# International Symposium on Lyon 2 WA



# the Archaeology and Archaeometry of

# the Chalcolithic and Bronze Ages in

# Northwest Iran and South Caucasus



# Edited By Akbar Abedi - Mehdi Razani





# **Abstract Book**

The International Symposium on the Archaeology and Archaeometry of the Chalcolithic and Bronze Ages in Northwest Iran and South Caucasus

**Tabriz, September 16-17, 2017.** 

Tabriz Islamic Art University

Edited By

Dr. Akbar Abedi

Tabriz Islamic Art University

**Dr. Mehdi Razani** Tabriz Islamic Art University





# The International Symposium on the Archaeology and Archaeometry of the Chalcolithic and Bronze Ages in Northwest Iran and South Caucasus

Tabriz, September 16-17, 2017.

Tabriz Islamic Art University & Deutsches Archäologisches Institut

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- 1. The Department of Archaeology and Archaeometry, the Faculty of Applied Arts, Tabriz Islamic Art University
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# Foreword

The first "International Symposium on the Archaeology and Archaeometry of the Chalcolithic and Bronze Ages in Northwest Iran and South Caucasus" held in Department of Archaeology and Archaeometry of Tabriz Islamic Art University, 16-19 September, 2017. The symposium mainly aims to establish good basement for scientific research in both north-western Iran and South Caucasus. After beginning of archaeological field projects in Nakhchivan region in Azerbaijan and according to close cultural, socio-economic relation with northwestern Iran now it seems the scholars of these regions should be share their findings and results for better understanding of cultural situation of the region. Plenty of activities have been carried out concerning Chalcolithic and Early Bronze Ages (Kura-Araxes Culture) of Near and Middle East specially in Iraq,

Turkey and Syria but Nakhchivan and north-western Iran considered as *terra incognita* in archaeological studies. With new projects have begun in Nakhichevan region and Southern Caucasus in one hand and north-western Iran in the other this symposium jointly organized by Tabriz Islamic Art University along with German Archaeological Institute (DAI) Tehran Branch and CNRS (Lyon 2 University) for sharing new field projects and new results for establishing new possibilities for the research of both region's scholars in Iran and Nakhchivan region. New archaeological field research in north-western Iran brought to light important materials and now all of them are ready for study in laboratories of Tabriz Islamic Art University. According to archaeometry department in Tabriz there is also this possibility for establishing archaeometrical basement for the study of Chalcolithic and Bronze Age materials in Tabriz Islamic Art University.

Tabriz Islamic Art University has organized and held two national and one international symposiums on the application of scientific analyses to archaeometry and the conservation of cultural heritage. The university is just to convene the joint "International Symposium on the Archaeology and Archaeometry of the Chalcolithic and the Bronze Ages in the Northwest Iran and the South Caucasus".

I would like to thanks everybody to help us for organizing and holding this symposium. Special thanks go to Dr. Judith Thomalsky (DAI) for coordination of symposium and close cooperation with Department of Archaeology and Archaeometry of Tabriz Islamic Art University. I would like to thank Dr. Key Nejad, Dr. Mohammadzadeh, Dr. Kasiri, Dr. Chubak, Dr. Omrani and M. Abdar for cooperation in the holding of the symposium.

Dr. Akbar Abedi

Scientific secretary

Abstracts



# The South Caucasus from the Neolithic to the Bronze Age: Twelve Years of Excavations in Nakhchivan (Azerbaijan)

Catherine Marro<sup>†1</sup>, Veli Bakhshaliye<sup>††</sup>, Rémi Berthon<sup>†††</sup> and Nicolas Gailhard<sup>††††</sup>

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# Abstract

multi-disciplinary programme was set up by a French-Azerbaijani research team in 2006 in order to investigate the dynamics linking the Near & Middle East to the Caucasus in Late Prehistory. One of the avenues of exploration concerned the exploitation of natural resources in the Caucasus from the Neolithic to the Early Bronze Age. Together with the excavation of two large Neolithic (Kültepe I) and Chalcolithic settlements (Ovçular Tepesi), our work has been focused on the salt dome of Duzdagi, with a view to analysing the processes that led to the first exploitation of salt by early Caucasian communities. Concurrently, an extensive programme aiming at documenting the beginnings of vertical pastoralism is in progress; this programme is being implemented through the excavation of three mobile sites: Sorsu, Uçan Agil and Zirinçlik, together with a series of isotopic analyses carried out on animal bones (archaeological and contemporary), modern animal hair, and vegetation cover. Lastly, the study of the exploitation of natural resources and early pastoralism is being completed by the geochemical and/or isotopic analysis of obsidian artefacts, copper objects and copper ores, which were collected either from archaeological sites or from natural deposits.

Drawing on the findings of this programme, we can already demonstrate that the

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mountainous territories of the Caucasus started to be exploited by pastoral groups from the Neolithic onwards; even if the specificities of what appears to be early specialized stock breeding are not clear yet. While Caucasian Neolithic and early Chalcolithic economies basically developed in the Araxes basin within a fairly secluded environment that allowed limited relationships with Syrian or Mesopotamian communities, a change in interregional dynamics occurred in the course of the 5th millennium, which led to the integration of the South Caucasus into a wider region that includes western Iran, eastern Anatolia, Syria and Mesopotamia. Our current hypothesis aiming to explain this shift draws on a large body of evidence, which suggests that the South Caucasus and probably Eastern Anatolia had become an economic hub by the end of the 5th millennium, at the core of which lay the exploitation of mineral resources (especially copper), and the practice of extractive metallurgy by Caucasian communities: as shown by recent evidence, the practice of metallurgy in Nakhchivan had indeed started some 500 years earlier than in the South.

