1945: Plate XVIII)

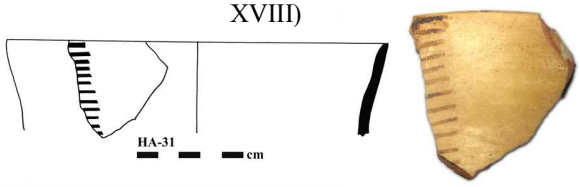

Figure 11. Pottery from H.31, Dalam Ubaid Painted Ware (DUP), (Levine & young 1986: fig 7)

Table 1. The table of all chalcolithic sites in Hamedan region

Site	Name	Area (m^2)	CHRONOLOGY				
			Early C.	Middle C.	Late C.	Bronze Age	Other
H.4	Marvan	9720		G. X	G. VII- G. VI		Prtian +Islamic
H.12	Bahram-Abad	535.62	G. XI	G. X	G. VII- G. VI		Historic + Islamic
H.14	Khandan Tepe	4182		G. X	G. VII- G. VI		Prtian + Islamic
H.31	Cholanghi	2646		G. X	G. VII- G. VI		
K.2	Koorijan	56168			G. VI	G. III	Iron age + Islamic
K.5	Matrook I	1480	G. XI		G. VII- G. VI		Islamic
K.6	Matrook II	14850	G. XI	?	G VI	G III	Historic
K.9	Hasan Tepe	7788		G X	G VII- G VI	G III	Historic +Islamic
K.19	Sari Tepe	20800			G VII- G VI	G III	Historic + Islamic
K.26	Ghoyoun Tepe	135000			G VII	G III	Partian

C. = Chalcolithic G. = Godin

For example we can see painted pottery from the K.2 and o121831ther important samples from H-31 that compares with pottery of Godin Tepe from the late Chalcolithic (Figure. 8, 11) (Levine & Young 1986, Young 1969). One of the general types of pottery from this period is the type with curved rim in the upper part of the vessel (S form). Two types – painted and plain that are used in this period, but here we have only the plain ware (Levine & Young 1986).

Near to the hillside of Mountain, There are four sites have assemblages from the middle and late chalcolithic i.e. Marvan Tepe, Bahram-abad, Khandan Tepe and Cholanghi Tepe in southern plain of Hamedan. The style of pottery for these sites is similar to Godin, information from Godin X shows a higher density of pottery at X compared to Godin IX, VIII, and VII. We can say that this comparison with Central and Western Zagros settlements is significant. It seems climatic circumstances is better for chalcolithic settlement, because after 6000 BP gradual increase of the spring rains and even the transition from pistachio-almond to oak forest. (Stevens et al, 2006:494)

Viewing the aerial images and using geographical information's, estimation of the influence of natural factors influence, we have alluvial fan on the hillsides. This region has suitable soil conditions for agriculture, and suitable topography, particularly dry farming. The altitude of this region is between 1600 – 1800 m, and is one of the most important centers of population for farming. This region has a suitable water source, with surface water and appropriate location of animal pasture development.

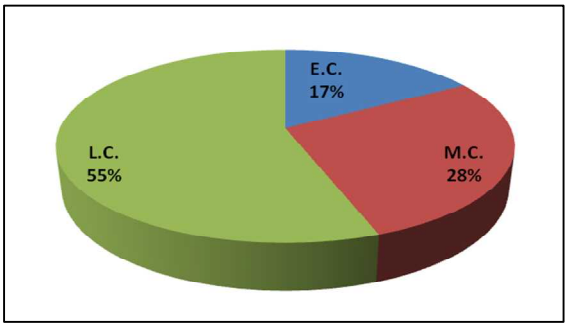

Figure 12. This graph shows the increase of sites during early to late chalcolithic in Hamedan

5. Discussions

The average of area in chalcolithic sites of region is 28129 m^2. Small areas of these sites depict the dependency of this type of occupation compared to pasturing sites in the west of Iran. These sites have the fewest distance to the river. With due attention to the ground slope map and the placement of them in 1 ratio slope and equal type of climate and height from sea surface, this matter is more obvious in the region .in Alvand slopes dry farm is common and seasonal pasturing is done .the soil of this part is light brown and has the less limitation in aegis of agriculture, are suitable for drainage and are utilized for agriculture. The site of H.4, H.12 and H.14 is located in this part. The general slope is changing, it is about 8 percents. The north east of this region has mountains with erosion and its several valleys have volcanic and metamorphic chalcopyrite stone, and the up-mentioned site of H.31 is located in this region. There is some fan alluvial in the south and north of vicinity which have slithers and the average of slopes is 3 and 8 percents. The soil is shallow and its texture is almost light and dense which is set on stone, slithers and limy items. With due attention to the average step planet cover, slope ratio, much slithers, depth limitation and spates, the region has erosion and Agricultural capability.

