







Archaeological Investigation of Administrative Documents and Records within the Chalcolithic Societies of Northwestern Iran

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Analyzing administrative documents holds significant importance within the realms of archaeology and sociology, akin to the study of other archaeological evidence. These examinations play a pivotal role in reconstructing various systems, encompassing management, social dynamics, economic structures, and political frameworks. Delving into administrative management within prehistoric societies unveils the intricate social intricacies and the supervision exercised by a designated leader or head over a subordinate group, representing an internal control mechanism. Notably, seals, impressions on seals, and diverse accounting artifacts serve as pivotal administrative documents. However, the exploration and investigation of such cultural data in northwestern Iran remain relatively scarce. Therefore, the current study endeavors to present, evaluate, and scrutinize the administrative records of Chalcolithic societies in northwestern Iran, employing a descriptive-analytical approach. Numerous inquiries persist without resolution regarding the administrative records and evidence pertaining to the later prehistory of northwest Iran. Ambiguity surrounds the quantification of Chalcolithic administrative documents within this region. Furthermore, the methodology for analyzing and evaluating the ownership and managerial evidence from the later prehistoric era in this area remains unclear. Addressing these uncertainties can establish a definitive framework and a solid foundation for investigating these matters in northwest Iran. Leveraging administrative data obtained from various sites including Tepe Chay Khoy, Chakhmaqluq, Tepe Kulyeri (Tepe Caravanserai), Sohachay Tepe, and others, the authors conduct an assessment of managerial evidence in the northwestern region of Iran. Furthermore, utilizing extant cultural artifacts and drawing upon the outcomes of prior studies facilitates an exploration into phenomena such as long-distance trade, economic endeavors, social intricacies, and cultural exchanges with neighboring areas.

Keywords:

Northwest Iran (Azerbaijan); Administrative documents; Chalcolithic; Economic-commercial interactions; Neighboring areas.

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1.Introduction

Seals and their imprints on clay tablets represent some of the most valuable remnants from the prehistoric and historical societies situated on the Iranian plateau. Systematically analyzing and studying these artifacts serves as an effective method for archaeologists and art historians to delve into the material and spiritual dimensions of ancient cultures (Tala'i, 2018: 1). These seals and carved works stand as significant historical objects contributing profoundly to the identification of various aspects of past epochs. The examination of such artifacts can elucidate many lingering mysteries from ancient times (Melkzadeh Bayani, 1971). The impressions left by seals, along with their patterns spanning different eras, unveil numerous facets of daily life, activities like hunting and warfare, religious practices, and more, surpassing the scope of insight provided by other available documents (Motarjem, 1996). The use of seals became widespread across the Iranian plateau as early as the 5th millennium BC, extending through the Neolithic and Chalcolithic periods and persisting till modern times (Tala'i, 2018: 37). The oldest known examples of seals, based on existing records, were discovered at ancient sites located in Syria, Palestine, Lebanon, and Turkey (Rashad, 1990: 235). Seals, bullae, and tokens offer multifaceted interest from various perspectives. Primarily, each of these artifacts stands as an autonomous archaeological piece associated with legal transactions or commercial dealings. Essentially, they symbolize authority and social standing, signifying the transfer and prolonged safekeeping of goods. Furthermore, owing to their engravings, incised effects, and patterns, they serve as tangible evidence for the study of the art of engraving (Mohammadi Far et al., 2013: 94). Excavations conducted in the northwestern regions of Iran and neighboring areas have unearthed cultural artifacts such as seals, seal impressions, and counting objects, which constitute fundamental tools in administrative management. Examining this category of data assumes significance as it offers insights into management practices, distinguishing between local indigenous (exported goods) or non-local (imported goods), and delineating commercial activities, whether proximate or distant. Consequently, long-distance trade has emerged as a competitive engagement involving the sources of raw materials and the distribution of finished products (Sherratt & Sherratt, 1991: 355).

Stamp seals have served as pivotal artifacts dating back to the 7th millennium BC in prehistoric Western Asian sites. Initially crafted from materials such as stone and mud/clay, these early seals boasted multifaceted functions, notably signifying prestige, social standing, symbols of status, and delineating individual and collective identities. With the evolution of management needs, these seals transformed into administrative tools, employed to secure warehouses and goods. This transition showcases the shift in their utilitarian role, illustrating their significance in administrative practices and organizational systems.

Seals have held a historical presence in the South Caucasus since the early 4th millennium BC. Excavations at Böyük Kəsik in Azerbaijan, dating to the Chalcolithic period, unveiled two button-shaped clay seals featuring flat surfaces. The emergence of seals with diverse styles and patterns came to prominence during the Kura-Araxes culture in the Southern Caucasus, beginning in the mid-fourth millennium BC (Shanshashvili & Sherazadhshvili, 2013: 7-25). Noteworthy neighboring sites like Böyük Kəsik in Azerbaijan and Orchosani in Georgia have yielded an array of significant administrative documents. These artifacts, crafted from baked clay, exhibit circular,

semi-circular, and oval shapes, equipped with suspension holes, and adorned with motifs depicting animals and geometric designs. The earliest documentation of seals originating from northwestern Iran traces back to the Early Bronze Age and the Kura-Araxes period. These early instances encompass discoveries of both cylinder and stamp seals unearthed from sites like Kul Tepe Gargar, Kohneh Shahr, and Yanik Tepe (Abedi 2022).