Keywords :Nakhichevan, Archaeology, Archaeometry, Neolithic –Early Bronze Age, 12 Years Excavation

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# Kul Tepe Jolfa and North-Western Iran's Cultural and Socio-Economic Contact with Southern Caucasus and Northern Mesopotamia in Chalcolithic and Bronze Ages

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# Abstract

fter three decades of stagnation in the northwestern Iran's archaeological activities, valuable works have been carried out concerning to prehistoric archeology of the region during recent years. In northwestern Iran almost all excavated sites are situated around the Lake Urmia and information about the other parts of the region is lacking and different parts of the region and its prehistory have received unequal attention. While a considerable part of western and southern parts of the Lake Urmia basin has been explored relatively comprehensively, eastern and northern parts remains largely an archaeological terra incognita. Most studies regarding to Kura-Araxes culture of northwestern Iran is mainly related to scant famous typical sites including: Yanik Tepe, Geoy Tepe, Hasanlu, Haftavan Tepe and Tepe Gijlar. In this paper I will try to introduce 195 Kura-Araxes sites and its distributions in different parts of NW Iran that yielded from old and new surveys. After a brief introduction of Kura-Araxes settlements in NW Iran, the paper addresses some recent excavations that took place concerning to Kura-Araxes culture. According to importance of Kura-Araxes materials of Kul Tepe (Jolfa) I will try to expose briefly the main stratigraphic, architectural and material data from this site. My discussion focuses mainly on two seasons of important well excavated site - Kul Tepe at the confluence of the southern Caucasus, northwestern Iran and eastern Anatolia. This site span a

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chronological range encompassing the Dalma, Pisdeli (LC1=Post-Ubaid), LC2-3 (Chaff-Faced Ware Culture), Kura-Araxes I, Kura-Araxes II and III, Middle and Late Bronze Age, Iron III, Urartian and Achaemenid periods – roughly from 5000- ca. 400 BC. New data yielding from excavations eventually lead us to new chronological table for northwestern Iran and southern Caucasus and to new approach to archaeology of the region during Kura-Araxes period.

Keywords :Chalcolithic, Kura-Araxes Culture, Surveys, Excavations, Kul Tepe Jolfa Project, North-Western IRAN

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# The River Valley of Araxes in the Horizon of Late Neolithic – Early Chalcolithic Age; On the basis of Materials Recorded from Boynoo Tepe – Qiz Qalasi

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## Abstract

n addition to the unclear socio- cultural interactions between the Southern Caucasus and the North West of the Iranian plateau prior to the Bronze Age, the archaeology of Neolithic Age in the River Valley of Araxes is still problematic. Archaeologically, pre- Bronze Age cultures of the North West of the Iranian plateau are known by some type sites around the Lake Urmia, such as Yanik Teppe, Dalma Teppe, Hajji Firuz Teppe, Pisdely Teppe and Ahrendjan- Qara Teppe Neolithic tradition in the Salmas plain. In the interim, the archaeological materials which are recorded from some Southern Caucasian type sites like as Kul Teppe of Nakhichevan and Aratashan seem different from the materials reported from the Urmia Lake basin. The valley of River Araxes is a key zone to understand such an interaction however it is not yet completely surveyed because of its sensitive location as a border line between I. R. Iran and South Caucasian new states. Boynoo Teppe - Qiz Qalasi is a key area that being located in the south bank of the River Araxes within the Iranian border line. An Iranian expedition to the Boynoo Teppe - Qiz Qalasi, in autumn 2008 - winter 2009, excavated a Late Neolithic - Early Chalcolithic site and surveyed another one whose archaeological materials are comparable with Southern Caucasus than the Lake Urmia; for example

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Shomu Teppe and Shulaveri. This paper introduces the excavated materials and discusses about the nature and scope of the socio- cultural interactions between the two adjacent regions before the Bronze Age.

**Keywords** :Late Neolithic, Early Chalcolithic, NW Iranian plateau, Southern Caucasus, Urmia Lake

# Lithic/Obsidian Industries Beyond the Araxes during Late Chalcolithic and Early Bronze Age

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## Abstract

he lithic industries in NW-Iran and South Caucasus are strongly characterized by distinctive technological networks. This can be presented from the 6<sup>th</sup> millennium onwards until the 3rd millennium BCE, though several major changes caused by different sub-regional orientations or network directions should be considered. Since prehistoric sites right and left from the major stream of the Araxes, are dominated by obsidian that stem from the nearby Armenian/Azerbaijan obsidian sources, sites in Northwest Iran - such as Hajji Firuz - yield obsidian tools that exhibit technological attributes of the Northern Mesopotamian Neolithic, inclusive a veritable amount of obsidians that stem from the Southern Anatolian deposits (such as Bingöl/Nemrut Dag - lake Van). However, these technological connections more and more decreased while a veritable local obsidian industry in South Caucasus is developing, directly linked to the local deposits and the establishment of a very specific core-tool technology, the large blade industry. Whether one can regard this large blade technology as a forerunner or even "missing link" to what we call the "Canaanean Large Blade Industry" (or "Canaanean Core Technology) of Northern Mesopotamia and the Levant of the 4<sup>th</sup> and 3<sup>rd</sup> millennium BCE, and to which degree the NW-Iranian sites of the Kura-Araxes can be count to this phenomena, is to be discussed in this workshop.