In the south-east of the site, the fan alluvial is discovered with the slope of 2-3 percents. The height of this site is less than 2000m and posses an approximately semi-deep and sallow soil and a kind of moderate and light texture. Furthermore it has moderate vegetation to planting and pasturing. Some parts of this region are appropriate for gardening. A little part of the north-east grounds which includes: average ups and downs and general slopes of 2-5percents, poses a height of 2000m and also can be a perfect place for dry farming of grains. The remained site of K-2, K-5, K-6, K-9, K-19, K-26, is located in these regions. Almost the expanded parts like k-26,135000m and k-2,56000m are related to these regions. These sites have the lesser distance to Gharechay River and are almost settled near the bank river. The expansion of this plain at this region and its relation to Qom plain and central plateau are the other features which provide the region for living with the most stability. By possessing the surplus of raining at cold seasons, we are confronting with great evaporation potential and lack of rain in spring and summer that leads to a draught period and a dominated drama. This problem proves the dependency to earth and water sources, specially the continual river of Gharechay. Also the Non-availability to pastures of the higher regions depicts the great dependency to these grounds.

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References

1. Abdi, K. The early Development of Pastoralism in the Central Zagros Mountains, Journal of World prehistory, 2003; 17:4
2. Balmaki, B, Binandeh A, Hajmohamadalian, A. the studying and primary recognition report of some parts of Gharechay river basinand hajibooy site of kaboodrahang plain, the library and archivist of ICHO documentary of Hammedan province is not published 2002 (In persian).
3. Henrickson, E.F., An updated chronology of the Central Zagros chalcolithic, Iran, 1985; XXIII: 63-108
4. Henrickson, R.C., A regional perspective on Godin III cultural development in central western, Iran 1986; 24: 1-55
5. Howel, R., Survey of the malayer plain, Iran 1979 ; XIII
6. Jochim, M. Ecological Theory in Archaeology, Archaeological Method and Theory:An Encyclopedia, edited by Linda Ellis, New York & London: Garland Publishing ,Inc, 2000: 161-5
7. Levine L, Young T.C. A summary of the ceramic assemblages of the central western Zagros from the middle Neolithic to the late third millennium B.C colloques internationaux CNRS, Paris 1986
8. Levine L.D, M. Mcdonald M A. The Neolithic and chalcolithic Period in the Mahidasht ,Iran 1977; XV: 39-50
9. N.G.O, The geographical culture of Iran cities (Hammedan Province), National Geographical Organization, Tehran 2001
10. Lloyd S, Safar F, Braidwood R.J. Tell Hassuna Excavations by the Iraq Government Directorate General of Antiquities in 1943 and 1944, Journal of Near Eastern Studies, 1945; 4, No. 4. (Oct., 1945: 255-289
11. Smith P, Young T.C. The force of numbers; population pressure in central western Zagros, 12000-4500 BC. In Young, T. C., and Smith, P. E. L. (eds.),The Hilly Flanks: Essays on the Prehistory of Southwestern Asia Presented to Robert J.Braidwood, Studies in Ancient Oriental Civilizations 36, The Oriental Institute of the University of Chicago, Chicago 1983:141–161.
12. Stevens L.R, Ito E, Schwalb A, Wright Jr. H.E. Timing of atmospheric precipitation in the Zagros Mountains inferred from a multi-proxy record from Lake Mirabad, Iran, Quaternary Research 66, 2006:494-500
13. Swiny S. Survey in Northwest Iran 1971, East and west:25, 1975: 77-96
14. Young T.C., Excavation at Godin Tepe, first progress report ,Royal Ontario Museum 1969.
15. Young T.C, Levine L. Excavation at Godin project, second progress report, Royal Ontario Museum 1974.

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