This study pursues several primary objectives. Initially, it aims to comprehensively review and scrutinize the evidence pertaining to administrative management practices during the Chalcolithic period in Northwest Iran. Secondly, it seeks to investigate the social and economic advancements alongside examining the evidence of administrative management in Northwest Iran, focusing on cultural exchanges with neighboring regions. Additionally, the paper endeavors to analyze and explore the significance of administrative management techniques in Northwest Iran during the Chalcolithic period, shedding light on both intra-regional and extra-regional developments, and elucidating communication methodologies prevalent within prehistoric societies during this era.

2.Methodology

The methodology employed in this research is structured upon descriptive-analytical studies involving cultural data sourced from fieldwork and extensive library research conducted at excavation sites. Subsequently, analyses are conducted utilizing administrative data obtained from prehistoric societies of the Chalcolithic period situated in northwestern Iran.

3.Research Background; The Currently Available Corpus of Seals in NW Iran

According to archaeological investigations, there exists a scarcity of data and analyses concerning administrative management within Chalcolithic societies in northwest and western Iran. Such analyses encompass artifacts like seals and their impressions, which serve as reflections of the intricate social and economic dynamics of the era. Predominantly, the available data related to administrative documents predominantly stem from the cultural sites situated in the Ghezel Ozan River basin of Zanjan province. Notable sites contributing to this information include Soha Chay Tepe (Rahimi-Sorkhni, 2007), Chakhmaq Luq (Ali Beigi et al., 2012: 11-19), Tepe Kul Yeri (Caravanserai) (Ali Beigi et al., 2014: 239-235), Qeshlaq Chehel Amiran (Sharifi 2020; Motarjem, 2013), Kalnan (Saed Mucheshi et al., 2016: 48), Talwar site No. 11 (Valipour et al., 2016), Kul Yeri clay casting mold (Khosravi & Niknami, 2021: 60-61), Gerdi Ashowan (Sharifi, 2019: 239), and Tepe Chay Khoy (Gravand et al., 2022: 151-152), where various administrative artifacts have been unearthed, such as stamp seals, seals, tokens, and other significant materials. Notably, only three cylindrical and stamped seals have been documented from Bronze Age sites in northwest Iran, two from Kul Tepe Gargar (Abedi, 2016: 102; Abedi 2022), and one from Kohneh Shahr site (Alizadeh et al., 2018). Additionally, administrative documents from the South Caucasus region have been sourced from sites like Alkhan Tepe (Axundov, 2021: 724), Böyük Kəsik in Azerbaijan (Museyibli, 2009:16), Orchosani with its circular and semi-circular clay seals (Gambashidze et al., 2010: 284 & 439), and Kaghchaghbiur site in Georgia with its stamp-shaped seals (Shanshashvili & Sherazadshvili, 2013: 20; Abedi 2022).

4. North-Western and Western Iran and Southern Caucasus; Sites and Data Studied in This Research

The study encompasses the northwestern provinces of Iran, focusing on reported administrative evidence from notable sites such as Soha Chay, Tepe Koulyeri, Tepe Chay, and Chakhmaqluq. Furthermore, the research will also explore significant sites in the South Caucasus region as part of its investigation (Figure 1).

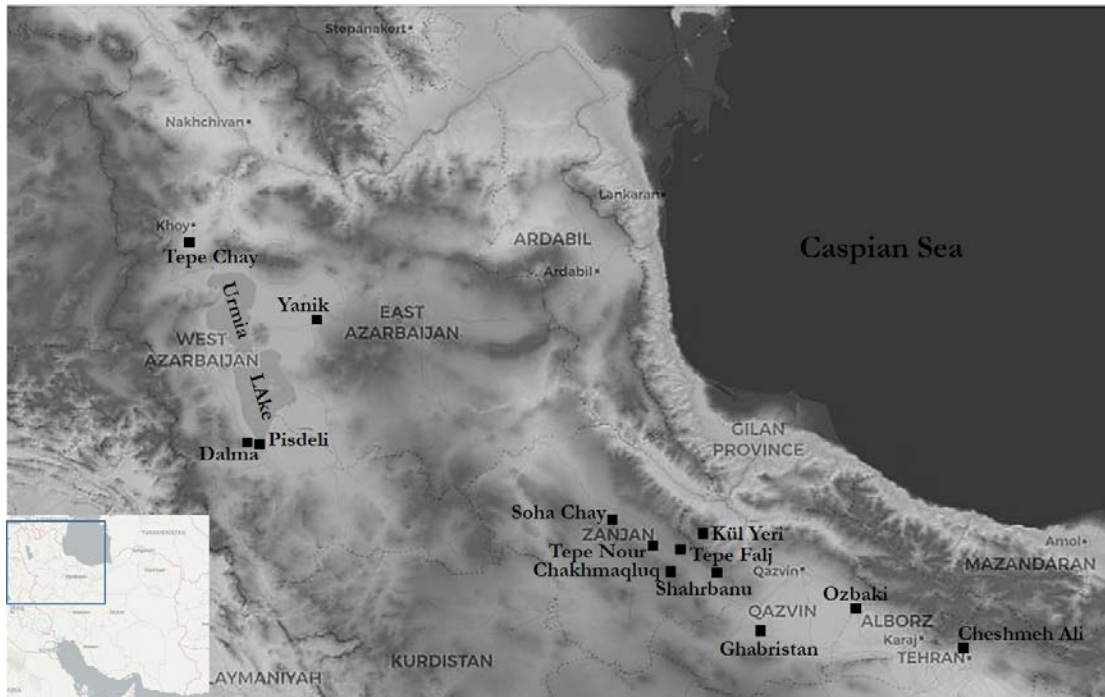


Fig. 1. Geographical location of the study area (authors, 2023)