Keywords :Lithic, Obsidian, Late Chalcolithic, Early Bronze Age, Analysis

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# The Beginnings of Extractive Metallurgy in Nakhchivan (Azerbaijan): The Archaeometallurgical Evidence from Ovçular Tepesi and Zirinçlik''

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<sup>†</sup>Research Associate and Founder of Arkeoservice, (CNRS) Sorbonne University, Paris

# Abstract

he data recently collected from the Late Chalcolithic settlements of Ovçular Tepesi and Zirinçlik in Nakhchivan have cast new light on the beginnings of extractive metallurgy in the South Caucasus. Artefacts, copper ore fragments, as well as metallurgical tools, were retrieved from both sites, but the evidence from Ovçular Tepesi is of special importance since it extends the record of complex crafting methods known to be in use during the last quarter of the 5th millennium. Copper casting, specific copper oxide selection and possibly co-smelting practices have been brought to light, while the geochemical and lead isotopic analysis of the finds, some of which are large copper tools, show that these artefacts were made locally from copper ores collected from nearby deposits. Among these tools, one axe-adze and one axehammer display close parallels with contemporary artefacts from South-eastern Europe (e.g. Vidra-type axes), which suggests possible connections with the Circumpontic Metallurgical Province (CMP). Altogether, the Nakhchivani evidence reveals that an advanced stage of extractive metallurgy had been reached in the South Caucasus as early as the late 5<sup>th</sup>millennium, possibly in relationship with the southeast European technological sphere. At all events, this evidence partly challenges the commonly held view according to which the blossoming of extractive metallurgy in

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the South Caucasus was linked to the expansion of the Kura-Araxes phenomenon during the Early Bronze Age.

**Keywords:** Archaeometallurgy, Chalcolithic, Ovçular Tepesi and Zirinçlik, Nakhichevan

# <u>10</u>

# The Past-Obsidian Project: From Transhumance to the Mine: the Role of Nomadic Pastoralists in the Protohistoric Exploitation of Obsidian in Iran and the Caucasus

# Marie Orange<sup>†1</sup>, François-Xavier Le Bourdonnec<sup>††</sup>, Catherine Marro<sup>†††</sup>, Rémi Berthon<sup>††††</sup>, Judith Thomalsky<sup>†††††</sup>

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# Abstract

The PAST-OBS research project aims to investigate the complex relationship between the exploitation of natural resources, technological innovations, and nomadic pastoralists in the Urmiah (northern Iran) and Sirab (Nakhchivan) regions, from the Neolithic through to the Bronze Age. More specifically, it seeks to explore the role of nomadic pastoralist groups in the distribution of the obsidian material, by focusing on the sourcing of the assemblages. The study of flock movements through the analysis of stable isotopes (strontium, carbon, oxygen) in caprine teeth will also provide further evidence to reconstruct suspected transhumance patterns. Eventually, the coupling of the information extracted from these two crucial markers could reveal a potential correlation between the development of pastoralism and the exploitation of natural resources, namely obsidian, copper, and salt. Furthermore, a comparison of the data obtained in the Sirab and Urmiah regions might help us to identify possible relationships between these two economically complementary areas.

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Our study aims to achieve a representative sourcing of the obsidian assemblages in a limited time by means of a unique analytical strategy relying on the use of complementary characterisation techniques (mainly portable XRF spectroscopy and LA-ICP-MS). We propose to present here the preliminary results obtained in the first phase of this project.

Keywords: Obsidian, Mine, Transhumance, Prehistoric Trade, Analysis, NW IRAN, South Caucasus

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# Identification of the Colorants used on the Late Bronze Age Ceramics of Eastern Lake Urmia Based on the Specimen from Kul Tepe, Ajabshir, NW IRAN

# Umm al-Banin Rastineh<sup>†</sup>, Masoud Bagherzadeh Kasiri<sup>††'</sup>, Bahram Ajorloo<sup>†††</sup>, Ghader Ebrahimi<sup>††††</sup>

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Abstract:

ne of the most interesting aspects of ancient potteries, is the investigation about the colorants used for their decorations. This study helps to explore about the ancient people knowledge and their experiments on creation of color by making up dying materials could be found close to their dwells. The present work represented an attempt to discern laboratorically the base and chemical composition of colorants used as decorative elements on ancient ceramics. Thus, five pieces of late Bronze painted pottery of the eastern Lake Urmia Basin (from the archaeological site of Kul Tepe of Ajabshir) were singled out. FT-IR technique was employed to determine whether the paint came from organic or inorganic sources and also to identify the existing anions and cations. The results suggested that the color has a mineral origin and consisted of iron oxides. Elemental analysis of the paints and studying their structure and chemical composition were completed using SEM-EDX, which demonstrated the presence of iron content alongside other component elements of the ceramic bodies, where the results

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tallied with the FT-IR spectrums. Finally, in order to confirm and complete the data, the specimen were subjected to XRD analysis, which showed that the pigments used in ornamenting the sherds were mineral and comprised of iron (agite).

