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## Village Period Cultivation of Faba Bean (Vicia faba L.) at Chega Sofla, Southwestern Iran: New evidence from the Southeastern Fertile Crescent

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**Abstract**

The origin and early dispersal of faba bean (Vicia faba L.) remain difficult to reconstruct due to the absence of extant wild progenitors and the limited preservation of archaeobotanical remains. This study presents new evidence for faba bean cultivation from the Late Village Period site of Chega Sofla, in southwestern Iran. Seven charred faba bean seeds, recovered from a storage context associated with an in situ burning event, were identified and analyzed morphologically. One seed was dated using AMS radiocarbon analysis, yielding a calibrated age of 6486–6387 cal BP. Morphometric observations indicate that the Chega Sofla faba beans belong to a small-seeded type and are generally smaller than many published assemblages from contemporaneous or later sites in Southwest Asia and Europe. Given the limited sample size and the effects of charring on seed morphology, these observations should be regarded as descriptive rather than explanatory. Nevertheless, the securely dated remains provide direct archaeobotanical evidence for faba bean cultivation in southwestern Iran during the Chalcolithic and contribute to refining the spatial framework of early legume agriculture beyond the Mediterranean core of the Fertile Crescent. The findings highlight the role of crop diversification and storage practices in the agricultural systems of southern Iran in the Village Period.

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## 1. Introduction

Faba bean (Vicia faba L.), one of the oldest food legumes cultivated by humans, is not only for human consumption, but also a good source of supplemental protein for livestock and poultry (Crépon *et al.,* 2010; Duc *et al.,* 2010; Smýkal *et al.,* 2015; Punia *et al.,* 2019; Meng *et al.,* 2021). According to the Food and Agriculture Organization of the United Nations (FAO), as of 2023, faba beans are cultivated in 66 countries and regions worldwide, covering a harvested area of 2.78×106 ha with a total production of 6.07×106 t (FAO, 2024). Modern agricultural systems play a crucial role in sustainable agriculture by cultivating faba beans to improve soil fertility, reduce greenhouse gas emissions, optimize cropping systems, and enhance soil structure and water use efficiency (Jensen *et al.,* 2010; Köpke & Nemecek, 2010; Zong *et al.,* 2019).

Available archaeological and genomic evidence suggests that faba beans were originally domesticated in Southwest Asia (Zohary & Hopf, 1973; Kislev, 1985; Tanno & Willcox, 2006; Caracuta *et al.,* 2016). According to archaeobotanical evidence and studies of extant plant populations, the origin and wild ancestry of the faba bean likely lie in the eastern Mediterranean Basin, from where it spread with the expansion of agricultural communities into Europe, India, and Ethiopia (Zohary & Hopf, 1973; Cubero, 1974; Wang *et al.,* 2012). At the Bronze Age site of Tel Kabri in Levant the cultivation of small-seeded faba beans was intensively managed, and their combination with other legumes highlights the diversity and ecological adaptability of the household economy during that period (Nicoli *et al.,* 2023). Research at the Gabii site in Iron Age Italy indicates that faba beans already played a significant role in the agricultural systems and land management strategies of the period (Gavériaux *et al.,* 2024). Taking the agricultural development of southern Italy around the medieval period as an example, the diffusion and evolution of faba bean types show a clear chronological pattern: only the small-seeded type was cultivated before the early Middle Ages; the medium-seeded type first appeared in archaeological contexts dating to the 8th century; and reliable evidence for the large-seeded type does not emerge until after the 12th century (Fiorentino *et al.,* 2026). According to the archaeobotanical records and phylogenetic studies, the wild ancestor of the faba bean was likely fully transformed into a cultivated species during domestication, result in the absence of wild populations today; Moreover, its domestication process appears to have differed from that of the major crops traditionally cultivated in the Fertile Crescent, such as barley and wheat (Leht, 2009). Today, faba beans are generally classified into three varieties based on seed size: large (Vicia faba var. major), medium (Vicia faba var. equina), and small (Vicia faba var. minor) (Cubero, 1974; Nadal *et al.,* 2003). Large-seeded faba bean types are used for human consumption, while small-seeded types serve mainly as livestock feed, fertilizer, and rotational nitrogen-fixing crops (Crépon *et al.,* 2010; Temesgen *et al.,* 2015). Archaeological evidence shows that from the Early Neolithic through the Roman period, faba bean varieties predominantly belong to the var. minor type (Zohary *et al.,* 2012). Larger-seeded types (such as V. faba var. major) appeared much later, and there are notable East-West geographic differences in seed morphology from the same period (Zohary & Hopf, 1973). However, the wild population

of cultivated faba bean remains unclear and may have been geographically limited or extinct (Terzopoulos & Bebeli, 2008; Rottenberg, 2020).

In summary, archaeological evidence of faba bean cultivation in ancient agriculture illuminates the spatial-temporal context and evolutionary trajectory of its origin, spread, diffusion, cultivation, and domestication. Additionally, studies of variety selection, agricultural adaptations, and changes in farming practices provide deeper insights into the social organization, economic structure, and cultural development of that period. Therefore, the present study, based on the chronological and morphological analysis of charred faba bean macrofossils from Chega Sofla, aims to supplement the archaeobotanical record of faba bean cultivation on the southeastern margin of the Fertile Crescent by providing temporal reference points for its dissemination. Building on this, the study attempts to explore the pathways of faba bean spread from the Mediterranean coast inland and the evolution of its diversity.

## 2. Analysis and decision

Chega Sofla (Fig. 1) is located in the southeastern part of the Fertile Crescent, within the transitional zone between the Zagros Mountains and the northern coast of the Persian Gulf. It lies on the Zohreh Plain, south of Behbahan city in Khuzestan Province, Iran, adjacent to the Zohreh River. The Zohreh River flows from the Zagros Mountains to the Persian Gulf, providing a stable water source for prehistoric agriculture and settlement. Although the site and the Behbahan Plain are separated by local ridges, they are connected via the Khairtabad River valley, which has historically facilitated transportation and cultural exchanges in the Zagros-Persian Gulf region (Dittmann, 1984). According to the Köppen-Geiger Climate Classification (Peel *et al.,* 2007), most of Khuzestan Province features tropical desert and tropical/subtropical steppe climates with highly seasonal precipitation primarily occurring in winter and spring, peaking in the mountainous areas; summer is hot and dry with scarce rainfall throughout the province. The site is located on a plain at an approximately elevation of 150 m, where annual precipitation is about 130-250 mm, which is lower compared to the mountains regions (Peel *et al.,* 2007; Raziei *et al.,* 2014).

In the 1970s, Hans Nissen from the Oriental Institute of the University of Chicago conducted archaeological reconnaissance in the Zohreh Valley and later on, Reinhard Dittmann carried out regional investigations of the fifth-millennium BCE sites in Behbahan region and the Zohreh Plain, reporting the site as “Chogha Sofla” and identifying it as one of the most important prehistoric settlements in the Zohreh Plain (Nissen & Redman, 1971; Dittmann, 1984; Moghaddam, 2016). Since 2015, Abbas Moghaddam has led the Zohreh Prehistoric Project (ZPP), which employs a multidisciplinary approach to systematically study the site (Moghaddam, 2016). In 2021, Chega Sofla was included on UNESCO’s Tentative List of World Heritage Sites under the title of “The Ritual Landscape”.

Chega Sofla covers approximately 180 hectares, including about 20 hectares of settlement area and roughly 160 hectares of cemetery (approximately 2000×800 m). Although undisturbed basal layers have not yet been reached and the earliest occupation remains uncertain, archaeological

evidence indicates that the site was occupied approximately between 5000 and 3700 BCE, making it one of the largest prehistoric sites in the northern Persian Gulf region (Moghaddam, 2016; Moghaddam & Miri, 2021).

### 3. Archeological sample collection

The charred plant remains analyzed in this study were recovered from Area A on the eastern mound of the site (Fig. 1c). Sampling was conducted in February 2017, specifically from Cluster No. 4 (Fig. 1d), which is located in the northeastern corner of Space 2 in Area A (Fig. 1d), at a depth of 74 cm above the site datum (Moghaddam, 2018).

Sampling strategy was context-driven rather than probabilistic and focused on a single, well-defined depositional unit in order to minimize Taphonomic mixing. The sediment samples (totaling 78 liters) were collected exclusively from Cluster No. 4, a dense concentration of charred

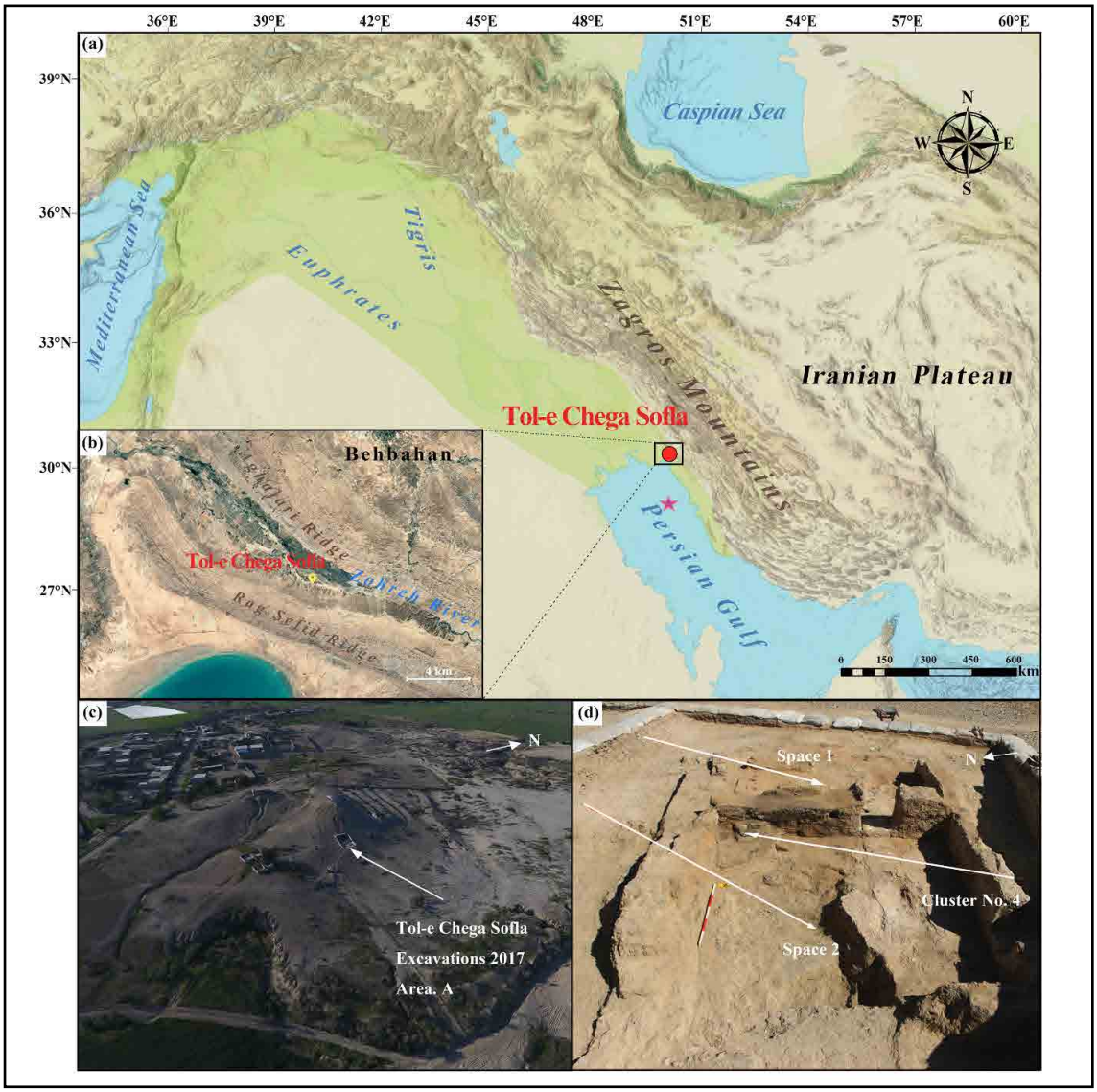



**Fig. 1: Comprehensive information map of Chega Sofla. a. Location map of the study area, and the area shaded in green on the map indicates the region known as the Fertile Crescent; b. Location map of the site; c. Aerial photo of the excavation area in Area. A (2017); d. Find spot of the plant macrofossils.**

plant remains directly overlying an occupation surface and associated with clear in situ burning indicators, including fired mudbrick fragments, ash lenses, and a heavily fire-blackened ceramic jar. No redeposited or secondary contexts were included. This targeted approach was adopted to ensure a high degree of contextual integrity and to allow the recovered plant remains to be interpreted as a single depositional episode related to storage and destruction by fire, rather than as an accumulation formed over an extended period.

To reduce identification bias, all legume remains were examined independently by multiple analysts and were only attributed to Vicia faba when diagnostic morphological traits were consistently observed, including overall seed shape, radicle morphology, and cotyledon configuration. Measurements were taken only from sufficiently preserved specimens to avoid distortion caused by intense charring or fragmentation. Given the known effects of carbonization on seed shrinkage and deformation, metric data were treated as comparative indicators rather than absolute size proxies. As a result, morphometric comparisons emphasize relative patterns across sites and periods rather than precise taxonomic thresholds.

Although the assemblage size is limited, the strict contextual control and the secure association with a single storage-related burning event allow the Chega Sofla faba bean remains to be interpreted with a high degree of chronological and behavioral confidence.

Identification and analysis of archaeobotanical remains

Firstly, the stored plant remains recovered from the site were subjected to detailed taxonomic identification. Identification was carried out using a Leica M205 C stereomicroscope through comparison with modern reference seed collections, published plates of archaeological plant remains, and relevant seed atlases (Bojňanský & Fargašová, 2007). After identification, the seeds were photographed, counted, and morphologically measured using LAS V4.12 software.

## 4. Chronology

A fragment of a faba bean seed was sent to the US Beta Laboratory for AMS14C dating. The result was subsequently calibrated using OxCal 4.4 online program (https://c14.arch.ox.ac.uk/oxcal/OxCal.html) and the IntCal20 database (Ramsey, 2009; Reimer *et al.,* 2020).

Only one faba bean specimen was selected for AMS radiocarbon dating due to the very limited number of well-preserved remains and the need to minimize destructive analysis. Among the recovered specimens, the dated seed fragment was chosen because it exhibited sufficient carbonized material for reliable measurement and derived from a secure, well-defined context associated with an in situ storage-related burning event. Given the strong contextual integrity of Cluster No. 4 and the absence of evidence for post-depositional disturbance, this single AMS determination is considered representative of the depositional episode that produced the faba bean assemblage. While additional dates would further refine the chronology, the present determination provides a robust temporal anchor for the assemblage within the Late Village Period.

## 5. Morphological analysis

Due to the relatively limited number of faba bean seed remains at archaeological sites and the

scarcity of morphological measurement data, this study compares the morphological measurements of faba bean remains from typical sites in Southwest Asia spanning the Pre-Pottery Neolithic to the Pottery Neolithic, and in Europe from the Bronze Age to the Iron Age. The main selected indicators include length, breadth, thickness, and the thickness-to-length ratio (T/L) of the faba bean seeds.

## 6. Results

### 6-1. AMS14C dating result

Previous studies have demonstrated that Chega Sofla was an important prehistoric settlement in the northern Persian Gulf region during the fifth millennium BCE and that, from the perspective of social evolution, the site flourished during the Later Village Period, a phase characterized by pronounced economic intensification in which the expansion of irrigation agriculture and the specialization of animal husbandry facilitated the accumulation of surplus, supported higher population densities, and marked a critical transition from relatively simple late Neolithic farming communities to more complex social structures (Hole, 1987; Moghaddam, 2016; Moghaddam, 2018; Moghaddam & Miri, 2021; Alirezazadeh *et al.,* 2024; Darabi *et al.,* 2024). Benefiting from the favorable irrigation conditions of the Zeydun Plain, Chega Sofla developed high-intensity cereal cultivation and established a composite subsistence strategy centered on intensive agriculture and well-developed pastoralism, supplemented by the exploitation of wild resources (Moghaddam, 2018; Dahdouh *et al.,* 2024). AMS $^{14}C$ dating of the faba bean remains recovered from the site's granary yielded a calibrated age of 6486-6387 calBP (4530-4440 BCE), providing robust scientific support for the proposed chronological framework.

### 6-2. Morphometric Analysis and Comparative Study of Faba Bean Remains

A total of 7 charred faba bean macrofossils were recovered, including 5 complete seeds (one of which was intensely charred and slightly broken) and 2 faba bean fragments (Fig. 2). Faba bean seeds possess an elongated radicle and an oblong hilum, with early domesticated types typically exhibiting wedge-shaped or ovoid morphologies with considerable variation, and a thickness that gradually tapers from the hilum toward the radicle end (Tanno & Willcox, 2006; Caracuta *et al.,* 2016). However, due to the special characteristics of faba bean such as harvest time and its own physiological characteristics, there are many limitations in the preservation of faba beans in archaeological sites; characteristics such as seed coat and hilum are difficult to preserve, and generally only the cotyledons of the seeds are preserved; the number of preserved faba bean remains is much different from that of other legumes (such as peas and chickpeas) (Tanno & Willcox, 2006; Zohary *et al.,* 2012). The charred faba beans from Chega Sofla have almost no preserved seed coat, so no trace of the hilum can be seen, but it can be seen that the seeds are basically wedge-shaped and have preserved complete radicles or radicle fragments.

Morphological measurements were performed using a stereo microscope, and the morphological index results of the five intact charred seeds were shown in Table 1, including length, breadth, thickness and the standard deviation (SD) of each index. The seed morphological characteristics

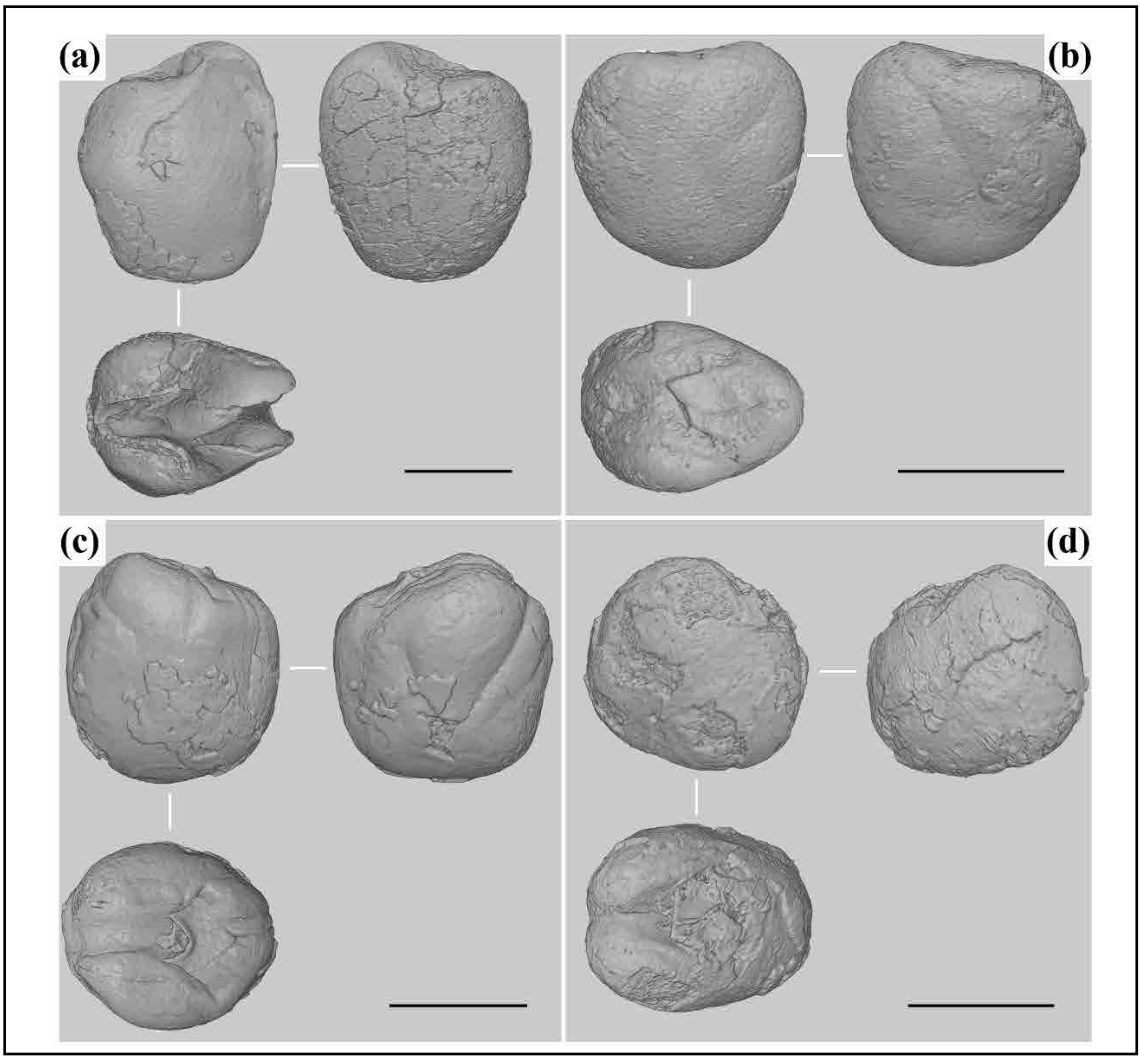



**Fig. 2: 2CT scan images of intact faba been (*Vicia faba*) remains (Scale bars in the images all represent 2mm).**

of this site were compared with those of the typical sites with faba bean macrofossils from the Pre-Pottery Neolithic to the Pottery Neolithic in Southwest Asia, including Ahihud, Nahal Zippori 3, Yiftah'el, and Tell el-Kerkh, and 8 typical sites from the Bronze Age to the Iron Age in Britain (Fig. 3) (Kislev, 1985; Tanno & Willcox, 2006; Caracuta *et al.,* 2015; Treasure & Church, 2017). It can be seen that the charred faba bean seeds from Chega Sofla are smaller in size compared to those from other sites in Fig. 3.

## 7. Conclusions

The genetic variation in ancestral faba bean types was mainly due to additive effects and maintained phenotypic consistency through stabilizing selection while modern varieties show increased dominance effects characterized by directional and asymmetric dominance reflecting human-driven directional and disruptive selection for yield and morphological traits (Suso & Cubero, 1986). Genetic studies have shown that natural migration dominated the early genetic diversity of faba bean, and human activities (such as selection for seed size) accelerated the

morphological differentiation of faba bean seeds, but did not completely sever the intraspecific gene exchange; taxonomic traits of faba bean, such as the number of leaflets per leaf, and seed thickness and length, are controlled by multiple genes (Cubero, 1974; Cubero & Suso, 1981).

Generally, the goal of human selection for domesticated crops is to increase seed size and yield per plant, and seeds are the main target of human selection; the results of principal component analysis show that the evolution of faba bean mainly occurred during the domestication process, and the flattening of faba bean seeds in the later period allowed the limited pods to accommodate larger seeds (Witcombe & Erskine, 1984; Suso & Cubero, 1986). Early faba bean seeds were small and round (such as var. minor and var. paucijuga), with a high thickness-to-length ratio (T/L>0.70); through later directional selection by humans, seeds gradually became larger and more flattened, resulting in the modern var. equina (T/L=0.26-0.70) and var. major (T/L<0.26), where var. major seeds have become large and flat by accumulating recessive genes making them suitable for human consumption, while var. equina seeds, of medium size, balance yield and adaptability, making them suitable as animal feed (Cubero, 1984; Suso & Cubero, 1986). The T/L values (Fig. 3d) of faba beans cultivated at early sites are mostly above 0.70, corresponding to small-seeded type; morphological measurements of seeds from Chega Sofla indicate that its faba beans belong to the small-seeded type, characterized by small and relatively round seeds. In contrast, some Bronze and Iron Age sites in Britain exhibit T/L values between 0.60 and 0.70, suggesting that during this period, broader cultivation of flatter seeds had begun locally.

Charred faba bean seeds from Bronze and Iron Age sites in Britain are generally larger in volume than their Neolithic counterparts from Southwest Asia, particularly in terms of mean length and thickness; these morphological differences reflect regional and temporal variations in faba bean evolution and indicate conscious human selection during the crop's cultivation and domestication processes (Fig. 3a-c). Among them, the charred faba bean seeds found in Chega Sofla are significantly smaller in size, roughly only one-sixth to one-quarter of those in other sites. The reason may be attributed to phenotypic plasticity exhibited by the species as it adapted to different climatic environments. The modern Köppen-Geiger climate classification (Peel *et al.*, 2007) categorizes the Levant sites of Ahihud, Nahal Zippori 3, Yiftah'el, and Tell el-Kerkh as Mediterranean climate zones, the British sites as temperate oceanic climate, and the southwestern Iranian region where Chega Sofla is located as tropical desert climate; the former two experience ample winter precipitation, while the latter, despite its overall low annual rainfall, receives most of its limited precipitation during winter, and the winter climate being influenced by both Mediterranean and tropical desert climates is relatively mild. Faba beans have high carbohydrate and protein contents, with approximately 48.6 g of carbohydrates and 24.5 g of protein per 100 g of dried beans; their amino acid profile surpasses that of cereals and is closer to that of animal protein, and their early maturation characteristic, typically sown in autumn or winter and harvested in spring, likely played a key role in making them an important food resource for early humans during the late winter to early spring period, filling the gap before cereal harvests and laying the foundation for subsequent systematic agricultural practices involving faba beans

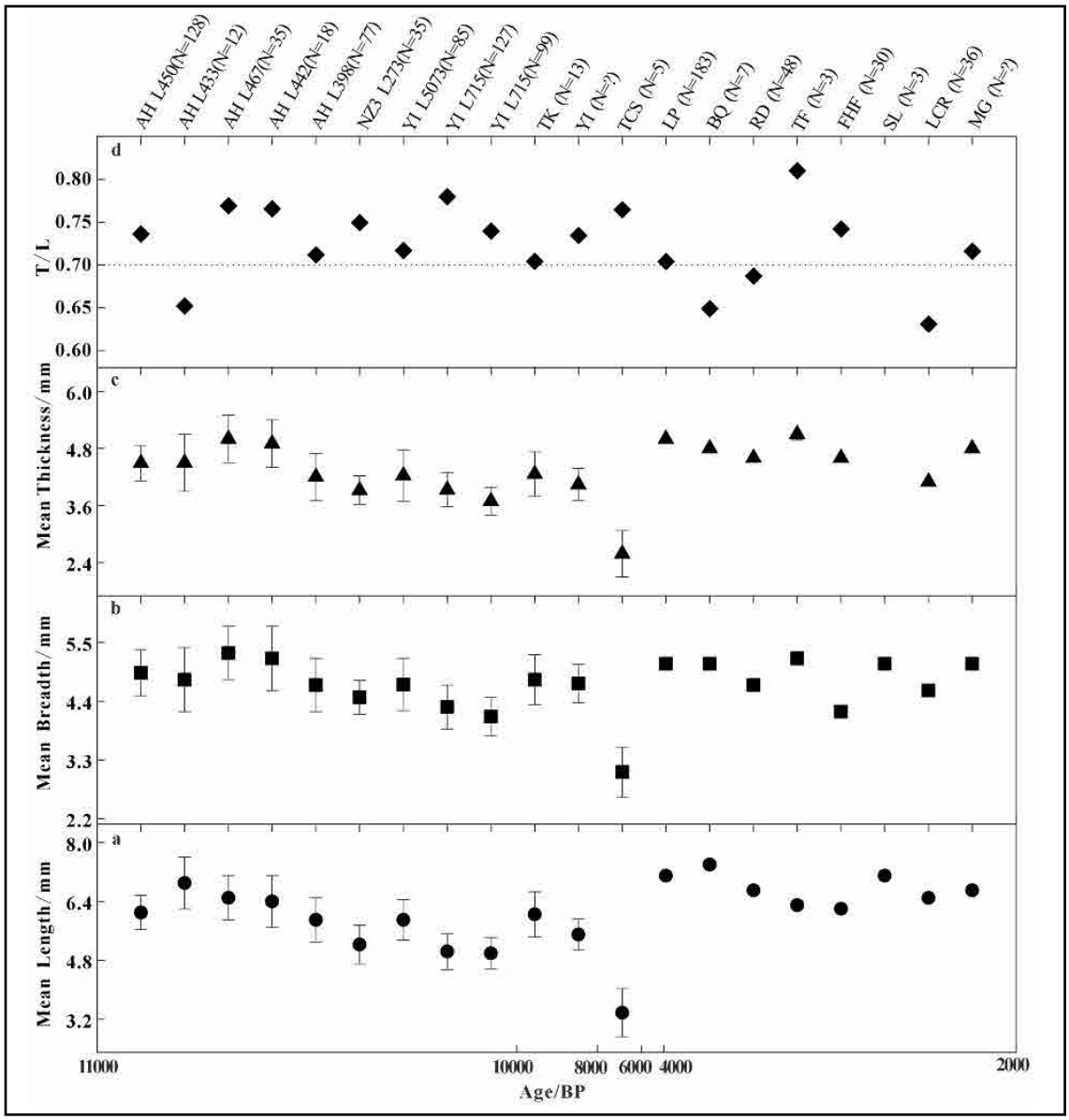



**Fig. 3: Morphological comparison of carbonized faba bean from representative Neolithic to Iron Age sites. a. Mean length comparison; b. Mean breadth comparison; c. Mean thickness comparison; d. Comparison of thickness-to-length ratio. N denotes the total number of measured faba beans; All archaeological site names are presented in abbreviated form; AH: Ahihud; NZ3: Nahal Zippori 3; YI: Yiftah'el; TK: Tell el-Kerkh; TCS: Tol-e Chega Sofla; LP: Le Pinacle; BQ: Bestwall Quarry; RD: Rowden; TF: Trethellan Farm; FHF: Frog Hall Farm; SL: Springfield Lyons; LCR: Le Câtel de Rozel; MG: Meare and Glastonbury.**

(Kislev & Bar-Yosef, 1988; Flint-Hamilton, 1999; Zong *et al.,* 2019). Modern experiments have shown that faba beans planted in autumn can have a higher yield than those planted in spring, with protecting flowers and pods from high temperatures and drought stress to enhancing seed production (Manning *et al.,* 2020; Torabian *et al.,* 2024). Currently, in Khuzestan Province, Iran, faba bean varieties that require winter sowing are commonly cultivated (Hasanvand *et al.,* 2015).

Paleoclimatic reconstructions relevant to southwestern Iran and the northern Persian Gulf during the mid-Holocene are based on multiple independent proxies, including pollen records

**Table. 1: Measurement results.**

| | Length/mm | SD | Breadth/mm | SD | Thickness/mm | SD |
|---|---|---|---|---|---|---|
| Average | 3.380 | 0.654 | 3.075 | 0.468 | 2.584 | 0.488 |
| Maximum | 4.492 | | 3.839 | | 3.319 | |
| Minimum | 2.791 | | 2.675 | | 2.061 | |

from lacustrine basins, sedimentological and geochemical data from inland lakes, and marine cores from the Persian Gulf. Pollen sequences from the Levant and western Iran indicate a generally warm early Holocene followed by increased climatic variability after ca. 7000 BP, while lake-level fluctuations and sediment records from Iran suggest shifts in precipitation seasonality rather than uniformly increased rainfall (Litt *et al.,* 2012; Jones *et al.,* 2013). Marine sediment cores from the Persian Gulf further document mid-Holocene environmental changes linked to variations in monsoon intensity and insolation, including episodes of relative cooling and increased moisture availability affecting the northern Gulf region between ca. 7000 and 6000 BP (Beni *et al.,* 2024).

Rather than invoking broad climatic contrasts between the Mediterranean and Southwest Asia, the present discussion focuses on regional-scale environmental conditions in southwestern Iran and the northern Persian Gulf zone, where Chega Sofla is located. This area represents a transitional ecological setting influenced by both Mediterranean winter precipitation systems and arid to semi-arid continental conditions. Such regional specificity is critical, as crop morphology and agricultural practices are more directly shaped by local growing-season constraints, including precipitation timing, winter temperatures, and water availability, than by macro-regional climatic categories.

Within this regional framework, the small size of the Chega Sofla faba bean seeds may reflect a combination of early domestication stage and local environmental constraints, rather than a single causal factor. Experimental and ethnographic studies demonstrate that faba bean seed size can be influenced by water stress, temperature, and sowing season, yet isolating these variables archaeologically remains difficult. Consequently, the reduced seed dimensions observed at Chega Sofla are interpreted here as a plausible adaptive response to local cultivation conditions during the Late Village Period, formulated as a working hypothesis rather than a definitive explanation.

Further evaluation of these hypotheses will require comparable, securely dated faba bean assemblages from southwestern Iran and adjacent regions, allowing environmental and domestication-related variables to be assessed independently.

Phylogenetic and archaeological evidence indicate that the faba bean originated in Southwest Asia, with its domestication likely occurring independently within the Mediterranean region (Zohary & Hopf, 1973; Kislev, 1985; Leht, 2009). Studies show that although no extant wild faba bean species have been identified, archaeobotanical evidence demonstrates that wild forms of faba bean existed long before the advent of agriculture; the wild ancestors of faba beans were exploited by local hunter-gatherer groups thousands of years prior to their formal domestication (Caracuta *et al.,* 2016). Many archaeological sites in Southwest Asia demonstrate that faba bean became a foundational legume species for human domestication as early as the initial stages of

agricultural development around 10000 years ago (Zohary *et al.,* 2012; Caracuta *et al.,* 2017; Rottenberg, 2020).

The dispersal of faba beans is hypothesized to have followed four primary routes: introduction into Europe via Anatolia; spread along the western Mediterranean coast to North Africa and the Iberian Peninsula; movement southward along the Nile River to Ethiopia; and eastward transmission through Iran into India (Cubero, 1974). The faba bean macrofossils from Chega Sofla, as archaeobotanical evidence of agricultural diversification along the southeastern margin of the Fertile Crescent, demonstrate that faba bean cultivation had reached southwestern Iran by around ca. 7000 years ago. The spread of domesticated faba beans from the Levant to this region involved extended periods of human selection and cultivation, as well as gradual adaptation to diverse ecological conditions, particularly the transition from Mediterranean to arid and semi-arid inland climates. Morphological adjustments in seed traits, coupled with the long timescales required for crop stabilization, likely contributed to the slow diffusion process, which may have spanned over a millennium, highlighting the protracted and complex dynamics of early crop dispersal.

Beyond Southwest Asia, historical and textual sources suggest that faba bean was introduced into parts of East Asia considerably later, likely through complex and multi-stage transmission routes across Central and South Asia (Zhou *et al.,* 2024). Owing to the lack of securely dated archaeobotanical evidence from these regions for the relevant periods, East Asia is not considered here as a comparative case for early domestication or morphological development. Instead, its mention serves only to underscore the long-term and geographically uneven nature of faba bean dispersal beyond its core area of early cultivation.

The charred faba bean remains from Chega Sofla constitute the earliest securely dated evidence for faba bean cultivation on the southeastern margin of the Fertile Crescent. The AMS radiocarbon date places their use in the Late Village Period (Chalcolithic), confirming that faba bean had become part of the cultivated crop repertoire in southwestern Iran by the mid–fifth millennium BCE. The recovery of these remains from a storage-related context further suggests their integration into established agricultural and subsistence strategies at the site.

Although the small number of preserved seeds limits broader generalizations, the observed small-seeded morphology is consistent with early cultivated forms documented elsewhere in Southwest Asia. These characteristics should be interpreted cautiously, as the present dataset does not allow for independent testing of environmental or evolutionary explanations. Instead, the primary significance of the Chega Sofla assemblage lies in its contribution to documenting the geographical extension of faba bean cultivation and the diversification of agricultural practices in southwestern Iran after the Late Neolithic. Future discoveries of comparable assemblages from the region will be essential for evaluating regional variability in faba bean cultivation and for clarifying the long-term trajectories of legume domestication and dispersal.

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**Authors' Contribution**

Authors contributed equally to the conceptualization and writing of the article. All of the authors approved the content of the manuscript and agreed on all aspects of the work

**Conflict of Interest**

Authors declared no conflict of interest.

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# کاشت باقلا در دورهٔ روستانشینی در چگاسفلا، جنوب‌غربی ایران: نمونه‌ای جدید از جنوب‌شرقی هلال حاصلخیزی


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**چکیده**

با وجود اهمیت باقلا (Vica faba L.) به‌عنوان یکی از کهن‌ترین لگوم‌های کشت‌شده در آسیای جنوب غربی، شواهد باستان‌گیاه‌شناسی مربوط به گسترش و کشت آن در لبهٔ جنوب‌شرقی هلال‌حاصل‌خیز همچنان محدود است. این پژوهش به معرفی و تحلیل بقایای سوخته‌شدهٔ باقلا، به‌دست آمده از چگاسفلا می‌پردازد. بقایای مذکور شامل هفت دانه (پنج دانهٔ کامل و دو شکسته) هستند که از یک فضای انبار غلات در کارگاه الف پشتهٔ شرقی محوطه و در ساختمان سوختهٔ آن به‌صورت برجا به‌دست آمده‌اند. به‌منظور تعیین گاهنگاری، یکی از دانه‌های باقلا با روش تاریخ‌گذاری رادیوکربن شتاب‌دهندهٔ (AMS14 C) مورد سنجش قرار گرفت که تاریخ کالیبره شدهٔ ۶۴۸۶-۶۳۸۷ سال پیش‌از حال حاضر را نشان می‌دهد و کشت باقلا را در این محوطه به دورهٔ روستانشینی جدید (کالکولتیک) نسبت می‌دهد. شناسایی گونه‌ای و بررسی ریخت‌سنجی دانه‌ها با استفاده از میکروسکوپ استریو و مقایسه با داده‌های منتشرشده از محوطه‌های نوسنگی و پسانوسنگی جنوب‌غرب آسیا انجام شد. نتایج نشان می‌دهد که دانه‌های باقلا در چگاسفلا از نوع کوچک‌دانه بوده و از نظر ابعاد کلی، کوچک‌تر از نمونه‌های گزارش شده از بسیاری از محوطه‌های هم‌زمان یا متأخر در مناطق مدیترانه‌ای و اروپایی است. با توجه به تعداد محدود نمونه‌ها و ماهیت زغال‌شدهٔ بقایا، این ویژگی‌های باید به‌عنوان مشاهداتی توصیفی و نه تبیینی درنظر گرفته شوند. با این‌حال، داده‌های ارائه شده شواهد مستقیمی از کشت باقلا در حاشیهٔ جنوب شرقی هلال حاصل‌خیز در هزارهٔ پنجم پیش‌ازمیلاد فراهم می‌کند و به درک بهتر از تنوع محصولات کشاورزی، راهبردهای ذخیره‌سازی و شدت‌یافتن اقتصاد کشاورزی در جنوب ایران پس از دورهٔ نوسنگی کمک می‌کند.