In northwestern Iran, the fifth and fourth millennia Chalcolithic culture of this region is delineated into two periods: firstly, the Dalma culture identified as Hasanlu IX, and secondly, the Pisdeli culture classified as Hasanlu VIII (Dyson, 1965, 1968). Recent research has proposed updated chronologies for the Chalcolithic era, specifying the Dalma period (500-4600/4500 BC) and LC 1-3 (4500-3700 BC) (Khazae et al. 2011; Abedi et al. 2014; Abedi et al. 2015; Abedi and Omrani 2015; Abedi 2016; Abedi 2017). Archaeologists note that the Chalcolithic period coincided with the initial phases of copper metallurgy (Bakhshaliyev and Marro, 2015: 5). The northwestern region of Iran and the Caucasus have long held significance in West Asian archaeology due to their proximity to influential cultural areas like Anatolia, Zagros, Mesopotamia, and Central Asia. Specifically, the northwest of Iran is recognized as a crucial cultural and geographical area in the prehistory of the Iranian plateau (Tala'i, 2010: 63-64). During the Chalcolithic era, early village societies experienced a zenith of prosperity, signifying a gradual departure from Neolithic patterns and the emergence of Chalcolithic cultures across a vast geographical expanse (Ibid.: 1). Key components characterizing Iran's Chalcolithic period include technological advancements in metallurgy, amplified agricultural production facilitated by irrigation, specialization in professions, extensive trade networks, augmented complexity in religious and ritual practices, new social hierarchies, and evolving burial customs (Matthews & Fazeli Nashli, 2022: 111).

Excavation projects yield diverse data encompassing ceramics, bone remnants, botanical specimens, metals, and more. Archaeologists and multidisciplinary scientists conduct extensive research on these findings, exploring aspects such as socio-economic structures, ceramic compositions, osteology, botany, identification of indigenous and foreign metal mines/ores, and dietary diversity. Alongside these sources, crucial insights are gleaned through administrative management techniques, internal control mechanisms, interactions with neighboring regions, and commercial transactions involving seals, seal impressions, tokens, and similar artifacts. Seals and their impressions are commonly discovered in conjunction with other archaeological remnants like pottery shards and animal remains, notably within storage spaces, residential areas, ritual sites, and excavated pits. Seal impressions stand as pivotal evidence of administrative procedures employed to seal clay containers, baskets, bags, and bundles for storage purposes, functioning as a form of authentication and safeguarding against tampering (Wright & Johnson, 1975: 271). From an iconographic perspective, seals, seal impressions, and symbols have been identified and dated back to the early stages of the Neolithic period (Amiet, 1997: 83).

4-1. Tepe Soha Chay: In the northwest region of Iran, a significant collection of administrative documents has been sourced from the Ghezal Ozan cultural realm within Zanjan province. Sohachay stands as a quintessential Chalcolithic site meticulously studied for its rich data. Tepe Sohachay represents a singular-period settlement, linked to the concluding phase of the 5th millennium BC. Positioned within the Sohachay Valley in southwestern Zanjan, the site rests at an elevation of 1,650 meters above sea level, predominantly yielding pottery data. Beyond pottery, excavations unveiled seals, seal impressions, metal lids, bone tools, clay artifacts, figurines, stone tools, obsidian, plant remains, and small bones (Rahimi and Eslami, 2018). Despite its modest dimensions, Sohachay exhibits substantial evidence of seals and seal impressions (Refer to Figure 2), signifying its prominence during the Chalcolithic era. Radiocarbon dating estimates the settlement's duration at approximately 300 years, relying significantly on the nearby river and fertile environs for sustenance. Absolute dating places this historical site within the period of 4369-3964 BC. Analyses conducted by Rahimi-Sorkhani suggest connections and parallels between the materials retrieved from this site and artifacts related to the Dalma period found in various locations, including the Urmia Lake basin, Lavin Tepe in the Little Zab basin, Kalnan Tepe in Kurdistan province, Ghosha Tepe in Meshginshahr, Cheshmeh Rajab in Simareh, and Dalma pottery discovered in the Kangavar plain (Ibid).



Fig. 2. The seal and seal impression of the Dalma period from Sohachay Tepe (Aali, 2006)

4-2.Chakhmaghluq Tepe: Among the array of sites revealing management evidence, the Chakhmaghluq Abhar site stands out, situated within the Abhar Rud River basin. A total of 25 sites linked to the Chalcolithic era have been documented in this basin. This noteworthy increase in site numbers during this period denotes a substantial rise in population and settlement growth compared to preceding eras. The Chalcolithic sites span diverse terrains, encompassing both plains and mountainous regions. Elevations of these sites range between 2,150 and 1490 meters above sea level, exhibiting a wide altitude spectrum. Spatially, these Chalcolithic sites predominantly cluster around water sources, frequently within distances of less than 200 meters (Khosravi et al., 2012: 131-154). Notably, among the significant cultural artifacts discovered within these sites, a pottery piece bearing a seal impression from the Late Chalcolithic period was excavated at Chakhmaqluq (Figure 3) (Ali Beigi et al., 2011: 11-19).