Keywords :Iron oxide pigments, Painted pottery, FT-IR, SEM-EDX, XRD

# Absolute (C14 AMS) and Relative Chronology of Dava Göz Khoy; New Evidence of Transitional Chalcolithic, Dalma and Pisdeli Cultures in NW IRAN

### Akbar Abedi<sup>†</sup>

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University, Tabriz, IRAN

### Abstract

he settlement of Dava Göz situated about 15km SW of Khoy and 1.5km north of the Dizaj Diz town in NW Iran. Dava Göz is a small site at north of the Lake Urmia, measuring about 100×100m (ca. 1ha). The first season of archaeological excavation primarily aimed to clarifying the chronology, settlement organization, and respond to some of the fundamental questions such as the transition process from Late Neolithic to Early Chalcolithic (Hajji Firuz to Dalma) and identifying different cultural horizon including Middle and Late Chalcolithic (LC1 and LC2) periods and also outlining cultural condition of the region during prehistoric periods. The present paper is intended to expose six absolute radiocarbon data from the site and preparing new data for revising prehistoric chronology of NW Iran. According to fresh absolute C14 radiocarbon date the stratigraphy and chronology of the settlement is now well understood and covers Transitional Chalcolithic (Dava Göz I: 5400-5000 BC), Early Chalcolithic or (Dalma Dava Göz II: 5000-4500 BC) and Middle and Late Chal- colithic 1 (Pisdeli, LC1: Dava Göz z III: 4500-4200 BC) and Late Chalcolithic 2 (Chaff-Faced Ware horizon, LC2: Dava Göz IV: 4200-3900/3800 BC) phases of the regional culture of north of the Lake Urmia Basin. Actually, Dava Göz is one of the scant well excavated settlements that give new and fresh information on the developments of the Lake Urmia Basin communities between the sixth to fourth millennium BC (5400-3700/3600 BC), and on their relationships with the contemporary Caucasian cultures as well as with those located further west and south, in Eastern Anatolia and in the Syro-

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Mesopotamian region. The first preliminary result of excavation, suggest special function for Dava Göz. It seems clear that this site could be consider as winter land for some agro-pastoral groups of Lake Urmia Basin who trying to find some pasturelands and preparing same raw materials like obsidian for the settlements of Urmia region The implications of the findings will discuss along with limitations and future research directions.

Keywords :Dava Göz Khoy, NW IRAN, Revised Chronological Table, 14C, AMS Analysis

# A Preliminary Report on the Excavation to Establish a Buffer Zone and Stratigraphy for Dizla'in Tapasi, Ardabil: The Bronze Age Deposits

### Mohammad Feizkhah<sup>†1</sup>

<sup>†</sup>M.Sc. in Archaeology, East Azerbaijan Cultural Heritage, Handicrafts and Tourism Organization (CHHTO)

### Abstract:

Deprivation Province. It forms part of the urban texture of the city of Hashjin. Domestic houses, agricultural activities, and street construction have encroached the site partially, a fact that compels proposing a protective buffer zone. The site entered the Iranian National Cultural Heritage List in 2003. The stratigraphy and buffer zone establishment project was implemented in 2008 with the collaboration of Ardabil Cultural Heritage, Handicrafts and Tourism Directorate. The demarcation of the buffer zone was carried out through opening at different parts of the site 32 small test trenches each invariably measuring 1 x 1 m. The sounding operation showed that the local settlement experienced an expansion in its southern corner in the Ilkhanid period. Another objective of the fieldwork involved defining a stratigraphic sequence. Thus, three trenches were opened.

The site dominates the surrounding areas thanks to its obvious location, which also fostered its defensive capabilities. The defensive wall that once encircled the mound is visible in satellite imagery. The site served as a fort only in the historic and Islamic period. As stated, in the Ilkhanid period the settlement extended southward. In the historic period simply the site itself was used as a fort and settlement. A Sasanian coin excavated from the historic strata warrants further studies of the Sasanian, Parthian or Achaemenian deposits of the site. A few iron slag were encountered in the historic layers, as well. Also, the site produced definite evidence on iron smelting industry,

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among them being a crucible and ceramic pipes used for air conveyance. During the Iron Age the site served as a cemetery. Two burials were attested. Presence of Bronze Age evidence at this highland site is of utmost archaeological significance in that the contemporaneous material typically occurs in plains and lowlands. Hence Dizla'in Tapasi can be arguably regarded as an essentially important site because of its Bronze Age deposits. The importance of the site also lies in the distinctive type of its Kura-Araxian nomadic settlement, wherein the local population created their dwellings as large circular pits cut into the sterile soil. The present paper is a preliminary report on the Bronze Age deposits of the site.