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## Site Size Hierarchy and the Complex Chiefdoms in the Bampur Valley During the Chalcolithic Period (4500-3900 BCE)

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**Abstract**

Bampur Valley in southeastern Iran, in the central part of Iranian Baluchestan, has been a key area for understanding various cultural processes since the Chalcolithic period. To better comprehend these processes in the prehistoric era, the present article focuses on site size hierarchy, based on the data related to the Yahya VA/Aliabad Period, around 4500-3900 BCE, collected from 41 sites during a survey conducted in 2009. The surveyed area spans more than 300 square kilometers along the Bampur River. The area of each site was estimated using GPS mapping, and SPSS analysis helped us classify the site sizes. Consequently, a three-level classification proved more acceptable than others, which includes: 1) sites less than 3 hectares, comprising 31 sites; 2) sites between 3-7 hectares, consisting of 7 sites; and 3) sites larger than 7 hectares, which includes only one site named Chah Hosseini, covering more than 15 hectares. For a better understanding of the various aspects of complexity and site size hierarchy, the relationship between site size and the distance of each site from the others was analyzed using SPSS. Consequently, the correlation between them was calculated by Pearson R and regression tests. Ultimately, this analysis demonstrates that examining distances and sizes is meaningful.

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## 1. Introduction

Bampur Valley in southeastern Iran is located in the central region of Iranian Baluchestan, within Sistan and Baluchestan province, and lies in the eastern part of the Jazmurian Basin, 200 km north of the Oman Sea. Bampur Valley is bordered by the Bazman Mountains and the Lut desert to the north, the Nikshahr mountainous area to the south, and the Jazmurian marshlands to the west. The Jiroft Plain is located 350 kilometers northwest of Bampur and provides a natural route to Kech-Makran in Pakistan through Bampur Valley (Fig.1).

The Bampur River, one of the few permanent rivers in Baluchestan, flows from the northern mountains of Iranshahr and, after traversing more than 150 kilometers, finally reaches the Jazmurian Basins in the westernmost part of the Bampur valley. The Jazmurian Basin is situated between the Jiroft Plain to the north and the Bampur Valley to the east and has been regarded as the final destination of the Bampur River from the east and the Halil Rud River from the north.

The investigations and excavations conducted by Stein in the 1930s at sites related to the Chalcolithic Period and Bronze Age in Iranian Baluchestan represent the first archaeological

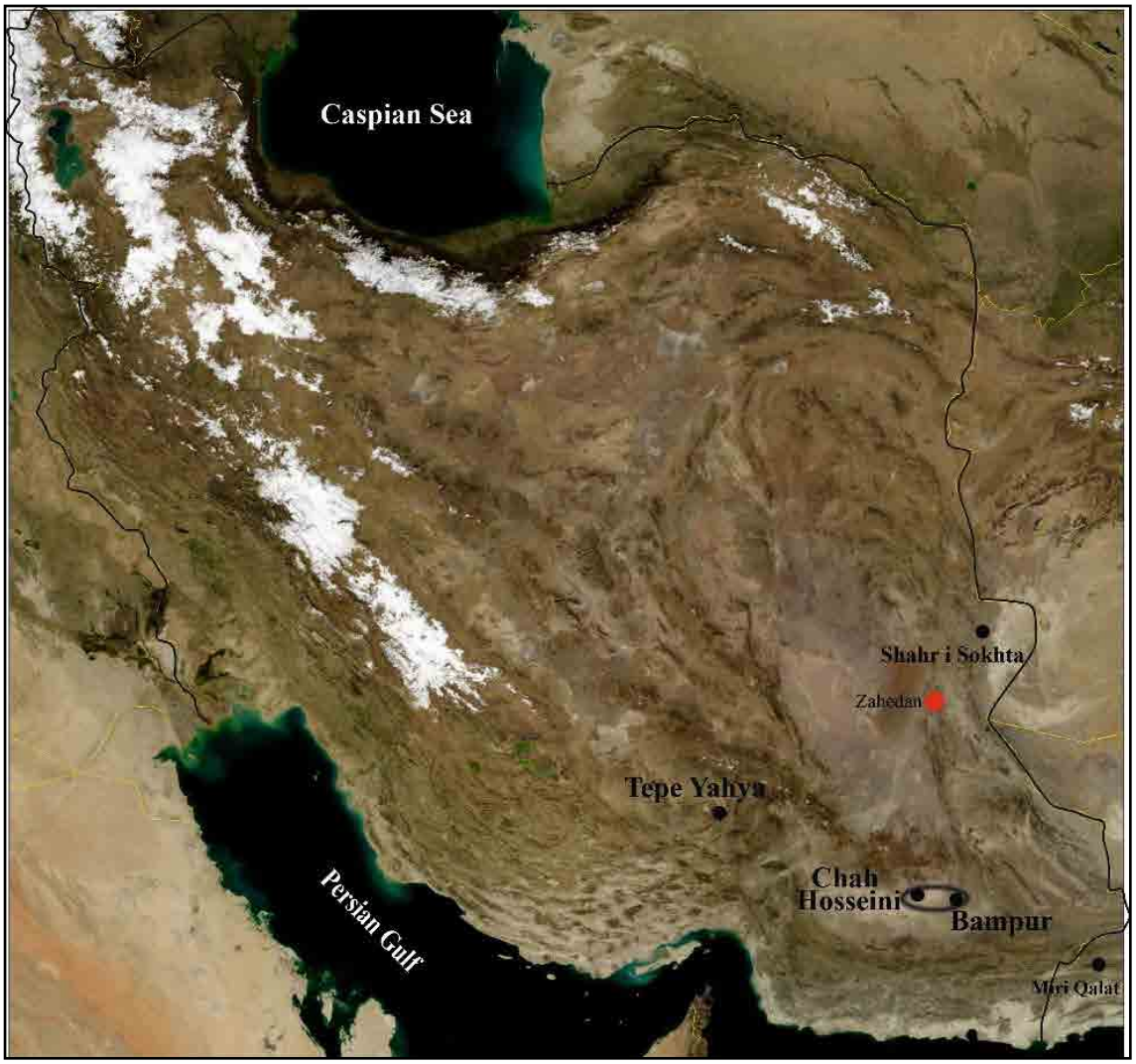



**Fig. 1: The Survey area has been noted by an oval black line in the Bampur Valley (Author, 2024).**

activities in the region. The Yahya VA and Aliabad wares (or Kerman-related wares) serve as tangible evidence within Stein's collection (Stein, 1937: XIX), which we now understand may date back to the mid-5th to mid-4th millennium BCE (Mutin et al. 2017: 3-4). Thirty years after Stein's explorations, B. De Cardi (1970) excavated at Tepe Bampur and categorized the cultural sequence of Bampur into six periods (I-VI), beginning in the early third millennium BCE, around 2900 BCE, and ended in Period VI around 1900 BCE

The latest fieldwork conducted in this area was carried out by the two authors (Moradi and Sarhaddi Dadian) in October 2011 as part of the archaeological survey project of the Bampur and Dalgan region. This marked the first comprehensive and systematic archaeological exploration in the Bampur Valley (Fig. 2). The survey began near Tepe Bampur and extended 30 kilometers westward into the Chah Hosseini area dated back to mid fifth to the 3rd millennium BCEE (Moradi, 2023: 44).

Further west lies the Jazmurian Basin, which shows no clear evidence of ancient settlements (Fig. 2). Scattered evidence of prehistoric settlements has only been found 30 km west of Chah Hosseini in the Chah Hashem area (Moradi, 2019: 242-3).

The present article has been prepared based on data collected from this survey, which covers an area of over 300 km². More than 121 sites were discovered, including those dating to the Chalcolithic Period, Bronze Age, and early historical periods. Among these, 41 sites are associated with various sequences of the Chalcolithic period, 38 sites from the Bronze Age, and the remaining sites are linked to the historical and Islamic eras (Moradi, 2017) (Fig. 2). The area was thoroughly explored on foot, and the sizes of the sites were measured using GPS Tracking Map. The sherds were also collected based on a non-probabilistic sampling method.

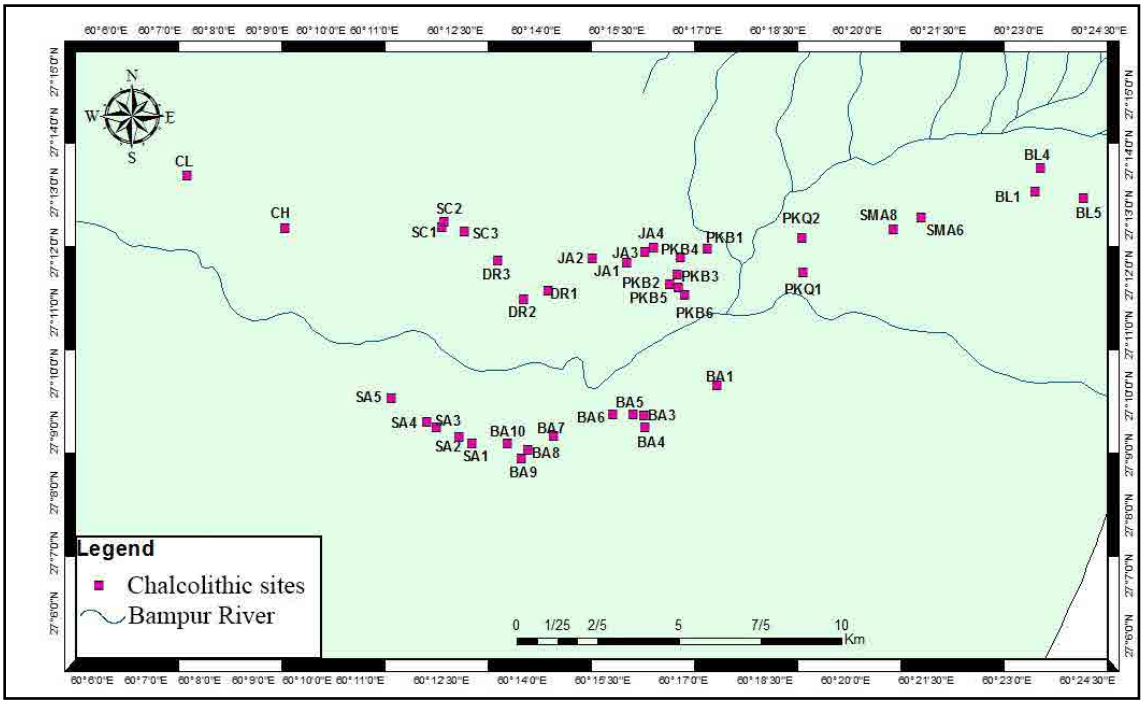



**Fig. 2:The location of the Chalcolithic sites in the Bampur Valley shown by GIS (Author, 2024).**

Whereas most Chalcolithic sites were found to the west along both the northern and southern banks of the river, the sites with Yahya VA pottery (4500-4200 BCE) were located on the northern part of the river, while those with Aliabad ware (4200-3900 BCE), in lesser quantity and limited area, were situated in the southern part of the Bampur River. The non-Chalcolithic settlements are primarily concentrated in the eastern part of the survey area within a 5-kilometer radius around Tepe Bampur.

Due to the absence of modern excavation in the Bampur valley, establishing an absolute date for this period is not feasible; thus, this date can only be referenced based on 14C dating conducted in Kerman and Kech-Makran in Pakistan (Fig. 3). Most of these sites are relatively small, half of them being less than 1 meter in height, while others range from 1.5 to 3.5 meters (Fig. 4). Only two sites stand out due to their significant height: 1) Chah Hosseini, covering more than 15 ha, is located at the western edge of the surveyed area, and 2) Tepe Balanch1, with an area of 1 ha and a height exceeding 4 meters, is situated at the eastern edge of the surveyed area. The largest site, Shams Abad no.15, spans over 20 ha and is mostly flat or scattered with sherds.

The sites related to the Chalcolithic period, dating from 4500 to 3900 BCE (Eskandari *et al.,* 2023; Moradi, 2025) (Fig. 3). We generally found three types of Chalcolithic pottery on the surface: Bampur, Kerman, and Miri wares (Mutin *et al.,* 2017). Kerman and Bampur pottery likely belong to an earlier part of the Chalcolithic period, around 4500 to 4200 BCE (Eskandari, 2017), contemporary with Yahya VA, while Aliabad/Miri wares are associated with the later Chalcolithic period, approximately 4200 to 3600 BCE (Eskandari *et al.,* 2023). However, the Aliabad ware dated between 4200-3600 BCE is divided into three phases (Eskandari et al. 2023), but the pottery from the latest phase was not collected from the Bampur valley, and the ware associated with the older phases appears alongside local wares that have also been seen with Yahya VA pottery at some other sites. Therefore, it would be difficult to suggest a date later than 3900 BCE in the surveyed area. It should be noted that Aliabad pottery also has Kerman/Jiroft origins, indicating the continuity of settlement in the area during this millennium (Fig. 5).

| Date (B.C) | Bampur valley | Kerman/ Jiroft | Kech- Makran | Sistan |
|---|---|---|---|---|
| **4500-4200** | Chah Hosseini Horizone | Yahya VA/ | | |
| **4200-3900** | Chah Hosseini Horizone | Yahya VA<br>Mahtutabad I | Miri I | |
| **3900-3600** | Chah Hosseini Horizone<br>**?????????** | Mahtoutabad II<br>Standard Ali Abad | Miri II | |
| **3600-3300** | Unknown | Mahtoutabad III<br>Uruk / Late Aliabad | Miri IIIa | |
| **3300-3100** | Unknown | Tepe Yahya IVC2<br>Proto-Elamite/Varamin A | Miri IIIa | I |
| **3100-2900** | Unknown | Varamin B | Miri IIIa | I |
| **2900-2500** | Bampur I-IV | Yahya IVB<br>Early Jiroft | Miri IIIb | II-III |
| **2500-2000** | Bampur V-VI | Tepe Yahya IVB6<br>Late Jiroft | Miri IIIc | IV |

**Fig. 3: Chronology of the southeast of Iran (after: Mutin 2013; Eskandari *et al.*, 2023; Moradi, 2025).**

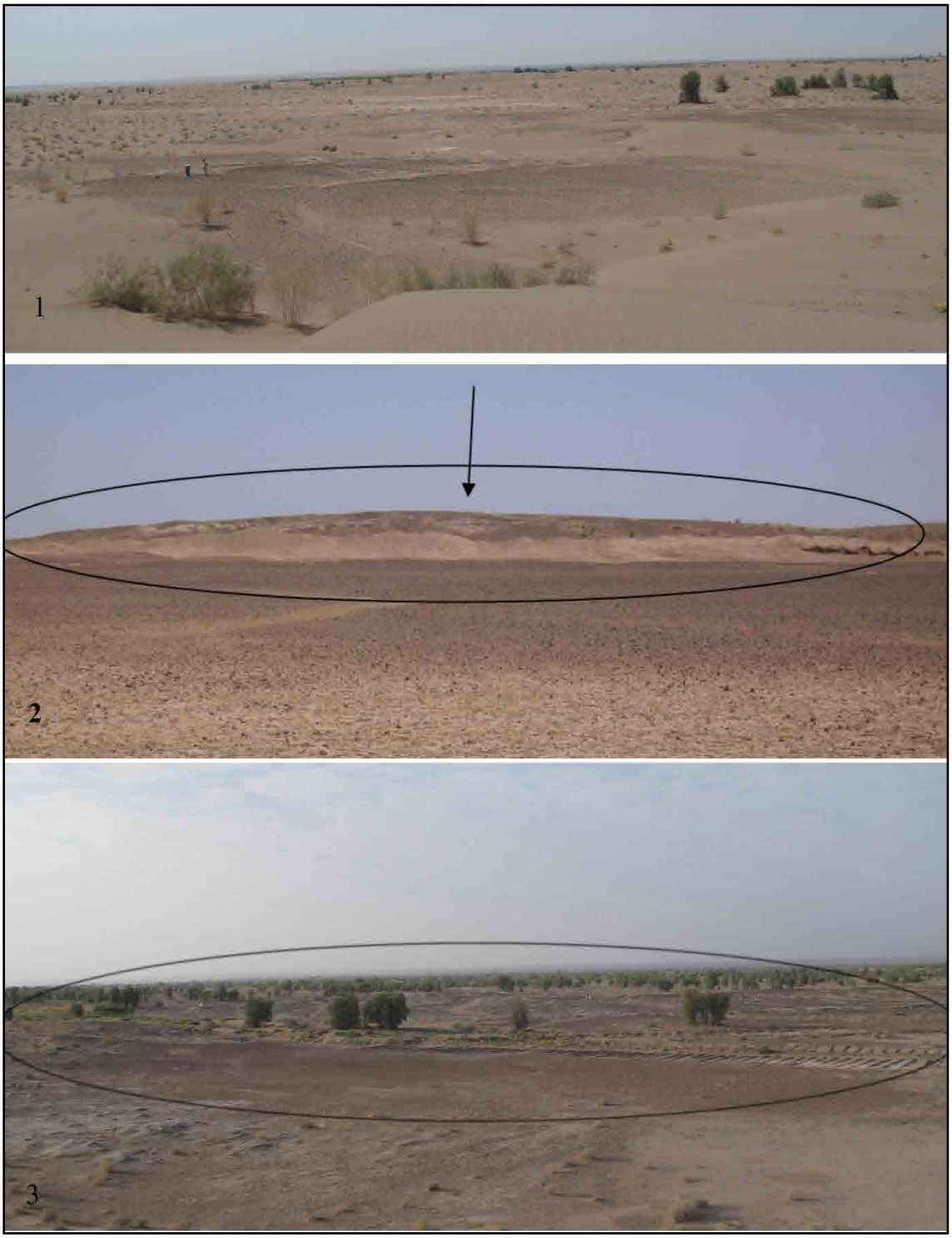



**Fig. 4: Chalcolithic sites (1: Sorme Chesm, 2: Tepe Balanch 1 and 3: Chah Hosseini) (Author, 2024).**

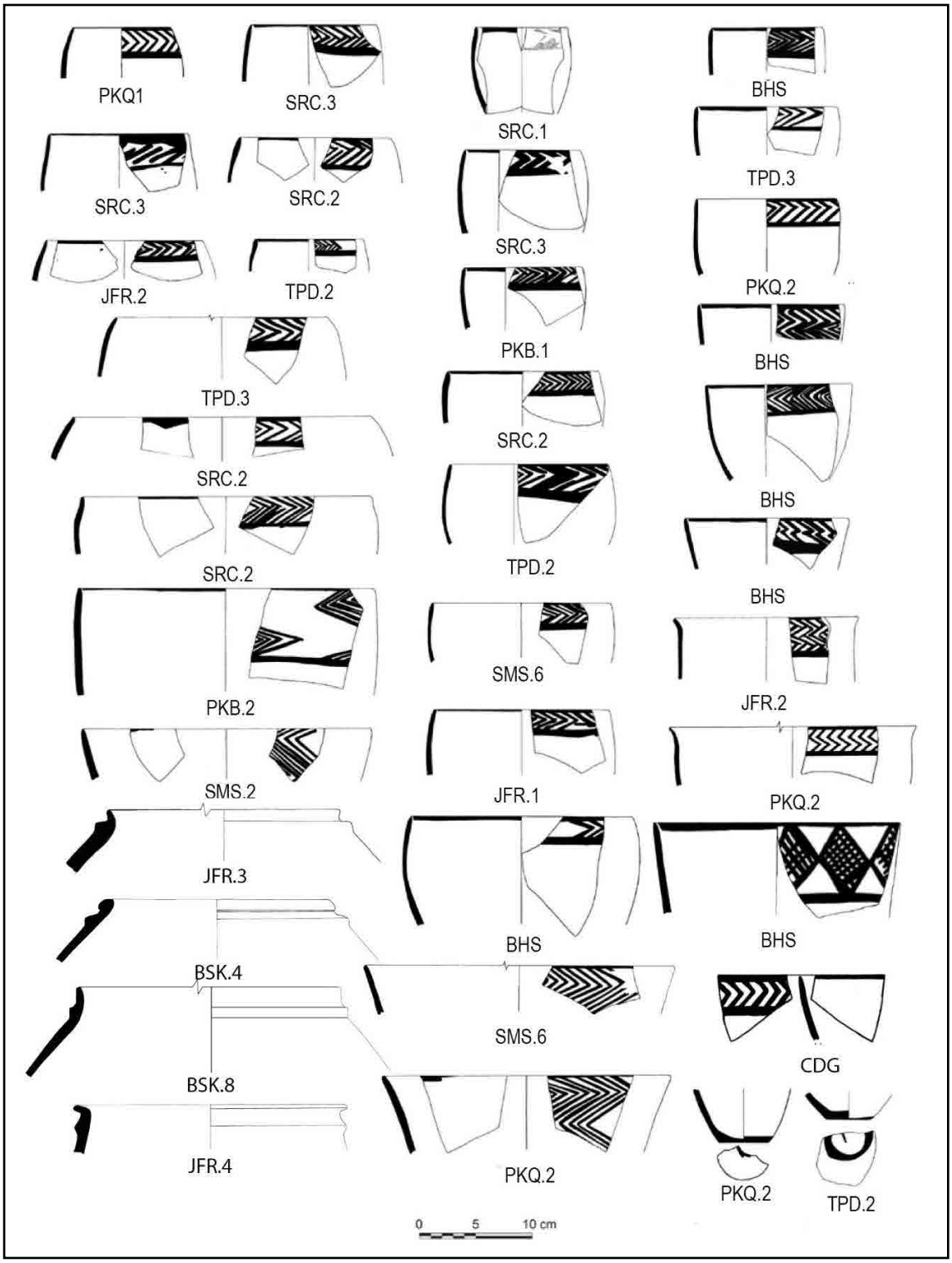



**Fig. 5: Kerman-related wares in the Bampur Valley sites (after: Mutin *et al.*, 2017).**

**Table. 1: Investigated sites with approximate areas and pottery types found on the surface (Author, 2024).**

| no | Site name | Approximate area (hc) | Class | Region | Type of pottery |
|---|---|---|---|---|---|
| 1 | Chah Hosseini | 15 | **1** | Northern region of the Bampur River | All |
| 2 | Balanch 1 | 4 | **2** | | Yahya VA |
| 3 | Balanch 2 | 0/35 | **3** | | Yahya VA |
| 4 | Balanch 5 | 0/25 | **3** | | Yahya VA |
| 5 | Shams Abad 6 | 1/7 | **3** | | Yahya VA |
| 6 | Shams Abad 8 | 2 | **3** | | Bampur ware |
| 7 | Posht Kor Qasem Abad 1 | 2/2 | **3** | | Yahya VA |
| 8 | Posht Kor Qasem Abad 2 | 5/25 | **2** | | Yahya VA |
| 9 | Posht Kor Pishk Abad 1 | 2/8 | **3** | | Yahya VA |
| 10 | Posht Kor Pishk Abad 2 | 2/6 | **3** | | Yahya VA |
| 11 | Posht Kor Pishk Abad 3 | 2/9 | **2** | | Yahya VA |
| 12 | Posht Kor Pishk Abad 4 | 3/6 | **2** | | Bampur ware |
| 13 | Posht Kor Pishk Abad 5 | 0/75 | **3** | | Aliabad ware |
| 14 | Posht Kor Pishk Abad 6 | 0/4 | **3** | | Aliabad ware |
| 15 | Jafar Abad 1 | 2/7 | **3** | | Yahya VA |
| 16 | Jafar Abad 2 | 0/17 | **3** | | Yahya VA |
| 17 | Jafar Abad 3 | 0/3 | **3** | | Aliabad ware |
| 18 | Jafar Abad 4 | 0/35 | **3** | | Aliabad ware |
| 19 | Darreh1 | 1 | **3** | | Yahya VA |
| 20 | Darreh2 | 3/7 | **3** | | Yahya VA |
| 21 | Darreh3 | 0/8 | **2** | | Yahya VA |
| 22 | Sorme Cheshm 1 | 1/8 | **3** | | Yahya VA |
| 23 | Sorme Cheshm 2 | 0/1 | **3** | | Yahya VA |
| 24 | Sorme Cheshm 3 | 0/35 | **3** | | Yahya VA |
| 25 | Chah Husseini | 15 | **1** | | Yahya VA |
| 26 | Chil Dergi | 0/75 | **3** | | Yahya VA |
| 27 | Pishk Abad 1 | 6/6 | **2** | Southern region of the Bampur River | Bampur ware |
| 28 | Pishk Abad 2 | | **2** | | Aliabad ware |
| 29 | Pishk Abad 3 | 0/4 | **3** | | Aliabad ware |
| 30 | Pishk Abad 4 | 1/3 | **3** | | Aliabad ware |
| 31 | Pishk Abad 5 | 2 | **3** | | Bampur ware |
| 32 | Pishk Abad 6 | 4/8 | **2** | | Bampur ware |
| 33 | Pishk Abad 7 | 0/65 | **3** | | Bampur ware |
| 34 | Pishk Abad 8 | 3/5 | **2** | | Aliabad ware |
| 35 | Pishk Abad 9 | 2/1 | **3** | | Aliabad ware |
| 36 | Pishk Abad 10 | 2/4 | **3** | | Yahya VA |
| 37 | Shekar Abad 1 | 2/2 | **3** | | Bampur ware |
| 38 | Shekar Abad 2 | 0/7 | **3** | | Bampur ware |
| 39 | Shekar Abad 3 | 0/8 | **3** | | Aliabad ware |
| 40 | Shekar Abad 4 | 2/7 | **3** | | Bampur ware |
| 41 | Shekar Abad 5 | 0/5 | **3** | | Bampur ware |

The importance of this study lies in two aspects. First, archaeological research in Iranian Baluchestan has declined since the 1970s, limited to sporadic excavations. Secondly, our understanding of the prehistoric cultural processes in this region is largely restricted to typological comparisons of pottery from Tepe Bampur or findings from the surface of the sites. The need for comprehensive studies that go beyond typological pottery comparisons is quite evident. This will enhance our knowledge of various aspects of the lives of ancient societies inhabiting the Bampur Valley. Due to the lack of interdisciplinary archaeological studies, this research is significant as it aids in a better understanding of the social hierarchy during the Chalcolithic period of the Bampur Valley. Additionally, this research allows us to explore the complexities of Chalcolithic societies in southeastern Iran.

## 2. Archaeological background and chronological issue of the Bampur Valley in the Chalcolithic period (ca. 4500-3900 BCE)

Many sites in the southeast of Iran until the mid-fifth millennium BCE showed less interaction with other areas. In the second half of the fifth millennium BCE, the expansion of the Yahya VA culture in Kerman towards the eastern and southeastern regions significantly increased interactions between Kerman, Baluchestan, and Makran in later periods. Sistan joined this interaction only in the second half of the fourth millennium BCE

In the late fifth millennium BCE, among the Chalcolithic sites in the Bampur valley, the highest dispersion of nonlocal pottery includes Kerman-related wares (Yahya VA) (Fig. 5) and, to a lesser extent, Aliabad/Miri II wares (Mutin *et al.,* 2017: 118-119). However, the number of sites with Yahya VA pottery is greater than those with Aliabad/Miri II wares, concentrated on the northern side of the Bampur River.

At first glance, our data suggest that the latter half of the Chalcolithic period, or Yahya VA – Aliabad period (c. 4500-3900 BCE), represents an expansion phase in the Bampur region as well as Kerman (Fig. 3 and 5). To gain a better understanding of the various aspects of cultural processes in the Bampur Valley, it seems rational to focus on sites featuring these types of pottery as the primary surface finds (table 1). This pottery has also been documented 400 km to the north in Mir Javeh near Zahedan (Heydari, 2015: Fig. 4), and in Saravan, located 250 km east of Bampur (Moradi *et al.,* 2018: 35-36). The southeasternmost distribution of Aliabad wares is found in Kech-Makran, in the west of Pakistani Baluchistan, linked to Miri II-IIIa wares (Besenval, 2001: 5).

Kerman-related ceramics include Black-on-buff and Black-on-red wares. These two types are reported in large quantities in Kerman and at Chah Hosseini in Bampur Valley. The Black-on-buff wares are more prevalent during the Yahya VB period, while the Black-on-red wares, characterized by a red color paste, are more common in Period VA than in Period VB (Mutin et al., 2017: 5). Notably, in the Bampur valley, the most frequently found sherds are associated with Black-on-red wares, which appear to date between the mid-fifth and the first centuries of the fourth-millennium cal. BC, based on 14C dates obtained from recent excavations at Kerman sites (Eskandari, 2017; Fig. 6, 32; Shafiee *et al.,* 2019, Figs. 9A-F).

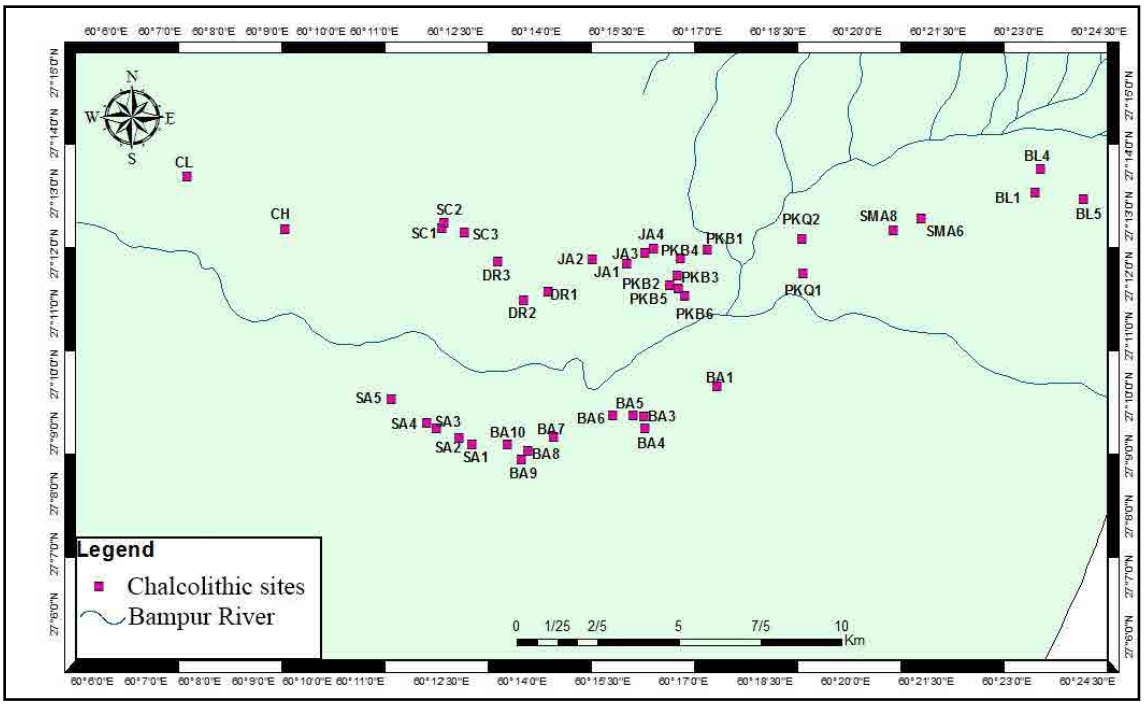



**Fig. 6: GIS map of Chalcolithic Sites in the Bampur Valley in 3 level classification (Author, 2024).**

**Table. 2: Numeric classification of sites size based on six level division (Author, 2024).**

| no | Area | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| 1 | Less than 1 ha | 17 | 43.6 | 43.6 | 43.6 |
| 2 | 1-2 ha | 5 | 12.8 | 12.8 | 56.4 |
| 3 | 2-3 ha | 9 | 23.1 | 23.1 | 79.5 |
| 4 | 3-4 ha | 4 | 10.3 | 10.3 | 89.7 |
| 5 | 4-7 ha | 3 | 7.7 | 7.7 | 97.4 |
| 6 | More than 7 ha | 1 | 2.6 | 2.6 | 100.0 |
| Total | | 39 | 100.0 | 100.0 | |

As noted by Lamberg-Karlovsky and Schmandt-Besserat, Chah Hosseini's monochrome and polychrome wares are at least wholly or partially contemporaneous with the Kerman-related ceramics (Lamberg-Karlovsky & Schmandt-Besserat, 1977). The survey included numerous bowls featuring interior painted decorations that are technologically similar to the Black on Red Kerman-related ceramics, leading us to assume they date to approximately the same period, between c. 4500 and 3900 BC. Bowls with interior painted decorations have been reported from 14 sites along the northern bank of the Bampur River, which also contain Kerman-related ceramics.

Aliabad wares are two types of ceramics that emerged on the southeastern Iranian plateau, primarily after the Black-on-buff and Black-on-red ware. However, it consists of early, Standard, and late phase between 4200-3600 BCE Miri ware consists of fine, monochrome-painted ceramics and is characteristic of period II at Miri Qalat and Shahi-Tump in Kech-Makran, a period dating

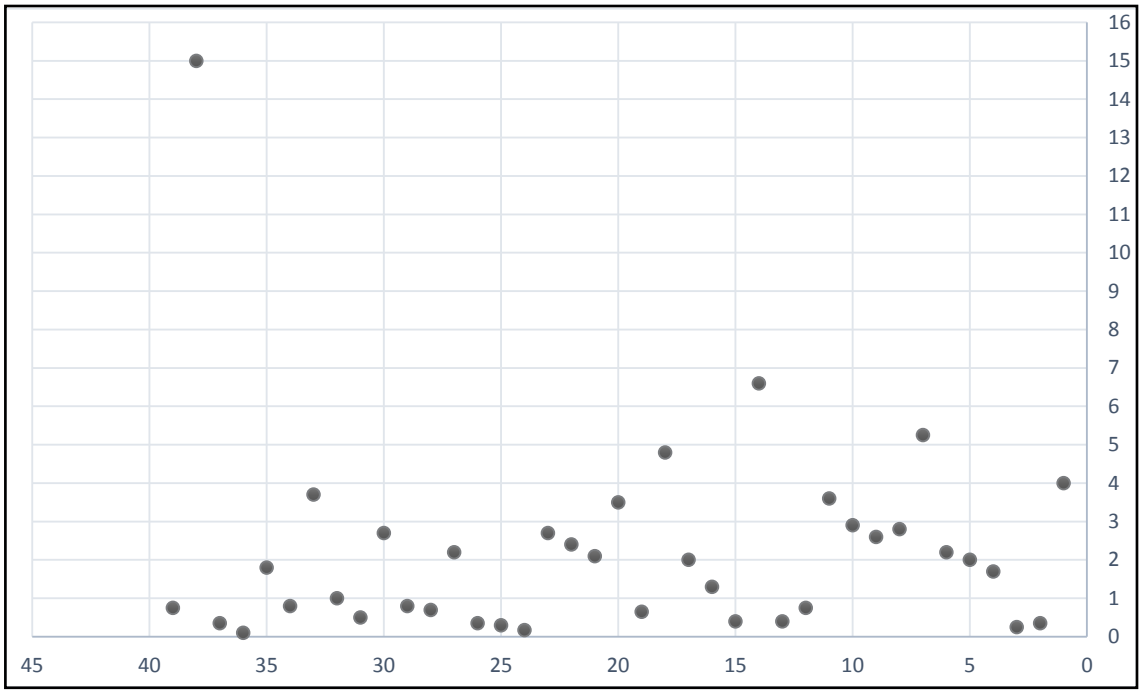



**Fig. 7: Size chart of Chalcolithic sites in the Bampur valley. In this chart, there are three size categories which divided based on concentration in some parts of this chart (Author, 2024).**

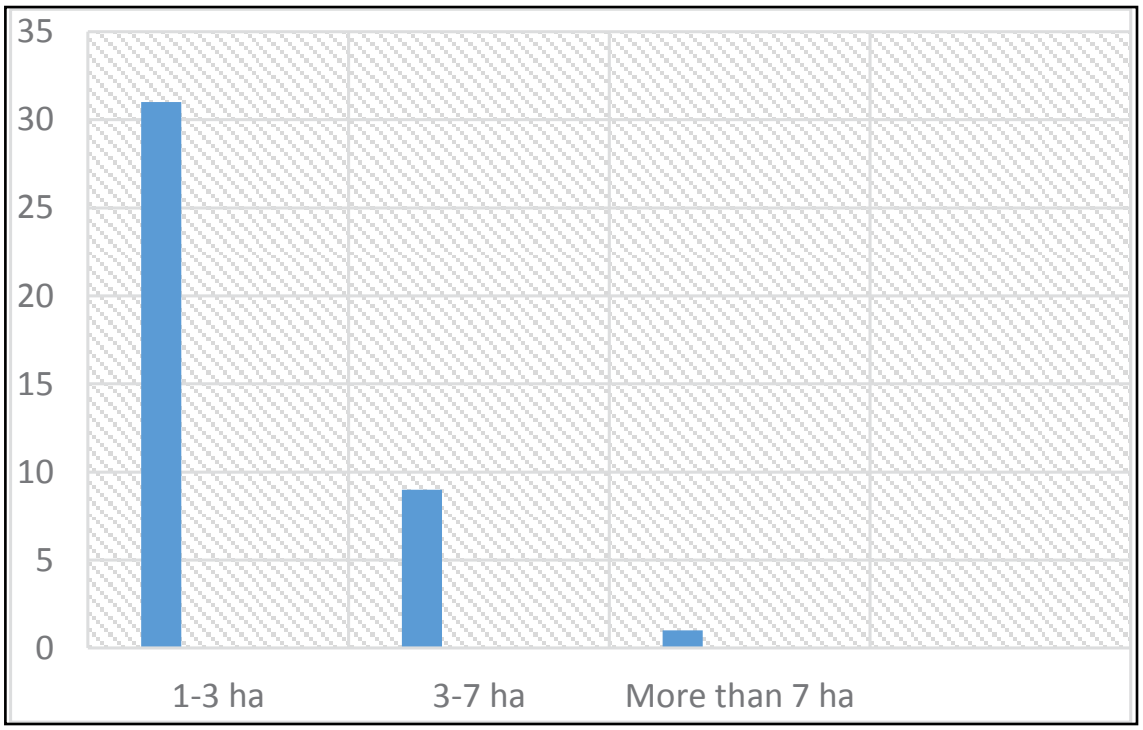



**Fig. 8: Classification of sites size based on three level division (Author, 2024).**

**Table. 3: Relation between distance and size of sites in each region (SPSS) (Author, 2024).**

| Correlations | | | | |
|---|---|---|---|---|
| **Site name gg** | | | **distance** | **area** |
| Southern region | Classification of distance | Pearson Correlation | 1 | .440 |
| | | Sig. (2-tailed) | | .115 |
| | | Sum of Squares and Cross-products | 11.429 | 2.286 |
| | | Covariance | .879 | .176 |
| | | N | 14 | 14 |
| | Classification of size | Pearson Correlation | .440 | 1 |
| | | Sig. (2-tailed) | .115 | |
| | | Sum of Squares and Cross-products | 2.286 | 2.357 |
| | | Covariance | .176 | .181 |
| | | N | 14 | 14 |
| Northern region | Classification of distance | Pearson Correlation | 1 | .373 |
| | | Sig. (2-tailed) | | .066 |
| | | Sum of Squares and Cross-products | 31.040 | 5.320 |
| | | Covariance | 1.293 | .222 |
| | | N | 25 | 25 |
| | Classification of size | Pearson Correlation | .373 | 1 |
| | | Sig. (2-tailed) | .066 | |
| | | Sum of Squares and Cross-products | 5.320 | 6.560 |
| | | Covariance | .222 | .273 |
| | | N | 25 | 25 |

**Table. 4: Correlation between sites measured by Pearson R- and Regression tests (Author, 2024).**

| Correlations | | | | |
|---|---|---|---|---|
| **Control Variables** | | | **Area** | **Distance** |
| Site name | Classification of size | Correlation | 1.000 | .391 |
| | | Significance (2-tailed) | . | .015 |
| | | df | 0 | 36 |
| | Classification of distance | Correlation | .391 | 1.000 |
| | | Significance (2-tailed) | .015 | . |
| | | df | 36 | 0 |

**Table. 5: Result of the relation between the area and their distance (Author, 2024).**

| Region | index | index | Correlation | Regression & R-pearson |
|---|---|---|---|---|
| **Northern region** | Area | Distance | Relatively strong correlation | 373. |
| **Southern region** | Area | Distance | Relatively strong correlation | 440. |

to the first half of the fourth millennium BC. Aliabad ware includes plain ceramics as well as monochrome and polychrome-painted ceramics, believed to have appeared in the second quarter of the fourth millennium BC and continued into the latter half of this millennium, although some radiocarbon dates suggest a timeframe between the mid-fifth and early fourth millennium BC (Eskandari *et al.,* 2023: Tab. 3).