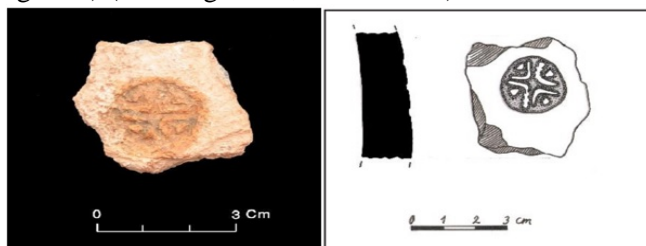


Fig. 3. A piece of pottery with a seal impression from Chakhmaqluq – Late Chalcolithic (Khosravi et al., 2012: 144)

The prevalence of Chalcolithic sites is notably more pronounced in the southern basin of Abharchay and along the western edge of the Ghezel Ozen river in Zanzan's western region compared to its northern basin. This distinction may be attributed to the discernibly distinct environmental conditions prevailing between the northern and southern banks of the Abhar Rud basins. Most of these sites comprise small settlements, likely serving as temporary habitation, relying primarily on agriculture, animal husbandry, and hunting for sustenance. Notably, settlements situated above 1700 meters suggest a probable association with nomadic pastoral communities. Scholarly investigations indicate that the prehistoric cultures in this area share commonalities with those found in the northwestern, western, and central plateau regions of Iran (Khosravi et al., 2008: 37-52; Saed Mucheshi, 2012: 41).

4-3.Tepe Kulyeri: The archaeological site of Kulyeri (Tepe Karvansara) situated in the eastern region of Zanzan is notable for its stratigraphic data detailing distinct cultural periods (Figure 4). This site underwent excavation in 2012 under the direction of Sajad Alibeigi. The exploration and surveying efforts unveiled a significant collection of Dalma pottery tradition (manipulated, impressed, scratched, and horn-handled). Additionally, several valuable items were discovered, including a stamp seal, two seal impressions, numerous counting objects (tokens), two copper awls, a metalworking mold, an animal figurine, as well as chipped stone and two stone beads. Occupied during the Early and Middle Chalcolithic periods, this site likely served an industrial purpose and was possibly re-inhabited during the Iron Age. The documented seals and seal impressions found here suggest administrative and supervisory evidence conceivably linked to ancient metallurgical activities in the highland regions west of the central plateau of Iran and the eastern area of Zanzan province during the late 5th millennium BC (Ali Beigi et al., 2013: 235-239). Scholars have acknowledged the

significance of seals (bullae) as administrative artifacts, indicative of administrative, managerial procedures, and monitoring mechanisms prevalent within ancient administrative offices and institutions (Zettler, R. L., 1987). The administrative documentation recovered from Kulyeri notably includes stamp seals and seal impressions.

During the excavation conducted in Trench 1, a flat seal crafted from soapstone, specifically Steatite, was unearthed. This seal bears a geometric motif etched with deep lines on one of its surfaces. The motif comprises five nested rectangles with a simple line running through the center of the smallest rectangle (Figure 5). Although similar specimens of this seal were not directly retrieved from the excavations at Kul Yeri (Tepe Karvansara), analogous seals have been found at sites like Qeshlaq Chehel Amiran (Motarjem, 2013), Kalnan (Saed Mucheshi et al., 2010, Fig. 17: 48), Sohachay Tepe (Rahimi Sorkhani et al., 2015), Chakhmaqluq (Ali Beigi et al., 2011: 15 and 17) (Figure 3), and Talwar No. 11 (Valipour et al., 2010). These settlements exist within the same historical period as Kulyeri and exhibit resemblances in terms of such artifacts. The discovery of two seals within the site holds substantial significance, implying notable implications. One of these seals exhibits a circular shape measuring 26-29 mm in diameter, adorned with checkered motifs covering its surface. The seal features four square rows of nearly identical size arranged across its surface, creating a distinct and clear impression. Additionally, there is a thread passing through the hole in the seal, presumably used for sealing vats or jugs. Traces of these threads indicate their role in sealing and securing the lids of the containers. Another seal impression, also circular and embellished with checkered motifs, was retrieved from Context 004 within Trench 1 (Figure 6) (Khosravi, 2015: 192).



Fig. 4. A general and close view of the excavations from the Kulyeri site (Khosravi & Niknami, 2021: 59)



Fig. 5. Stamp seal made of soapstone obtained from Kulyeri site (Khosravi, 2014: 191)

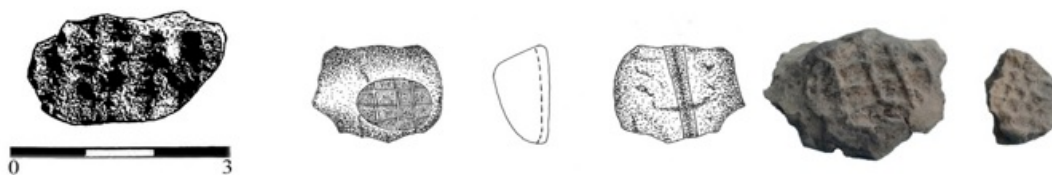


Fig. 6. A seal impression with open checkered motifs from Kulyeri site (Khosravi, 2015: 192)