Keywords :Dizla'in Tapasi, Bronze Age, Stratigraphy, NW IRAN

# Late Chalclothic Period in Little Zab Basin, Northwestern Iran

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### Abstract

ab basin is located in the south part of Urmia Lake. The little Zab River in northwestern Iran rises from the mountains Piranshehr and flows from the northwest to the southeast direction to join Iraq from Alan passage. Based on Hasanlu research project in Ushnu- Solduz valley, there is a gap between Hasanlu VIII/Pisdeli and Hasanlu VII, wich can be linked to Early Trans-Caucasian II-III in the north Urmia Lake basin. At the end of the Pisdeli period, there is an abandonment of the many small sites in Ushnu-Solduz valley. In recent archaeological studies in Little Zab basin, Beveled-rim bowl pottery was found in five sites in the Zab basin. This pottery is not seen in the northwest of Iran yet. Beveled-rim bowls for the first time appeared in southern Mesopotamia in the early fourth millennium and by the midfourth millennium in the surrounding regions, declining to extinction by 3000 BC. Their trajectory coincides with the Uruk period. For this type of pottery various meanings are proposed depending upon where they were found. If we consider this pottery as the late Uruk period, that belongs to the late fourth millennium BC. There are not big settlements like south of Mesopotamia in the fourth millennium, in this area. And it's because of the environment that does not allow to the formation of these settlements. Probably these sites are connective points of trade network, Beveled-rim bowls as the late Uruk period that is late fourth millennium BC, at this time we see social complexity accelerating in the Middle East. Geographical position and Settlement pattern, Signs of Commercial and cultural relation of the North-Western Iran Society and northern Mesopotamia in late Chalcolithic. Based on evidences it can be proposed

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that after Pisdeli period, Uruk culture is continuity, which is contemporary with northern Mesopotamia. Now, if based on prehistoric chronology of Sulduz plain and the south of Urmia Lake basin, we consider for Dalma Culture a history about 4000-5000 B.C and for Pisdeli 3200-3900 B.C, so the Uruk culture will situate after 3100 B.C.

Keywords: Late Chalcolithic, Little Zab Basin, Northern Mesopotamia, NW IRAN

# Four Seasons of Archaeological Surveys in Bostan Abad, NW IRAN; New Chalcolithic and Bronze Age Findings

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### Abstract

A rchaeological surveys have always provided wealthy information about the past times of a geographic region for archaeologists. Many regions have been surveyed and many archaeologists studied them but Bostan Abad area in East Azerbaijan province is one of the few places where limited archeological activities are carried out. In this area, many sites were discovered and recorded, during 4 seasons of archaeological surveys. About 99 sites related to the Chalcolithic Age and 90 sites related to the Bronze Age were discovered. The present study analyzes the pattern of site dispersion and typology of pottery of the Chalcolithic Age and Bronze Age of Bostan Abad, based on archaeological investigations in 2006, 2013, 2014 and 2016. Of course that the data are based on archaeological surveys, therefore, based on surface data, a definitive distinction cannot be made between Chalcolithic Age and Bronze Age. The results of this study are important from two perspectives. On the one hand, key role of geography should be mentioned in choosing Location of residence, and also the causes of the decline in the number of new Chalcolithic sites to the Early Bronze should be

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studied. On the other hand, the typology of potteries in the Chalcolithic and Bronze Age, show the trans-regional connections in this period, due to the strategic position of Bostan Abad.

**Keywords:** Archaeological Survey, Settlement Pattern, Chalcolithic, Bronze Age, Bostan Abad, NW IRAN

# Settlement Pattern Analysis through Transition from the late Chalcolithic to early Bronze Age on the Eastern Shore of Urmia Lake, NW Iran

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### Abstract:

omparison between eastern shore with western and south part of Urmia Lake Basin demonstrates the deep distinction in environment and geopolitical stations. The volcanic Sahand Mountain made the differentiation and the low area plains on shore of Lake connects the rather deep valleys to the Lake hole, so in this plains the current rivers pass in short distance on the plains. On the other hand eastern shore plains have altitude more than western and south vast plains. Archaeological evidence from this region has proven the Human settlements from the Late Neolithic and Early Chalcolithic Period. Based on this evidence the Chalcolithic establishments in this part of Urmia Lake have formed in various settlements; the 'Tell Sites' are the most specific settlement that can be seen in the plains and also the alluvial terraces at some valleys. Other type of human remains is found at the top of hills and end of valleys that archaeological performed surveys have been identified these sites; may be related pastoral groups remains. It seems this pattern and life style has lasting till end of Late Chalcolithic, but communities in this area had fallen to lowest level slightly before Bronze Age. However, the Early Bronze Age in northwest Iran concurrent with expansion of Kura-Araxes Communities; the groups of immigrant people from south caucuses to most part of northern area in the West Asia, and they conquered the most part of Northwest Iran. Analyze the location of Kura-Araxian settlements demonstrate the peoples settled in the following of the Late Chalcolithic period sites in most cases.

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But aggregation and early Bronze Age settlements size and number are far less than the late Chalcolithic period and its seams the population declined sharply through late Chalcolithic period to early Bronze Age because the late Chalcolithic sites reduced and almost there is only one early Bronze Age settlement in per plain.