However, the chronological relationships between these ceramics are generally based on the belief that Black-on-Red Ware followed Black-on-Buff Ware and that these two styles were produced before Aliabad and Miri wares. Important issues remain regarding the exact dating of these ceramic styles from the Chalcolithic period in southeastern Iran.

Chronologically, Prickett established the Yahya VA between 4200-3900 cal. BCE based on radiocarbon and stratigraphic evidence (Prickett, 1986: 410 tab. 3.1; 413 tab. 3.2). Additional radiocarbon dates, including on Chalcolithic samples from Tepe Dehno near Shahdad, Tepe Vakilabad in the Orzouyeh Plain and recently Tepe Varamin in Jiroft near Konar Sandal south have been presented by the archaeologists (Eskandari *et al.,* 2017; 2023; Shafiee *et al.,* 2019).

Based on these new radiocarbon analyses, the Yahya VC-VB is placed between 5350-4700 BCE and Yahya VA between 4700-4200 calBCE at Tepe Dehno (Eskandari *et al.,* 2018: Tab. 2). In Tepe Vakilabad, Yahya VC-VB set between 5300-4800 cal. BCE and Yahya VA between 4800-4200 cal. BCE (Shafiee *et al.,* 2019, 92 tab. 1). Other scholars have recently proposed Yahya VC (Early Black-on-Buff Ware) between 5000-4800 cal. BCE, Yahya VB (Black-on-Buff Ware) between 4800-4500 cal. BCE and Yahya VA (Black-on-Red Ware): 4500-4000 cal. BCE (Pfälzner & Soleimani, 2017: 118 Fig. 13).

No 14C dates from the Bampur Valley have been presented yet but by considering the presence of such pottery at more than 41 sites, we can establish the chronology of the Chalcolithic sites with Kerman-related wares to be between 4500-3900 BCE The typical Yahya VA pottery has been found alongside standard Aliabad wares. Despite this long duration covering more than one millennium, we must concentrate only on the sites with Yahya VA / Aliabad wares that date between 4500-3900 BCE, as is the case in the Kerman area (Table 1).

## 3. Methods

Our primary reason for selecting these sites was the presence of at least one shard associated with the Kerman Chalcolithic period. When estimating the size of the sites during this extensive period, it is important to note that the Aliabad ware, following Yahya VA pottery, likely represents a part of the cultural continuity of the Kerman Chalcolithic period in the Bampur plain. The pottery has been found in small sites measuring less than 3 hectares, thus placing them in the lowest tier of our three-level classification of site sizes, which does not affect our interpretation of site size in the Bampur Valley. Furthermore, most sites with Aliabad ware are situated in the southern part of the river, while those with Yahya VA pottery are concentrated to the north of the riverbed. In any case, this extensive period and the diversity of pottery do not disrupt our three-level classification of site sizes in this region.

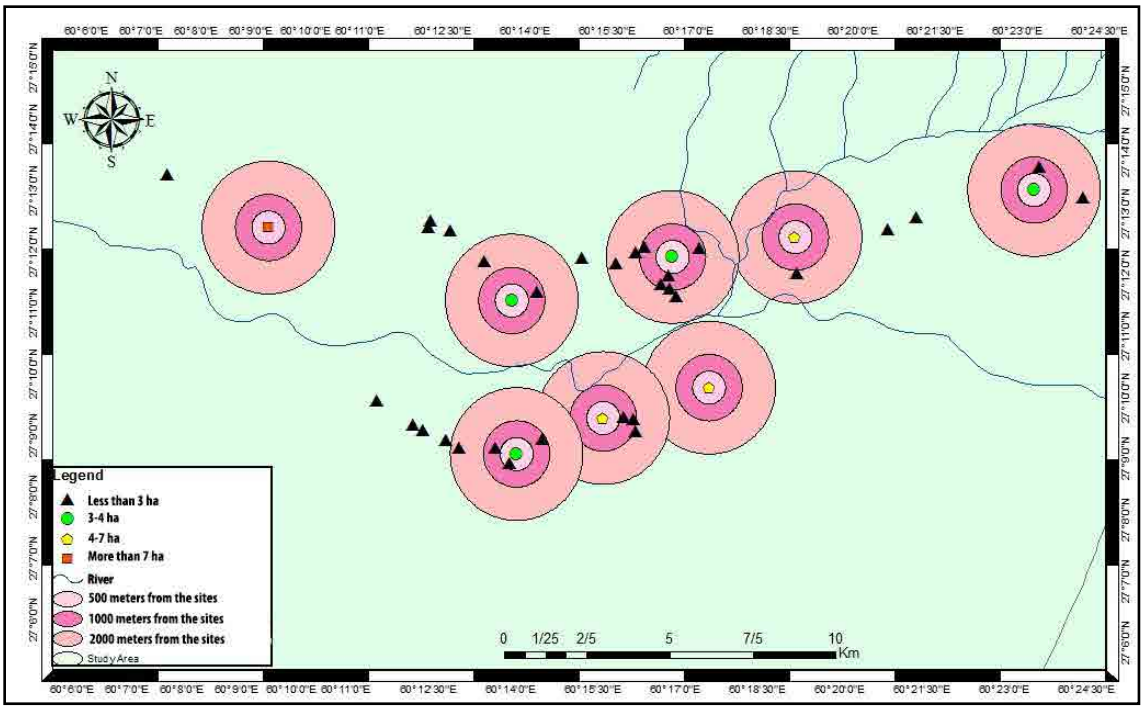



**Fig. 9: General view of relation between site size and distance (Author, 2024).**

**In this map there are three buffer zones with the range of 500, 1000 and 2000 meters. The red one is the largest one, (Chah Hosseini with 15 ha) that has no site in 2000 meters radius or more. The yellow pentagons are the sites between 4 -7 ha, with no other site at a radius of 500 meters and in radius of 1000 meters there is just one site. But in sites between 3 to 4 hectares marked with a green circle, they have some little sites (less than 3 ha) in radius of 1000 meters or in one case a little site in radius of 500 meters. Although some exceptions can be seen in Bampur valley, the analysis of distances and sizes in SPSS is significant.**

Since all sites are located in a flat area, some ineffective variables for the research, such as elevation and slope, were removed from the list of variables. Also, the environmental factors were removed from the list of variables because all sites are located in a limited zone with the same conditions. In the first step, the site size, the map of the site's placement, and the distances between these 41 Chalcolithic sites were documented by GIS, and then the connection between these variables (site size and distance) was studied by using different tests of SPSS. When both variables were numerical, the Linear Regression and Pearson R tests were used to assess the relationship between them. The Pearson correlation test and linear regression are sophisticated statistical techniques for data that are typically at the interval level of measurement. Regression analysis is used when we want to predict the values of one variable from the other variables. So, the area of the sites is considered the independent variable, and the size and the distance between them are regarded as the dependent variables.

In this case, a simple linear regression test has been applied and the output of these tests is tables that evaluate the strength of the relationship. In fact, the strength of the relationship depends on the significance level of the independent and dependent variables, and one way to determine the significance level is through the "sig" output. When it is closer to zero, the significance would be greater, indicating a relationship between the two variables, which in this case indicates a direct




**Fig. 10: Stamp seal from Tepe Jafar Abad, a Chalcolithic site in the Bampur valley (Author, 2024).**

relationship between size and distance. In addition, a cluster diagram is provided to understand these relationships.

## 4. Discussion

Site-size hierarchy is an archaeological pattern commonly used to identify regional political hierarchies in stateless middle-range societies and state-level societies (Duffy, 2015). Flannery declared the concept of decision-making and hierarchical organization (1972: 412). Henry Wright and Gregory Johnson developed an approach defined by Flannery: that a state is "a society with specialized administrative activities" (1975: 267). Their model of decision-making hierarchies in early states finds its main archaeological application in the analysis of site-size hierarchies. The most widely used measure in their model was the number of size levels (normally in hectares) in a settlement hierarchy. Wright (1977) defined the states of Mesoamerica as having large centers dominating three or more levels of a settlement hierarchy and proposed the existence of up to five levels in the settlement hierarchies of Mesopotamia, southwestern Iran, and the central Andes (1986a) and Johnson (1982) also made a terminological distinction between the hierarchies present in these stratified societies and those that existed in the interpersonal relations of non-stratified societies.

The use of the site-size hierarchy model in southeastern Iran goes back to the archaeological investigation in the Rud-i Gushk area, located 80 km north of Tepe Yahya. This was the only region in southeastern Iran that was investigated and surveyed with a focus on the size of the sites (Pricket, 1986). However, the focus of this fieldwork was not on the hierarchy levels; Pricket classified the site sizes only for chronology. It is interesting to mention that during the Yahya VA period, the total number of settlements increased to 55 sites, with over 39 ha of site area and 72 ha of sherds scatters (Pricket, 1986: 591-93). Yahya VA tended to increase site numbers and the total area of occupation. This period had a substantial increase in the number of dune sites. Within Yahya VA, there were 53 measured dune sites with major or minor occupation components (Prickett, 1986: 770).

Although the middle of the Chalcolithic period (or the Chah Hosseini Horizon in the Bampur Valley) is the expansion phase in the region, for testing the model on the Bampur Valley, we focused on the period between 4500-3900 BCE, where Yahya VA pottery and contemporary sherds were collected at the sites. Measuring the settlement size without any excavation is difficult, but when the sites include different wares that date back to the Yahya VA/early Aliabad Periods, we could consider the present size of the site as the measuring factor.

Our basis was the presence of Kerman-related pottery (Yahya VA/Aliabad wares) that appeared alongside local pottery, all dated back to the middle to the early decades of the Late Chalcolithic periods. This means that we included all sites where any kind of Kerman-related pottery was found, and these sites were nominated for estimating size and distance from other sites. Since, according to archaeological research, this period is very long, it has been assumed that the area from which this type of pottery was collected corresponds to the area of the site during the specified period.

However, the concentration of sites was on the northern side of the Bampur River, and the study was focused on the northern section of the river with Yahya VA pottery (Fig. 2). But the southern side was also taken into consideration for a better understanding of the hierarchy. It is worth noting that all sites on the southern side of the river have Aliabad wares (ca. 4200-3900 BCE), and all of them were placed in the third level of size classification (less than 3 hectares).

By studying the surface finds, three pottery types have been classified in this area, including Kerman ware, Aliabad pottery, and local types (Mutin *et al.,* 2017: 3-15). A common element at many sites is Yahya VA/Aliabad ware, which is black on red with geometric designs and previously has been collected in large quantities in Kerman (Fig. 5). For greater accuracy, we removed the scattered sherds with multiple chronological sequences from our data, and finally, we only considered 41 sites for statistical analysis (Table 1). The area of each site was estimated using a GPS plan, and the distances were also estimated using a GPS route map.

In the first step, a numeric classification of site size based on a six-level division is prepared, and the table is presented using SPSS analysis (Table 2). If we count the sites with less than a 2-hectare area in one category, we can see a hierarchical arrangement of sites based on the estimated area for each one. But it has only a numerical value, and in the same way, we can also provide smaller or bigger classifications by playing with the numbers. So, as is obvious in Figures 7 and 8, it seems that the three-level classification is more acceptable than the others.

Therefore, by attending to Figures 7 and 8, there are three size categories divided based on concentration in different parts of Figure 7. In the lowest part of Figure 7, there are 31 sites with an area of less than 3 hectares. Statistically, most sites are located in this part, and the area difference among them is less. The sites between 3-7 hectares are located in the middle of the chart, and the area difference between them is less than 3 hectares, whereas the number of them decreased to 7 sites. In the upper part, we have only one site. Chah Hosseini is the most famous and largest Chalcolithic site in Baluchestan, with an area of about 15 hectares (Fig. 7). An exception exists here since Balanch no. 1, with an area of 1 ha, was assumed to be the other large site on the eastern edge of the surveyed area. Despite its smaller size, it has the greatest height among all sites in the

Bampur Valley, but it is separated from the concentration area of the other Chalcolithic sites. As a result, regarding the different choices for site size classification and by statistically analyzing the sizes, it is acceptable to divide them into three levels. 1) Less than 3 ha, 2) between 3-7 ha, and 3) one site more than 7 ha.

In the Farukh Phase in Dehloran (4600-4300 BCE) and the Susa Phase in the Susiana Plain (4300-4000 BCE) in southwestern Iran, there were central settlements often larger than neighboring settlements. During the Farukh Phase, two settlement centers grew with obvious distance between them, which may have allowed them to control the smaller sites with designated distances. Similarly, in the Susiana Plain, two "primate" settlement centers developed during the Chalcolithic period. Chogha Mish in the east flourished with an area of 11 ha, and Susa in the west was the other (Wright, 1986b: 53-55). It is also interesting to know that in the Rud-i Gushk area, north of Tepe Yahya in Kerman, there are different sites that can be divided into three categories (Prickett, 1986).

In the second step for a better understanding of the concept of site hierarchy, the relationship between site size and distance of sites was studied using statistical methods. First, the distance between each site and the nearest site was measured using a GPS route map. Then, in SPSS software, the correlation between them was calculated using Pearson's R and regression tests (Tables 3-4).

In Table 5, the site size categories are shown based on the distance between them. The small sites (category no. 1) have more varied distances, but all are less than half a kilometer. In contrast, sites with 3-7 hectares (category no. 2) have more distance from other sites, with the nearest distance being half to one kilometer only for one site (Tables nos. 3-4).

In Figure 9, there are three buffer zones with ranges of half, one, and two kilometers. The red one is the largest (Chah Hosseini) and has no site within a 2-kilometer radius or more. The yellow pentagons are the sites between 3 - 7 ha; no site is located within a radius of half a kilometer, and within a radius of 1 kilometer, there is only one site. However, in these sites, there are some smaller sites (less than 3 ha) within a radius of 1 kilometer. Although some exceptions can be seen in the Bampur Valley, which could be referred to as the multi-chronological situation of the excepted sites, the analysis of distances and sizes in SPSS is meaningful. Based on these tests, there is a significant relation between the area and their distances (Table 5). In this way, when the area of the site has increased, its distance from the smaller sites has increased. Based on the results, the relation between the site size (or the area of each site) and distance is 39 percent, and their significance (sig) is less than 5 percent, and even in some cases is under 1 percent or reaches zero, which means that the results are valuable (Table 5).

## 5. Conclusion

Based on the site size charts and statistical analysis, a three-level classification is proposed for the middle Chalcolithic sites of the Bampur Valley, and it seems to be more acceptable than other classifications. Our classification consists of: 1) small villages (less than 3 ha; a total of 31 sites), 2) the large village (between 3 to 7 ha; consisting of 7 sites), and a big center (15 ha). It should

be interesting that we encounter the same situation in the southwest of Iran. Hence, our division is more similar to southwest Iran in the Dehloran and Susiana Plains. The same situation can be seen in the Rud-i Gushk area near Tepe Yahya in Kerman. Sabaz area in south east Bampur river seems to have a similar situation in the chalcolithic period but needs to more focus on the sites in the future (Sarhadi Dadian, 2024)

For greater accuracy, the relationship between site distance and site size is examined using Pearson's R and regression tests, which indicate a significant correlation between area and distance. As the area of a site increases, the distance from smaller sites also increases.

By acknowledging that simple chiefdoms possess only one level of control hierarchy above the local community, while complex chiefdoms have one or two levels of control hierarchy above the community (Wright, 1984: 42-43), we can categorize the Chalcolithic sites of the Bampur Valley as a complex chiefdom that exerted a two-level control over 31 small villages. It appears that during this period, middle-range societies existed in the Bampur Valley, where complex chiefdoms could have multiple levels of decision-makers above the primary producers (Fig. 10).

The question that arises here is why, unlike on the Susiana Plain, the settlements in the Bampur Valley did not evolve into state or pre-state societies in later periods. Although our knowledge is very limited due to a lack of archaeological excavations, perhaps the answer can be explored through the context of the Middle and Late Chalcolithic sites in southwestern Iran. As we have observed in southwestern Iran, during this period, two large centers dominated several smaller sites in the Susiana Plains. The presence of these two large centers may have heightened competition between them for resources or dominance. Such a situation is not evident in the Bampur Valley or Dehloran Plains, where only one significant center is found in each of these areas. Additionally, a number of other factors may influence the cultural processes in these sites in the southwest of Iran. The presence of Mesopotamia as an influential factor in the southwest of Iran, along with the complex experiences in the exchange and management of goods, may have led these settlements to achieve a level of complexity that pushed them toward statehood. Finally, in the absence of excavations in the Bampur Valley, it will be difficult to say more about the cultural processes in the southeast of Iran.

**Author's Contributions**

Dr. Hossein Moradi (corresponding author) and Dr. Hossein Sarhadi Dadian directed the fieldwork. Dr. Moradi formed a framework for analyzing the data and Dr. Zahra Rajabiuon by using SPSS, designed the statistical charts and tables.

**Author Contributions**

The contribution of all authors to the writing of the article has been equal.

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# رتبه‌بندی محوطه‌ها براساس اندازهٔ در دورهٔ مس‌وسنگ میانه در دشت بمپور در بلوچستان (۴۵۰۰ تا ۴۰۰۰ پ.م.)


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**چکیده**

دشت بمپور در قسمت مرکزی بلوچستان ایران، در جنوب‌شرقی ایران به‌عنوان یک منطقهٔ کلیدی برای درک فرآیندهای مختلف فرهنگی از دوران مس‌وسنگ به‌بعد، مطرح بوده است. داده‌های پژوهش حاضر از بررسی حدود ۴۸ محوطهٔ مس‌وسنگ از بخش بمپور از شهرستان ایرانشهر در استان سیستان‌وبلوچستان جمع‌آوری شده است. این مطالعه با تمرکز بر سلسله‌مراتب اندازهٔ محوطه‌ها تلاش دارد تا با استفاده از روش‌های آماری با استفاده از برنامهٔ SPSS، سلسله‌مراتب هر محوطه را در کل منطقهٔ مورد بررسی، مورد ارزیابی قرار دهد تا از این راه میزان پیچیدگی اجتماعی در این دوره در دشت بمپور را مورد مطالعه قرار گیرد. طبقه‌بندی اندازهٔ محوطه‌ها با استفاده از SPSS انجام شدو نهایتاً با استفاده از آزمون‌های R-Pearson و Regression، طبقه‌بندی سه سطحی مقبول‌تر از سایر طبقه‌بندی‌ها فرض شد که شامل موارد زیر است: ۱) محوطه‌های کمتر از ۳ هکتار شامل ۳۱ محوطه؛ ۲) بین ۳ تا ۷ هکتار شامل ۷ محوطه؛ و ۳) محوطه‌های بیشتر از ۷ هکتار می‌باشد. برای درک بهتر جنبه‌های مختلف پیچیدگی و سلسله‌مراتب اندازهٔ محوطه‌ها، رابطهٔ بین اندازهٔ محوطه و فاصلهٔ هر محوطه با سایر محوطه ها توسط SPSS مورد مطالعه قرار گرفت. درنهایت این پژوهش نشان می‌دهد که تحلیل فواصل و اندازه‌ها معنادار است. در جایی‌که جوامع خان‌سالار ساده از الگوی دو سطحی در سلسله‌مراتب اندازهٔ محوطه‌ها برخوردار بوده‌اند، بررسی‌های به‌عمل آمده نشان می‌دهد که الگوی سه سطحی مختص به جوامع خان‌سالار پیچیده می‌باشد درد شت بمپور دیده می‌شود که پیش‌تر در جلگهٔ شوش و فاز فرخ در دهلران و درهٔ صوغان در کرمان نیز دیده شده است.



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## Half of the Fourth Millennium BCE: A Re-evaluation of the Role of Tepe Hissar in the Proto-Elamite Phenomenon

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**Abstract**

Archaeological investigations at Tepe Hissar, situated in the northeast of the Iranian Central Plateau, have provided tangible evidence of the "Proto-Elamite phenomenon" at the site. The primary focus of this research is a comparative analysis of the "grey wares" and "cylinder seals" recovered from the "Hissar II" occupation layers (second half of the 4th millennium BCE) with established samples from other Proto-Elamite sites. The findings indicate that the grey wares of Hissar exhibit clear similarities with standard Proto-Elamite samples from Tepe Sofalin, particularly regarding paste composition, firing techniques, vessel forms, and decorative motifs. Furthermore, an analysis of the Hissar cylinder seals, concerning their material, manufacturing techniques, and iconographic expressions, reflects the site's cultural connections with Proto Elamite world. Collectively, this evidence positions Tepe Hissar not merely as a peripheral point of contact, but as an active and innovative node within the cultural interactions of the late 4th millennium BCE. This study highlights the necessity of reassessing current models regarding the transmission of the Proto-Elamite culture to northern regions. Based on the ceramic and glyptic data, Tepe Hissar is redefined not as a passive link, but as an active agent within the communication networks and cultural developments of the Proto-Elamite era in the northern Iranian plateau; a site that, through the selection and re-creation of both imported and local elements, contributed to the formation of distinct cultural traditions.

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## 1. Introduction

The study of proto-urban societies and material interaction networks in Southwest Asia has considerably advanced our understanding of the emergence, development, and transformation of pre-state societies (Algaze, 2001; Alizadeh, 1994; Frangipane, 2016; Helwing, 2005). A central discourse in this field involves examining the parameters of the Proto-Elamite phenomenon and the extent of its expansion, influence, or lack thereof, within various regions of the Iranian Plateau (Helwing, 2004; Abdi, 2003; Alden, 1982; Amiet, 1985; Dahl *et al.,* 2013; Dittmann, 1986; Pittman, 1992). The investigation of sites outside the classical Proto-Elamite heartlands, such as "Tepe Hissar" in northeastern Iran, not only raises questions regarding the actual boundaries of the Proto-Elamite sphere but also facilitates a rethinking of the nature of communication networks, cultural interactions, and the diverse trajectories of proto-urban societal development (Dyson, 1987; Thornton *et al.,* 2013; Saeedi, 2021). Given its considerable antiquity and cultural richness, Tepe Hissar is among the few sites that, despite its unique geographical location and indigenous dynamics, has consistently remained central to debates concerning the relationship between the Central and Eastern Iranian Plateau and the Proto-Elamite cultural sphere (Dyson, 1987; Saeedi, 2021). The discovery of a limited number of cylinder seals and other material culture attributed to the Proto-Elamite period, alongside certain grey wares comparable to specimens found at Proto-Elamite sites on the Central Plateau, led to the site long being perceived as a connecting link between western and eastern Iran. However, findings from recent field research and critical re-readings of the data have raised new questions and uncertainties regarding this hypothesis. Today, a more precise examination of the stratigraphic structure, the analysis of stylistic features of ceramics and seals, and the evaluation of architectural and funerary data from Tepe Hissar have rendered a redefinition of its cultural status, and an assessment of its dependency on or independence from the Proto-Elamite phenomenon, inescapable. This article aims to undertake a fundamental re-evaluation of the site's position within the cultural systems of the late 4th and early 3rd millennium BCE through a critical and comparative analysis of the data from Tepe Hissar and other major Proto-Elamite centers, exploring the multifaceted dimensions of the core question of integration vs. conscious rejection within the framework of the available evidence.

### 1-2. Statement of the Problem

The cultural affiliation of Tepe Hissar, one of the prominent sites in northeastern Iran during the late 4th and early 3rd millennia BCE, has long been a subject of scholarly debate. The question of whether Tepe Hissar can be identified as part of the Proto-Elamite cultural network is not merely a concern of regional history; it directly impacts our understanding of the processes of proto-urbanization and trans-regional cultural formation in Iran (Afshar, 2014; Costantini & Dyson, 1990; Dyson, 1987; Saeedi, 2021; Gürsan-Salzmann, 2016; Paladre, 2023; Thornton *et al.,* 2013). For many years, the purported discovery of a Proto-Elamite tablet in the "Southern Mound", along with several cylinder seals, was considered the primary evidence supporting Hissar's membership within the Proto-Elamite sphere (Dyson, 1987). However, critical re-examination of sources and

excavation data has revealed that the nature of this evidence, particularly the tablet attributed to the Proto-Elamite period, is ambiguous (Dahl *et al.,* 2013), while the seal impressions and tokens often lack definitive analytical reliability. Furthermore, recent comparative chronological and stratigraphic studies have emphasized the absence of any distinct administrative materials or diagnostic Proto-Elamite pottery at the site, asserting that Tepe Hissar's pottery tradition was primarily oriented towards the east and northeast (Dyson & Remsen, 1989; Thornton *et al.,* 2013). Conversely, profound political and economic events, such as the emergence of the Proto-Elamite phenomenon, initiated new dynamics across the Iranian Plateau (Helwing, 2005; 2006). During this period, archaeological evidence suggests that rather than adopting the administrative models of the western world, Tepe Hissar gradually gravitated toward northern and eastern networks, such as the Namazgah culture, and opted for a different trajectory in its socio-economic structure (Thornton *et al.,* 2013).

Nevertheless, the presence of a limited number of Proto-Elamite seals and certain imitation ceramics, such as beveled-rim bowls (BRBs), demonstrates that Tepe Hissar was in contact with and aware of the cultural transformations occurring in the western half of Iran (Gürsan-Salzmann, 1992). This raises critical questions regarding the nature of these connections and the extent to which the site adopted or rejected Proto-Elamite administrative systems, thereby transforming this issue into the central focus of the present study. Therefore, the central research problem is to determine, based on diverse archaeological evidence, stratigraphic data, and stylistic analysis of the artifacts, whether Tepe Hissar can be classified within the Proto-Elamite sphere, or if it should be viewed as an independent center in the eastern Iranian Plateau, oriented toward local and regional, non-Proto-Elamite networks. In other words, when analyzing the relationship between Tepe Hissar and the Proto-Elamite phenomenon, which of the two scenarios, "active integration" or "conscious rejection" of the Proto-Elamite network, is supported by the available material evidence? A critical re-reading and analysis of field data, contextualized within the cultural communication networks of the proto-urban period, can not only clarify the enigma of Tepe Hissar's position relative to the Proto-Elamite phenomenon but also open new horizons for understanding the complexity of inter-regional communications and the diverse trajectories of cultural development in ancient Iran.

### 1-3. Research Objectives

The core research questions of this study revolve around the cultural position of Tepe Hissar in relation to the Proto-Elamite culture, based on diverse archaeological and comparative evidence. This article attempts to address whether the material data from Tepe Hissar, including ceramic types and cylinder seals, truly attests to the site's integration into the Proto-Elamite cultural sphere or rather indicates an independent tradition oriented toward eastern and Central Plateau networks. Furthermore, this study aims to compare the distinct characteristics and differences of Hissar's pottery and seals with established samples from major Proto-Elamite sites, such as Susa and Tepe Sofalin, and to evaluate the extent and nature of Tepe Hissar's contact, influence,

or even resistance to the administrative and managerial patterns of this period. Finally, Hissar's position within late 4th and early 3rd millennium BCE communication networks and its level of participation in the formation of trans-regional cultures or regional independence constitute other fundamental themes of this research. To address these questions, this research employs an analytical-comparative approach. First, archaeological data, including field findings and previous studies concerning Tepe Hissar, are systematically collected and examined. Subsequently, through a descriptive analysis of the stylistic and stratigraphic features of the recovered pottery and cylinder seals, and a comparative analysis against established material markers at major Proto-Elamite sites such as Susa and Tepe Sofalin, the degree of cultural homogeneity or distinction of Tepe Hissar is identified. Throughout this process, a critical evaluation of various scholarly perspectives and new interpretations of the evidence will play a pivotal role, enabling a precise analysis and elucidation of the functioning of communication networks, exchange patterns, and the historical scenarios envisioned regarding Tepe Hissar and its relation to the Proto-Elamite phenomenon.

## 2. Geographic Setting and Settlement Dynamics

Geographically, Tepe Hissar is situated on the Central Iranian Plateau, approximately 1.5 km southeast of the modern city of Damghan (36°09' N, 59°22' E) (Fig. 1). The site occupies a strategic position along the historic east–west trade corridor connecting Tehran and Mashhad. To the north rises the Alborz Mountain range; the primary catchment area for the Cheshmeh Ali spring, which drains via the Damghan River, while the southern margins of the site border the Central Salt Desert. Geomorphological and ecological studies indicate that this favorable setting facilitated prehistoric mobility and offered access to diverse environmental zones (Meder, 1989). The ancient inhabitants utilized a broad subsistence catchment, exploiting resources ranging from the arid desert margins to the Alborz foothills, and potentially extending to the Caspian coastal plain located approximately 100 km across the mountains (Gürsan-Salzmann, 2016). This resource landscape influenced the long-term spatial dynamics of the site. Over time, the population shifted across the settlement complex, likely driven by agricultural requirements or changing water availability. Consequently, previously inhabited areas were abandoned and converted into intra-site cemeteries, only to be reoccupied in later periods. Throughout the occupational sequence, active residential sectors coexisted with adjacent flat zones reserved for burials (Gürsan-Salzmann, 2016). Rising 6 to 8 meters above the surrounding plain, Tepe Hissar comprises seven discrete mounds and several low-lying, flat settlement sectors. By the mid 1970s, the visible remains spanned approximately 600 meters in diameter, covering roughly 12 hectares, with a portion of the site's margins buried beneath the alluvial sediments of the Damghan River (Meder, 1989).

## 3. History of Archaeological Research and Environmental Context

The scholarly history of Tepe Hissar began in the late nineteenth century. The earliest reference to the site appears in the notebook of General Houtum-Schindler, an Austrian officer serving

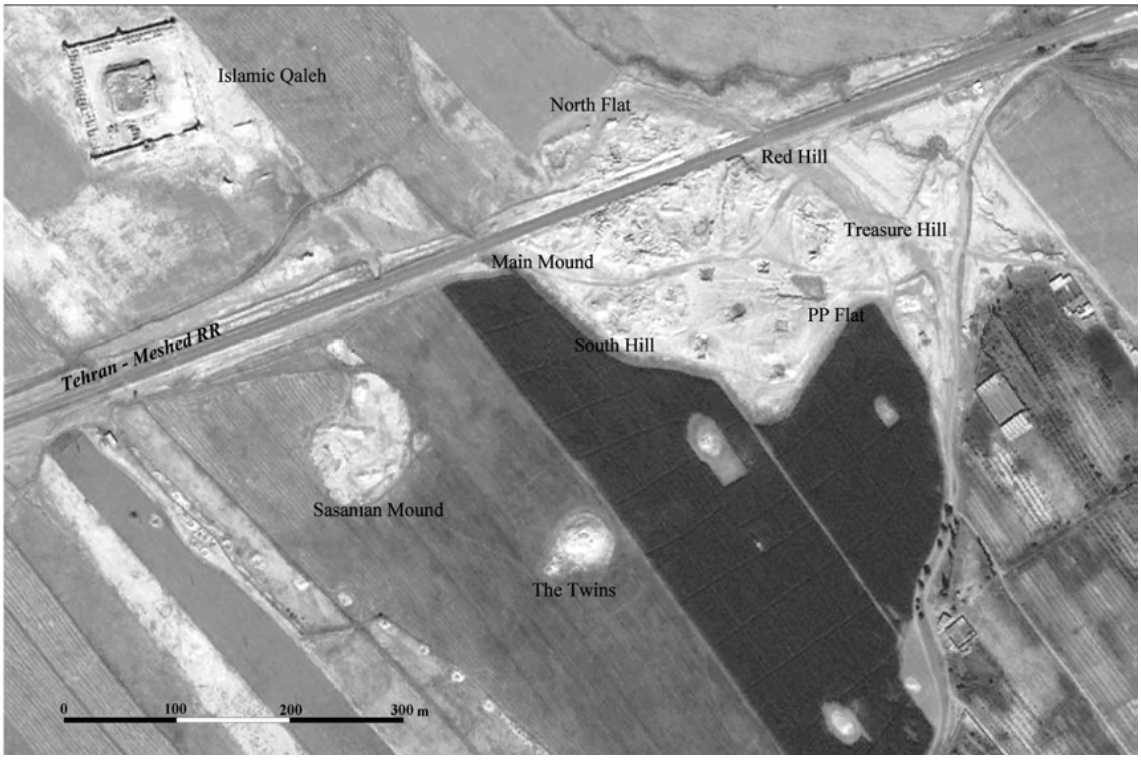



**Fig. 1: Aerial view of Tepe Hissar, Damghan (Gürsan-Salzmann, 2016).**

in the Persian army, who documented the looting of the mound by local inhabitants in search of antiquities (Schindler & Schmeltz, 1887). Decades later, in 1925, Ernst Herzfeld of the German Archaeological Service in Iran surveyed the Damghan region, listed the looted artifacts previously mentioned by Schindler, and formally recommended the site for systematic excavation to Horace Jayne, then director of the University of Pennsylvania Museum. In 1930, Jayne invited Erich Schmidt to direct the Damghan Project on behalf of the Pennsylvania Museum of Art. Operating from 1931 to 1932, the Damghan Project was designed as a comprehensive program targeting three main features as the prehistoric mound of Tepe Hissar, the historic citadel of Damghan, and the nearby Sasanian palace. Schmidt's pioneering work established the site's basic historical and chronological framework (Schmidt, 1931; 1933; 1937). Nearly fifty years later, in 1976, the second major excavation campaign was launched. Initiated by the Penn Museum under the direction of Robert H. Dyson, and co-directed by Maurizio Tosi of the University of Turin, this project was conducted in collaboration with the Iranian Center for Archaeological Research (ICAR). The primary objective of the 1976 season was to resolve the stratigraphic and chronological ambiguities inherent in Schmidt's original sequence. Through refined stratigraphic testing and the application of radiocarbon dating (Dyson & Lawn, 1989), the team clarified the occupational sequence of the Main Mound (Buildings 1, 2, and 3), the Northern Area (the Burnt Building complex), the Southern Mound (an industrial workshop area), and the Twin Mounds. This campaign also integrated multidisciplinary research, including geomorphological and ecological reconstructions (Meder, 1989), archaeo-metallurgical investigations (Pigott, 1989),

and a regional archaeological survey of the Damghan Plain (Trinkhaus, 1989). Subsequent fieldwork was conducted by Iranian researchers. In 1995, Ehsan Yaghmaei directed a brief rescue excavation on behalf of (ICAR); however, the data from this season remain largely unpublished. In 2004, Kourosh Roustaee carried out a boundary delimitation project and completed further geomorphological assessments of the site, while also evaluating the evidence for occupational continuity at Tepe Hissar into the Iron Age (Roustaei, 2010).

**4. Stratigraphic Sequence of the Main Mound at Tepe Hissar**

At the Main Mound, Schmidt excavated trench DF09 from the ground surface to a depth of more than 3.5 meters below surface. In his final publication of 1937, he assigned these remains to periods III, II, and IC. However, his internal subdivision, IIIC, IIIB, IIIA, IIB, IIA, and IC, is not particularly precise when applied to the excavated architectural levels. In 1976, Dyson expanded excavation within Building Phase 2 at a depth of -3.45 m, exposing approximately 500 m² of architectural remains horizontally, extending from DF09 to include the spaces (DG00), (DG01), CG90, DG10, and DG11 (Howard, 1989). The architectural phases were numbered from top to bottom by means of letters and numerals, such that (1) designates the latest building phase within each construction stage (Table 1). On the Main Mound, a 1×1 m stratigraphic sounding was excavated from the highest preserved surface over the intact remains of Building 1. This sounding reached the terminal levels of the Painted Wares horizon and the initial appearance of Grey Wares, corresponding to Phases F and Period III. It thus provided a continuous sequence from the end of Schmidt's Period I through the subsequent Periods II and III. This sounding demonstrates that all of these architectural units were essentially contemporary and belonged to phase D, that is, Period II, contrary to Schmidt's classification, in which they had been assigned to Period III. Radiocarbon samples confirm the chronological framework of this stratigraphic relationship (Dyson & Lawn, 1989).