Six small clay tokens were recovered from Contexts 001 and 007 within Trench 2, retrieved from the surface context. These clay artifacts exhibit a buff and dark buff coloration, measuring 15 to 25 mm in diameter and possessing a thickness ranging from 5 to 8 mm. Similar token samples have been documented from various sites across the central Iranian plateau. These pieces manifest a cone-shaped structure (Figure 7). The presence of seals, seal impressions, and tokens within the site likely suggests a system of exchange and trade between sites sharing the same historical context in the broader region. This presence also signifies the potential existence of economic management, or more broadly, management systems, possibly pertaining to economic or political structures (Khosravi, 2014: 192; Khosravi, 2015: 192). Moreover, clay and stone tokens akin to those found at Kulyeri were excavated from Tepe Qeshlaq Bijar, exhibiting diverse shapes and found abundantly (Sharifi, 2020: 236, Figs. 1-6; Sharifi, 2019: 236-239). These symbols, such as seals, seal impressions, and bullae, possibly facilitated the transfer of abstract mental-auditory concepts into visual-tactile representations. This pragmatic application allowed individuals to perceive and touch these concepts. Furthermore, the utilization of these symbols facilitated the inspection of goods, aiding in categorizing merchandise, laying the groundwork for organizing hierarchical commercial management techniques (Motarjem and Sharifi, 2013: 46-27).

During the comprehensive surface survey conducted at the site, various significant artifacts were discovered, including a clay casting mold, raw copper stones, and copper fragments. These items were found scattered among several pits and excavated sections within the area. Considering the challenges associated with transporting relatively large and weighty pieces of copper ore, it can be inferred that the site is situated in proximity to primary deposits of copper ore, a supposition supported by geological maps. However, the specific mine responsible for the extraction of the copper ore has yet to be definitively identified. Moreover, among the findings are stone objects such as anvils (Figure 8) (Khosravi & Niknami, 2021: 62), akin to those recovered from the Arisman site (Helwing 2011), which were likely utilized in the copper metal extraction process. Regarding the noteworthy discoveries linked to industrial and metallurgical activities at Kulyeri, mention can be made of the copper awls and hand stone. The clay molds found, measuring 22 cm in length and 7 cm in width, exhibit six relatively parallel rows of grooves, likely employed in the shaping of narrow bars (Figure 9) (Khosravi & Niknami, 2021: 60-61).

Regarding its chronological classification, Kulyeri is proposed to correspond to the Dalma/Early Chalcolithic period (Khosravi, 2015: 194). Conversely, excavations at Tepe Gerdi Ashowan unearthed copper, obsidian, and shell artifacts dating back to the Late Chalcolithic period. These findings underscore the existence of management activities, internal control systems, and trade-economic relationships with distant or nearby neighboring regions (Sharifi, 2019: 239).

Analogous clay molds used for casting purposes, akin to these samples, have been documented at the Qalayeri site in the Republic of Azerbaijan (Figure 10) (Museyibli, 2019) and Orchusani in Georgia (Figure 11) (Gambashidze et al., 2018) within the South Caucasus region. Through analysis of the cultural data acquired, these artifacts are believed to be associated with the Leyla Tepe culture. Further comparison and examination of these findings may illuminate their connections with regions including Eastern Anatolia, Northern Mesopotamia, and the Maikop culture in the North Caucasus during the 4th millennium BC (Museibli, 2019: 63-76).

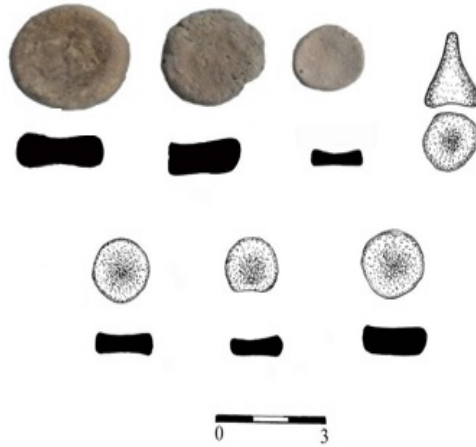


Fig. 7. Clay tokens discovered from the Kulyeri (Khosravi, 2015: 194)



Fig. 8. stone objects from the Kulyeri (Khosravi & Niknami, 2021: 62)



Fig. 9. Blacksmithing crucible from the Kulyeri (Khosravi & Niknami, 2021: 62)



Fig. 10. Four-groove clay mold from Qalayeri (Museibli 2019: 74)

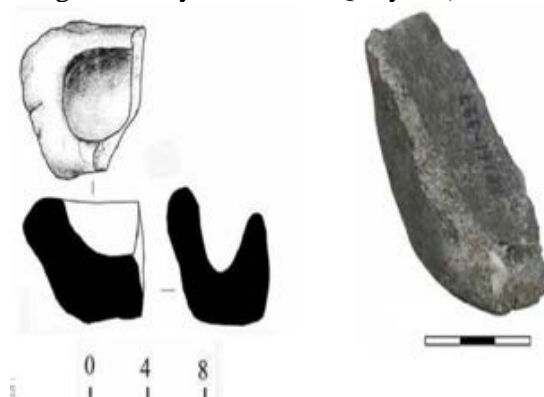


Fig. 11. Stone molds from Orchusani (Gambashidze et al. 2010: 441 & 442)