Keywords: East of Lake Urmia, Chalcolithic Period, Bronze Age, Settlement Patterns, GIS, NW IRAN

# Dozdaghi Early Bronze Age Center in Khoy plain, Northwestern Iran

New Evidence from Salt Mine

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# Abstract

hoy plain in Northwestern Iran with its appropriate climate condition and suitable environmental capacities, had a particular importance in archeology of different prehistoric and historical periods. Archaeological finds shows that, in the Early Bronze Age (Kura-Araxes) period, Douzdaghi site with more than 16 hectares, becomes a very important and major center of urbanization in north of the Lake Urmia. Based on the Khoy plain survey results, 12 sites related to Early Bronze Age period. Douzdaghi is one of the most important and largest of them, which located in central of the plain. Unlike the previous period, which the settlements were observed only in the plain, during the Bronze Age settlements were found in the plains and highlands and we are faced with changing in settlements patterns. At the beginning of the third millennium BC, there are widespread socio-cultural changes for most regions of Iran. The northwestern region of Iran, along with the Araxes Basin and the Kura River basin, is probably the pioneer in these changes. Due to its location, Dozdaghi located on the junction routes of the Iranian plateau to Anatolia in one hand and southern Caucasus in the other hand, specially in trade and cultural exchanges. The existence of a salt mine as an export commodity in this area as well as tools of obsidian (imported goods) in seven different types, there is good evidence for this connection.

Keywords: Khoy, Doozdaghi, Salt Mine, Trade, NW IRAN, Southern Caucasus.

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# Transition from Chalcolithic to Early Bronze Age in NW of Iran Based on Archeo-Petrographic Studies of Kul Tepe Jolfa Potteries

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#### Abstract

halcolithic and Bronze Age are among the most important eras in prehistoric periods of Iran, being different in terms of cultural data such as pottery, architecture, burial, etc. Potteries from Chalcolithic are buff in surface with different geometrical motifs on them, whereas in Bronze Age, sudden changes in the pottery are observed. In this era, the tradition of buff wares was abolished and a wide range black-gray pottery with craved designs can be seen. This cultural difference, followed by different varieties of pottery, have been well identified in cultural layers of most parts of the Iran, especially in northwestern regions. There have been debates with respect to this cultural difference and whether the properties of Bronze have been derived from new Chalcolithic culture, or new works give evidence for a newly arrived nation/culture. However, despite the disagreement in this case, as well as the unsolved issues between the two era, it seems that the use of experimental methods might provide responses to all these debates. Using petrographic studies on the potsherds obtained from Chalcolithic and Bronze layers of Kul Tepe at Hadishahr in northwestern Iran, this study attempts to find information about the soil used in them and their native status. The Kul Tepe site (E 45° 39' 43"- N 38° 50' 19", 967) is located near the city of

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Hadishahr, which is located ten kilometers south to Aras River. Kul Tepe is a multiperiod site with an area of six hectares, which is nineteen meters higher than the surrounding lands. The site was discovered by an expedition in East Azerbaijan Province in 1968 under the supervision of Kambakhshfard, which was later reported by other authors such as Edwards, Kliess, Kroll, and Omrani as well. Kul Tepe is precisely located in the northwestern corner of Iran, which is the gateway between Southern Caucasus and northwestern Iran. Kul Tepe is located next to a wide gorge at the center of highlands in the crossroads of major routes linking the Iranian plateau to Anatolia and the Caucasus to Northern Mesopotamia. The first season of excavation at Kul Tepe was carried out from June to August 2010. Because of the huge quantity of materials and deposits at Kul Tepe, the site needs further research and excavation to better understand its cultural situation in the region. The second season of excavation was conducted from August to October 2013 in order to answer certain questions about the region and extend the studied areas. Ten characteristic potsherds (five for each era) from Late Chalcolithic and Early Transcaucasia culture (Kura-Aras) were studied by thin section microscopic (petrographic) method. These potsherds had been obtained during the excavations on Kul Tepe. Given the obtained results, as well as external heterogeneities in the texture of potsherds between the two eras, other significant differences were detected among them, including the fabric and texture type. The dominant texture in the potsherds of the Chalcolithic is of silt or fine crystals, whereas that of Bronze Age is coarse and porphyritic. However, no case of volcanic glass was found among the potsherds of Chalcolithic, whereas potsherds of Bronze Age have volcanic glasses, as well as crescent- and circle-like pieces. With due attention to the geology of this region, flysch sedimentation basin, volcanic, pyroclastic, and calcareous rocks and the like existed in this area, and one could clearly state that origin of the Bronze potsherds is local because some pieces of volcanic or pyroclastic rocks would be unexceptionally seen in all of them.

Keywords: Kul Tepe Jolfa, NW IRAN, Chalcolithic, EBA, Transition, Petrographic Analysis

# Spatial Distribution Settlements Patterns Analysis of Chalcolithic Sites of Bostānabād, NW IRAN

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# Abstract

rchaeological surveys have always provided wealthy information about the past times of a geographic region for archaeologists. Many regions have been surveyed and many archaeologists studied them but Bostan Abad area in East Azerbaijan province is one of the few places where limited archeological activities are carried out. In this area, many sites were discovered and recorded, during 4 seasons of archaeological surveys. About 99 sites related to the Chalcolithic Age and 90 sites related to the Bronze Age were discovered. The present study analyzes the pattern of site dispersion and typology of pottery of the Chalcolithic Age and Bronze Age of Bostan Abad, based on archaeological investigations in 2006, 2013, 2014 and 2016. Of course that the data are based on archaeological surveys, therefore, based on surface data, a definitive distinction cannot be made between Chalcolithic Age and Bronze Age. The results of this study are important from two perspectives. On the one hand, key role of geography should be mentioned in choosing Location of residence, and also the causes of the decline in the number of new Chalcolithic sites to the Early Bronze should be studied. On the other hand, the typology of potteries in the Chalcolithic and Bronze Age, show the trans-regional connections in this period, due to the strategic position of Bostan Abad.