**5. Hissar Period II (3350–3100 BCE)**

On the Main Mound, Phase D is represented by three building phases, D1 to D3, which were recovered in Buildings 1, 2, and 3 (Dyson and Lawn, 1989). These building phases were documented by the 1976 excavation team through horizontal excavation. All these buildings share a common layout, and their exterior walls are characterized by buttresses. Each building contains a main room with a central hearth, with the exception of Building 1 in Phase D3. The main room of Building 2 exhibits two building phases: D3 and D2. The initial phase, D3, was contemporaneous with Building 1 and is situated along its southeast wall. However, the main room was constructed in the subsequent phase, D2. Following the D3 and D2 building phases, the floor of the main room of Building 3 was reconstructed in Phase D1, which belongs to the D–C transitional period at the beginning of Period III (Fig. 4).

**5-1. Building 1**

The details of Building 1 are known only through Schmidt's brief field notes, a published plan,

**Table 1: Correlation of levels, periods, and radiocarbon dates for the Tepe Hissar sequence (after: Gürsan-Salzmann, 2016).**

| Schmidt's levels 1931-32 | Schmidt's Periods | 1976 Corr. Periods | 1976 Phases and Strata | Location | MASCA Corrected Dates (BC) |
|---|---|---|---|---|---|
| Lev. "1" | IIIC | IIIC | A (1)<br>B (2) | Highest preserved stratum | 2150-1885 |
| Lev. bet. "2-1" | IIIB | IIIB/IIIA | C1 (3)<br>C2 (4) | DG20 - 3 ovens similar to the one in the North Flat | 2640-2390 |
| Lev. "2" | IIIB/IIIA | IIB | D1 (5)<br>D2 (6)<br>D3 (7) | Building 3a Rm 11<br>Building 3a Rm 7<br>Area /2/<br>Kiln /3/<br>Kitchen /1/<br>Buildings 2, 3 | 3360-2995<br>3175-2920<br>3380-3160<br>3375-3150<br>3385-3165<br>3380-3155 |
| Lev. "3" | IIA/IIB | IC/IIA | E1 (8)<br>E2 (9)<br>E3 (10) | DF09<br>Baulk 13 | 4590-4545 |
| Lev. "4" | IC/IIA | IC/? | F1 (11)<br>F2 (12)<br>F3 (13) | DF09<br>Baulk 13 | 4345-3515 |

and an unpublished archival map (Schmidt, 1937: Fig. 84). The structure was incompletely documented and excavated, and only a few photographs were recorded. The plans illustrate a central room approximately 20 m² in size, which apparently had an entrance from the west and a second entrance in the northeast corner leading to a corridor approximately 1 m wide and 3 m long. Directly opposite this entrance, against the northeast wall, there was a two-chambered hearth. Slightly west of the corridor entrance, a narrow wall protruded into the room. It appears the southeast wall was continuous, with no entrance into Building 2. The location of this structure suggests that Building 1 was constructed contemporaneously with Building 2, which is attached to it from the southeast and belongs to Phase D3, dating to approximately 3400 BCE (Dyson & Howard, 1989).

### 5-2. Building 2

Excavations of Building 2 revealed a square main room measuring 6.3 m2, with a floor located 3.30 m below the surface and a square hearth in the center. The primary entrance was a 65 cm wide doorway in the southeast wall, leading into the room from an open courtyard to the south. To the right of the door, there was a short partition wall. Another doorway in the back wall led to a storeroom. To the right of this door stood a wall that blocked a passageway. To its west, a doorway with a low threshold led to another storeroom. Schmidt noted that fragments of stone mortars were found in both storerooms, consistent with the use of these spaces for grain storage (Schmidt, 1937:

156). The exterior facades of the northeast and southeast walls featured buttresses or recesses that were not indicated on the original plan. These exterior wall facades remain unexcavated. Pottery found in the deposits of Building 2, from the floor level (at a depth of 3.45–3.65 m) up to (-2.50 m), is described in Schmidt's daily logs as primarily Grey Ware, with examples of Painted Red Ware. The artifacts recovered from the deposits of the Building 2 main room included eight baked clay quadruped figurines, a clay ball, a spindle-shaped object with a flat base, a small bowl, and two ceramic spindle whorls. Based on Schmandt-Besserat's analysis, these objects are likely tokens (Schmandt-Besserat, 1992: 203–206). Building 2 belongs to Phase D3.

### 5-3. Building 3

Building 3 originally featured buttressed walls on all four sides. The original southwest wall appears in Schmidt's records as an irregular wall with three buttresses on the northeast side, opposite the east corner of Building 2 (Schmidt, 1937). The building was approximately rectangular and initially consisted of a single main room. At some point, one of the niches was cut from the northeast wall to create a doorway, and a small rectangular storeroom with buttressed exterior walls was added. In the north corner, there was a three-chambered hearth. In the center of the room, a square mud pedestal was observed, containing a deep hole for a column in the middle; its orientation was diagonal relative to the walls. It is unclear whether this structural element belonged to the first phase of construction or was an addition following the building's reconstruction after a fire. Following the initial fire, the exterior niches and the interior rows of "crescent-shaped" niches in the northwest wall were filled with ash and plastered; this event likely occurred concurrently with the reconstruction of Building 2. At this time, the room was shortened; the ruined southwest wall was abandoned, and a new, narrower wall was built parallel to it, inside the room. Perhaps shortly thereafter, another small storeroom without buttresses was added to the southeast wall, accessible via a small door from the main room. Absolute radiocarbon dates for Period II of the Main Mound indicate that the construction and use of these spaces occurred primarily between approximately 3380 and 3000 BCE (Dyson & Harris, 1986). The first floor of the Storeroom has been dated by two samples to 3375–3150 and 3355–3165 BCE; Corridor 2 to 3380–3160 BCE; and Kitchen 1 to 3380–3155 BCE. The Kiln 3 dates to 3375–3150 and 3355–3165 BCE. Therefore, the architectural developments in this sector primarily belong to the late fourth to early third millennium BCE (i.e., Phases D1 to D3) (Dyson & Harris, 1986).

## 6. Tepe Hissar and the Proto-Elamite Phenomenon

The inclusion of Tepe Hissar within the Proto-Elamite phenomenon has always been fraught with fundamental ambiguities, and the evidence invoked in support of such an attribution has largely been limited to the alleged discovery of a Proto-Elamite tablet in a storage room on the Southern Mound, associated with two cylinder seals, eight tokens, and two seal impressions (Bulgarelli & Tosi, 1988). These data, which effectively became the principal basis for assigning Tepe Hissar to the Proto-Elamite sphere, were defined by Dyson as a Proto-Elamite tablet associated with seal impressions of the Proto-Elamite period even before the tablet was formally published by the

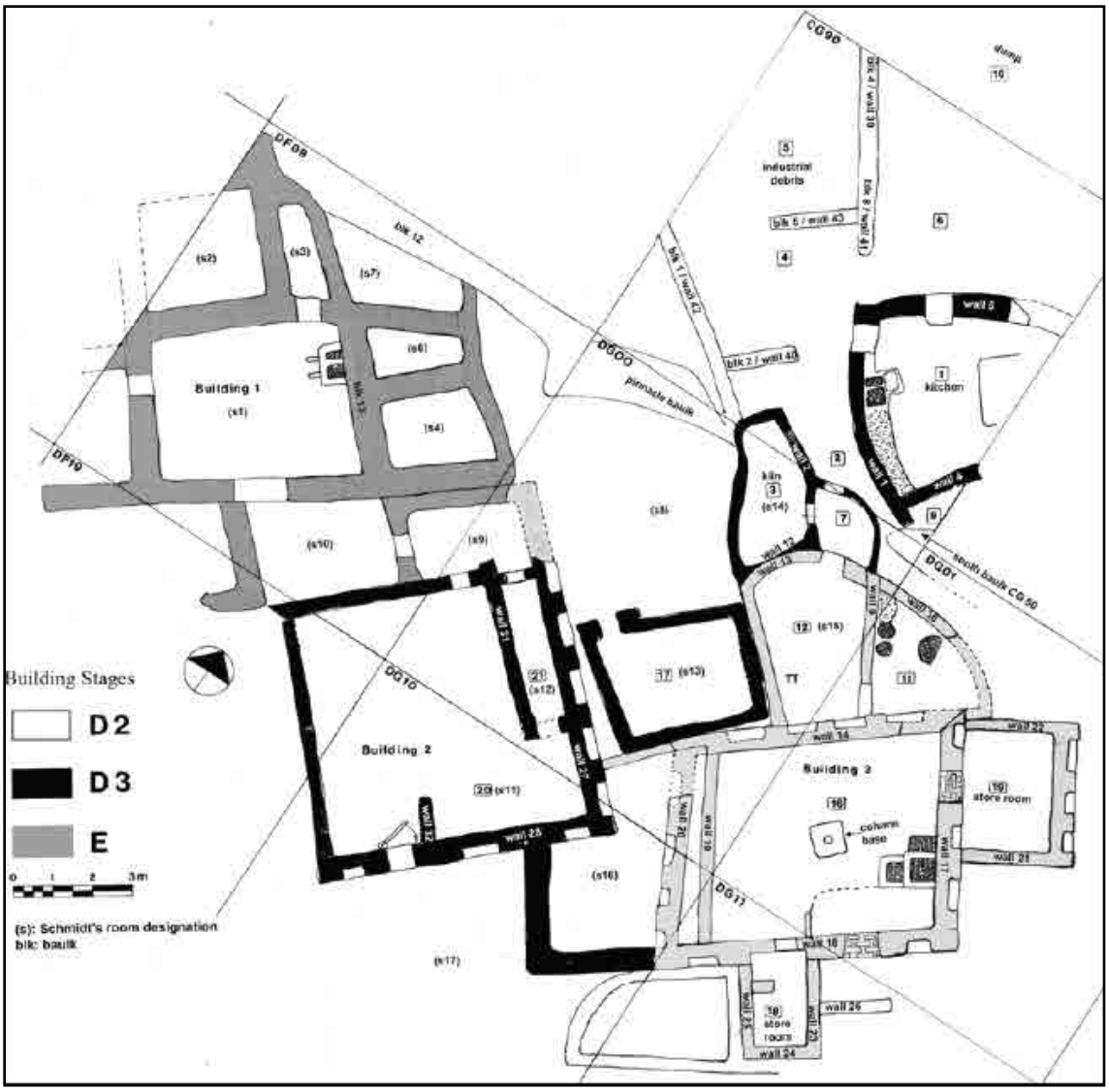



**Fig. 2: Architectural plan of Hissar II, Buildings 1, 2, and 3 (3350–3100 BCE) (after: Gürsan-Salzmann, 2016).**

excavators (Dyson, 1987: 657–658). This interpretation was rapidly accepted within the scholarly community; however, the actual nature of this tablet and its relationship to the Proto-Elamite administrative tradition remained essentially unclear (Potts, 2001; Lamberg-Karlovsky, 2001; Mutin, 2013; Abdi, 2003; Sumner, 2003). Morteza Hessari, in his study, added new information and explicitly referred to the existence of raw Proto-Elamite tablets, as well as an unpublished cylinder seal identified by late Ehsan Yaghmaei in recent excavations (Hessari, 2011: 38).

At this point, an important issue deserves attention. while Tepe Hissar has largely been linked to the Proto-Elamite sphere on the basis of the alleged discovery of this very tablet and a few isolated objects, Shahr-i Sokhta, despite possessing a comparable assemblage, including a confirmed Proto-Elamite text and standard seal impressions, has never been considered a member of this sphere (Paladre, 2023). This contradiction became clearer when, in 2013, three articles published in the volume "Ancient Iran & its Neighbors" highlighted several dimensions of the issue (Petrie, 2013). The conclusions of Petrie, as well as those of Gürsan-Salzmann and Dyson,

did not even mention this tablet, and both unequivocally regarded Tepe Hissar as outside the Proto-Elamite sphere (Petrie, 2013; Thornton *et al.,* 2013). In contrast, Saeedi regarded Tepe Hissar as part of the Proto-Elamite cultural sphere (Saeedi, 2021). All of these scholars, while emphasizing the absence of diagnostic administrative materials and the clear eastern orientation of Hissar's ceramic assemblage, adopted broadly convergent positions. Dahl and colleagues in an article further demonstrated that the famous Proto-Elamite tablet was in fact bearing signs of cuneiform script (Dahl *et al.,* 2013: 353–354). A re-examination of the sources also revealed that the so-called Proto-Elamite seal impressions mentioned by Dyson essentially do not exist as such (Paladre, 2023). Of the administrative materials recovered from Tepe Hissar, only two specimens can be associated with the Proto-Elamite horizon; a classic Proto-Elamite seal (Schmidt, 1937: 198, Fig. H 116) and a glazed cylinder seal (H 3710), decorated with animal and bird motifs, which was found at Treasure Hill, in trench CH 96, and in a layer that Schmidt described as a "suspicious" fill belonging to IIIB, thus dating it to between 2500 and 2200 BCE. The first and second cylinder seals were largely forgotten because of Schmidt's erroneous stratigraphic attribution (Schmidt, 1937). However, a re-reading of the style and the field notes of Dyson and Harris clearly identifies the seal as belonging to the classic Proto-Elamite style. Interestingly, this seal was found at the base of building (No. 21), the floor of which, according to radiocarbon dating, belongs to around 3200 BCE (Dyson & Harris, 1986: 85). Gürsan-Salzmann and Dyson also classified this building as belonging to Phase D 3350–3100 BCE (Thornton *et al.,* 2013). This confusion stems, above all, from an inadequate understanding of the cultural materials of Tepe Hissar and an incomplete grasp of the true nature of Proto-Elamite culture. A clear example is Gürsan-Salzmann's recent publication, which bases Tepe Hissar's contacts with Mesopotamia between (3400 and 3100) BCE on the presence of beveled-rim bowls and an administrative assemblage of uncertain character, and cites Helwing; whereas Helwing explicitly refers to the Uruk phenomenon in lowland regions (Helwing, 2013).

### 6-1. Pottery of Tepe Hissar Period II

In general, four primary pottery classes are observed in Hissar II. These include (1) Grey Ware, comprising burnished, plain, and metallic-luster varieties; (2) Red Ware, consisting of both plain and painted types; (3) Buff Ware, including plain and painted forms; and (4) Coarse Buff Ware (Gürsan-Salzmann 2016). During Phase D of Tepe Hissar, ceramic production attained a level of diversity, quality, and technical-artistic complexity that distinguishes it from both preceding periods and many contemporaneous regions. The most abundant class is Burnished Grey Ware, which, owing to high-firing temperatures, metallic-like luster, and fine finishing, represents the pinnacle of ceramic production techniques of the period (Fig. 3). Manufacturing processes, such as the use of the potter's wheel, precise temperature control, and the inclusion of sand temper in the clay paste, resulted in the creation of high-quality, exceptionally thin-walled vessels. These lustrous, burnished surfaces attest to both the technical proficiency of the potters and the social demand for delicate, decorative wares. A rich assemblage of functional and ritual forms is

observed during this phase. bottles and open-mouthed jars, particularly in the burnished and plain grey varieties, are frequently thin-walled with professionally joined necks and bodies; visible wheel-throwing marks further underscore their technical signatures. Morphologically, painted buff conical cups/bowls, pedestaled bowls (or those with broad bases), spherical bowls, large storage jars, trays and bell-shaped goblets constitute a significant portion of the assemblage. With the onset of the transitional Phase D–C, changes in the quantitative distribution of these wares and the emergence of new forms become evident. The proportion of Burnished Grey Ware decreases slightly, replaced by an increase in more utilitarian Plain Coarse Buff Wares, likely reflecting economic or functional shifts.

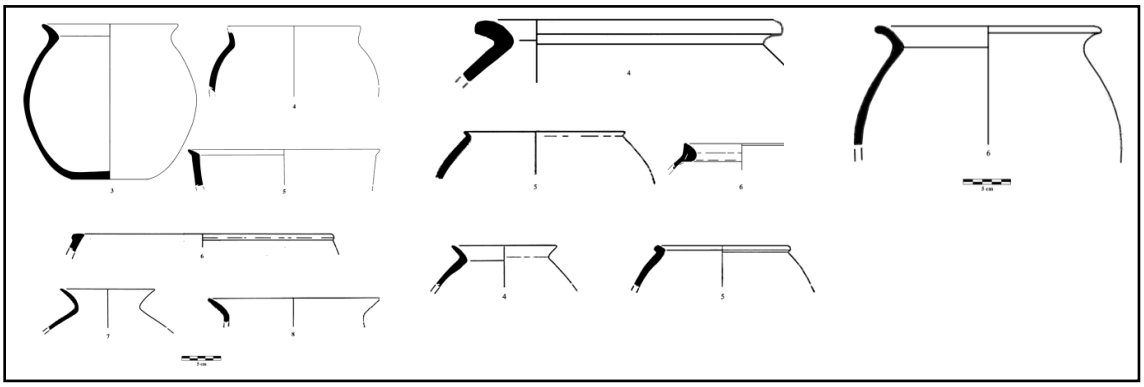


**Fig. 3: Shapes of Plain and Burnished Grey Ware from Tepe Hissar II (Gürsan-Salzmann, 2016).**

### 6-2. Comparative Analysis: Tepe Sofalin and Tepe Hissar (Hissar II)

A comparison of the pottery assemblages from Tepe Sofalin with those of Tepe Hissar (Hissar II, Phases D and D–C) provides crucial insights into the relationship between these two sites, within the broader context of technological, aesthetic, and cultural developments on the northern Iranian Plateau during the second half of the 4th millennium BCE. This analysis facilitates an examination of the trajectories of interaction and mutual influence between these regions. Significantly, among all classic and well-established Proto-Elamite sites, Tepe Sofalin exhibits the most striking similarities in pottery assemblages, particularly concerning Grey Wares and its associated sub-types. Almost all Grey Ware types identified in Hissar II are also present in the Tepe Sofalin assemblage. Given that Tepe Sofalin is a single-period Proto-Elamite site, possessing all standard characteristics of this period in terms of ceramic traditions and administrative technology and is geographically the closest Proto-Elamite site to Tepe Hissar, a comparison of their respective pottery assemblages offers the most effective means to clarify the nature of Tepe Hissar during the second half of the 4th millennium BCE and to determine the extent of its integration within the Proto-Elamite horizon (Fig. 4).

### 6-3. Burnished Grey Ware with Incised Geometric Designs

The first group, Burnished Grey Ware with incised geometric designs at Tepe Sofalin, constitutes 12% of the total ceramic assemblage at the site. The temper used is organic, manifesting as narrow, longitudinal voids on the inner and outer surfaces of all sherds, which serves as a defining

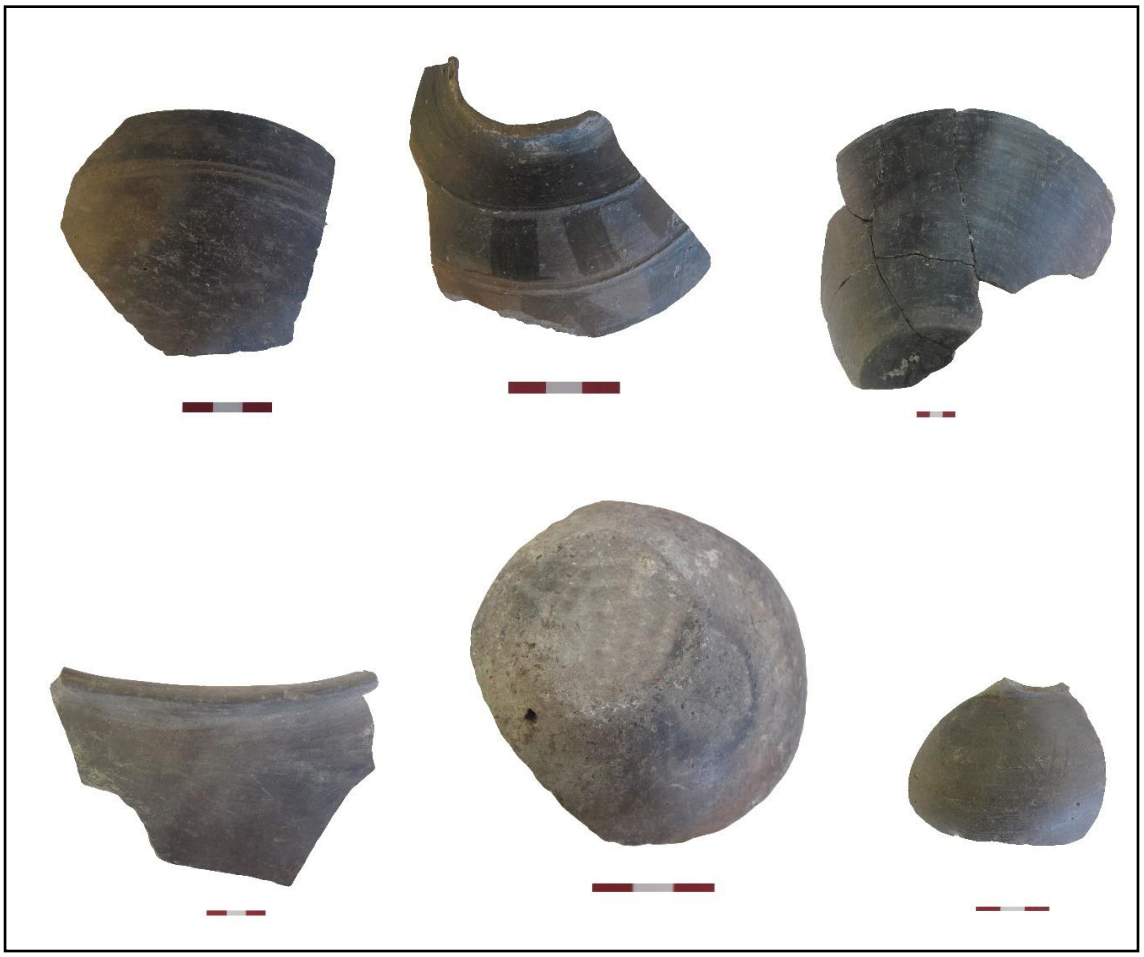


**Fig. 4: Samples of Grey Wares from Tepe Sofalin (Yousefi Zoshk, 2010).**

characteristic of this ware (Yousefi Zoshk 2010). Although the paste is sufficiently well-kneaded and the pottery possesses a cohesive and solid fabric, the abundance of organic temper gives the fabric a texture resembling a highly compressed, porous sponge; notably, these vessels produce a dull, low-pitched sound when struck. The majority of vessels in this ware are open-mouthed, typically featuring simple rims and flat bases. In addition, globular, closed-mouthed vessels and carinated forms are also observed among the various shapes of this group. The identified bases in this ware are flat, belonging to vessels with either spherical or vase-like bodies (Fig. 5).

### 6-4. Grey Ware

The second group of Grey Ware at Tepe Sofalin features a brownish-grey or black paste and accounts for more than 2% of the studied sherds; it primarily consists of plain, relatively thin-walled vessels. This ware contains mineral temper (fine sand), which renders the fabric homogeneous with good to very good sorting. The exterior surfaces of most sherds are burnished in an irregular, lower-quality manner. All examples consist of globular, closed-mouthed vessels. The interior surfaces are predominantly uneven and contain charcoal-black sand particles, a feature that serves as a key diagnostic criterion for identifying this ware. The clay utilized for this pottery is relatively refined, with few visible impurities (Yousefi Zoshk, 2010). The firing of these vessels is

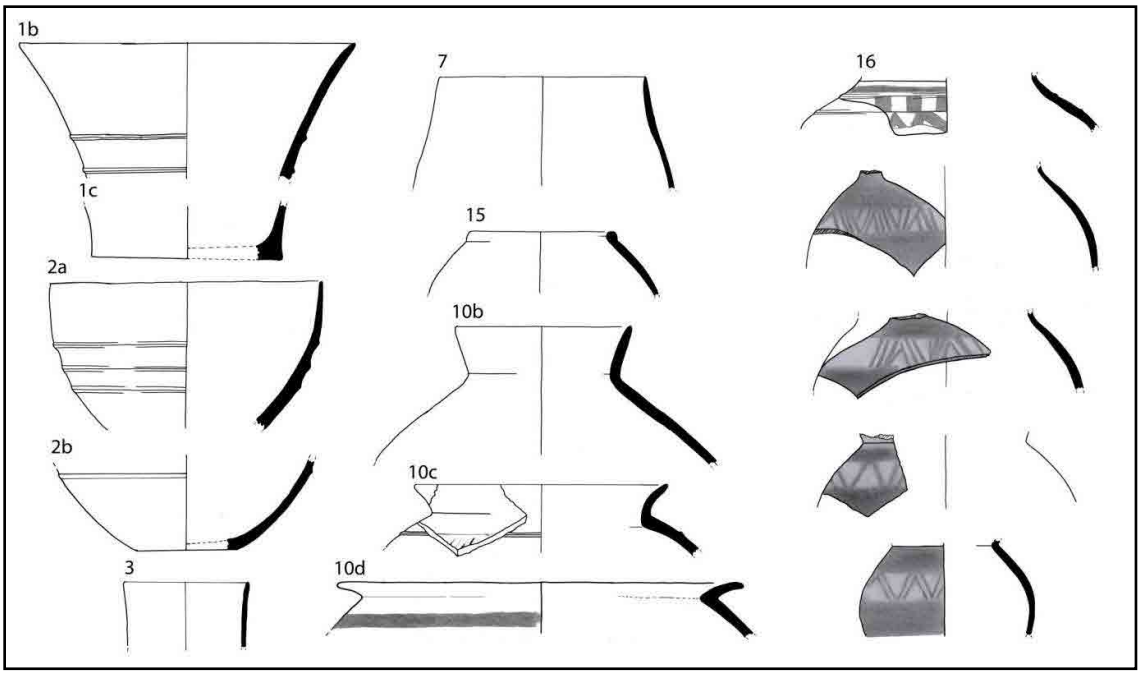



**Fig. 5: Burnished Grey Ware with vegetable temper, Tepe Sofalin (Yousefi Zoshk, 2010).**

relatively uniform, though not to the extent that it compromises the durability of the ceramic. The identified forms include closed-mouthed globular vessels with externally folded rims in various sizes. Almost all sherds of this ware lack decoration, with only rare instances showing traces of simple incised burnished geometric designs (Fig. 6).

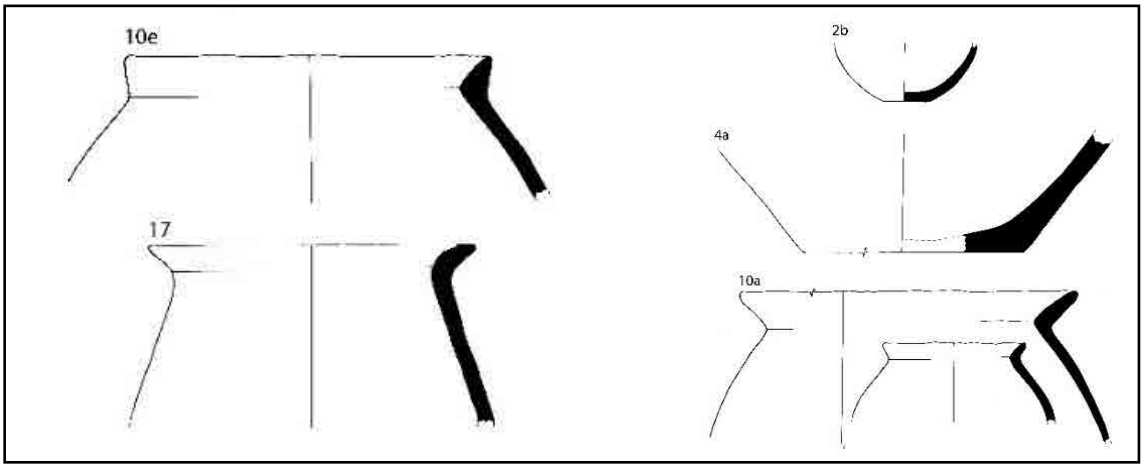



**Fig. 6: Plain Grey Ware with mineral temper, Tepe Sofalin (Yousefi Zoshk, 2010).**

### 6-5. Regional Dynamics and the Hissar Interaction Sphere

The pottery evidence from Tepe Hissar and Tepe Sofalin reveals a complex interplay of shared technological knowledge and divergent socio-aesthetic trajectories. While both assemblages share a common technological style, characterized by the mastery of the potter's wheel and controlled redox firing, the manifest disparities in their decorative grammars and paste preparation point toward distinct socio-economic orientations. At Tepe Hissar Phase D, the proliferation of

intricate geometric and zoomorphic motifs reflects a highly specialized local tradition with deep-seated aesthetic roots. Conversely, the "austere" nature of the Tepe Sofalin assemblage, where decoration is largely marginal, suggests a shift in ceramic function toward a more utilitarian or standardized administrative context. The presence of coarse organic temper and heterogeneous fabrics at Tepe Sofalin, in contrast to the well-levigated and sand-tempered pastes of Hissar, further underscores a localized adaptation of the Grey Ware tradition, potentially dictated by resource availability or different modes of production (household vs. workshop-based). A critical synthesis of the ceramic data from major sites across the Central Iranian Plateau (Sialk, Arisman, Qoli Darvish, and Ozbaki) necessitates a revision of the prevailing "top-down" model of Proto-Elamite expansion. Traditionally, cultural shifts on the Plateau have been interpreted as consequences of influence radiating from southern or western "core" centers (e.g., Susa or Malyan). However, the quantitative dominance of Grey Ware at Tepe Sofalin, exceeding 15% of the total assemblage, strongly suggests that the primary cultural and technological vector originated from the Northeast (the Hissar tradition) rather than the Proto-Elamite heartlands. The near-total absence of Grey Ware in classic southern Proto-Elamite centers (Susa, Malyan, and Yahya) highlights a profound regional boundary. The high frequency of this ware at Tepe Sofalin indicates that the site functioned as a critical nexus where the administrative complexity of the Proto-Elamite horizon intersected with the long-standing technological traditions of Northeastern Iran. The adoption of Hissar-inspired technology at Tepe Sofalin, devoid of Hissar's elaborate aesthetic iconography, suggests a process of selective adaptation. This indicates that while the technological know-how (the chaîne opératoire of Grey Ware production) was highly mobile and trans-regional, the symbolic and aesthetic systems remained localized. In this light, Tepe Hissar emerges not as a peripheral recipient of Proto-Elamite influence, but as a potent cultural "source" that shaped the material landscape of the Central Plateau during the 4th millennium BCE. The interaction between these two sites should be framed not as a direct imitation, but as part of a multi-directional network of exchange. It seems that the Proto-Elamite phenomenon on the Central Plateau was a heterogeneous construct, significantly defined by its resilience to external aesthetic norms and its profound technological debt to the Hissar tradition (Fig. 7).

### 6-6. Administrative Evidence during the Hissar II Period

Cylinder seals are exceedingly rare at Tepe Hissar, with only three specimens recovered during archaeological excavations. The first cylinder seal (H 892) depicts a scene featuring a chariot, a rider, and a groom (Schmidt, 1933: Pl. CXXXB). Although registered as part of an unpublished burial (DF 19, X-60), its association with this specific burial remains uncertain, even though its context within the broader cemetery area is secure. This burial is relatively late, located within the fill of Period I, which, according to the revised chronology, corresponds to Phase B/C. Consequently, the spatial context cannot be later than the last quarter of the 3rd millennium BCE. Furthermore, if it is indeed associated with these graves, it could date to the end of the same millennium, specifically the Hissar IIIC period. This evidence, combined with the stratigraphic positioning, renders an attribution to the later Hissar II1C period highly probable. The second

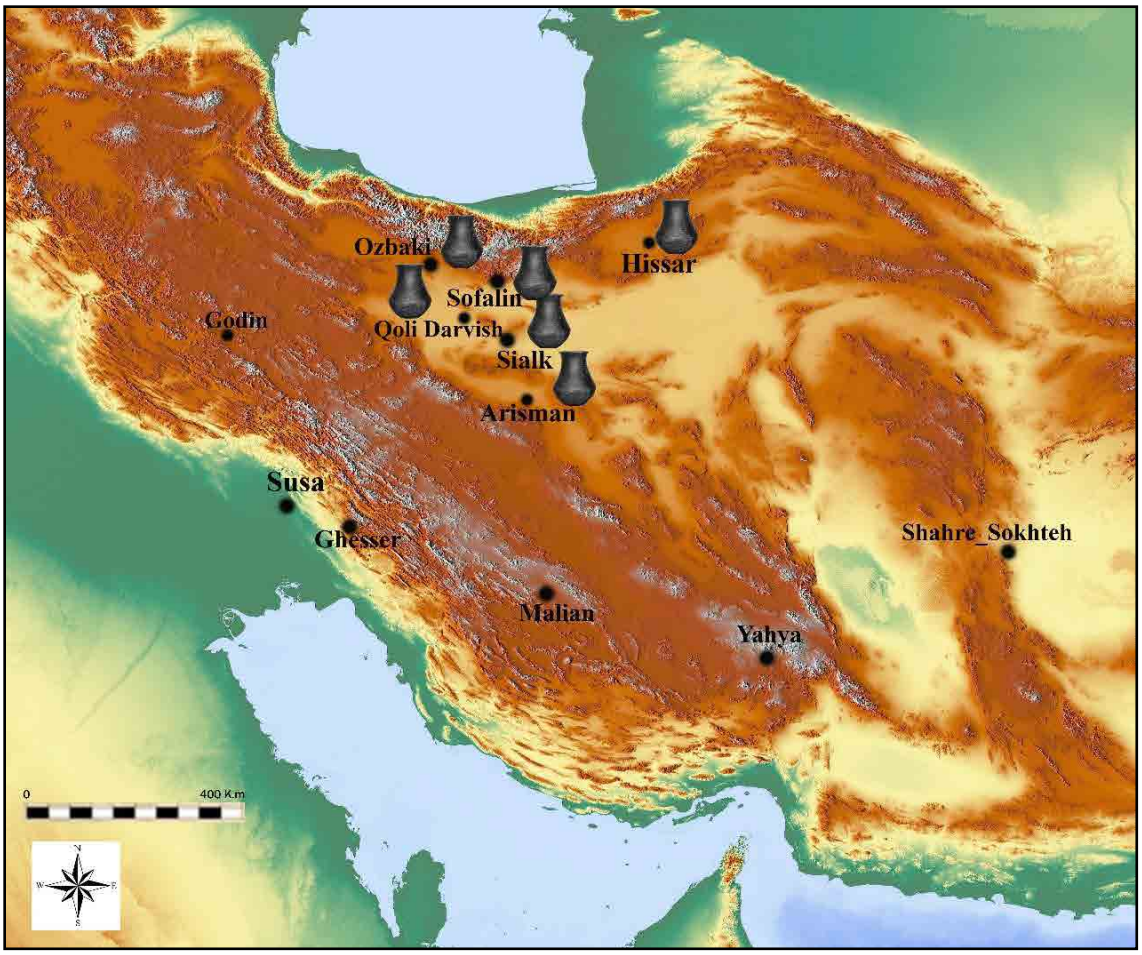



**Fig. 7: Distribution map of Grey Ware in classic Proto-Elamite sites, based on the Grey Ware classes of Tepe Hissar II (Authors, 2025).**

cylinder seal (H 3710), decorated with animal and bird motifs, was recovered from Treasure Hill in Trench CH 96, within a layer designated by Schmidt as a "dubious" fill belonging to Hissar IIIB (Schmidt, 1937: 198). No precise data regarding its exact location, depth, or context were recorded. Nevertheless, catalog entries indicate that excavations during this period were conducted in the upper portion of "Level 3", which Schmidt attributed to the Hissar IIB period (Schmidt, 1937: 174). Thus, the seal must date either to the late Hissar II or the early Hissar III period (the early third millennium BCE). Consequently, the evidence of cylinder seal usage at Hissar suggests connections with the West at both the beginning and the end of the 3rd millennium BCE. Within the fill of Building 2, seven additional objects were registered without precise spatial provenience: four clay quadruped figurines (H 83, 97, 117, and 123), one clay ball (H 118), a flat-based ceramic object (H 199), and a ceramic oval (H 120). The latter three objects are highly likely tokens. The persistent association of these recording devices or counters with animal figurines within this structure and its underlying strata is noteworthy. These small objects, including spheres and cones recovered from both Treasure Hill and the Southern Mound, belong to the assemblage of counters or counting devices widely studied today as components of an early accounting system (Schmandt-Besserat, 1978).

The most important cylinder seal recovered from Tepe Hissar was found on the Main Mound, at a depth of 2.45 m below the surface (Fig. 8). From a stylistic standpoint, there is no doubt that this object is a classic Proto-Elamite seal (Paladre, 2023), a conclusion further confirmed by Dyson and Harris's re-examination of the excavation records (Dyson & Lawn, 1989). In fact, the seal was found in the foundations of Building 2, whose floors were dated to around 3200 BCE by means of 14C analysis (Dyson & Lawn, 1989). The cylinder seal depicts a dynamic bull facing right. The animal's head is rendered frontally and at a slight angle, making its two powerful horns and penetrating gaze clearly visible. The pronounced hump on its back, together with the mane and the exaggerated hanging dewlap, indicates the artist's effort to emphasize the animal's anatomical features and majesty. The tail is also rendered with a pointed, spear-like tip, adding to the dynamism of the composition. Beneath the bull's chest, a clearly visible cross appears, an element that was probably symbolic and likely drew the viewer's attention. In front of the animal, a standing vertical element with cone-like forms is visible, topped by two semicircular shapes with pointed ends. In formal terms, this element may be interpreted as a totem or a sacred and ritual symbol, and its presence in the scene suggests the importance of symbolism and sign relations in the culture that produced it. In the upper part of the scene, several unidentifiable sinusoidal and spiral forms are visible; these elements add delicacy, movement, and symbolic ambiguity to the composition. The seal was executed by means of deep incision, with extensive use of reserved flat fields. In other words, the engraver employed a burin and metal tool to smooth different surfaces and produce fine, precise details. The body of the animal is rendered through a clearly structured and geometric division. For example, the strong articulation of the body and the depiction of the hind legs through parallel and curved lines generate rhythm and movement, bringing the piece somewhat close to line-based art. Curved and sinusoidal lines play an important role both in the main features, such as the body's arc and the curvature of the horns, and in the details, such as the wavy rendering of the dewlap or the net-like pattern on the body. This emphasis on curvature and fluidity enhances the sense of vitality in the depicted creature and demonstrates the artist's inventive control over the engraving tool. The anatomical details are rendered with remarkable precision: the muscles, dewlap, horns, and even the tail were executed with systematic and meticulous care. Such an approach reflects the engraver's high level of skill as well as the symbolic importance of the animal in Proto-Elamite culture. This artistic example was first identified in (1939) by Henri Frankfort as an object belonging to the Elamite branch of the Jemdet Nasr cultural tradition (Frankfort, 1939: 227). This attribution was based on shared stylistic and iconographic elements with Elamite traditions during the transitional phase leading to the historical civilizations of southwestern Iran. However, the object subsequently received little attention in later studies and gradually fell outside the main research agenda. A renewed examination of it could nevertheless provide important evidence for cultural relations, the movement of symbolic concepts, and stylistic diversity across the geographical boundaries linking sites such as Tepe Hissar and the Proto-Elamite horizon.