4-5. Tepe Chay Khoy: Tepe Chay stands as a multi-period archaeological site positioned approximately 10 kilometers southeast of Khoy city, situated at an elevation of 1181 meters above sea level. Unearthed findings at the site, including obsidian chipped stones, mud-brick remnants, and variously sized pieces of furnace welds, strongly indicate Tepe Chay's utilization as an industrial site during prehistoric eras. Through excavations, researchers have delineated four distinct occupational periods, with the stamp seal associated with the fourth period categorized under the Late Chalcolithic 3 phase (LC3). The discovery of the stamp seal signifies the intricate social and economic fabric of the communities dwelling within the site. Furthermore, it suggests that the society was at the precipice of transformation, transitioning into novel cultural complexities (Garavand et al., 2022: 151-152). In the northwestern region of Iran, only two seal samples—a cylinder and a stamp seal—have been documented thus far, originating from the Bronze Age sites at Kul Tepe Gargar (Abedi, 2015: 102; Abedi 2022). The Tepe Chay clay stamp seal measures 30 mm in length and 25 mm in width. It features a straightforward carved excised decoration on its surface, housing a 3-mm hole at its center designed for suspension. The seal's surface is segmented into two parts, followed by seven horizontal lines etched below this division line (Figure 12). Alongside the stamp seal, various cultural artifacts, including stone beads, polished stone objects, obsidian tools, among others, have been documented at Tepe Chay (Garavand et al., 2022). Moreover, the excavation at Tepe Qeshlaq yielded an array of administrative artifacts, including clay and bone flat and cylindrical seals, along with seals and tokens displaying diverse shapes such as round, button, horn-shaped, disk, oval, spherical, conical, barrel, and hyperbolic forms. Predominantly, these administrative materials were recovered from phase IV. The absolute dating of this phase indicates a timeframe around 3915 ± 270 BC (LC2-3). The geometric motifs engraved on these seals and

impression seals signify their role in facilitating regional and foreign trade activities. By comparing the tokens, stamp seals, and obsidian stones, parallels have been drawn between the pottery discovered at Tepe Qeshlaq and those found in sites across the Urmia Plain (West Azerbaijan), southwest Iran, and Mesopotamia. This correlation suggests that the inhabitants of Tepe Qeshlaq engaged in commercial and economic interactions with individuals from Chalcolithic societies (Sharifi, 2019).



Fig. 12. Stamp seal of Tepe Chay (Gravand et al., 1401: 157)

4-6. Gerdi Ashowan: The recently excavated Gerdi Ashowan site in Piranshahr yielded cultural artifacts such as obsidian tools, shell fragments, and copper pieces, primarily indicative of commercial activities and internal control mechanisms. These findings suggest a cultural affinity between the Late Chalcolithic pottery collections from Gerdi Ashowan and sites in northwest Iran, Anatolia, Caucasus, Mesopotamia, and Syria. Research outcomes illustrate the coexistence of communities in Gerdi Ashowan with cultural resemblances to regions in Northwest Iran, North Mesopotamia, Caucasus, and Anatolia, suggesting cultural similarities. The geographical positioning of the Urmia Lake basin has historically served as an interconnecting route, with Gerdi Ashowan potentially playing a role as a midpoint and communication hub, a notion supported by the discoveries of obsidian, shell, and metal artifacts. During the 4th millennium BC, the Late Chalcolithic 2 and 3 Chaff-faced Culture (CFW) expanded on this site, later succeeded by the influence of the Kura-Araxes culture at the beginning of the 3rd millennium BC, replacing the former (Sharifi, 2019: 488-488). Additionally, shells and obsidian from the Tepe Qeshlaq area, particularly the obsidians, suggest origins from Caucasian and Anatolian regions (Sharifi, 2020: 305, fig: 87-6; Sharifi, 2019: 305-298). The vicinity of Tepe Qeshlaq boasts abundant mineral resources, including chert and high-quality river flint. Notably, findings include a sample of copper sulfate rock and a stone mold for copper molding (Table 1) (Ibid., 2019: 317).

The inception of archaeological investigations in the South Caucasus traces back to the 19th century, wherein the Chalcolithic period was denoted as the Eneolith cultural era. Within this period, archaeologists have discerned two distinctive cultures, the Kura-Araxes and Maikop cultures, existing within the North Caucasus geographical area. Hence, the Kur and Aras rivers within the Caucasus basin are often referred to as the Mesopotamia of the Caucasus. Notably, prominent archaeologists like Kuftin, Issen, and Səlimxanov conducted investigations and scholarly examinations of this region in the 19th century (Avşarova & Pirquliyeva, 2010: 51-52). The field of prehistoric archaeology within the Caucasus region has gained favor among Western archaeologists' field projects (Lyonnet & Quliyev, 2010: 85-98). Among the sites in the South Caucasus, the Alkhan Tepe site has yielded administrative documents. Seals recovered from this site exhibit semi-circular forms, perforations, polished texture, and are crafted from raw clay. Notably, these seals feature 11 irregularly placed small dimples on their surface

(Fig. 13), suggesting plausible associations with counting or possibly indicating the sealing of specific items (Axundov, 2021: 724).