**Keywords:** Archaeological Survey, Settlement Pattern, Chalcolithic, Bronze Age, Bostan Abad, NW IRAN

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# Provenance Studies of Early Bronze Age Metalworking in North-Western Iran, Based on Metal Artifacts of Kul Tepe Hadishahr

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#### Abstract

Note the fundamental questions of archeology and archaeometry, is how to find the provenance of the raw materials used and the tools obtained from the prehistoric sites, as well as the method of smelting and processing of them in the ancient societies, for that In this method, it can be realized communication, trade and interaction between communities in ancient times , in the regard of the questions raised through this research, 14 samples of metal works selected from the systematic excavations of the Kul-Tepe of Hadishahr excavation were selected by the mechanism of "elemental analysis (Portable XRF Spectrometer), Scanning electron microscopy with X-ray Microanalysis (SEM-EDS), X-Ray Diffraction study (XRD), Inductively Coupled Plasma mass spectrometry (ICP-MS), Metallographic studies with Reflected polarized light Microscopy (OM) and Petro-graphic thin sections study by polarizing microscope (OPM)" were the matter of this research. The result of this research based on these studies shows that, 10 samples were identified as the Waster. Thus, this is impossible to Provenance and determine the method of smelting of the samples. This is necessary to mention that, the lack of study (provenance and determining the method of smelting)

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applies for another sample in which the evidence of Metal element is available on the mold (Due to the low value of that). only in one of the samples there were metal slag along with the waster, therefore it would be possible to study the provenance based on trace elements, which in this study and also based on the Geology of area around Kul-Tepe, the possibility of using metal mines of Caucasus area by the residents of Kul-Tepe in the Early Bronze Age was proposed. The two other samples are Metal dagger and Iron pyrite (The Fool's gold) which were studied in this research, about the Iron pyrite or the fool's gold it can be introduced as Mano port (the tools which were obtained from the nature and carried by human to their living places.) for the plenty of this sort of stone around Kul-Tepe area. Also the technology of making metal dagger can be offered because of observing the couple bands in the microscopic structure of that, one of the melting methods, Annealing, hot-Working or melting, Annealing, Cold-Worked, and then Annealing again. According to lack of slags along with trace elements of metal objects analysis of Kul tepe, it could be suggests that probably trade and transporting of metal bars from other region have been carried out. The region suggested with some probability as origin of this bars is southern Caucasus.

Keywords: Archaeometallurgy, Metal-Works, Kul-Tepe, Early Bronze Age, Caucasus Mine, North West Iran



برگزاری این سمپوزیوم مسلماً با تلاش افراد زیادی همراه بوده است که در صورت عدم همکاری این عزیزان امکان اجرای آن وجود نداشت. در وهله اول کمیته اجرایی سمپوزیوم بر خود لازم می داند از ریاست محترم دانشگاه جناب آقای دکتر کی نژاد سپاس ویژه ای را داشته باشد چرا که رهنمودهای ایشان همواره افق راه پژوهشگران دانشگاه بوده است. پس از ایشان نیز از زحمات تمامی عزیزان مخصوصاً جناب آقای دکتر محمدزاده معاون محترم آموزشی، پژوهشی و فناوری، جناب آقای دکتر آخوندی ریاست محترم روابط بین الملل دانشگاه، جناب آقای دکتر کثیری ریاست محترم دانشکده هنرهای کاربردی و در نهایت از ریاست محترم امور اداری جناب آقای دکتر شهبازی بابت هماهنگی امور کمال تشکر و قدردانی را داریم. همچنین از تمامی کمیته اجرایی از دبیر اجرایی محترم جناب آقای رازانی و تیم دانشجویی که تلاش فراوانی جهت سامان دادن امور قبل از برگزاری سمپوزیوم نمودند نهایت سپاسگزاری را داریم.

> دکتر اکبر عابدی دبیر علمی سمپوزیوم

اولین سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ در تاریخ ۲۵–۲۹ شهریور ماه ۱۳۹۶ در گروه باستان شناسی و باستان سنجی دانشگاه هنر اسلامی تبریز با همکاری موسسه باستان شناسی آلمان (شعبه تهران) و متخصصان باستان شناسی و باستان سنجی دانشگاه لیون ۲ و موسسه ۲۹۳ فرانسه برگزار گردید تا تیم ها و متخصصان این حوزه ها بتوانند نتایج آخرین یافته های خود را ارائه داده و با سایرین به اشتراک بگذارند. از آنجائیکه در طول سالیان گذشته منطقه نخجوان و بطور کلی قفقاز جنوبی و همچنین شمال غرب ایران فعالیت ها و همچنین انتشارات اندکی در رابطه با دوران مس و سنگ و مفرغ (فرهنگ کورا – ارس) داشته اند فعالیت ها و همچنین انتشارات اندکی در رابطه با دوران وقفه های مطالعاتی این منطقه را مرتفع خواهد ساخت. به علاوه معرفی قابلیت های باستان شناسی، باستان سنجی و مرمت آثار و ابینه تاریخی دانشگاه هنر اسلامی تبریز به متخصصان این حوزه از دیگر اهداف برگزاری این سمپوزیوم و نشست تخصصی است.