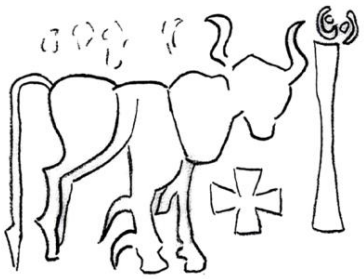
| Provenance | Drawing | Image |
|---|---|---|
| Hissar |  |  |
| Refferences | Schmidt 1937: 198, fig. H 116; Frankfort 1939a: 228, fig. 70 | |

**Fig. 8: Classic Proto-Elamite cylinder seal impression from Tepe Hissar (Paladre, 2023).**

### 6-7. The Tepe Hissar Cylinder Seal (H 116) and Proto-Elamite glyptic

Comparative analysis of the Tepe Hissar cylinder seal (H 116) and two Proto-Elamite specimens reveals striking stylistic, compositional, and symbolic parallels. These similarities suggest that the Hissar seal was either a direct import from primary Proto-Elamite glyptic workshops or was profoundly influenced by the visual and ideological conventions of that system. The most salient similarity is the shared iconographic theme as the depiction of a bull as the central Figure In all three specimens, the animal is rendered in motion, with an emphasis on exaggerated anatomical features such as the dorsal hump, the folds of the dewlap, and a pointed, spear-like tail. This mode of representation, based on the hyper-articulation of physical attributes, was common in Proto Elamite glyptic art, reflecting the symbolic importance of the bovine in the visual tradition. Another significant parallel is the use of a frontal head in the animal's depiction. Although rare in Proto-Elamite glyptic, the frontal rendering of the bull's head on the Hissar seal finds a direct counterpart in one of the well-known seals from Susa (Amiet, 1972: Pl 23 et 104, Fig. 972). Furthermore, symbolic elements positioned in front of the animal appear in all three seals. While the Hissar specimen features a columnar or totem-like object topped with two semicircular tabs, the Susa seals exhibit comparable markers. Finally, the technical proficiency and surface finish of the seals share a high degree of precision. The use of sinusoidal lines, fine-tool engraving, and the meticulous cylindrical construction of the Hissar seal are all consistent with the technical hallmarks of Proto-Elamite seal manufacture.

Despite these similarities, distinct differences exist between the Tepe Hissar seal and the Susa specimens, primarily stemming from their respective cultural contexts and points of origin. Firstly, the pictorial composition of the Hissar seal is simpler and more static than the impressions from Susa. The Hissar seal features a single animal paired with a lone symbolic element, whereas Susa seals typically exhibit more complex, multi-elemental, and symmetrical compositions, often balancing several animals or ritual objects within the frame. This may suggest a process of simplification within the cultural milieu of Tepe Hissar or a focused emphasis on a specific facet of the visual narrative. Ultimately, the Hissar seal portrays only one animal figure within an open and sparse pictorial field, whereas Susa seals generally possess more densely filled compositions, incorporating multiple figures or decorative motifs that increase the narrative complexity (Table 2).

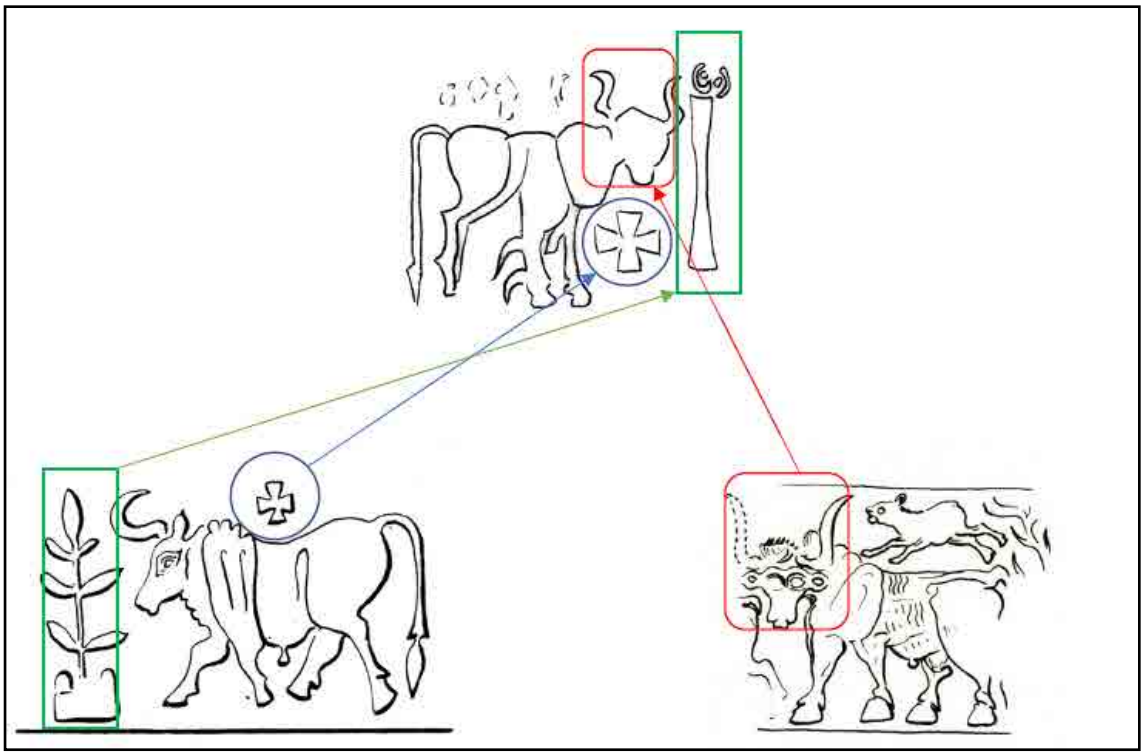


**Fig. 9: Comparative analysis of cylinder seal motifs: Tepe Hissar vs. classic Proto-Elamite specimens.**

**Table 2: Comparative Analysis of Cylinder Seal Motifs: Tepe Hissar (H 116) vs. Susa Samples (A and B).**

| Features | Tepe Hissar Seal (H 116) | Susa Sample (A) | Susa Sample (B) |
|---|---|---|---|
| **Depicted Animal** | Striding bull | Striding bull | Striding bull |
| **Direction of Motion** | Right | Left | Left |
| **Head Orientation** | Frontal (rare and notable) | Profile | Frontal (rare specimen, similar to Hissar) |
| **Anatomical Features** | Neck folds, hump, pointed tail | Neck folds, tail, elongated body | Neck folds, strong snout, muscular body |
| **Associated Symbolic Element** | Maltese cross, column/totem in front of the bull | Standard or ritual object in front of the animal | Geometric/totemic signs beside the animal |
| **Compositional Style** | Simple, focused on a single animal and symbol | Symmetrical composition with multiple elements | Balanced but more crowded structure than Hissar |
| **Execution/Technique** | Precise finish, wavy lines, metal tool carving | Relief lines, polished finish, deep engraving | Regular finish, strong formatting |
| **Provenience/Context** | Tepe Hissar, Building 21, Phase D, c. 3200–3100 BCE | Susa, Proto-Elamite layers, c. 3300–2900 BCE | Susa, Proto-Elamite layers, attributed to the Classic Proto-Elamite period |

Overall, a close comparison between the Tepe Hissar cylinder seal and the two examples from Susa indicates that this object should either be regarded as a direct import from the principal centers of Proto-Elamite seal production or, at minimum, as having been profoundly influenced by the visual concepts and representational conventions of that period. The combination of high technical quality, shared iconographic themes, and distinctive stylistic features suggests that, even if the seal was produced locally at Tepe Hissar, its maker was clearly familiar with, and drew inspiration from the Proto-Elamite glyptic tradition. The cylinder seals from Susa were produced within the Proto-Elamite visual and administrative tradition and, in this sense, constitute direct reflections of its socio-cultural structure. By contrast, the Hissar seal was recovered from a site in the north-eastern Iranian Plateau, geographically distant from the core of the Proto-Elamite civilization and generally belonging to an independent cultural sphere. It may therefore be regarded as tangible evidence for cultural contact, the transmission of visual concepts, and perhaps even the movement of individuals and craft specialists between eastern and south-western Iran during the late fourth millennium BCE.

**7. Conclusion**

It is necessary to return to the archaeological evidence. Prior to ca. 3700 BCE, Tepe Hissar shows no substantial connection with western Iran. Only after this period do ceramics displaying Sialk III6–7 characteristics appear at Hissar alongside Burnished Grey Ware, marking the beginning of intensified interaction with the Central Iranian Plateau. This process gradually gained momentum, characterizing the period between 3650 and 3400 BCE. During this phase, the production of prestige goods, particularly metallurgy, acquired a highly specialized character. This development is evident not only at Hissar but also at Tepe Sialk and Arisman, although locally distinctive technological practices were retained at each site. By 3400 BCE, profound transformations occurred at Hissar. Mud-brick architecture was replaced by brick construction; systematic buttresses were added to architectural structures; Burnished Grey Ware became more widespread and technologically elaborate; and metallurgy reached its peak of development. These changes indicate the capacity to procure a diverse range of raw materials and the strengthening of exchange networks extending eastward and northward. Consequently, at precisely the time when the Proto-Elamite phenomenon was emerging on the Central Iranian Plateau, Tepe Hissar followed a different trajectory. This development coincided with the appearance of the earliest ceramics related to southern Turkmenistan and the Namazgah cultural tradition; a pattern that was repeated during the third millennium BCE. Gursan-Salzmann and Dyson interpreted this divergence as a deliberate response intended to preserve Hissar's political structure in the face of external influence. The relatively few imported or import-like elements, such as examples of beveled-rim bowls in the D–C transitional deposits, several low-walled trays with vegetal temper, and one classical, highly polished cylinder seal, should not be interpreted as evidence for the adoption of Proto-Elamite culture. Rather, they represent indicators of contact with, and awareness of, this phenomenon, which was consciously

prevented from incorporating Hissar into its socio-political system. To explain the reorientation of Hissar's cultural and interaction networks, two hypotheses are proposed: (1) The Client Network Hypothesis: The settlements surrounding Hissar may have become its principal clients or dependents. This domestic realignment significantly transformed the socio-political and economic structure of Tepe Hissar. By securing a monopoly over its immediate hinterland and establishing these satellite communities as its primary consumers, Hissar no longer required integration into the western exchange networks, leading to its deliberate disengagement from them. (2) The Western Collapse Hypothesis: The collapse of western exchange networks generated profound political-economic transformations, encouraging a greater emphasis on more local, regionalized spheres of interaction. Crucially, the dynamics of interaction between Tepe Hissar and the Central Plateau must be re-evaluated. Rather than being a passive recipient of Proto-Elamite influence, Tepe Hissar acted as an active cultural exporter. The substantial presence of Burnished Grey Ware within the assemblage of Tepe Sofalin strongly suggests that Hissar exerted a greater influence on the prevailing Proto-Elamite horizon of the Central Iranian Plateau than it received. This technological and stylistic expansion highlights Hissar's agency and its role as a key player in shaping the material culture of surrounding regions. This scenario reflects transformations that coincided with the emergence of Proto-Elamite cultural formations in western Iran. These developments drew the Central Iranian Plateau into the orbit of early urbanizing societies; a trajectory that Tepe Hissar appears consciously to have rejected in favor of maintaining its own distinctive traditions. Hissar thus provides an instructive case of the rejection of a pre-state and proto-Urbanization system that was neither suited to the conditions prevailing at the site nor adopted during subsequent periods. Such rejection, however, does not imply a complete rupture in relations; the limited presence of early or diagnostically Proto-Elamite elements at Tepe Hissar itself demonstrates the continuation of contacts and a high degree of cultural awareness.

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The contribution of all authors to the writing of the article has been equal.

**Conflict of Interest**

In adherence to ethical publication standards, the authors affirm that there are no conflicts of interest, either personal or financial, that could have influenced the content or conclusions presented in this research.

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# تپه حصار و مرزبندی‌های فرهنگی شمال‌شرق ایران


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**چکیده**

تحقیقات باستان‌شناسی اخیر در تپه حصار، واقع‌در شمال‌شرق فلات‌مرکزی ایران، شواهد ملموسی از حضور پدیدهٔ آغازایلامی در این محوطه ارائه داده است. محور اصلی این پژوهش، تحلیل تطبیقی سفال‌های خاکستری و مهر استوانه‌ای به‌دست‌آمده از لایه‌های دورهٔ حصار II (نیمهٔ دوم هزارهٔ چهارم پیش‌ازمیلاد) با نمونه‌های شناخته شده از سایر محوطه‌های آغازایلامی است. یافته‌ها نشان می‌دهد که سفال‌های خاکستری حصار، از حیث ترکیب خمیر، شیوهٔ پخت، فرم و تزئینات، شباهت‌های روشنی با نمونه‌های استاندارد آغازایلامی تپه سفالین پیشوا دارند. تحلیل مهرهای استوانه‌ای حصار، از منظر مواد، شیوهٔ ساخت و بیان تصویری، پیوندهای فرهنگی حصار با جنوب‌غرب ایران و نیز نقش آن در شبکه‌های مبادلاتی و هنری آغازایلامی را بازتاب می‌دهد. مجموعه شواهد مزبور، تپه حصار را نه صرفاً به‌عنوان یک نقطهٔ تماس، بلکه به مثابه حلقه‌ای فعال و نوآور در تعاملات فرهنگی اواخر هزارهٔ چهارم پیش‌ازمیلاد مطرح می‌سازد و ضرورت بازنگری در مدل‌های رایج انتقال فرهنگ آغازایلامی به مناطق شمالی‌تر را برجسته می‌کند. برمبنای داده‌های سفال و مهر، تپه حصار نه صرفاً یک حلقهٔ منفعل، بلکه کنشگری فعال در شبکه‌های ارتباطی و تحولات فرهنگی عصر آغازایلامی در شمال فلات ایران به‌شمار می‌رود؛ محوطه‌ای که با انتخاب و بازآفرینی عناصر وارداتی و محلی، به شکل‌گیری سنت‌های فرهنگی متمایز یاری رسانده است.



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## Absolute and Relative Chronology of the Bronze Age at Tappeh Shireh-Paz-Khāneh (Shiretal), Qazvin Plain

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**Abstract**

This study investigates the absolute and relative chronology of the Bronze Age at Tappeh Shireh-Paz-Khāneh (Shiretal) in the Qazvin Plain, northern regions of Central Plateau of Iran, based on excavations conducted in 2015-2016. The site presents a multiperiod archaeological record, including Late Neolithic, Middle Bronze, and Late Bronze Age deposits. Despite the limited knowledge of the Bronze Age in the Central Plateau, particularly the notable gap from the mid-third to the mid-second millennium BCE, the findings at Tappeh Shireh-Paz-Khāneh provide valuable insights into the cultural and social dynamics of the period. This article aims to document and analyze the archaeological features and pottery assemblage to establish a relative and absolute chronology for the Bronze Age phases represented at the site. The study will also compare the cultural traditions observed at Tappeh Shireh-Paz-Khāneh with those of contemporary sites in the neighboring regions, to assess cultural continuity and regional interactions. Methodologically, systematic excavation and stratigraphic analysis have been conducted to categorize artifacts and architectural remains. The typological and chronological frameworks will facilitate dating the artifacts, especially pottery assemblage, and constructing a timeline of cultural sequences. By examining these findings, this research will contribute to a deeper understanding of the socio-political dynamics of the Bronze Age in the region, shedding light on the transitions leading to the Iron Age and the subsequent Median and Achaemenid empires. Based on relative and absolute chronological evidence for the Bronze Age, the site was occupied during both the Middle and Late Bronze Age settlement phases. The estimated date ranges for these phases at this site are 2400–2100 BCE for the Middle Bronze Age, and 1800–1700 BCE for the Late Bronze Age.

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## 1. Introduction

Tappeh Shireh-Paz-Khāneh, located in Alborz County, Qazvin Province, was excavated in Autumn-Winter 2015 and Spring of 2016 under the supervision of Mohammad Reza Asgari from Iranian Cultural Heritage, Handicrafts and Tourism Organization (ICHTO) of Qazvin Province, with permission number 943141/00/6123 dated 08/16/2015 from the Cultural Heritage and Tourism Research Institute (RICHT). The site exhibits multiperiod archaeological deposits, encompassing the Late Neolithic, Bronze Age (Middle and Late Bronze), and Iron Age. The site is thus particularly important for our knowledge of the Bronze Age on the Central Plateau of Iran which is otherwise is limited, with a notable gap from the mid-third millennium BCE to the mid-second millennium BCE (Pollard *et al.,* 2012; 2013).

Evidence for the Middle–Late Bronze Age is derived from excavated sites including Tepe Sagzabad in Qazvin (Azizi *et al.,* 2011; Pollard et al., 2012), Tepe Qoli-Darvish in Qom (Sarlak, 2011), Tepe Kopandeh in Isfahan (Saedi Anaraki, 2009), and Sites 013 and 051 in the Varzaneh Plain (Rafi'i-Alavi et al., 2020; Fazeli et al., 2022). In the Qazvin Plain, only Tepe Sagzabad and the present site have yielded excavated evidence dating to this period. Elsewhere in Iran, major centers and large settlements emerged during the Middle–Late Bronze Age, while the Elamite civilization flourished across the southern, southwestern, and western regions of the Iranian Plateau.

Due to the limited archaeological evidence available from the third millennium BCE, it has been proposed that societies in the Qazvin Plain did not attain state-level complexity and that large parts of the Central Plateau were only sparsely occupied during much of the Middle-Late Bronze Age (Schmidt et al., 2011; Vidale et al., 2018). The new evidence contributes to a better understanding of the social and cultural developments, that shaped the region during the second half of the third millennium and the first half of the second millennium BCE.

Based on the ceramic assemblage from Tepe Hasanlu, Danti (2013) proposed a chronological sequence for northwestern Iran spanning the second millennium BCE. This sequence comprises Middle Bronze Age I (2100–1900 BCE), Middle Bronze Age II (1900–1700 BCE), Terminal Middle Bronze Age II (1700–1600 BCE), Middle Bronze Age III (1600–1450 BCE), Late Bronze Age (1450–1250 BCE), Iron Age I (1250–1050 BCE), and Iron Age II (1050–800 BCE). This framework serves as an important reference for comparative chronological studies across the region.

Understanding the Bronze Age is crucial for interpreting the cultural and social dynamics leading to the Iron Age and the subsequent Median and Achaemenid empires. The rich evidence from several Iron Age settlement sites and cemeteries in the Central Plateau highlights the necessity of examining Bronze Age cultural traditions, to identify dates of transitions and assess cultural continuity and the extent of regional influences. The excavation of Bronze Age deposits at Tappeh Shireh-Paz-Khāneh offers preliminary insights into these issues, focusing on relative and absolute chronology.

This article addresses the following questions: what are the specific archaeological features and pottery assemblage identified at Tappeh Shireh-Paz-Khāneh that contribute to our understanding

of the Bronze Age; how do the cultural traditions observed at Tappeh Shireh-Paz-Khāneh compare to those at other contemporary sites in the Central Plateau of Iran; and what implications do the findings from Tappeh Shireh-Paz-Khāneh have for understanding the socio-political dynamics of the region during the Bronze Age?

The wider goals include: to document and analyze the archaeological deposits and pottery assemblage from the Bronze Age at Shireh-Paz-Khāneh; to establish a relative and absolute chronology for the cultural phases represented at the Bronze Age deposits of the site, contributing to a better understanding of the historical timeline of the region; and to assess the cultural continuity and interactions between different periods at Tappeh Shireh-Paz-Khāneh and their broader implications for the Central Plateau of Iran.

The methodology is as follows: systematic excavation and stratigraphic analysis of the site to uncover and categorize artifacts and architectural remains from the Bronze Age; typological analysis to date the pottery assemblage and establish a timeline for the cultural sequences at Tappeh Shireh-Paz-Khāneh; and comparative analysis of the findings with data from other archaeological sites in the region, employing both quantitative and qualitative methods to assess cultural influences and transitions across periods.

## 2. Tappeh Shireh-Paz-Khāneh

### 2-1. Location and Background

The archaeological site of Tappeh Shireh-Paz-Khāneh (also named by local as “Shiretal”), is located in Qazvin Province, within the Alvand Industrial Town, in Dizaj village. The site is precisely located at coordinates 36°13’05.24”N, 50°04’43.36”E, at an elevation of 1250 meters above sea level. Significantly, the Yāliyān River flows approximately 1 km to the west of Tappeh Shireh-Paz-Khāneh, contributing to the geological and ecological context of the area (Fig. 1).

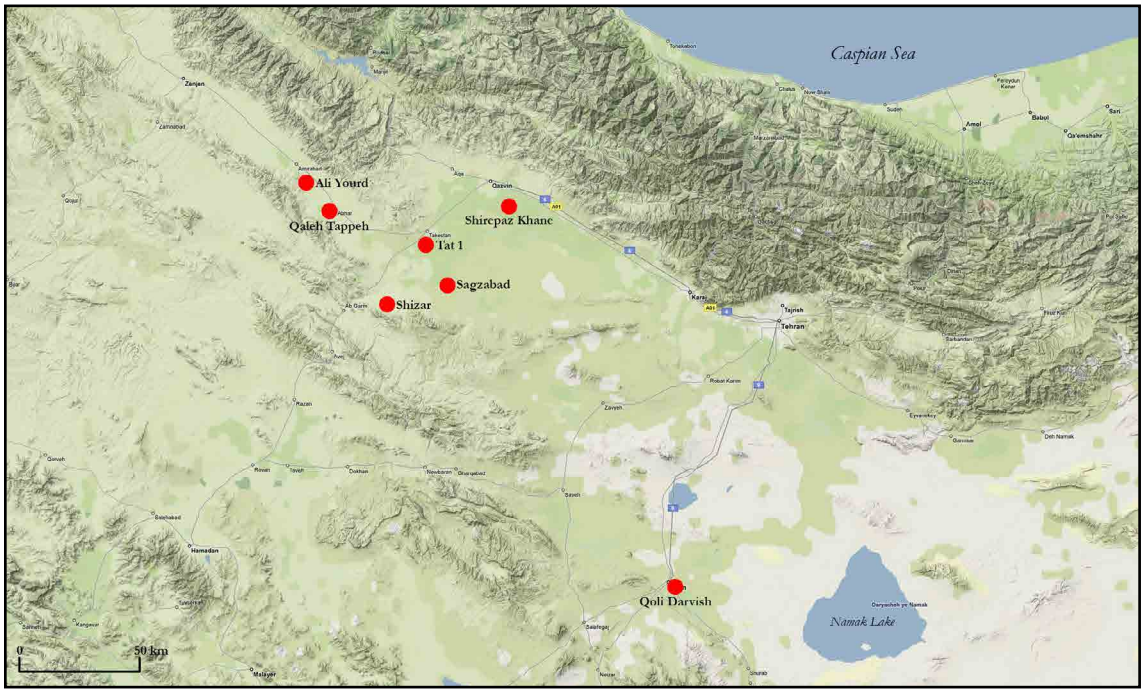



**Fig. 1: Bronze Age sites in the Qazvin Plain, Central Plateau of Iran (Authors, 2025).**

The site is located in the northern part of Qazvin Plain, c. 2 km south of the village of Dizaj, 2.5 km north of Alvand Industrial Town and 10 km southwest of Qazvin City. Morphologically, the site is a small mound about 4 meters high with an almost semicircular shape with its longer axis extending north south, likely originally circular; its eastern part was destroyed by the asphalt road built in the 1970s. More than half of the site had already destroyed due to unsupervised construction of Qazvin-Alvand road in the 1970s (1350 A.H.). While the very top of the site appears to have remained intact prior to excavation, more than 80 percent of core area has been used recently as a place for accumulating and burying huge amounts of industrial debris (Fig. 2).




**Fig. 2: Top: Aerial photo of Tappeh Shireh-Paz-Khāneh (Google Earth); Bottom: Topography and location of trenches in Tappeh Shireh-Paz-Khāneh (Courtesy of MCTH of Qazvin Province).**

**2-2. Survey and excavation strategies**

Tappeh Shireh-Paz-Khāneh was identified during archaeological reconnaissance in the 1990s by the ICHTO of Qazvin Province, as a severely damaged but important site. The site was chosen for rescue work in 2014 when tween road of Qazvin and the Alvand Industrial area was widened and threatened to fully destroy the remaining eastern part of the mound. The excavation of Shireh-Paz-Khāneh aimed to study the architectural context, cultural sequence, stratigraphy, and to define the core area and buffer zone of site, considering the damage and the need for urban infrastructure. After receiving permission from the RICHT, rescue excavations took place in the autumn-winter of 2015 and spring of 2016.

Work proceeded through a systematic site survey mapping the distribution of materials on the surface, that provided the basis for the choice of locations for soundings. 22 test trenches were dug to determine the core area and buffer zone of the site, establishing a surviving site of 2.2 ha, 150 m long and 150 m wide. Altogether eight different trenches were dug. The largest were two trenches with dimensions of 9×10 m and the smallest reached 3×3 meters. The combined results allowed to define fifteen phases of architectural occupation, six dating to the Late Bronze Age (LBA), five to the Middle Bronze Age (MBA) and four to the Late Neolithic (LN), this latter phase with its own subphases.

**2-3. Description of Trenches and Architectural Phases**

**Trench I:** Trench I was excavated on the highest, undisturbed point of the mound and had an extension of 10×9 meters. Trenches I and VI, are those included the upper levels of site. Eight different architectural phases were distinguished in trench I. One square mud-brick room of 170×170 cm was lined with red and white clay discovered in the first phase (Fig. 3a). The structure with which the walls stood on foundations made from large stone boulders belonged to the second phase (Fig. 3b). In the third phase, an open area floor, possibly with temporary roofing, was observed. This area slopes from NE to SW, and was therefore not suitable for a house floor, but possibly a courtyard or outdoor space. Two small pits may represent postholes for wooden column, as the space also contained organic residues and charcoal particles (Fig. 3c & 3d). The floor was littered with animal dung. The fourth phase is represented by a large pisé architectural element (Fig. 3e). The northern, eastern and southern walls of the room were within the trench limits and define a space (hall) of c. 18 m2 with an oven in the center. From this level onwards, the trench was reduced to half its size and excavation continued only in the western half of the trench in a 4x5 m area. The fifth phase of architecture was only observed in the Trench VI, which is opened in the northern part of Trench I. At a depth of -285 cm, the sixth phase of architecture was identified (Fig. 3f). It consisted of white-lined clay walls, which the small size of trench didn't allow us to more description. At a depth of -300 cm, the seventh phase of architecture represents the latest MBA phase, comprising a room with walls plastered in white (Fig. 4c). The last phase reached in this trench at -365 cm depth also belonged to the MBA. It consisted of remnants of a wall, an oven and a complete clay container inside the oven (Fig. 4d). Exploration continued through drilling to a depth of -420 cm.

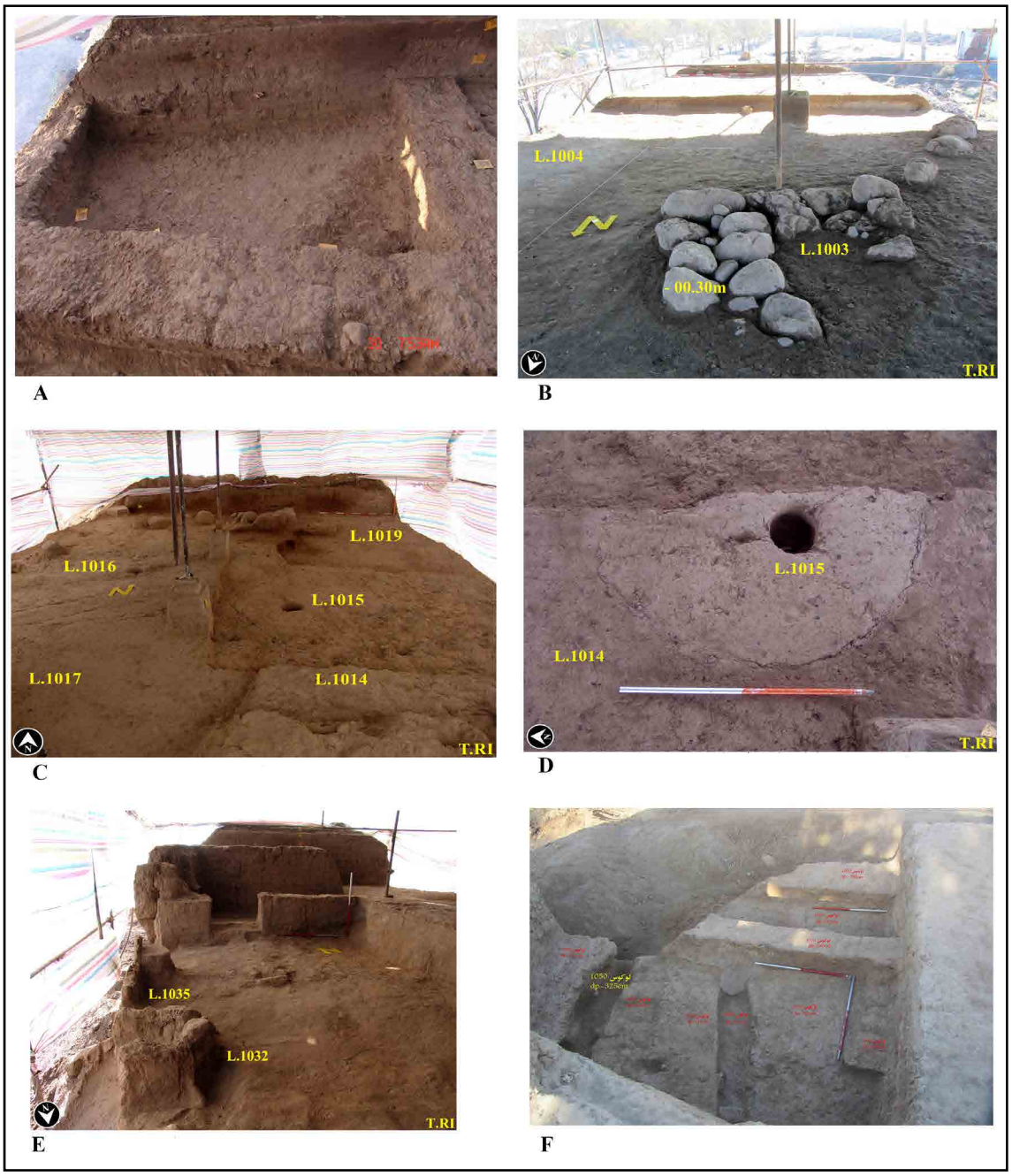



**Fig. 3: Tappeh Shireh-Paz-Khāneh, Trench I: A. Architecture phase 1; B. Architecture phase 2; C. Architecture phase 3; D. Example of a posthole from architecture phase 3; E. Architecture phase 4; F. Architecture phase 6 (Pictures by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Trench II:** Trench II was located 11 m south of trench I and had an extension of 4×4 m. Here, the third, fourth and fifth phases of the MBA architecture were identified. Within the trench, the major feature were the pisé walls, which a large rubble packing in a rectangular space belonging to the fourth phase (Fig. 4e). The fifth phase was stratigraphically separated from the sixth phase by a pisé space with gypsum layer on the floor (Fig. 4f). The sixth phase includes white floor which had been painted by an irregular geometric shape and consisted of a mixture of ash and

dirt together with soft soil (Fig. 5a). This floor was the first Bronze Age occupation, and the underlying cultural layers from -585 cm onwards belonged to the Neolithic period (Fig. 6c & 6d).

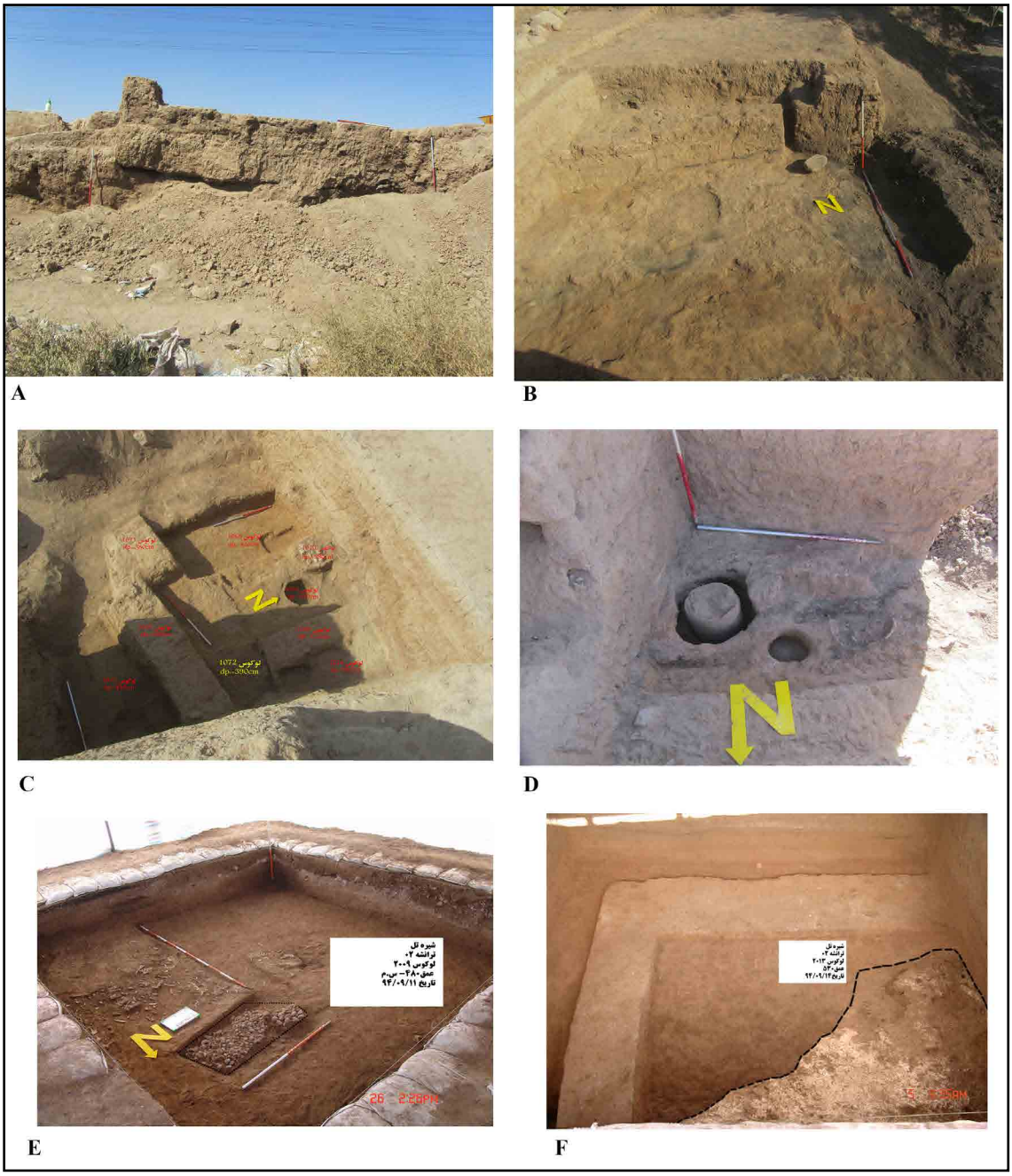



**Fig. 4: Tappeh Shireh-Paz-Khāneh: A. Section of Trench VI, architecture phase 5; B. Trench VI, architecture phase 5; C. Trench I, architecture phase 7; D. Trench I, architecture phase 8; E. Trench II, architecture phase 1, floor layer of stone paving; F. Trench II, architecture phase 2, gypsum floor (Pictures by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Trench III:** Trench III was located 29 m northeast of the datum, about 7 m from trench I, and extended 4×4 m. Here, two phases of LBA architecture and one MBA phase were documented. The uppermost occupation consisted of a large mud-brick walls that separated two rooms (Fig. 5b). The architecture of the second phase with mud-brick and footed clay floor, was of larger

dimensions than in the preceding and following levels. Due to the limited dimensions of the trench, no complete room was comprised within the excavated space (Fig. 5c). The third phase of architecture belonged to the MBA and was represented with three clay walls that circumscribe three smaller rooms. Room 4 in the northwestern part of the trench had a clay floor and debris of an oven and of a platform as cooking installations (Fig. 5d, 6e & 6f).

**Trench IV:** Trench IV was created with a dimension of 4×7 meters at a distance of 30 meters northeast of the datum point. The purpose of exploring trench IV was a control study of the sequence of cultural layers and a horizontal exploration of the visible architectural phases for educational purposes. Two phases of architecture were identified, with the upper phase being purely a very small part of a pisé wall. The second phase of architecture belongs to the MBA and was a room in the southwest of the trench, possibly a storage area as a large sample of wheat seeds were retrieved here (Fig. 5e).

**Trench V:** Trench V was excavated in the southern part of Trench I to reveal the architectural plan of phase 1 and its stratigraphy. Excavation stopped at a depth of 110 cm after the plan was obtained due to the risk of collapse from the slope of the mound (Fig. 5f).