Furthermore, notable administrative records were recovered from the Böyük Kəsik site in the Republic of Azerbaijan, attributed to the Leyla Tepe culture, which stands as a crucial site within the South Caucasus. Within this site, two clay seals, circular and semi-circular in shape, were unearthed. These seals were designed with a hole to allow thread passage for hanging. As depicted in Figures 14 and 15, these seals exhibited engraved animal motifs and nail-shaped lines (Museyibli, 2009:16). Orchosani, situated in the southwest of Georgia, represents a site dating back to the Chalcolithic and Bronze Age periods, revealing typical administrative artifacts like seals. Positioned at an elevation of 1200 meters above sea level and situated alongside the Poteskhoy River, Orchosani presented perforated rhombic seals (Figure 16), dome/stamp-shaped with grid motifs (Gambashidze et al., 2010: 284 & 439). Furthermore, Figure 17 illustrates significant stamp-shaped seals acquired from Kaghchaghbiur, regarded as crucial administrative documents (Shanshashvili & Sherazadhshvili, 2013: 20; Abedi 2022).



Fig. 13. Clay seals from Alkhan Tepe (T.İ.Axundov, 2021: 724)

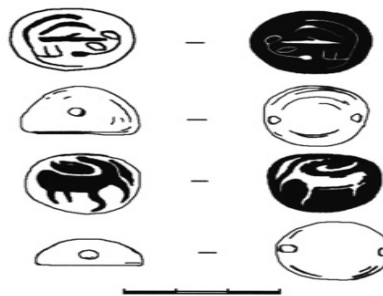


Fig. 14. Clay seals from Böyük Kəsik (Museyibli, 2007:16)

Fig. 15. Clay seals from Böyük Kəsik (Нариманов и др. 2007, стр. 62)



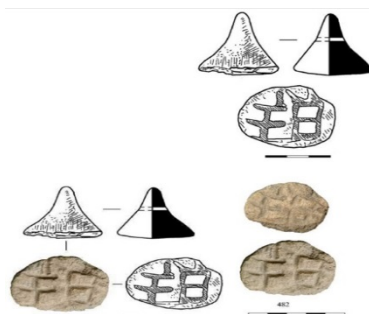


Fig. 16. Rhombus-shaped seals from Orchosani

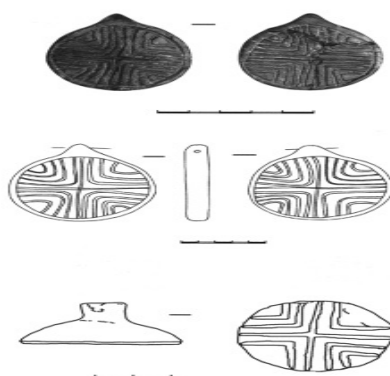




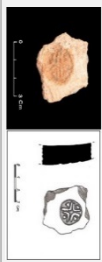
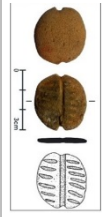



Fig. 17. Stump-shaped seals from Kaghchaghbiur trading area (Gambashidze et al., 2010: 284 & 439; Shanshashvili & Sherazadshvili, 2013: 2)

Table x. Sites containing seals and impression seals (administrative documents) from northwest Iran

No.	Site name	Seal sample	Impression seal sample	Geographical coordinates	Area (m ²)	Site height (m)	Elevation from sea level (m.a.s.l)	Overlooking one of the natural resources	Cultural period	Geographical coordinates	Reference
1	Sohachay Tepe			3919097 4822784	156	-	1650	Sohachay	Chalcolithic and Paleolithic	Zanjan	Rahimi Sarkhani et al. (2016: 56)
2	Kulyeri			3615385 4924358	-	12	1704	A mountainous area-Yengechay River	Chalcolithic and Neolithic	Abhar	Khosravi et al. (2009: 40)

3	Tepe Chakhmaqluq		-	2500	-	2002	A mountainous and uneven area	Chalcolithic and Neolithic	Abhar	Khosravi et al. (2012: 144)	
4	Tepe Chay		-	4254789 499552	Less than 10,000	1	1181	An intermountain Plain	Chalcolithic, Neolithic, and Paleolithic	Khoy	Gervand et al. (2022: 141-167)
5	Tepe Falaj		-	36° 11' 38.7"N 49° 2' 43.0" E	12 × 1002	6	1497	A mountainous and uneven area	Chalcolithic, Neolithic, Iron Ages, and Islamic era	Khordareh	Khosravi et al. (2009: 41)

5. Conclusion

The current investigation discloses documentation concerning management, oversight, and regulation within the Chalcolithic communities of northwestern Iran. Notably, these documents are predominantly sourced from architectural spaces, charred pit deposits, burnt refuse areas, and kitchen zones. These discoveries serve as foundational evidence in reconstructing the management, social dynamics, economic structures, and potentially political systems during the Chalcolithic era.

The administrative management evident in prehistoric societies signifies the intricate social supervision exerted by a group identified as social elites over another group, termed as followers or internal control. These administrative artifacts encompass seals, seal impressions, and various types of tallying instruments, which have been sparsely acquired and examined within the northwestern region of Iran. The administrative records originating from Tepe Chay, Chakhmaqluq, Kulyeri Tepe, Soha Chay Tepe, Tepe Falaj, Tepe Qeshlaq, and Tepe Kelnan offer an opportunity to explore expansive trade networks, economic pursuits, societal intricacies, and cultural exchanges with neighboring regions within the northwestern Iranian plateau.