دانشگاه هنر اسلامی تبریز در سالهای گذشته سازمان دهنده و برگزارکنندهٔ دو سمپوزیوم ملی با موضوع کاربرد تحلیل های علمی در باستان سنجی و مرمت میراث فرهنگی و یک سمپوزیوم بین المللی تحت عنوان سمپوزیوم بین المللی باستان سنجی ایران و آلمان بوده است و هم اینک، در حال برگزاری سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ است که گامی موثر در تعاملات و تبادلات علمی بین المللی خواهد بود.

برگزاری چنین سمپوزیوم های علمی و نشست های تخصصی مخصوصاً در ایران زمینه آشنایی متخصصان و دانشجویان رشته های باستان سنجی، باستان شناسی و مرمت را با همتایان خود در مناطق همجوار فراهم می سازد و از آنجایئکه رشته هایی مانند باستان سنجی، علوم نوینی به شمار می آیند استفاده و بکارگیری از آخرین امکانات و تجهیزات آزمایشگاه و متدهای نوین جهت ارتقاء این رشته در ایران یکی از برآیندهای چنین سمپوزیوم های تخصصی بین المللی است. اولین سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ یکی از سمپوزیوم های تخصصی در حوزه باستان شناسی و باستان سنجی منطقه شمال غرب ایران و قفقاز جنوبی است که با هدف گرد هم آمدن متخصصان پیش از تاریخ شمال غرب ایران و قفقاز جنوبی برنامه ریزی گردید تا متخصصان این حوزه ها آخرین دستاوردها و نتایج یافته های خود را با یکدیگر به اشتراک بگذارند. شروع مجدد مطالعات باستان شناسی و باستان سنجی در منطقه نخجوان توسط تیم های پژوهشی خارجی و داخلی زمینه مساعدی جهت ایجاد یک پایگاه اطلاعاتی برای پیش از تاریخ این منطقه با شمال غرب ایران ساخت که مسلماً نتایج این یافته ها و این پایگاه اطلاعاتی با توجه به همجواری این منطقه با شمال غرب ایران فهم ما را از برهمکنش های فرهنگی و ارتباطات فرامنطقه ای در دوران پیش از تاریخ و مخصوصاً در دوره های

از طرف دیگر شروع مجدد فعالیت های باستان شناختی از دهه ۸۰ شمسی توسط باستان شناسان ایرانی در منطقه شمال غرب ایران از یک سو و تاسیس گروه باستان سنجی و باستان شناسی در تبریز از سوی دیگر زمینه مساعدی جهت تبادل آخرین یافته ها و امکانات باستان سنجی و علوم باستان شناختی را برای متخصصان هر دو حوزه شمال غرب ایران و قفقاز جنوبی فراهم ساخت.

پیشگفتار



# سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ تبریز، ۲۵-۲٦ شهریور ماه ۱۳۹٦ دانشگاه هنر اسلامی تبریز

# نهادهای بر گزارکننده:

- گروه باستان شناسی و باستان سنجی دانشکدهٔ هنرهای کاربردی دانشگاه هنر اسلامی تبریز
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    - ۳. مرکز مطالعات ملی فرانسه(CNRS) و دانشگاه لیون ۲

## نهادهای پشتیبان:

- د. حوزهٔ ریاست دانشگاه هنر اسلامی تبریز
- ۲. ادارهٔ کل میراث فرهنگی، صنایعدستی و گردشگری آذربایجان شرقی، تبریز
  - ۳. پژوهشگاه سازمان میراث فرهنگی، صنایعدستی و گردشگری
  - ۸. مؤسسة باستان شناسی آلمان، نمایندگی ایران، تهران (DAI)

## با سپاس ویژه از:

- استانداری آذربایجان شرقی
- ۲. دفتر نمایندگی وزارت خارجهٔ جمهوری اسلامی ایران در شمال غرب کشور، تبریز

## سازماندهندگان:

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- ۲. مهدی رازانی
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  - ۴. بهرام آجورلو

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    - کترین مارو، دانشگاه لیون ۲ فرانسه



برای دریافت فایل الکترونیکی دوفصلنامهٔ پژوههٔ باستانسنجی و کتاب مجموعهٔ چکیدهٔ مقالات سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ به نشانی اینترنتی زیر مراجعه شود: www.jra-tabriziau.ir

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عنوان و نام پدید آو <i>ر</i>	: سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ/ به کوشش، اکبر عابدی و مهدی، رازانی
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موضوع	: همایشها – چکیده مقالات
موضوع	: باستان شناسی و باستانسنجی

حامیان سمپوزیوم بین المللی باستان شناسی و باستان سنجی شمال غرب ایران و قفقاز جنوبی در دوره مس و سنگ و مفرغ تبریز، ۲۵-۲٦ شهریور ماه ۱۳۹٦



مجموعة جِحَيدة مقالات

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