**Trench VI:** Measuring 9×10 meters, this trench was excavated in the northern part of Trench I to investigate the stone architectural space discovered previously and access the fifth phase of the architecture, which was not found in Trench I but was visible in the section of a destroyed wall. Four architectural phases from the Late Bronze Age were identified down to a depth of -295 cm. The first layer included an adobe wall with only the bottom course remaining, as the other two walls were destroyed. The second phase consisted of structural remains of stacked, unmortared stones with a floor, similar to those found in Trench I. Excavation continued in the eastern section to reveal the fifth phase. The third phase was identified by a wall with two rows and a central floor, while the fourth phase, found at a depth of -210 cm, measured approximately 50 cm high and 45 cm wide at its largest section, with a gap between the eastern part and the main wall. Notably, this wall had a white coating on its interior facade and was associated with a 10 cm layer of ash on the floor, indicating a fire. This phase corresponds to a large space measuring 5 meters in length and 3 meters in width (Fig. 4a & 4b).

**Trench VII:** This 3×3 meters trench, located in the southern part of Trench II, aimed to identify grooves in the Neolithic floor and to analyze the usage of the triple hearths found in Trench II. Two layers from the Middle Bronze Age were discovered: the first layer included part of a floor and hearth, while the second layer revealed two nearly perpendicular walls.

**Trench VIII:** Measuring 6×7 meters, this trench was located 20 m far from Trench VII, where the upper layers had been destroyed. Its purpose was to gather comprehensive information about the Middle Bronze Age, starting at a depth of -445 cm from the surface of the mound. The excavation reached -545 cm and revealed two architectural phases: the first phase featured an unmortared stone structure oriented east-west (Fig. 6a), and the second phase consisted of two adobe mud-brick walls in the southwestern part of the trench (Fig. 6b).

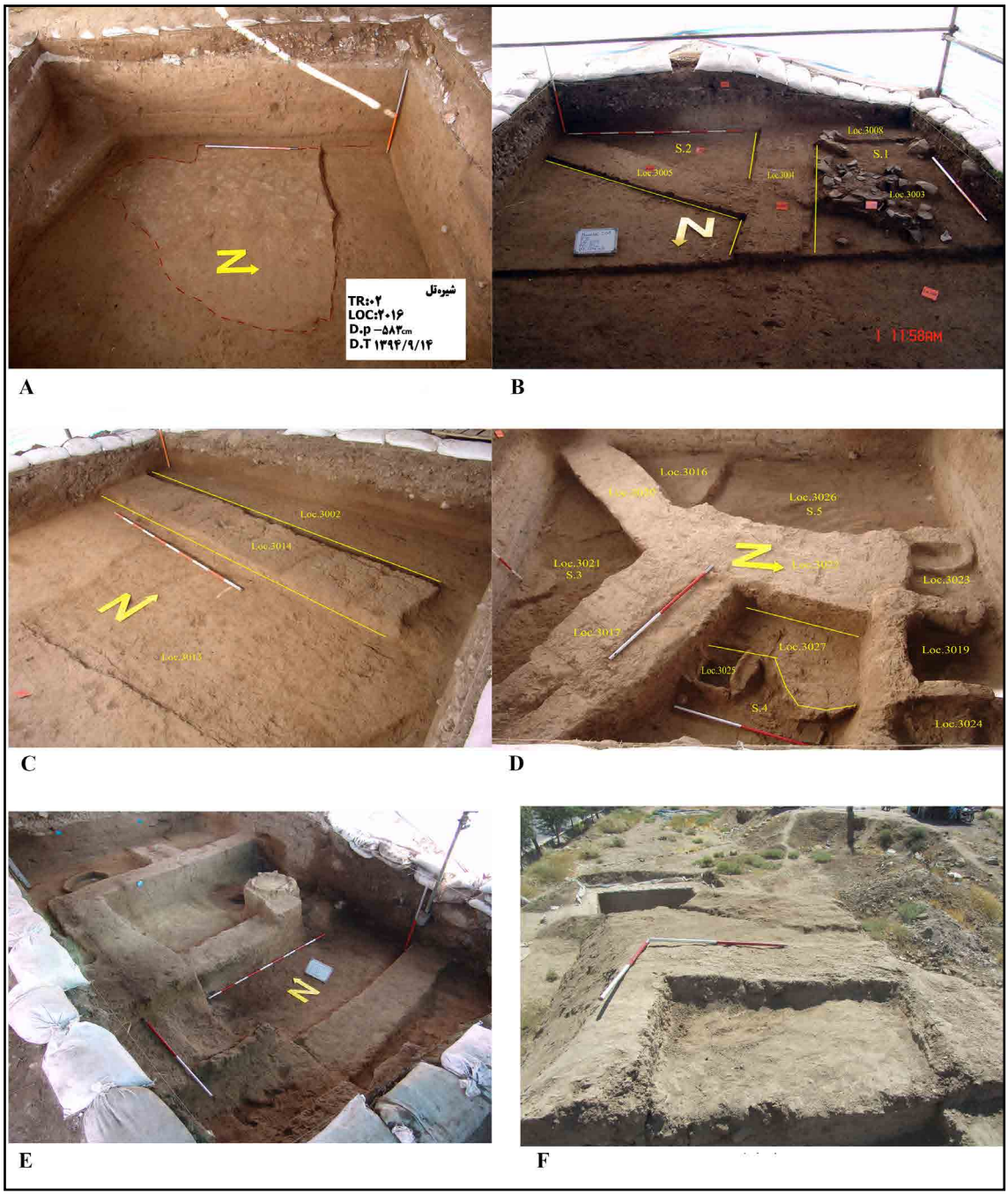



**Fig. 5: Tappeh Shireh-Paz-Khāneh: A. Trench II, architecture phase 3, painted floor; B. Trench III, architecture phase 1; C. Trench III, architecture phase 2; D. Trench III, architecture phase 3; E. Trench IV, architecture phase 2; F. Trench V, architecture phase 1 (Pictures by excavation team members, Courtesy of MCTH of Qazvin Province).**

## 3. Pottery Typology and Relative Chronology

The pottery from Tappeh Shireh-Paz-Khāneh belongs to two cultural periods: the Late Neolithic and the Bronze Age. The Late Neolithic pottery from the lowest layers of Trench II and VII is not discussed here. The Bronze Age pottery is attributed to the Middle and Late Bronze Ages.

**Middle Bronze Age:** The Middle Bronze Age pottery from this site was recovered from various trenches: Trench I (Phases 6, 7, and 8), Trench II (Phases 1, 2, and 3), Trench VII

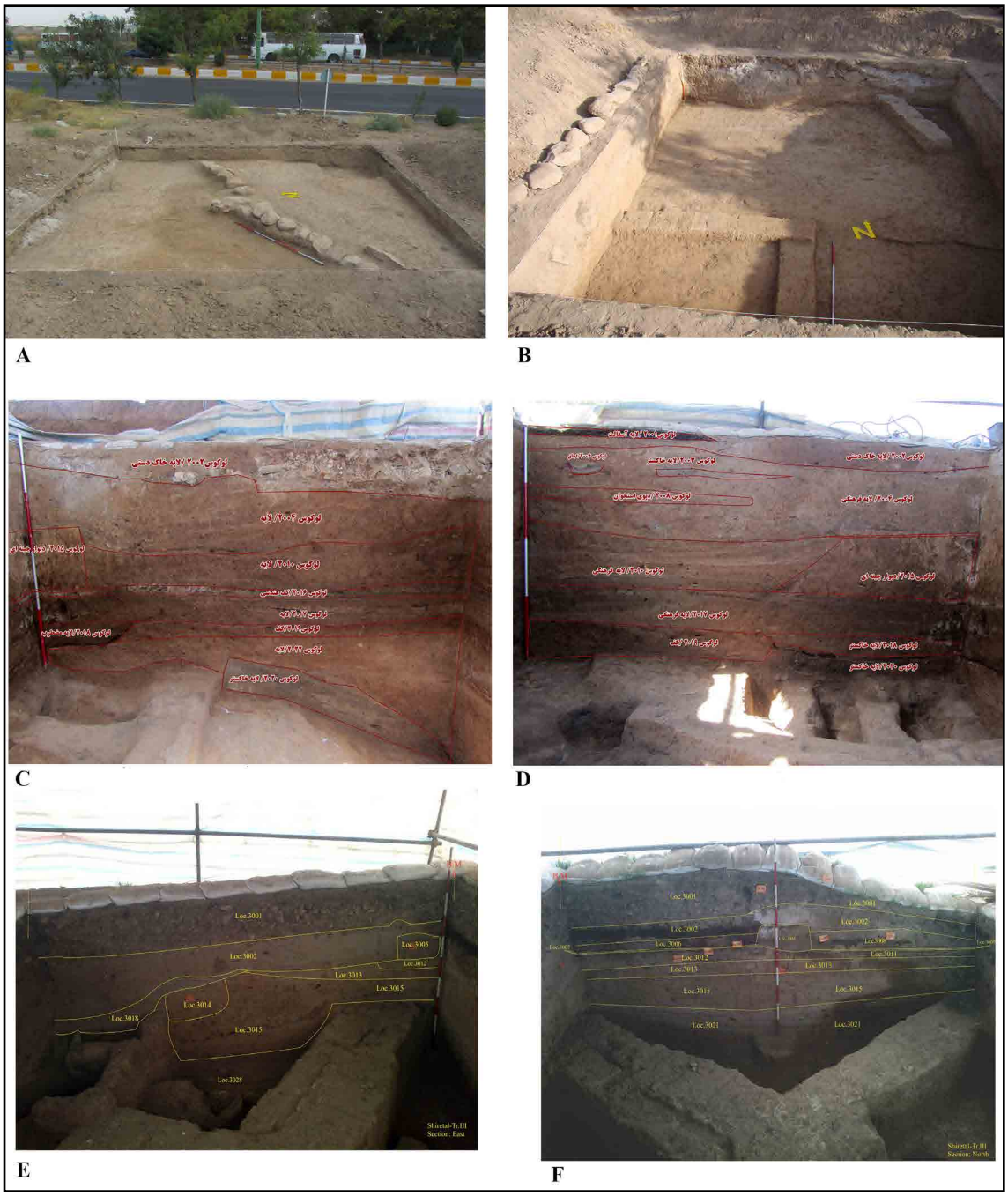



**Fig. 6: Tappeh Shireh-Paz-Khāneh: A. Trench VIII, architecture phase 1; B: Trench VIII, architecture phase 2; C. Trench II, Western Profile; D. Trench II, Southern Profile; E. Trench III, Eastern Profile; F. Trench III, Northern Profile (Pictures by excavation team members, Courtesy of MCTH of Qazvin Province).**

(Phases 1 and 2), Trench III (Phase 3), Trench VIII (Phases 1 and 2), and Trench IV (Phase 2) (Tab. 1).

Middle Bronze Age pottery can be distinguished into six main fabric groups (Tabs. 2 & 3):

1. Simple ware: buff to brown, often with traces of sooth or smoke (Fig. 7: 1-10); vessels are produced by hand molding over textile (Fig. 7: 1; Fig. 8: 12-15); sometimes with handles of type Nahkichevan (Fig. 7: 12-13) only from trenches I and VIII.

**Table 1: Relative chronology of the trenches, Tappeh Shireh-Paz-Khāneh (Authors, 2025).**

| Trench | I | II | III | IV | V | VI | VII | VIII |
|---|---|---|---|---|---|---|---|---|
| LBA | 1*<br>2*<br>3 | | 1<br>2 | 1 | 1 | 1<br>2<br>3<br>4 | | |
| | 4 | | | | | | | |
| MBA | 6<br>7<br>8 | 1*<br>2*<br>3 | 3* | 2* | | 5 | 1<br>2 | 1<br>2 |

**Star (*) shows the sampled contexts from architecture phases for 14C.**

2. Wheel made grey ware: can be distinguished further into simple and decorated ware; all vessels are wheel-thrown and are fully fired; decoration is geometric, incised or plastic additions, zigzags (Fig. 9: 1, 6).

3. Wheel made buff ware: the fabric is similar to the grey wheel-made ware but is of buff to orange color (Fig. 9: 7).

4. Handmade grey/black ware: handmade from clay with mineral and organic temper and "burnished painting" (Fig. 9: 8-10).

5. Handmade black ware with carving: all handmade, with geometric decoration on the neck, framed by horizontal lines (Fig. 9: 11-14; Fig. 8: 1-5).

6. Brown ware with "carving" pattern: fabric is brown-colored to orange and decorated with point-shaped incisions. Lines form a zigzag patterns (Fig. 9: 15-17; Fig. 8: 6-7).

Potsherds 2 and 7 in Figure 7 can be attributed to the Early Bronze Age, whereas potsherd 6 in Figure 9 is likely associated with the Late Bronze Age. These parallels may indicate continuity in pottery-making traditions, suggesting the persistence and transmission of some ceramic traits across successive periods.

**Late Bronze Age:** The Late Bronze Age pottery from Tappeh Shireh-Paz-Khāneh was recovered from the first and fourth phases of Trench I, the fourth architecture phase of Trench VI, and the second architecture phase of Trench III (Tab. 1).

In addition to the Middle Bronze Age pottery types, the pottery collection categorized into four main fabric groups (Tabs. 4 & 5):

7. Plain ware (Fig. 10: 1-8).

8. Wheel-made grey ware (Fig. 10: 9-19).

9. Handmade grey ware (Fig. 11: 1-5).

10. Painted red ware (Fig. 11: 9; Fig. 8: 8-11) comparable to Haftavan VI (Edwards, 1981) and Sagzabad (Talai, 1983; Azizi et al., 2011: Plate 1), handmade and decorated with dark or yellowish painted motifs (Fig. 11: 6-8).

Notably, the Middle Bronze Age plain wares with textile impressions persisted across all layers of the Late Bronze Age. During this time, the same manufacturing technique was also applied to handmade gray ware, which had an uncoated inner surface (Fig. 11: 6-8).




**Fig. 7: Tappeh Shireh-Paz-Khāneh, Middle Bronze Age pottery: simple handmade buff ware (Drawing by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Table 2: Description of diagnostic potteries of Middle Bronze Age in Figure 7**

| Trench | Locus | Pottery No. | Description: 1. Vessel part, 2. Manufacture, 3. Temper, 4. Size (quality of production), 5. Firing, 6. Fabric Colour (ext. / int. / core), 7. Caly slip (ext. / int.), 8. Decoration, 9. Place of decoration | Parallel |
|---|---|---|---|---|
| VIII | 8005 | 1 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark brown / dark brown / brown, 7. Thin / thin | Fazeli *et al.*, 2022: Fig. 10: 28 |
| VII | 7034 | 2 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Black (oxidized) / dark brown / brown, 7. Thin / thin | |
| VII | 7035 | 3 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Buff / buff / orange, 7. Thin / thin | Fazeli *et al.*, 2022: Fig. 10: 1 |

| | | | | |
|---|---|---|---|---|
| I | 1054 | 4 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | |
| VII | 7012 | 5 | 1. Bottom, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Black (oxidized) / dark brown / orange, 7. Thin / thin | |
| I | 1063 | 6 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark brown / dark brown / brown, 7. Thin / thin | |
| VII | 7030 | 7 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | Fazeli *et al*., 2022: Fig. 10: 9 |
| VII | 7030 | 8 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | |
| II | 2014 | 9 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Pale brown / pale brown / brown, 7. Thin / thin, 8. Two knobbed in shoulder, 9. Exterior | |
| | | 10 | 1. Rim with vertical handle, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Black (oxidized) / dark brown / brown, 7. Thin / thin, 8. Two parallel knobs in shoulder, 9. Exterior | |
| I | 1044 | 11 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark brown / dark brown / dark brown, 7. Thick / thick, 8-9. Trace of textile in interior side | |
| VIII | 8005 | 12 | 1. Body with horizontal handle, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | |
| I | 1054 | 13 | 1. Rim with horizontal handle on body, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | |

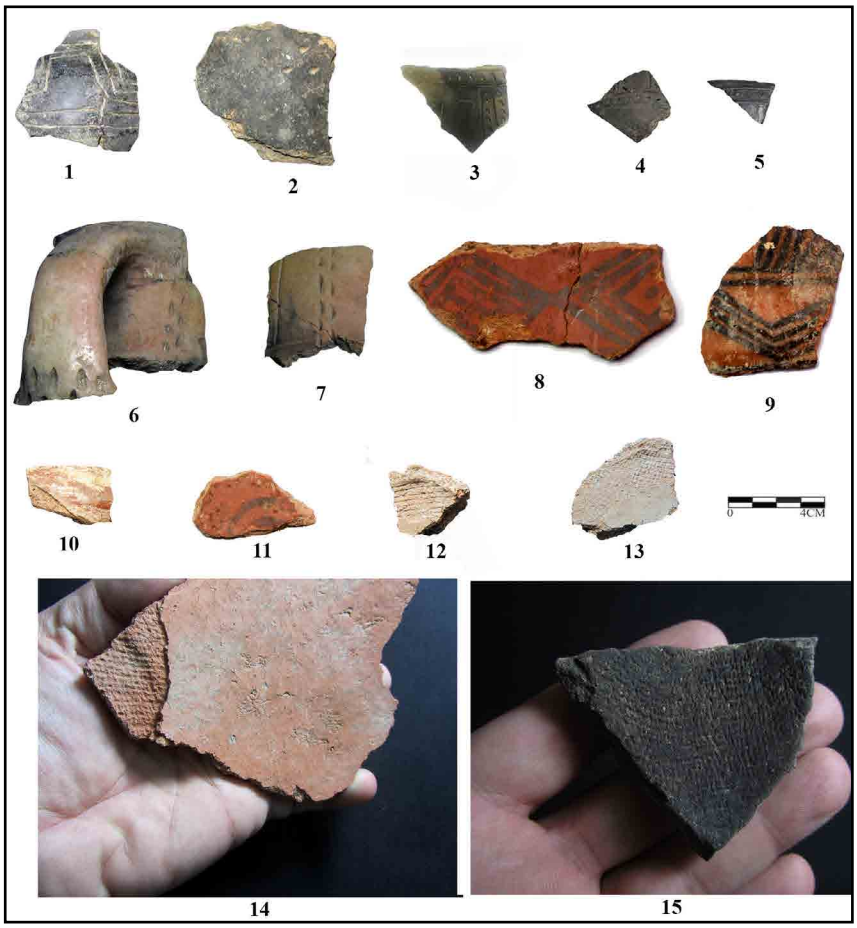



**Fig. 8: Tappeh Shireh-Paz-Khāneh, decorated pottery examples and textile technique (Pictures by excavation team members, Courtesy of MCTH of Qazvin Province).**

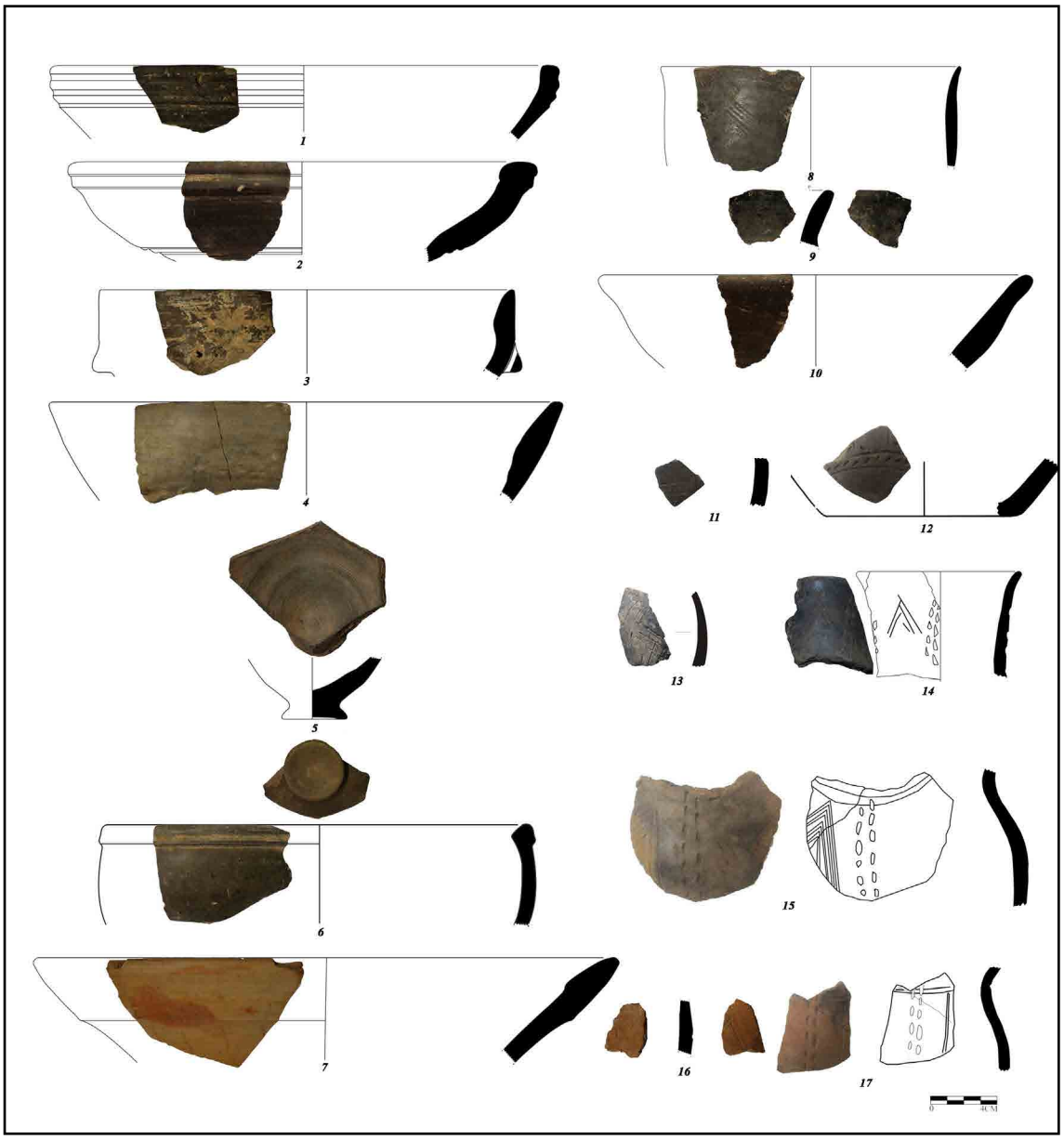


**Fig. 9: Tappeh Shireh-Paz-Khāneh, Middle Bronze Age pottery: wheel-made grey and buff wares, handmade black ware, pastilles, plastic and incised decoration (Drawing by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Table 3: Description of diagnostic potteries of Middle Bronze Age in Figure 9.**

| Trench | Locus | Pottery No. | Description:<br>1. Vessel part, 2. Manufacture, 3. Temper, 4. Size (quality of production), 5. Firing, 6. Fabric Colour (ext. / int. / core), 7. Caly slip (ext. / int.), 8. Decoration, 9. Place of decoration | Parallel |
|---|---|---|---|---|
| VIII | 8003 | 1 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Dark gray / dark gray / gray, 7. Thin / thin | |
| VIII | 8005 | 2 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Dark gray / dark gray / gray, 7. Thin / thin | |
| VIII | 8003 | 3 | 1. Rim with knobbed handle, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| VIII | 8003 | 4 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| VII | 7012 | 5 | 1. Bottom with base, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |

| | | | | |
|---|---|---|---|---|
| VII | 7030 | 6 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| VIII | | 7 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Pale orange / pale orange / orange, 7. Thin / thin | |
| I | 1044 | 8 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Polished geometric lines, 9. Exterior | |
| I | 1044 | 9 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin | |
| VIII | 8005 | 10 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin | |
| II | 2014 | 11 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Incised lines and parallel ovals, 9. Exterior | |
| II | 2014 | 12 | 1. Bottom, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Incised lines and parallel ovals, 9. Exterior | |
| II | 2004 | 13 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Incised lines, 9. Exterior | |
| II | 2014 | 14 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Incised lines and parallel tears, 9. Exterior | |
| II | 2014 | 15 | 1. Body (shoulder), 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Pale brown / pale brown / pale brown, 7. Thin / thin, 8. Incised lines and parallel tears, 9. Exterior | |
| VII | 7022 | 16 | 1. Body, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin, 8. Incised lines, 9. Exterior | |
| II | 2014 | 17 | 1. Body (shoulder), 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Pale brown / pale brown / pale brown, 7. Thin / thin, 8. Incised lines and parallel tears, 9. Exterior | |

Potsherd 10 in Figure 10 is attributable to the Early Iron Age. This may suggest that some ceramic traits characteristic of the Iron Age began to develop during the Late Bronze Age. Alternatively, the sherd may constitute intrusive material originating from disturbed upper Iron Age deposits.

**4. Discussion: Absolute Chronology**

Two charcoal samples and four bone samples from trenches I, II, III, and IV were dated absolutely at Tappeh Shireh-Paz-Khāneh. A description of the archaeological context of these samples is provided below (Tab. 6).

Sample No. 7_Shiretal, Locus 2014, RN. 2007: Locus 2014 (II-2) is the first batch of a package of ash layers with an average thickness of 15cm, at a depth of -515 to -535 cm below datum point. The feature extends in East-West direction over 232 cm length and 90 cm width. The cultural material from this layer belongs to the second architecture phase of MBA and comprises, besides animal bones and charcoal as well as charred seeds, simple buff kitchen pottery, handmade grey ware, some of it with incised geometric decoration, and wheel-made black ware as well as handmade brown ware. An animal bone specimen from this locus was dated to 2284-2061 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

Sample No. 10_Shiretal, Locus 2008, RN. 2006: Locus 2008 (II-1) is a primary context located 2 meters from the eastern side wall of trench and extending 225 cm N-S and 200 cm



**Fig. 10: Tappeh Shireh-Paz-Khāneh, Late Bronze Age pottery: simple ware, grey and black wheel-made ware, pastilles, plastic and incised decoration (Drawing by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Table 4: Description of diagnostic potteries of Late Bronze Age in Figure 10.**

| Trench | Locus | Pottery No. | Description:<br>1. Vessel part, 2. Manufacture, 3. Temper, 4. Size (quality of production), 5. Firing, 6. Fabric Colour (ext. / int. / core), 7. Caly slip (ext. / int.), 8. Decoration, 9. Place of decoration | Parallel |
|---|---|---|---|---|
| V | 5009 | 1 | 1. Rim, 2. Handmade, 3. Mineral, 4. Coarse, 5. Insufficient, 6. Orange / orange / pale brown, 7. Thin / thin | Edwards, 1981: Fig. 119: 3 |
| V | 5009 | 2 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin | |
| V | 5001 | 3 | 1. Rim with vertical handle, 2. Handmade, 3. Mineral, 4. Coarse, 5. Insufficient, 6. Dark brown / brown / pale brown, 7. Thin / thin | Malek Shahmirzadi, 1977: Pl. 145: 1 |
| V | 5001 | 4 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| I | 1036 | 5 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / Orange / Orange, 7. Thin / thin | |

| | | | | |
|---|---|---|---|---|
| I | 1036 | 6 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Orange / Orange / Orange, 7. Thin / thin | |
| I | 1036 | 7 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / Orange / Orange, 7. Thin / thin | |
| I | 1036 | 8 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Brown / Brown / Orange, 7. Thin / thin | |
| III | 3003 | 9 | 1. Rim with knobbed handle, 2. Wheel-made, 3. Mineral, 4. Fine, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin, 8. Parallel knobs, incised and polished lines, 9. Exterior | Fazeli *et al*., 2011: Fig. 4 |
| I | 1039 | 10 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Fine, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| I | 1039 | 11 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Fine, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin, 8. Incised parallel lines, 9. Exterior | |
| VI | 6003 | 12 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Fine, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| VI | 6003 | 13 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Fine, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin, 8. Parallel knobs and incised lines, 9. Exterior | Sarlak, 2011: Fig. 267 |
| VI | 6014 | 14 | 1. Rim, 2. Handmade, 3. Mineral, 4. Fine, 5. Sufficient, 6. Dark gray / dark gray / dark gray, 7. Thin / thin, 8. Polished geometric designs, 9. Exterior | |
| I | 1039 | 15 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| I | 1039 | 16 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| III | 3003 | 17 | 1. Base of tripod vessel, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| V | 5001 | 18 | 1. Bottom with base, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Insufficient, 6. Pale brown / pale brown / pale brown, 7. Thin / thin | Malek Shahmirzadi, 1977: Pl. 141: 13 |
| V | 5001 | 19 | 1. Semi-complete vessel with small vertical handle, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |

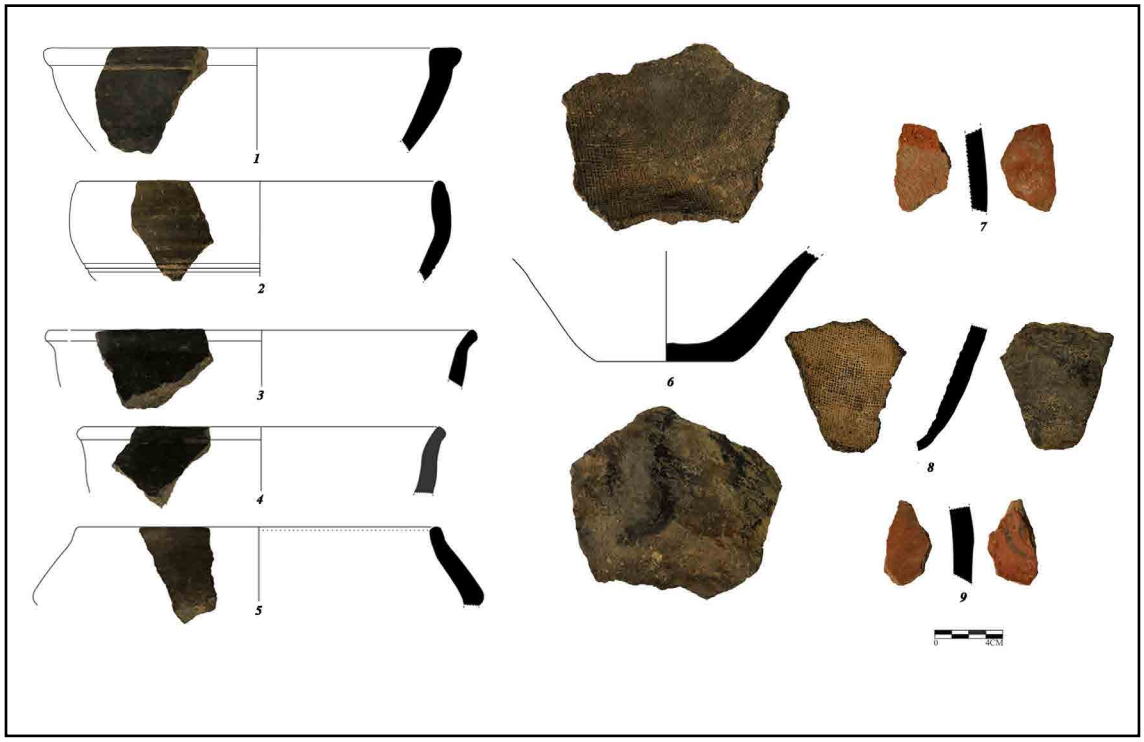



**Fig. 11: Tappeh Shireh-Paz-Khāneh, Late Bronze Age pottery: black ware, decoration, textile technique and orange ware (Drawing by excavation team members, Courtesy of MCTH of Qazvin Province).**

**Table 5: Description of diagnostic potteries of Late Bronze Age in Figure 11.**

| Trench | Locus | Pottery No. | Description: 1. Vessel part, 2. Manufacture, 3. Temper, 4. Size (quality of production), 5. Firing, 6. Fabric Colour (ext. / int. / core), 7. Caly slip (ext. / int.), 8. Decoration, 9. Place of decoration | Parallel |
|---|---|---|---|---|
| I | 1036 | 1 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Black (oxidized) / dark gray / gray, 7. Thin / thin | |
| I | 1036 | 2 | 1. Rim, 2. Wheel-made, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / gray / gray, 7. Thin / thin | |
| V | 5009 | 3 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Buff (oxidized) / dark gray / gray, 7. Thin / thin | |
| V | 5009 | 4 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Gray / dark gray / gray, 7. Thin / thin | |
| V | 5009 | 5 | 1. Rim, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / gray / gray, 7. Thin / - | |
| I | 1092 | 6 | 1. Bottom, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Brown (oxidized) / gray / dark gray, 7. - / thin, 8-9. Trace of textile in interior side | |
| I | 1036 | 7 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. - / thin, 8-9. Trace of textile in interior side | |
| I | 1036 | 8 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Insufficient, 6. Brownish gray / gray / dark gray, 7. - / thin, 8-9. Trace of textile in interior side | |
| I | 1039 | 9 | 1. Body, 2. Handmade, 3. Mineral, 4. Medium, 5. Sufficient, 6. Orange / orange / orange, 7. Thin / thin, 8. Painted black design, 9. Exterior | |

**Table 6: Constrain table shows the provenience of individual samples, Tappeh Shireh-Paz-Khāneh (Authors, 2025).**

| Lab No. MAMS | Sample name | Archaeological context | Material | Calibrated dates (cal BCE), 1sigma: 68.3% probability | Calibrated dates (cal BCE), 2sigma: 95.4% probability | Period |
|---|---|---|---|---|---|---|
| 29983 | 7_Shiretal | Tr.II, Loc.2014, RN.2007, D:523cm | Animal bone, *Ovis aries*, distal end of right humerus | 2266-2141 | 2284-2061 | MBA |
| 29985 | 10_Shiretal | Tr.II, Loc.2008, RN.2006, D:483cm | Animal bone, *Equus* sp., distal end of right humerus, shaft | 2451-2298 | 2463-2246 | MBA |
| 29981 | 4_Shiretal | Tr.IV, Loc.4015, RN.4009, D:455cm | Charcoal, *Juniperus* sp. | 2462-2348 | 2468-2303 | MBA |
| 29980 | 2_Shiretal | Tr.III, Loc.3015, RN.3014, D:302cm | Charcoal, *Juniperus* sp. | 2431-2216 | 2457-2209 | MBA |
| 29984 | 9_Shiretal | Tr.I, Loc.1025, RN.1021, D:230cm | Animal bone, *Ovis aries*, complete right radius & ulna | 1874-1748 | 1881-1701 | LBA |
| 29982 | 6_Shiretal | Tr.I, Loc.1002, RN.1005, D:40cm | Animal bone, Caprini, distal end of right tibia | 1741-1666 | 1750-1638 | LBA |

E-W. Its elevation is from -480 to -490 cm. The deposit contains a mass of animal bones, with horns, jaw bones, scapulae and ribs, some of them burnt. This bone accumulation is probably a garbage dump related to the rubble packing and associated floor layers (loc. 2004) of the first phase of MBA in trench II. Other cultural materials found here are simple buff kitchen ceramics, black handmade and wheel-made grey ware, some with geometric decoration, all

typical of MBA in the region. An animal bone specimen from this locus was dated to 2463-2246 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

Sample No. 4_Shiretal, Locus 4015, RN. 4009: Locus 4015 (IV-2) represents an ash deposit in the SW of the trench that is wedged by the walls 4012 and 4007 and stratigraphically situated between layers 4013 and 4016. Its runs from a depth of -446 cm to -455 cm. The deposit contained mainly cereal seeds (wheat or barley) and some other charcoal. Buff kitchen ware, handmade grey and black pottery with incised geometric decoration are all typical for MBA in the region. A charcoal sample from this locus was dated to 2468-2303 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

Sample number 2_Shiretal, Locus 3015, RN. 3014: Locus 3015 (III-3) is a primary deposit of soil and ash together with clay lumps and charcoal, sealed by locus 3013 and extending over the complete trench. This locus belongs to the third architecture phase of Trench III. Its elevation is from -293 to -368 cm. The layer slopes from S to E, and is in the northern part up to 75 cm thick. The deposit contained buff handmade kitchen ware, grey and black handmade wares and wheel-made tiles, all typical of the MBA. A charcoal sample from this locus was dated to 2457-2209 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

Sample No. 9_Shiretal, Locus 1025, RN. 1021: Locus 1025 (I-2) consists of ash residues and siliciclastic accumulations formed inside the architectural space. The locus is located under the floor of the second phase of architecture (I2). Due to the slope of the floor, locus 1025 was visible in different elevations, from a depth of -125 cm in the north to -178 cm in the east and -152 cm to the west, all relative to the datum point. The thickness of the context was about 50 to 70 cm and reached a depth of -200 cm. Ceramics and animal bones, charcoal particles, ash residues and other organic residues like traces of mats and burnt wood had accumulated in this context. Ceramics were simple buff wares plus some wheel-made grey wares, typical for the LBA. An animal bone specimen from this locus was dated to 1881-1701 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

Sample No. 6_Shiretal, Locus 1002, RN. 1005: Locus 1002 belongs to the first architecture of Trench I (I-1), is a soil layer under topsoil, extending over the complete trench at a depth between -20 and -40 cm. It has become thicker towards the south. The deposit must be characterized as a secondary context of debris which stratigraphically situated under locus 1001, and upon Locus 1003 and 1004. Pottery from this level comprises grey ware and polychrome painted Khabur ware or Haftavan type, related to the LBA (Fig. 8: 9). An animal bone specimen from this locus was dated to 1750-1638 cal BCE with 95% confidence, coinciding with the relative chronology based on pottery typology.

The model was constructed using the stratigraphic sequence of dated samples from phases 4 to 1 across all trenches. The MBA spans from 2468-2303 to 2284-2061 cal BCE with 95%

confidence, indicating a median date range of 2400 to 2100 cal BCE and a time span of at least 300 years. The LBA dates are poorly constrained, with only two dates (1881-1701 and 1750-1638 cal BCE), suggesting a median span of 1800 to 1700 cal BCE (Fig. 12).