Seals and seal impressions engraved on clay tablets stand as some of the most invaluable remnants from prehistoric and historical societies on the Iranian plateau. A systematic analysis and examination of these artifacts afford archaeologists and art historians the means to scrutinize the material and spiritual dimensions of ancient cultures, symbols of authority, and societal hierarchies. Furthermore, these artifacts signify ownership and the transfer of commodities over prolonged periods. The scrutiny of these materials is paramount in elucidating administrative cultures, local and foreign commodities, as well as trade activities, be they local or across vast distances.

In the surrounding regions where administrative documents have been retrieved, notable sites encompass Tepe Khaleseh in Zanzan, the ancient Alu site in Qazvin, Tepe Zagheh

in Qazvin, and Tapeh Qeshlaq in Bijar within the central Iranian plateau. Additionally, sites such as B y k K sik in the Republic of Azerbaijan, representing the Chalcolithic era (the earliest instance in the South Caucasus region), and the Orchusani in Georgia within the South Caucasus, are noteworthy. These seals exhibit circular, semi-circular, and oval shapes, featuring perforations designed to accommodate threads for suspension, and are crafted from fired clay, displaying depictions of animal and geometric motifs.

During the Chalcolithic periods in northwestern Iran, archaeological findings point to the presence of administrative documentation within this geographic area. These discovered documents, encompassing seals, seal impressions, and tokens, reflect the application of administrative management/internal control techniques, indicating the emergence of heightened societal intricacies and the facilitation of industrial specialization, particularly in metal manufacturing. This documentation suggests an improved means of communication among the region's inhabitants. The proximity between the mountainous and lowland areas represents short-distance interactions. In contrast, the connectivity with the central Iranian plateau, the South Caucasus, and even Mesopotamia denotes long-distance associations. The discovery of seals, seal impressions, tokens, and the utilization of administrative management/internal control techniques underscores the progression of societal complexity and the establishment of industrial specialization, particularly in metal production. This advancement has fostered enhanced communication between the highlands and lowlands in a localized context, while also fostering connections with the central plateau of Iran, the South Caucasus, and even Mesopotamia, signifying long-distance interactions.

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بررسی و مطالعه باستان‌شناختی مدارک مدیریتی جوامع دوره مس و سنگ شمال غرب ایران

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چکیده

بررسی و مطالعه مدارک مدیریتی مانند سایر داده‌های باستان‌شناختی، همواره در مطالعات باستان‌شناسی و جامعه‌شناسی دارای اهمیت بوده است. چنین پژوهش‌هایی می‌تواند در بازسازی نظام مدیریتی، اجتماعی، اقتصادی و حتی سیاسی مورد توجه قرار گیرد. در واقع مدیریت اداری در جوامع پیش از تاریخ نشان‌دهنده پیچیدگی‌های اجتماعی و نظارت گروهی از افراد جامعه (به‌عنوان سرگروه/رهبر) به گروهی دیگر (به‌عنوان زیرگروه/پیرو) است که از آن به‌عنوان کنترل داخلی نیز نام می‌برند. از مدارک مدیریتی می‌توان به مهرها، اثر مهرها و انواع اشیا شمارشی اشاره کرد. این‌گونه داده‌های فرهنگی به‌ندرت از منطقه شمال‌غرب ایران به دست آمده و مورد مطالعه قرار گرفته‌اند. هدف از نگارش پیش‌رو، معرفی، بررسی و مطالعه داده‌های مدیریتی دوره مس‌وسنگ منطقه شمال‌غرب ایران است که با روش توصیفی - تحلیلی انجام یافته است. در رابطه با مدارک و شواهد مدیریتی دوران پیش از تاریخ شمال‌غرب ایران سؤالات زیادی هنوز بدون پاسخ مانده است پرسش‌هایی نظیر اینکه آیا شواهدی از مدارک و داده‌های مدیریتی از جوامع دوره مس‌وسنگ شمال‌غرب ایران وجود دارد؟ و اینکه بر اساس این داده‌ها چگونه می‌توان بحث مالکیت و مدیریت در پیش از تاریخ پایانی شمال‌غرب مورد تجزیه و تحلیل و ارزیابی قرار داد؟ پاسخ به این مجهولات می‌تواند افق روشن و پیش‌زمینه‌ی مناسبی برای مطالعات این نوع موضوع در شمال‌غرب ایران را فراهم آورد. پژوهش حاضر بر اساس داده‌های مدیریتی به دست آمده از محوطه‌های تپه چای خوی، چخماق لوق، تپه کول پری (تپه کاروانسرا)، سها چای تپه و غیره سعی بر آن دارد تا به ارزیابی شواهد مدیریتی در شمال‌غرب ایران بپردازد. بر اساس مواد فرهنگی برجای مانده و نتایج پژوهش‌های به‌دست‌آمده، می‌توان پدیده‌هایی مانند تجارت دور بُرد، فعالیت‌های اقتصادی، پیچیدگی‌های اجتماعی و برهمکنش‌های فرهنگی با مناطق همجوار را در شمال‌غرب ایران مورد بررسی قرار داد.

واژه‌های کلیدی: شمال‌غرب ایران، مدارک مدیریتی، دوره مس‌وسنگ، فعالیت‌های اقتصادی - تجاری، مناطق همجوار.