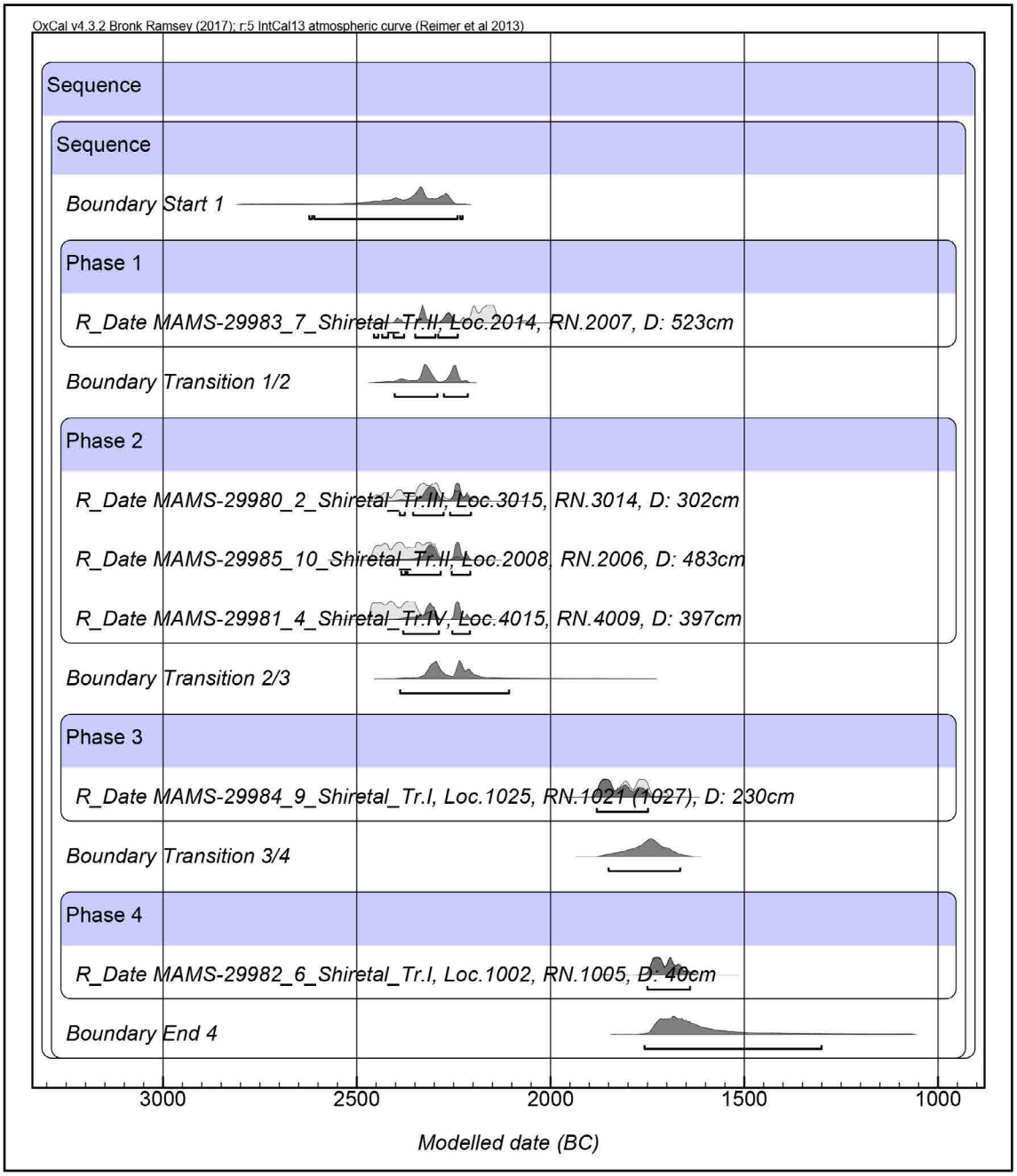



**Fig. 12: Tappeh Shireh-Paz-Khāneh, calibrated and modeled ages (By B. Helwing and H. Fazeli).**

## 5. Conclusion

The Early Bronze Age in northwestern Iran is associated with the Yanik or Kura-Araxes culture. In addition to the Yanik Tepe, artifacts from this culture have been found at sites like Haftavan VII, Geoy Tepe K, and Hasanlu VII. The pottery from this period is

entirely handmade, typically featuring a black or gray burnished surface, often decorated with carved designs or simple wavy lines (Burney, 1961: 51). Architectural remains from the early phase include 14 building structures at Yanik Tepe (Summers, 2004), as well as from Phase K1 at Geoy Tepe (Summers, 1984) and Haftavan VIII (Burney, 1975), which reflect circular architectural spaces. The second and third phases of this culture, as reported, showed rectangular buildings identified at Yanik, Geoy Tepe K2 and K3, and Haftavan VII. The pottery tradition of the Yanik culture extends across the eastern slopes of the Alvand Mountains and the Hamedan Plain in western Iran, influencing areas as far as the western parts of the Central Plateau of Iran (Qazvin Plain). Sites such as Ebrahim Abad (Talai, 1995: 6), Piryousefian (Fazeli, 2006), Tepe Shizar (Valipour, 2006; Mostafapour, 2011; Fazeli et al., 2013), and Yas Tepe have been identified from this period in the Qazvin Plain through reconnaissance by the Institute of Archaeology of the University of Tehran and authors. Researchers date the second phase of the Kura-Araxes culture in the Caucasus and northwest Iran to between 3300 and 2700 BCE, with Kura-Araxes II having the widest geographical extend, likely entering the Qazvin Plain and Central Plateau around 3000 BCE. The archaeological evidence from this period is primarily from excavations at Tepe Shizar in the Qazvin Plain (Valipour, 2006; Fazeli et al., 2013) and Tepe Arasto in the Tehran Plain (Pourfaraj, 2012), dating between 3000 and 2600 BCE.

Recent excavations at Tappeh Shireh-Paz-Khāneh and Tappeh Tat 1 have challenged the notion of a cultural break and hiatus in the Central Plateau of Iran between the Early and Late Bronze Ages, previously thought to span approximately one millennium (2600–1700 BCE). Some researchers refer to this gap as the Lost Millennium, supported by paleo-seismological and paleo-climatological evidence (Fazeli et al., 2013). Climate change led to droughts, while severe earthquakes, due to the sites locations on alluvial fans near faults, contributed to the abandonment of habitats in the late 4th millennium BCE. Environmental conditions improved in the first half of the second millennium BCE, leading to the Late Bronze Age settlements like Qara Tepe/Sagzabad (Schmidt et al., 2011; Quigley et al., 2011). Excavations at Tappeh Shireh-Paz-Khāneh revealed habitation during the Middle and Late Bronze Ages from 2400 to 2100 and 1800 to 1700 cal BCE, partially bridging the earlier time gap by several settlement phases. Tappeh Tat 1 exhibited a similar situation, although its settlement duration was shorter. Despite this, information about the Lost Millennium remains limited (Fazeli et al., 2022), suggesting that various cultural and natural factors contributed to the decline of Bronze Age settlements, resulting in fewer identified sites from this period during archaeological surveys in the Qazvin Plain.

From the late third millennium BCE until the beginning of the Iron Age (around 1500 BCE), polychrome ware was widespread in western and northwestern Iran (Talai, 1995: 26).

This pottery type is referred to as Haftavan VIB or Urmia Ware in northwestern Iran, and sometimes as Dinkhah (Hamlin, 1974). Haftvan VI is chronologically dated between 1950-1350/1300 BCE, while Dinkhah IV dates from 1750-1450 BCE (Hamlin, 1974). In Ozlik Tepe, Azerbaijan, this period is dated to 1900-1700 BCE (Edwards, 1981 & 1983), and in Armenia, it ranges from 2400/2300 to 1600 BCE (Ozyforat, 2001). According to Talai, the tradition of polychrome pottery vessel production spread to the Central Plateau (Tepe Sagzabad) from northwestern Iran around 1600 BCE. He proposed that the Sagzabad culture is linked to the Dinkhah, Geoy Tepe, and possibly Giyan and Haftavan cultures (Talai, 1995: 26).

Based on absolute dating at Tappeh Shireh-Paz-Khāneh, pottery analysis, and architectural types, the Middle Bronze Age at this site aligns with the third period of Yanik, Geoy Tepe K3, Haftavan VII, and Hasanlu VI. The discovery of unique Nakhchivan-type handle sherds from Middle Bronze Age layers alongside handmade black pottery with carved designs suggests simultaneous formation during this period. Furthermore, the presence of wheel-made gray pottery alongside Kura-Araxes types indicates a connection to the eastern region of the Central Plateau of Iran, similar to the third period of Tappeh Hesar. Additionally, a new method of producing simple handmade gray pottery from this period is evident, including the technique of making pottery with textile, which is abundant across all layers of the Middle and Late Bronze Ages.

The Late Bronze Age at this site, characterized by large architectural spaces and occasional columns, spans from 1800 to 1700 BCE based on absolute chronology and pottery typology. Although the arrival of monochrome and polychrome Haftavan VI or Khabur-type painted pottery in the Qazvin Plain is dated to 1600 BCE according to excavations at Tappeh Sagzabad (Talai, 1995: 26), evidence from Tappeh Shireh-Paz-Khāneh suggests that painted Khabur-type pottery can be traced back to its early formation around 2000/1900 BCE in northwestern Iran. This pottery was found in Trench I during the third architectural phase, dated to 1880-1700 BCE, and is also present in its two older phases of Tappeh Shireh-Paz-Khāneh. Additionally, it appeared in the second architectural phase of Trench III, which transitions directly into the Middle Bronze Age, dated to 2400-2100 BCE. If we consider the end of the Late Bronze Age to be in the second layer of Trench III, the formation and arrival of Late Bronze Age pottery in the Qazvin Plain can be traced back to at least 1900/1800 BCE.

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**Authors' Contribution**

Authors contributed equally to the conceptualization and writing of the article. All of the authors approved the content of the manuscript and agreed on all aspects of the work

**Conflict of Interest**

Authors declared no conflict of interest.

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# مـطالعات باسـتان‌شـنـاسی

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# گاهنگاری مطلق و نسبی عصر مفرغ در تپهٔ شیره‌پزخانه (شیره‌تل)، دشت قزوین


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**چکیده**

این مطالعه، گاهنگاری مطلق و نسبی عصر مفرغ در تپهٔ شیره‌پزخانه (شیره‌تل) در دشت قزوین واقع‌در بخش شمالی فلات‌مرکزی ایران را براساس کاوش‌های انجام شده در سال‌های ۱۳۹۴ و ۱۳۹۵هـ.ش. بررسی می‌کند. این محوطه، توالی فرهنگی چند دوره‌ای، شامل نهشته‌های دورهٔ نوسنگی متأخر، مفرغ میانی و مفرغ متأخر را در خود جای‌داده است. باوجود دانش محدود از عصر مفرغ در فلات‌مرکزی ایران، به‌ویژه شکاف قابل‌توجه از اواسط هزارهٔ سوم تا اواسط هزارهٔ دوم پیش‌ازمیلاد، یافته‌های تپهٔ شیره‌پزخانه شواهد ارزشمندی درمورد پویایی فرهنگی و اجتماعی این دوره ارائه می‌دهد. هدف این پژوهش، مستندسازی و تجزیه و تحلیل ویژگی‌های باستان‌شناسی مواد فرهنگی مکشوفه، به‌خصوص گونه‌شناسی ظروف سفالی، برای بازشناسی گاهنگاری نسبی و مطلق برای مراحل عصر مفرغ در این محوطه است. این مطالعه همچنین سنت‌های فرهنگی مشاهده شده در تپهٔ شیره‌پزخانه را با سنت‌های محوطه‌های هم‌زمان در مناطق همجوار مقایسه خواهد کرد تا تداوم فرهنگی و تعاملات منطقه‌ای را ارزیابی کند. ازنظر روش‌شناسی، کاوش روشمند و تحلیل لایه‌نگاری برای طبقه‌بندی و گونه‌شناسی ظروف سفالی و بقایای معماری به‌کار گرفته شده است. با بررسی این یافته‌ها، این پژوهش به درک عمیق‌تر از پویایی فرهنگی، اجتماعی-سیاسی عصر مفرغ در منطقه کمک خواهد کرد و به درک بهتری از گذارهای منتهی به عصر آهن و امپراتوری‌های بعدیِ ماد و هخامنشی می‌انجامد. درنتیجه گاهنگاری نسبی و مطلق برای نهشته‌های عصر مفرغ، مشخص شد که این محوطه در بردارندهٔ چندین مرحلهٔ استقراری از دورهٔ مفرغ میانی و مفرغ متأخر است. بازهٔ زمانی پیشنهادی برای این دو دوره در این محوطه، ۲۴۰۰ تا ۲۱۰۰ پ.م. برای دورهٔ مفرغ میانی و ۱۸۰۰ تا ۱۷۰۰ پ.م. برای دورهٔ مفرغ متأخر است.



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## A new narrative of the Bronze Age along the Caspian Sea Based on Excavation of Ghale–Ben, Iran

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**Abstract**

The central part of the southern Caspian Sea region was densely inhabited during the third millennium BCE. From an archaeological perspective, it is important to understand when and how such lush environments supported large populations during the Bronze Age, and, how these communities developed new socio-economic structures during the third and second millennia BCE. Ghal e-Ben is one of the key Bronze Age sites in the central part of Mazandaran Province, excavated in 2019. The site's occupation dates back to the Late Chalcolithic period (around 3200 BCE) and continued until the second half of the second millennium BCE (around 1500 BCE). Archaeological evidence from Ghal-e Ben indicates that during the Bronze Age, it was a fully sedentary agricultural settlement, inhabited by a large population whose economy was based on a combination of animal husbandry, including sheep, goat, pigs, and cattle, and large-scale farming. In a regional context, communities in the area became more complex during the second millennium BCE., as evidenced by the emergence of large cemeteries containing high-status burial goods, the development of new farming systems, and the establishment of long-distance trade networks. The cultivation of Chinese broomcorn and foxtail millet suggests the introduction of new crops and an evolving agricultural economy during this period. Our research program at the site of Ghal-e Ben not only provides a comprehensive chronological framework for the Bronze Age on both the southern and northern slopes of the Alborz Mountains, but also allows us to revise the chronology of several other sites that were previously dated using relative methods.

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## 1. Introduction

Iran served as the heartland of diverse cultural zones and identities during the third millennium BCE, encompassing the Jiroft civilization in Kerman Province, the Helmand civilization in the east, the Great Khorasan civilization (BMAC), the Elamite civilization in southwestern Iran, the Transcaucasian cultural sphere across much of western Iran and the central plateau, and the "Burnished Gray Ware culture" in northeastern Iran—recognized as a hallmark of the Bronze Age in Mazandaran (Cleuziou, 1986; 1991; Bessenay-Prolonge and Vallet, 2019; Olson and Thornton, 2019). The 2019 excavation at Ghal-e Ben provided a detailed overview of the distribution of the "Burnished Gray Ware Culture" in the south-central regions of the southern Alborz Mountains. Secure chronological data from Ghal-e Ben has also proven valuable for comparative studies with two other major sites of the region: Tureng Tepe and Gohar Tepe (Olson and Thornton, 2019; Piller and Mahforozi, 2009). In this paper, we briefly present the 2019 excavation results from Ghal e-Ben to propose a model for the long-term socio-economic development of Mazandaran during the Bronze Age. The material culture of Early Bronze Age Mazandaran shows strong affinities with that of northeastern Iran and the Gorgan Plain. However, over time, the ceramic assemblages begin to reflect increasing regional distinctiveness and inter-regional cultural identities. We position Mazandaran Province within the broader cultural sphere of northeastern Iran, which stretches northward to the Sumbar Valley in western Turkmenistan and southward to Tepe Hissar in the Damghan region. Prominent excavated sites across northeastern Iran, such as Tepe Hissar, Tureng Tepe, Narges Tepe, Hoseyn Abad, Shah Tepe, Yarim Tepe, Gohar Tepe, Ghal e-Kesh, Tepe Kelar, and Ghal e-Ben, together outline the settlement history of the third millennium BCE., a pattern that gradually declined between 1900/1800 and 1500 BCE. (Abbasi, 2011; Afshar *et al.,* 2019; Olson and Thornton, 2019; Tadahiko, 2010; Vallet, 2019; Thornton *et al.,* 2013). A particularly significant development is the appearance of Transcaucasian cultural elements in Mazandaran and the Gorgan Plain around 2500–2400 BCE. This reflects a phase of hybrid cultural interaction with northwestern Iran. However, the Bronze Age culture of Mazandaran should not be seen merely as a prehistoric local identity. It coexisted with and was influenced by the broader Transcaucasian cultural tradition, which, during the late fourth and third millennia BCE., emerged without evolving into complex urban or state-level societies.

The agricultural intensification in Mazandaran and the Gorgan Plain during the Bronze Age demonstrates the presence of fully sedentary agrarian societies. These communities ranged from small villages to large settlements, organized within a hierarchical site structure. Their economies relied primarily on a combination of large-scale agriculture and animal husbandry, including sheep, goats, pigs, and cattle, while showing decreasing reliance on wild resources (Heydari, 2017; Heydari et al., 2021; Olson, 2024). Although interregional interactions were substantial during the third millennium BCE., a particularly intriguing discovery is the cultivation of Chinese broomcorn and foxtail millet, which points to a distinct agricultural economy that had emerged around 4000 years ago. Mortuary practices, the investment in burial goods, the construction of monumental architecture, and iconographic evidence all attest to the presence of a socially complex, possibly urbanized landscape in Mazandaran during the Bronze Age.

## 2. The site of Ghal e-Ben (Excavated Trenches and the Absolute Chronology)

The archaeological site of Ghal-e Ben, located near the Caspian Fault and the Khoshroud-Pey River, has been significantly shaped by its surrounding environmental conditions. Situated approximately 20 kilometers south of the city of Babol and near the modern town of Khoshroud Pey (36º23'18''N, 52º34'13''E, at 67 meters above sea level), the site currently covers an area of less than 3 hectares. However, its original extent was likely much larger before modern development, including road construction, agricultural expansion, and residential buildings, reduced its size. Archaeological excavations were carried out between January and March 2019 to establish a secure chronological framework through the study of three stratigraphic trenches: TR Q-31, TR AB-27, and STR X-35 (Figs. 1, 2, and 3), all situated in the northern and western parts of the site. In addition, a horizontal trench (TR W-32), measuring 5 by 5 meters, was opened to document more detailed evidence of site occupation. Unfortunately, this area appears to have been disturbed by local activity in recent years, limiting its interpretive value. Nevertheless, the three stratigraphic trenches yielded secure archaeological data spanning from the late fourth millennium BCE to the middle of the second millennium BCE. In the following sections, we summarize the stratigraphy of trenches Q-31, AB-27, and X-35 to gain insight into the cultural phases and occupational history of the site. Table 1 indicates the cultural sequences of the site from 3101 BCE to 2925 BCE (93.2%) to 1613 BCE -1508 BCE (95.4%), while after a long interval, the site was reoccupied from 940 A.D to 1023 CE.

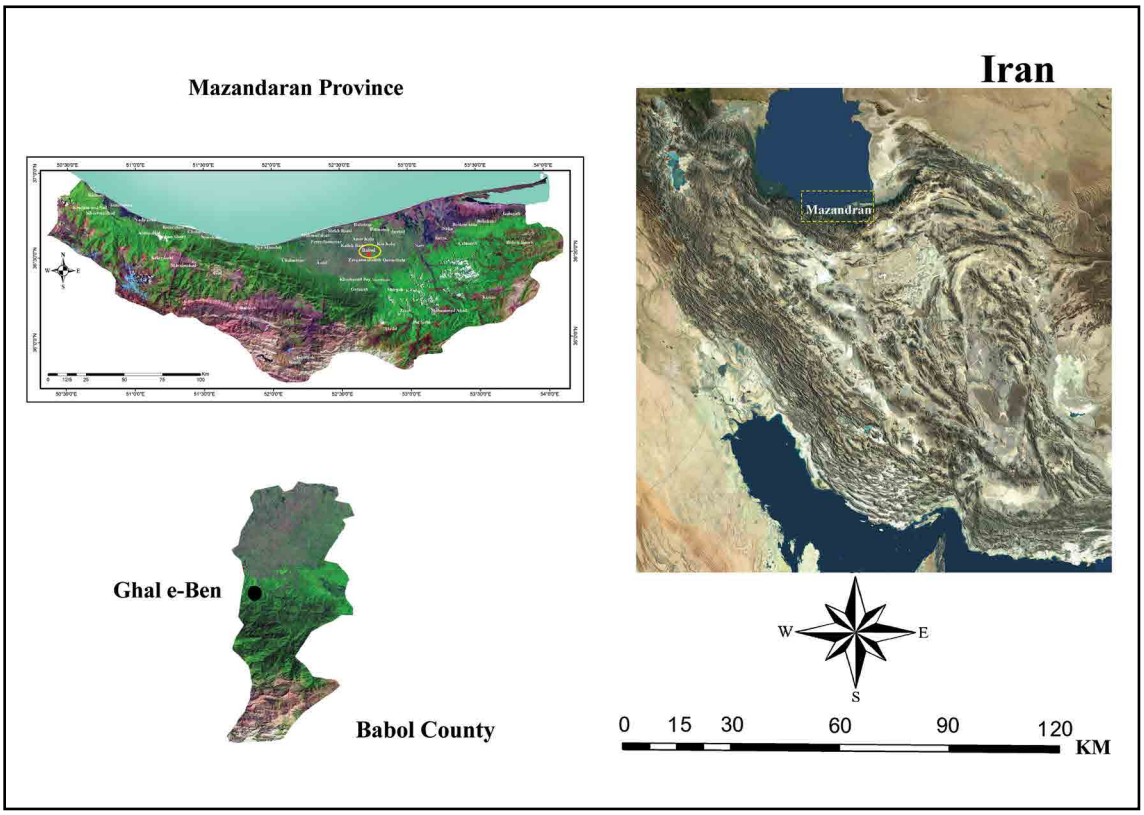



**Fig. 1: Location of Ghal e-Ben, south of the Caspian Sea.**




**Fig. 2: Aerial image of the site and the location of the trenches Q31- X35.**

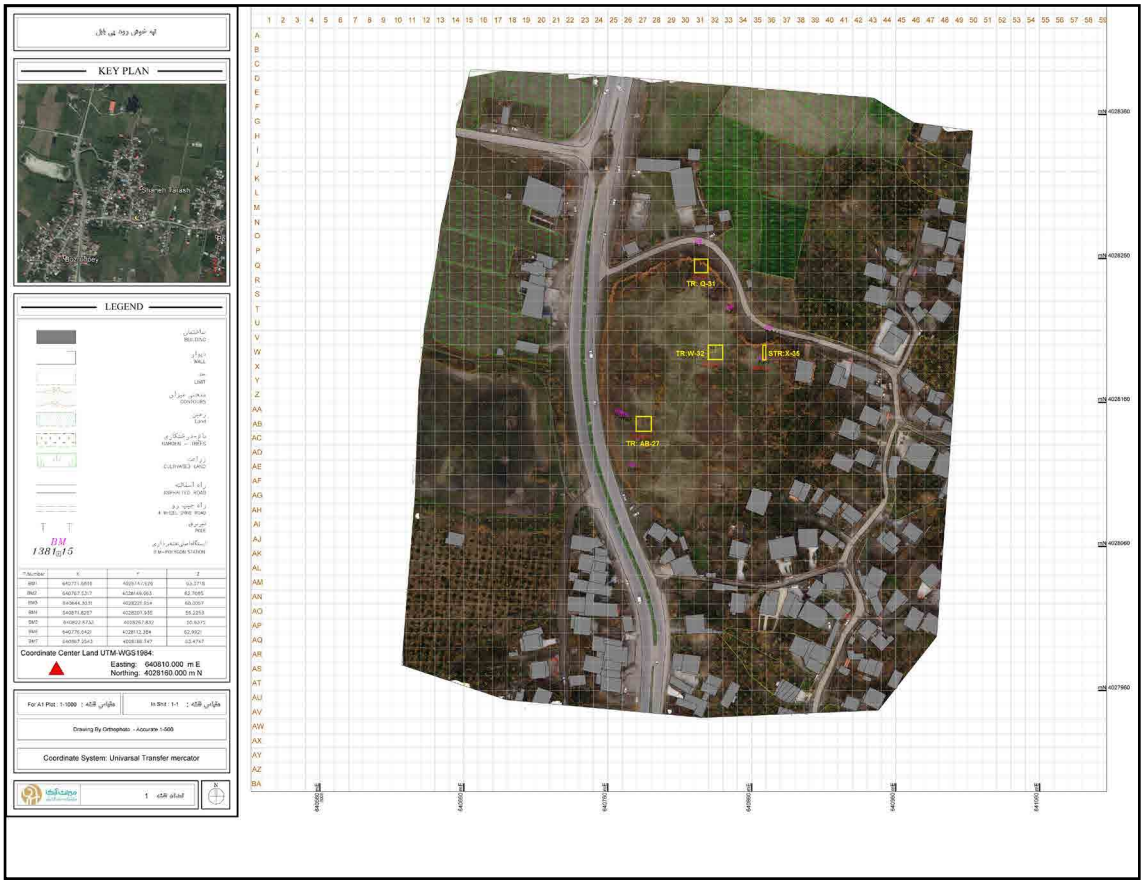



**Fig. 3: Topographic map of the area and location of excavated trenches at Ghal e-Ben.**

**2-1.Step trench (STR)**

X-35: The step Trench of X-35 (Fig. 4) is in the northern part of the site and with a 10.50m depth of archaeological 37 contexts, including primary and secondary deposits such as house walls, pits, burial contexts, and pavement. The first two meters of the top layers date back to the 10th century; afterwards is a combination of in situ and disturbed context, and after this period, one meter of oxbow lake deposits completely separates the 10th century occupation from the Bronze Age contexts. After the Oxbow Lake deposit, a secure 7.50 m of Bronze Age layers were exposed, addressing the start of the site's occupation from 3200 BCE. and ending 1500 BCE. Contexts from 101 to 109 (besides Context 107) belong to the 10th century. Context 109 is a large pit in which Context 107 was cut and is a mixed material culture of the 10th century CE (Seljuk period) onwards, such as seeds, pottery, glass, coins, etc. Contexts 103 and 105 consist of the parts of a wall and stone pavement. Context 106 includes several broken mudbricks as part of a collapsed wall. At a depth of two meters below the top layer, Context 107 consists of oxbow lake sediment deposit, and we assume environmental instabilities, such as flooding, caused such sedimentation and abandonment of the site around 1600-1500 BCE. There is no evidence of material culture in the one meter of oxbow lake sediment deposit.

Just below this context, archaeological evidence of the Late Bronze Age has appeared (Contexts 110-117) with a 2.50 m thickness starting from a depth of 3 m to 5.50 m. The Late Bronze Age cultural layers of Trench X-35 can be subdivided into the four architectural phases. The first phase includes a compact fired clay (Context 110) with the evidence of charcoal, fired broken bricks starting from a depth of 300 cm and continuing to a depth of 360 cm. The 14C sample from Context 110 dates back to 1613-1508 BCE, and according to the other 14C dates from the Trench Q-31 (see below), the site of Ghal e-Ben was abandoned around 1500 BCE. The second phase (context 111) is a collapsed, irregular, disturbed brick, in which parts of the bricks were fired while parts of the walls were in situ. The size of the bricks is 10×30×60 cm. In this architectural phase, around 20 kilograms of seeds (context 113) were found, dating back to 1691- 1532 BCE. Two other dates belong to context 111, dating back to 1621-1518 BCE (95.4%) and 1589- 1476 BCE (95.4%).

The three architectural phases consist of Contexts 114, 115 (pit) and 116 (pit), starting from 430 cm and ending 540 cm. Considering the thickness of Context 114, the whole depth has been divided into three levels: A, B and C. In this context, large-sized carbonized branches were found, and this evidence strongly suggests their origin as belonging to timbers used for roofing. Stone mortars, spindle whorls, and potsherds were found in Context 114. The 14C dates of the three depths of level A, B, and C indicate the following dates of 1689-1537 BCE (92.6%), 1641-1550 BCE (81.3%), and 2141-1951 BCE (95.4%). Phase 4 includes the floor, oven, and some small pits, which seem to be part of the residential section. This context starts from 550 cm and continues to 520 cm. Although we do not have 14C data from this layer, its depth is parallel with level C of Context 114, dating back to 2141-1951 BCE (95.4%). Therefore, we propose that it is probably the site was abandoned after the 4.2ka events, and around 400 years later was occupied for a short period of time, 100 to 150 years, and then abandoned again.

From Context 118, the Middle Bronze Age starts in trench STR-X35 with three meters of archaeological layers. Contexts 118 and 119 are part of a residential space which starts from 550 cm and continues to 573 cm with limestone floor evidence. The 14C of this context is 2300-2150 BCE (84.6%). Contexts 120,121, 122, and 123 start from a depth of 600 cm and continue to a depth of 705 cm, which indicates a domestic activity of the Middle Bronze Age. These consist of considerable debris from a residential house, which is located on the floor of Context 122, and a burial belongs to a young child (Context 121). The 14C date of context 121 is 2864-2495 BCE. Contexts 124-129 all suggest domestic activities, which start from a depth of 700 cm and continue to a depth of 840 cm. The 14C date of Context 124 is 2409-2234 BCE (93.3%). The considerable point is that the traces of several ovens, which are all located close to each other, were found in this deposit. The 14C date of Context 129 is 2877-2633 BCE belongs to the Early Bronze Age. The skeleton was buried in a flex position close to an oven without any gifts, and it seems that one of the traditions of the Middle Bronze Age was that the dead were buried close to an oven. Unfortunately, parts of the oven are located outside the trench and do not allow us to present a better picture of burial practices. Context 127 is located under Contexts 122 and 123, between a depth of 820-872 cm. In this context, we have recovered some pieces of Transcaucasian ceramics with an associated 14C date of 2530-2427 BCE (93.5%) (Fazeli Nashli *et al.,* 2022a) (Table 1).

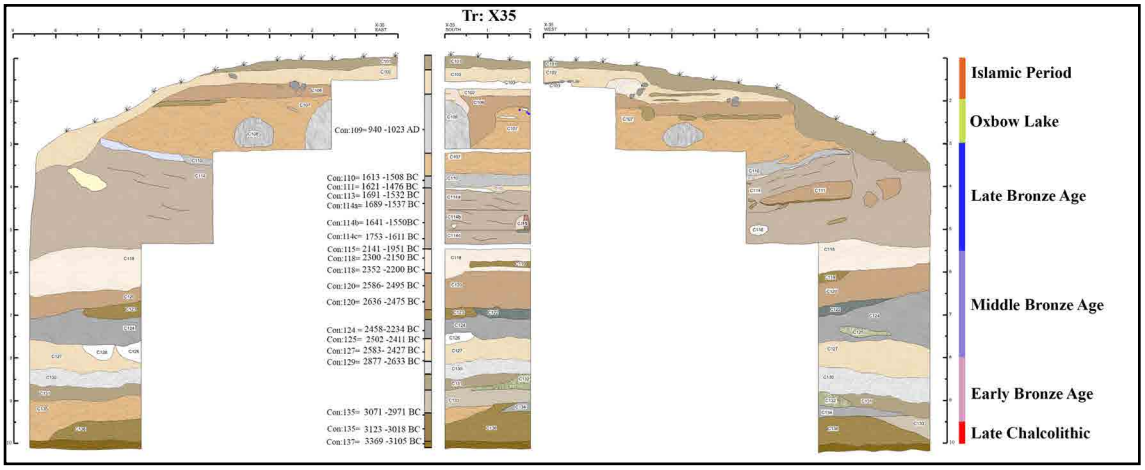



**Fig. 4: Trench X-35, stratigraphic section and location of dated samples.**

**Table 1: The absolute chronology of Ghal e-Ben, Tr X-35).**

| Period | Context | Depth | Radiocarbon date (charcoal) | Radiocarbon Date (seeds) | Comment |
|---|---|---|---|---|---|
| **10 century A.D.** | 109 | -100 cm | | 940-1023 BCE (65.3%) (Oryza sativa) | pit |
| **Gap** | 107 | -200-300 cm | | | oxbow lake |
| | 110 | -390 cm | | 1613-1508 BCE (95.4%) (Triticum aestivum) | flotation |

| | | | | | |
|---|---|---|---|---|---|
| **Late Bronze Age 2000-1500 BCE** | 111 | -391 cm | 1589-1476 BCE (95.4%) | | collapse layer |
| | 111 | -395 cm | | 1621-1518 BCE (95.4%) | flotation |
| | 113 | -390 cm | | 1691-1532 BCE (91.7%) (Triticum aestivum) | flotation |
| | $114_a$ | -400 cm | | 1689-1537 BCE (92.6%) | flotation |
| | $114_b$ | -455 cm | 1641-1550 BCE (81.3%) | | collapse layer |
| | $114_c$ | -530 cm | | 2141-1951 BCE (95.4%) (Panicum miliaceum) | flotation |
| | 115 | -470 cm | | 1753-1611 BCE (93.1%) (Hordeum vulgare) | flotation |
| **Middle Bronze Age 2500-2000 BCE** | 118 | -560 cm | 2300-2150 BCE (84.6%) | | soil layer |
| | 118 | -570 cm | | 2352-2200 BCE (84.2%) | flotation |
| | 120 | -675 cm | | 2586-2495 BCE (56.7%) | soil layer |
| | 120 | -685 cm | | 2636-2475 BCE (89.1%) | flotation |
| | 124 | -715 cm | 2409-2234 BCE (93.3%) | | soil layer |
| | 124 | -690 cm | | 2458-2283 BCE (90.2%) | flotation |
| | 125 | -750 cm | 2448-2411 BCE (53.9%) | | kiln |
| | 125 | -750 cm | | 2502-2456 BCE (49.7%) | flotation |
| **Early Bronze Age 3000-2500 BCE** | 127 | -835 cm | 2530-2427 BCE (93.5%) | | soil layer |
| | 127 | -840 cm | | 2583-2472 BC E (92.1%) | flotation |
| | 129 | -900 cm | 2877-2633 BCE* | | burial |
| **Late Chalcolithic/ Caspian Black of Red Ware 3200-3000 BCE** | 135 | -1015 cm | 3071-2971 BCE (50.9%) | | pit |
| | 135 | -1020 cm | | 3123 BCE-3018 BCE (44.2%) | flotation |
| | 137 | -1035 cm | 3369-3105 BCE* | | burial |

## 2-2.Trench Q-31

This trench was excavated in the northwestern section of the site to investigate geological transformations and the presence of a fault through stratigraphic methods. The trench measured 2×2 meters, within which 37 contexts were identified, and the excavation reached a depth of 10 meters. Contexts 301 to 307, with a thickness of approximately two meters, are attributed to the Islamic period. The burial matrix of Context 305, located at a depth of around 160 cm, was found within a cavity created by animals. This cavity, probably a rodent burrow, caused mixing and disturbance of the underlying soil layers with the upper layers (Fig. 6). A radiocarbon (14C) test

conducted from the seed sample obtained through flotation yielded a calibrated date of 1508-1434 BCE (95.4%), indicating that this layer has been disturbed and mixed with earlier prehistoric strata (Table 2).

Meander Flow and Formation of Oxbow Lake: At a depth of 2 meters in Trench Q-31, Context 307, like Context 107 in Trench X-35, revealed a one-meter-thick natural silty fine-grained sediment deposit containing abundant remains of small freshwater snails, but no pottery fragments or cultural materials were found. Based on geological and sediment logical analyses, this context represents the remnants of a gradually abandoned channel of an ancient meandering river that eventually transformed into an oxbow lake or stagnant water body. This environmental transformation caused a cultural hiatus across the entire site.

The sub-fault event: The subsidience faultline (Context 309) extends from the western and southern edges of the trench to its northern boundary. This significant geological feature likely results from subsidence or seismic stress along two fissures or fractures caused by a secondary fault. This natural fault has affected more than 1×1 meters of the trench's western and southern sides. It originates at a depth of 2 meters, coinciding with the cultural hiatus layer (Context 307), and has caused a vertical displacement of approximately 40 cm across all sedimentary and cultural layers in this section of the trench (Fig. 5).

Due to the considerable width of the fault fissure, cultural materials such as Islamic, historic, and even prehistoric pottery were displaced from upper layers to deeper contexts, reaching depths of up to 8 meters. This downward movement and the resulting layer disturbances have significantly complicated stratigraphic analysis. To mitigate this issue, from a depth of 8 meters onward, a narrower probe extended northward from the southern wall of the trench. Consequently, excavation continued smaller scale with dimensions of 1.5 by 2 meters.

The Late Bronze Age layers, represented by Contexts 311 to 321, begin at a depth of 4 meters and continue down to approximately 6 meters, with an estimated thickness of about 2 meters. This period includes two architectural phases. The first layer following the cultural hiatus is indicated by the sedimentary deposits of contexts 308 and 310, which extend from a depth of 3 to 4 meters.

Phase I: Radiocarbon (14C) analysis performed on a charcoal sample taken from the hearth in Context 317 at a depth of 430 cm yielded a date of 1512-1440 BCE (66.4%). A separate 14C test on a charcoal sample retrieved through flotation from the same context produced a calibrated date range of 1539-1446 BCE (95.4%). Phase II: This phase likely pertains to a domestic space, starting at a depth of 560 cm and extending to 6 meters. Its primary feature is a hearth (Context 320), situated adjacent to a pit (Context 319). Radiocarbon analysis of a charcoal sample obtained via flotation from Context 319 yielded a calibrated date of 1620-1498 BCE (93.7%).

The Middle Bronze Age is represented by Contexts 322 to 324, beginning at a depth of 600 cm and extending to 700 cm. It includes the remains of an architectural structure featuring a preserved residential floor, mud brick walls, and a hearth. Radiocarbon dating of charcoal from Context 322 yielded a calibrated date of 2299-2142 BCE (84.9%). A separate 14C test on charcoal obtained via flotation from the same context produced a date of 2350-2193 BCE (82.5%).




**Fig. 5: Earthquake activity during the Bronze Age in Ghal e-Ben.**

The Early Bronze Age includes Contexts 324-335, starting at a depth of 7 meters and reaching 9 meters, with a layer thickness of approximately 2 meters. It comprises two architectural phases:

Phase I: A collapsed wall (Context 325) with scattered mud bricks was observed at 7 meters. Radiocarbon analysis of charcoal from this context yielded a date of 2525-2422 BCE (95.4%),

while the charcoal sample from flotation resulted in 2576-2469 BCE (95.4%). Phase II: The residential floor from Phase I (Context 325) continues from 8 meters depth and is adjacent to a hearth (Context 333). Human remains recovered from this level include an adult (Context 330) and a small child (Context 331). Apart from a single lapis lazuli bead, no additional burial goods or artifacts were found. Radiocarbon dating of charcoal near the hearth (Context 333) yielded a date of 2893-2843 BCE (72.6%).

The Late Chalcolithic layer corresponds to Contexts 335 to 337, beginning at a depth of 9 meters and extending to 10 meters. It primarily consists of cultural and occupational deposits with no preserved architectural features. A 14C test on charcoal from Context 337 produced a date of 3048-2951 BCE (73.9%), while the flotation sample yielded a date of 3101-2925 BCE (93.2%) (Table 2. See charts 1 and 2) (Fig. 6).

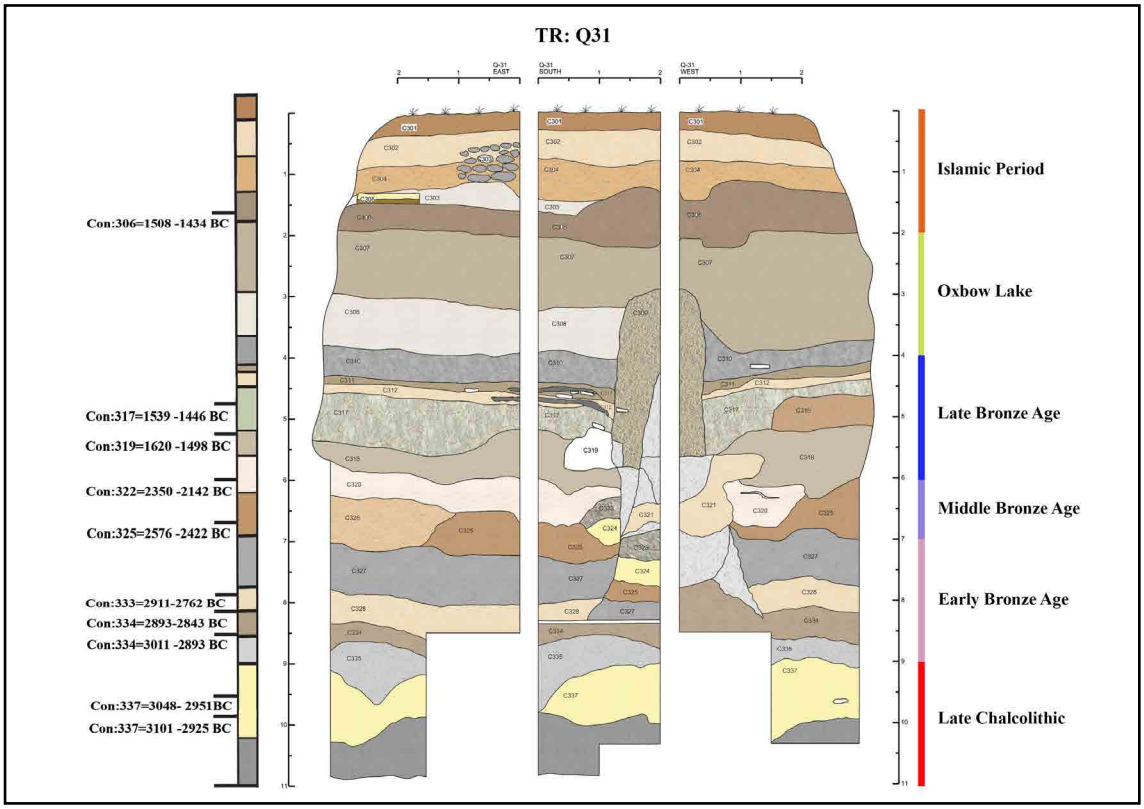



**Fig. 6: Trench Q-31 stratigraphic section and location of dated samples.**

**Table 2: The absolute chronology of Ghal e-Ben, Trench Q-31.**

| Period | Context | Depth | Radiocarbon date(charcoal) | Radiocarbon Date (seeds) | Comment |
|---|---|---|---|---|---|
| **10 century A.D.** | 306 | -150 cm | | 1508-1434 BCE (Lentil) | Context 301-306 is a 10th contrary layer, but the hedgehog removes the soil from context 317 to 306 |
| **Gap** | 307 | -200-300 cm | | | oxbow lake |

| | | | | | |
|---|---|---|---|---|---|
| **Late Bronze Age 2000-1500 BCE** | 317 | -420 cm | 1512-1440 BCE (66.4%) | | kiln |
| | 317 | -430 cm | | 1539-1446 BCE (95.4%) | flotation |
| | 319 | -570 cm | | 1620-1498 BCE (93.7%) (Triticum aestivum) | flotation |
| **Middle Bronze Age 2500-2000 BCE** | 322 | -630 cm | 2299-2142 BCE (84.9%) | | collapsed wall |
| | 322 | -650 cm | | 2350-2193 BCE (82.5%) | flotation |
| **Early Bronze Age 3000-2500 BCE** | 325 | -680 cm | | 2576-2469 BCE (95.4%) | flotation |
| | 325 | -680 cm | 2525-2422 BCE (95.4%) | | kiln |
| | 333 | -810 cm | 2911-2762 BCE * | | burial |
| | 334 | -855 cm | 2893-2843 BCE (72.6%) | | kiln |
| | 334 | -910 cm | | 3011-2893 BCE (95.4%) | flotation |
| **Late Chalcolithic 3300-3000 Caspian Black of Red Ware (3200-3000 BCE)** | 337 | -990 cm | 3048-2951 BCE (73.9%) | | soil layer |
| | 337 | -990 cm | | 3101-2925 BCE (93.2%) | flotation |

*** Dated in Mannheim, Germany, other dates analyzed in the School of Archaeology, Peking University.**

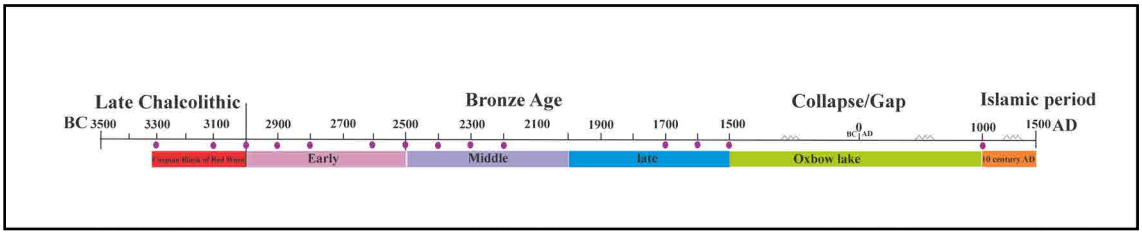



**Chart 1: The sequence of settlement at Ghal e-Ben.**

## 3. Findings and Cultural Significance

As previously mentioned, a distinctive decorative bead made of lapis lazuli (Fig. 7) was found next to the remains of a small child within the Bronze Age layers, on the floor of a domestic space in association with a hearth. This finding is of particular significance, as there are no known sources or deposits of lapis lazuli in northern Iran or the Iranian Plateau. The presence of this ornament, therefore, strongly indicates that it was a cultural import. Another notable artifact from the site is a human figurine (Fig. 8) comparable to similar examples previously documented in the Gorgan Plain and at Tureng Tepe (Olson and Thornton, 2019). These items, along with a variety of human-made bone tools of undetermined function and spindle whorls, recovered from the

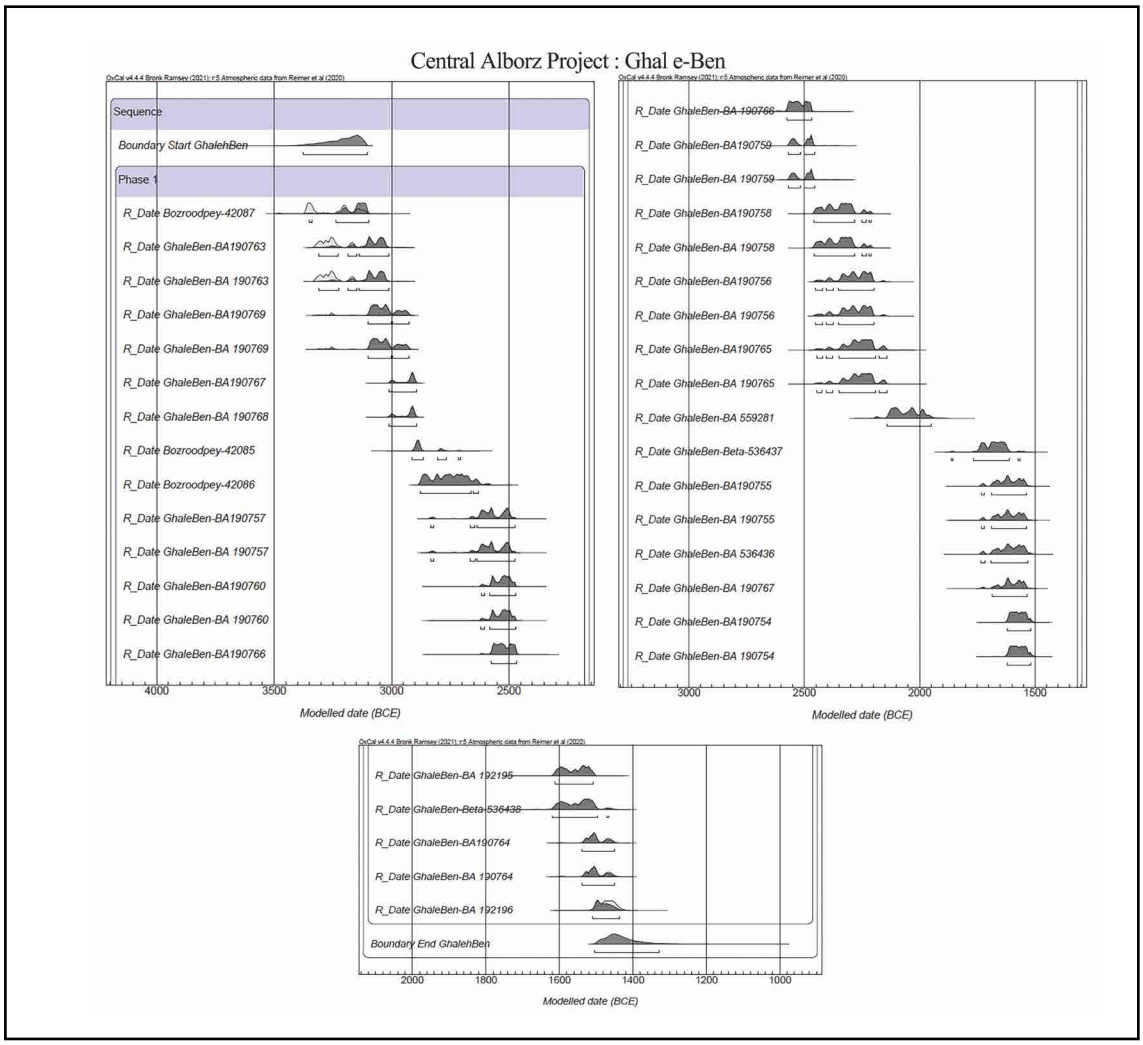



**Chart 2: The sequence of settlement at Ghal e-Ben.**

Bronze Age horizons, collectively reflect a rural settlement at the Ghal e-Ben. Material culture suggests a community with a subsistence economy based on agriculture and animal husbandry.




**Fig. 7: Burial objects recovered from two trenches, X-35, Q-31 (from left to right: lapis lazuli bead, vessel-glass paste pendant, bone tools.**



**Fig. 8: Human figure found in Ghal e-Ben.**

## 4. The Relative Chronology Based on Typology of Pottery at Ghal e-Ben

### 4-1. Late Chalcolithic: Caspian Black of Red Ware (3300-3000 BCE)

Although the eastern part of Mazandaran province has a relatively good background related to the fourth millennium BCE. But archaeological visibility of the fourth millennium BCE. in the central and western parts is much weaker than that of the fifth and early fourth millennia BCE. The traces of Sialk III ceramics, both Sialk III4-5 and Sialk III6-7, can be found in sites such as Terkam, Komishani in Neka, and Sad Tepe in Sari, further to the eastern part of Mazandaran, and doubtfully in Astangroad in Nowshahr, in the western part of Mazandaran, who dates back before 3400 BCE (Heydari, 2017; Khazaie Kouhpar, 2012). It seems that during the Early Hissar II (3650-3400), Sialk III3-7 culture penetrated the eastern Mazandaran through the Damghan region. However, both Barbara Helwing and Christopher Thornton (Helwing, 2006; Thornton *et al.,* 2013) accurately address Hissar's "cultural orientation" changes from the west (i.e., the north central plateau) to the north/northeast of Iran, especially turning to the Gorgan plain, which fluoresced around this time. The second half of the fourth millennium BCE is a crucial time concerning highly refined craft production, such as metallurgy and lapidary work, all of which support the inference an elite societal context in the Damghan region. Indeed, during the second half of the fourth millennium that Hissar became a centralized production center, with metallurgical production and lapidary work (particularly with lapis lazuli) on a large scale, with a centrally organized system. And the Gorgan plain could be seen as the consumers of such status goods.

The phenomenon of "Caspian Black on Red Ceramic" at Tepe Hissar also supports such changes of orientation to the north of Alburz Mountain (the Gorgan plain). We can see "Caspian Black of Red Ceramic" emerged in the stronger layers in the Gorgan plain and sites such as Tureng Tepe, Narges Tepe, and Hoseyn Abad support our hypothesis that the Grogan plain was probably the centre or the corridor of "Caspian Black on Red Ceramic" which gradually diffused into the site Tepe Chalow (Vahdati *et al.,* 2019). The absolute dating of Chalcolithic ceramics of Tepe Chalow dates back to 3337-3208 BCE (95.4%) cal BCE (Vahdati *et al.,* 2019: 186). The Chalcolithic pottery can be grouped into distinct types of Black-on-Red and Black-on-Buff painted pottery, which mostly appear at Shah Tepe III and Narges Tepe IV (Abbasi, 2011). In

Mazandaran province, sites such as Gohar Tepe and Ghal e-Ben also address the Caspian Black on Red Ceramic (Fig. 9, N:1-9).

At Gohar Tepe, lower layers introduce both the "Caspian Black on Red Ceramic" and "Burnished Grey Ware", dating back 3511-3426 cal BCE (70.3%) and 3383-3351 cal BCE (25.1%) (Ghasemi Gorji, 2017). Around 30 cm of Ghal e-Ben contains the Black of Red Ceramic, which is handmade, with the surface is covered by red slip. All the paints on the surface due to the high moisture of the lower layers of the site disappear. The 14C date of Context 135 of trench X35 from the 14C labs of Peking University shows 3071 -2971 BCE (50.9%). In Context 137, a burial skeleton was found, which is located on virgin soil. The body was buried in the flex position on the left-hand and the face turned to the southwest. Numbers of beads with a bronze pin, which was fixed in an awl, was found with the skeleton (Safari *et al.,* 2021). The radiocarbon date from this context shows 3363-3129 BCE (Fazeli Nashli *et al.,* 2022a).

An important point is that the "Caspian Black on Red Chalcolithic Ceramic" gradually intermixes with the "Gorgan Grey Ware," which supports gradual developments from the late fourth millennium BCE. of the two above ceramic traditions. We also should consider that the central parts of the southern Alborz do not have strong evidence of fourth-millennium cultural tradition, and large tell sites which emerged during the third millennium BCE. onwards. The limitation of excavated areas from the site of Ghal e-Ben does not allow us to have more cultural data, but sites such as Tepe Chalow and Hoseyn Abad support the relationship between the Namazga III, Kara Depe, Geoksyur I, and Chong-depe (Vahdati *et al.,* 2019; Tadahiko *et al.,* 2010).

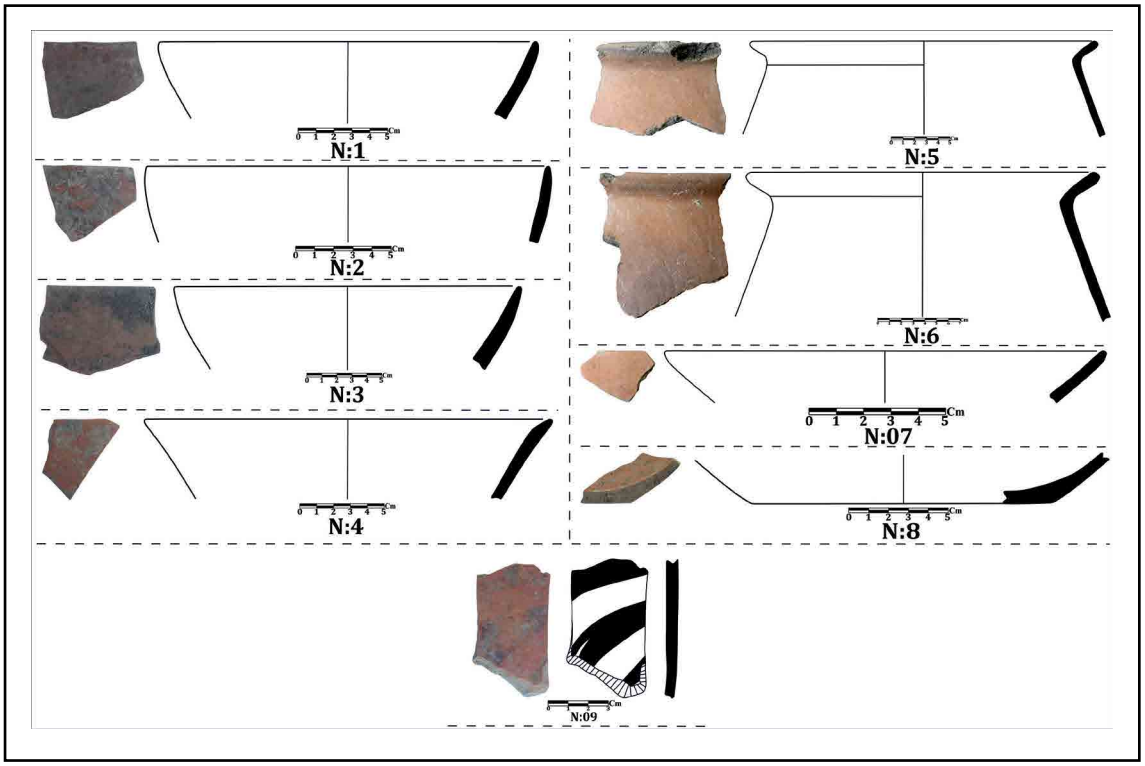



**Fig. 9: Late Chalcolithic pottery design of Ghal e-Ben (Kalvari Janaki, Hedayat Allah).**

**4-2. Early Bronze Age, 3000-2500 BCE.**

The population of Mazandaran province flourished during the Bronze Age with the emergence of large centers such as Gohar Tepe, with more than 30 hectares. The same situation took place in the Gorgan plain with large centers such as Tureng Tepe, with its large monumental buildings, etc (Bessenay-Prolonge & Vallet, 2019). Against this background, the Early Bronze Age of Ghal e-Ben starts from ca. 3000 BCE., & ends at ca. 2500 BCE. With the beginning of the Bronze Age, the technology and style of pottery changed with the appearance of "Gray Wares" from light to dark colours. During this period, we see seven types of spout containers, such as open, vertical, shoulder, closed, and congressional. Eight types of vessel forms, including varieties of bowls, jugs, cauldrons, cups, jars, glasses, plates, and small cups (Fig. 10, N:1-17). Most of the ceramics are wheel-made with the inorganic temper and fired in the closed kilns; the surface is burnished, engraved, and polished. Patterns are a combination of geometric lines decorated with thin, wide strips or horizontal, vertical, and diagonal lines. The most important types of these designs are in the form of wide horizontal, vertical, and diagonal strips or a combination of these several items, in the form of spiral patterns, zigzag patterns, square and lozenge-shaped patterns, circular and pin-shaped patterns. The location of these designs is on the exterior surface and in the upper and middle segments of the vessels. Polished patterns are in the form of wide horizontal strips, narrow irregular horizontal lines, and irregular square grids that have been used in the upper part of the vessels and the parts of the shoulder and body. Also, carved designs have been used in two ways on the surface near the rim of vessels, looking like mouse teeth and with several horizontal lines (Safari et al., 2021). The dark and light grey ceramics of Ghal e-Ben Early Bronze Age are comparable with Gohar Tepe (Mahforozi, 2007), Yaghout Tepe (Mahforozi, 2006), Kelar Tepe, Kelardasht (Mousavi Kouhpar and Abbasnejad Seresti, 2007), Ghal e-Kesh (Amir Kolaei, 2009), Ghal e-Pey in Sari (Mahforozi, 2009), Terkam (Mahforozi, 2010), Komishani (Fazeli Nashli, 2017) and Tepe Abbasi in Neka (Abbasnejad Seresti, 2009) these ceramics is also comparable with the north-eastern regions such as Shah Tepe, Tureng Tepe IIIA, Narges Tepe IIIC, and Hissar IIB-IIIA. Related to the pottery forms, the most connection can be found with the sites of Shah Tepe, Tureng Tepe and Yarim Tepe (Arne, 1945; Deshayes, 1968a, 1976b; Stronach, 1972) and Narges Tepe in Gorgan (Abbasi, 2011) Gorgan plain and Hissar (Schmidt, 1937; Dyson and Howard, 1989).

Along with the grey wares, several pieces of Kura-Araxes pottery types were identified in Ghal e-Ben. With the polished surface and engraved decoration, and with the typical handles of Kura-Araxes type (Fig. 10, N. 8 and 13). Delicate logs consist of zigzag and triangular strips, geometric carving lines with combed and wavy ornaments, and nail-shaped lines carved on the outer or inner edge of the dishes, which are comparable to specimens. The type of ceramics is also found at Kelar Tepe (Heydarian, 2011: 247). It is also comparable to the Astankrood site of Nowshahr (Khazaei, 2011: 194-195). This pottery is a sign of cultural connection with the western and northwestern areas, and in a way, the area of Ghal e-Ben can be considered as the easternmost area of influence of Kora-Arax culture.

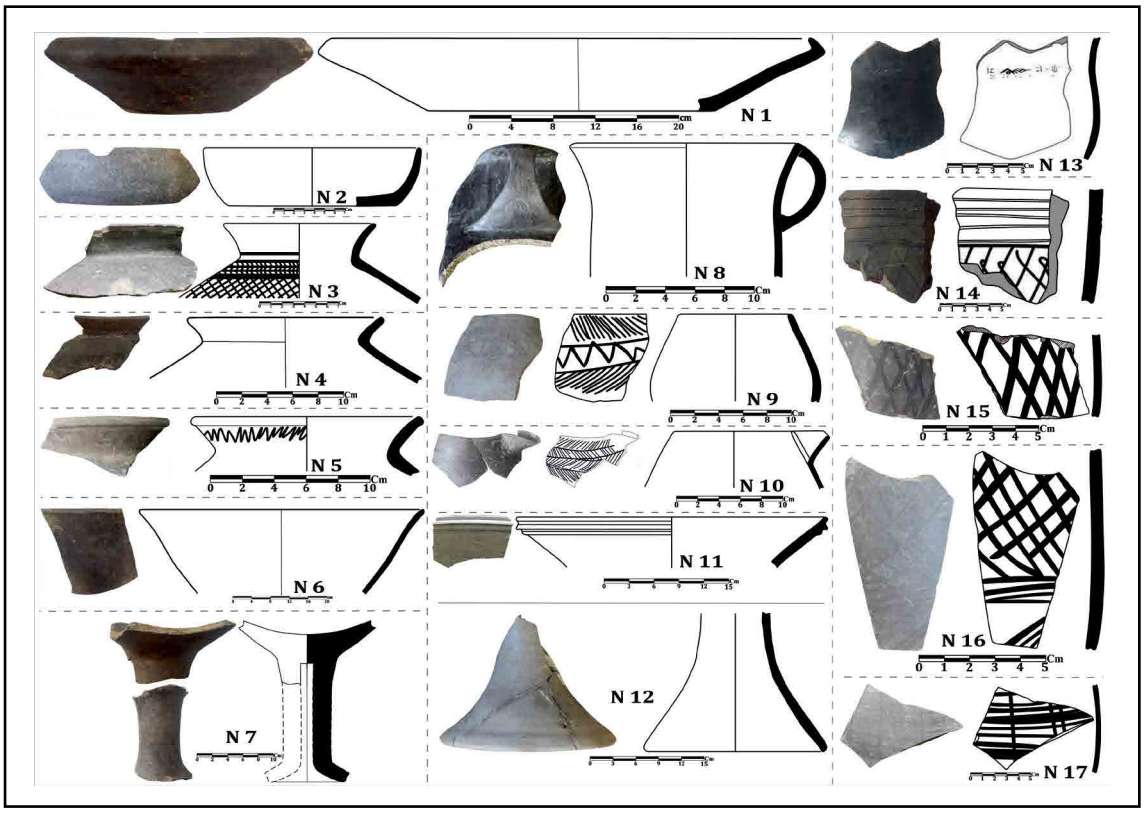



**Fig. 10: Early Bronze Age pottery of Ghal e-Ben (Kalvari Janaki, Hedayat Allah).**

### 4-3. Middle Bronze Age 2500-2000 BCE.

During the Middle Bronze Age, we see innovations such as new shapes of vessel mouth forms, and new forms, including tubular, ventral, handle, and chamfered rim. The bowls form disappeared, but new forms such as pitchers, pots, and jars were used during the Middle Bronze Age. Ceramics were fired in closed kilns and wheel-made, while the surface treatments of the Early Bronze Age were continued, but horizontal lines were applied on the surface of the vessels. Regarding the placement of the designs, it can be said that the burnished and polished patterns were used on the whole surface of the vessels. The polished patterns of this period were created with less depth than the previous period, and the burnished patterns were created on both the inner and outer surfaces of the vessels. A variety of thin patterns of motifs in the form of horizontal and vertical lines have been used. The embossed designs of this period have a different variety than the previous period and are seen in the form of horizontal lines and rope embossed designs. Some of the motifs of the previous period were also not used in this period. The new designs of this period can be in the form of regular and irregular squares with narrow burnished lines, combined geometric designs in the form of horizontal, vertical, diagonal, and tangled lines, cross lines, truncated patterns, and vertical toothed patterns lines (Safari *et al.,* 2021) (Fig. 11, N:1-20).

Middle Bronze Age pottery of Ghal e-Ben is comparable with Gohar Tepe (Mahforozi, 2007), Yaghout Tepe (Mahforozi, 2006), Tepe Kelardasht (Mousavi Kouhpar and Abbasnejad Seresti, 2007), Ghal e-Kesh in Amol (Amir Kolaei, 2009), Ghal e-Pay in Sari (Mahforozi, 2009), Terkam in Sari (Mahforozi, 2010), Komishani Tepe (Fazeli Nashli, 2017), and Abbasi in Neka (Abbasnejad

Seresti, 2009). Also, based on the pottery typology, there is obvious high resemblance of pottery types with the northeastern sites such as Hissar IIIB (Schmidt, 1937), Yarim Tepe III (Stronach, 1972), Shah Tepe II (Arne, 1945), Tureng Tepe IIIB (Deshayes, 1968-1976), and Narges Tepe IIIB (Abbasi, 2011). In general, it seems from this period, the connections with north-western Iran ended, and there is a gradual decrease of ceramic style and form in the Gorgan plain, which indicates a new cultural boundary.

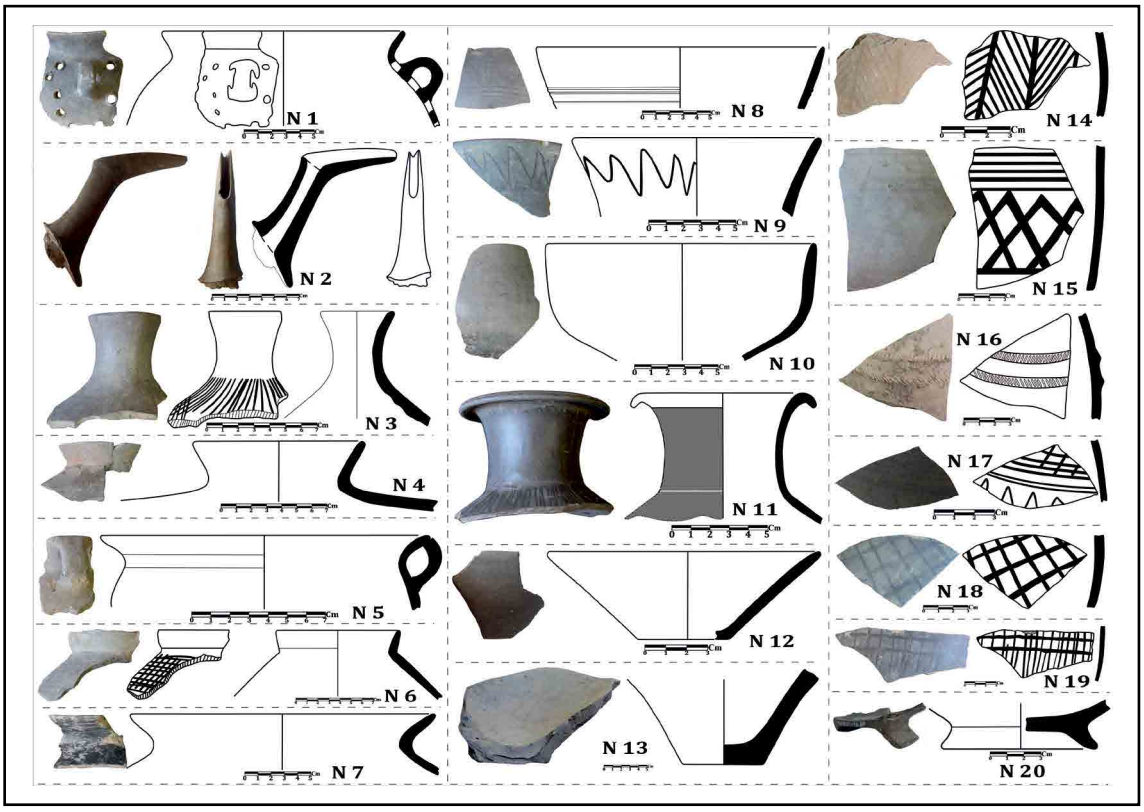



**Fig. 11: Middle Bronze Age pottery of Ghal e-Ben (Kalvari Janaki, Hedayat Allah).**

### 4-4. Late Bronze Age 2000-1500 BCE.

Here in this paper, we will discuss more about the cultural gaps during the third and second millennia BCE. but, the site of Ghal e-Ben experienced two cultural gaps at the end of the third millennium BCE. and beginning of the second millennium BCE. Then the site was re-occupied from ca. 1700 BCE. and finally abandoned during the first half of second millennium BCE. During the Late Bronze Age, although the shape of the rim increased, in general, the forms are the continuation of the previous period with less innovation to come. The most important types of rims are open, vertical, concave, closed mouth, necked, funnel-shaped, tubular, and rim with handle. During this period, bowls that were not used during the Middle Bronze Age began to be made again. Jars continued in three types: shoulder, shoulderless, and handled, and cups of the handleless type with a cylindrical shape. The jars are in one category with handle type, and food storage vessels and cooking containers, also the continuation of the Middle and Early Bronze Age. Pitchers that became popular from the Middle Bronze Age continued in this period with

the two types of simple and handle forms, and cups, which were simple in the Early Bronze Age, in this period is in two simple forms with a low rim. As in the two previous periods, the pottery was fired more adequately in closed kilns which most of which are wheel-made. The engraved decoration ended during the Late Bronze Age. Another important aspect regarding the motifs is their placement, which appears on various parts such as the base, rim, shoulder, neck, stem, outer edge, and interior surface lines (Safari *et al.,* 2021).

The burnished designs of this period do not have a special order and were used only in certain parts of vessels, such as under the pipe and inside the pipes. Burnished pattern of this period can be a combination of helical and horizontal motifs in the form of wide strips, vertical zigzags with thin and wide horizontal and vertical bands, irregular horizontal and vertical bands, zigzag motifs that evoke the ladder form, and helical motifs. Horizontal and horizontal and vertical strips are deformed. Among the designs that appeared for the first time in this period, we can mention the designs of empty circles on the inside of ceramics. Another type is diagonal lines that were used with less depth than in previous periods. Another issue is that paints are in the base, rim, shoulder, on the rim inner parts of the rim (Fig. 12, N: 1-18).

The Late Bronze Age pottery of Ghal e-Ben is comparable to Gohar Tepe in Behshahr (Mahforozi, 2007), Yaghout Tepe (Mahforozi, 2006), Ghal e-Kesh in Amol (Amir Kolaei, 2009), Ghal e-Pay in Sari (Mahforozi, 2009), Tepe Kelar (Mousavi and Abbasnejad Sereshti, 2007; Mousavi Kouhpar, 2009), Hissar IIIC (Schmidt, 1937), Shah Tepe IIA (Arne, 1945), Tureng Tepe IIIC (Deshayes, 1968; 1976) and Narges Tepe IIIA (Abbasi, 2011).

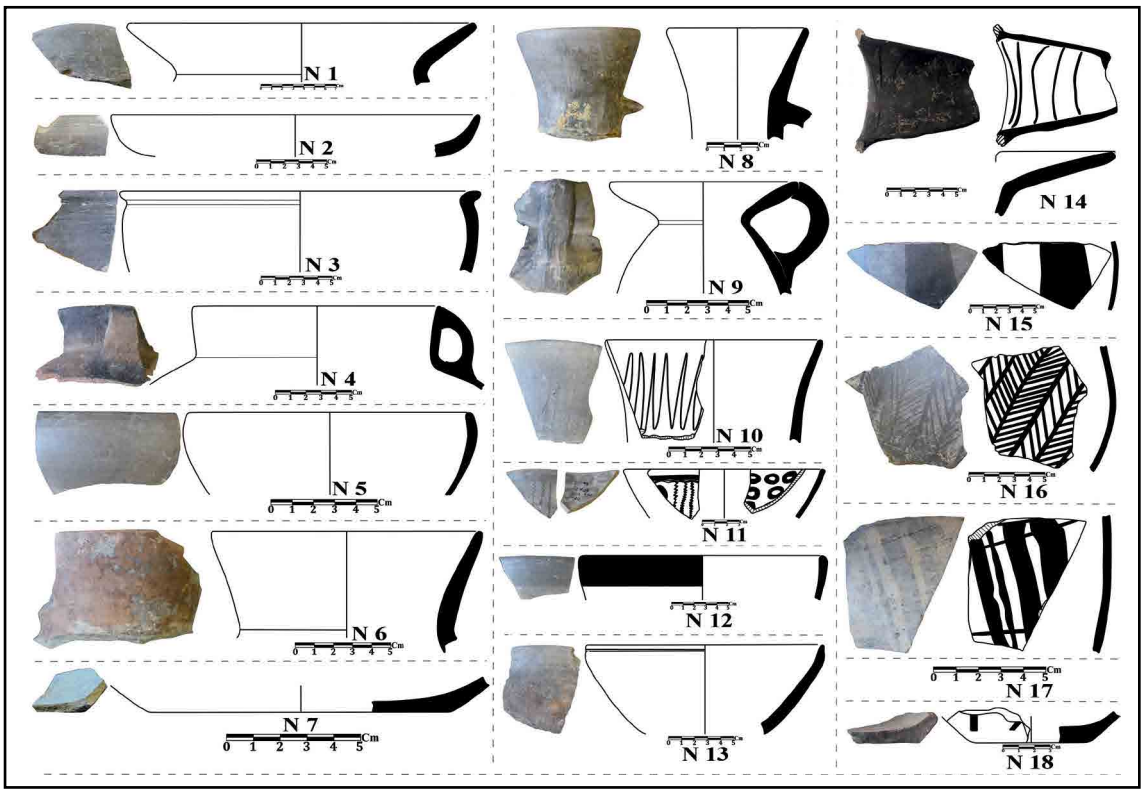



**Fig. 12: Late Bronze Age pottery of Ghal e-Ben (Kalvari Janaki, Hedayat Allah).**

## 5. Faunal remains from Ghal e-Ben

A total of 745 animal bones were recovered from very well-preserved conditions during the excavations of the three stratigraphic trenches at Ghal e-Ben. The archaeozoological studies of this collection could shed light on the exploitation of animals and herding strategies of Bronze Age occupants in the southern Caspian Sea shore. Within the collection, 333 bones belong to the Early Bronze Age, 204 bones to the Middle Bronze Age, 182 bones to the Late Bronze Age, and 14 bones only to the Early Iron Age. 73% of the collection (533 bones) was identified to the level of genera and species. Faunal spectra are not very diverse, which include cattle, sheep, goat, pig, red deer, dog, fox, beech marten, and waterfowl (Table 3).

**Table 3. Taxonomic distribution of animal remains in number (NR) and weight (WR) of remains.**

| Ghal e-Ben 2019 | Early Bronze Age | | Middle Bronze Age | | Late Bronze Age | | Early Iron Age | | Total of NR | Total of WR (G) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | **NR** | **WR** | **NR** | **WR** | **NR** | **WR** | **NR** | **WR** | | |
| *Bos taurus* | 84 | 6190.2 | 35 | 1861.3 | 29 | 2340 | | | 148 | 10391.5 |
| *Ovis aries* | 9 | 242 | 8 | 171.3 | 14 | 237.7 | 1 | 1.4 | 32 | 652.4 |
| *Capra hircus* | 9 | 101.2 | 2 | 53.4 | 5 | 77.6 | | | 16 | 232.2 |
| Caprinae | 47 | 541.8 | 76 | 483.9 | 55 | 425.1 | 7 | 55.6 | 185 | 1506.4 |
| *Sus scrofa* | 82 | 2302 | 33 | 875.1 | 18 | 435.6 | | | 133 | 3612.7 |
| *Cervus elaphus* | 1 | 296.8 | 1 | 34.5 | | | | | 2 | 331.3 |
| *Canis familiaris* | 2 | 6.3 | | | 6 | 30.4 | | | 8 | 36.7 |
| *Vulpes vulpes* | 2 | 11.3 | | | | | | | 2 | 11.3 |
| Canidae | 1 | 1.7 | | | | | | | 1 | 1.7 |
| *Martes foina* | 1 | 2.4 | | | | | | | 1 | 2.4 |
| Carnivorae | | | 1 | 8.3 | | | | | 1 | 8.3 |
| cf. Pelecanidae | | | 1 | 42 | | | | | 1 | 42 |
| *Anas* sp. | 2 | 1.9 | | | | | | | 2 | 1.9 |
| Mollusc | | | | | | | 1 | 0.2 | 1 | 0.2 |
| Large mammal | 34 | 661.3 | 16 | 299.2 | 14 | 193.6 | | | 64 | 1154.1 |
| Medium mammal | 7 | 63.3 | 4 | 62.1 | 1 | 7.9 | | | 12 | 133.3 |
| Small ruminant | 52 | 175.4 | 27 | 101.6 | 40 | 108.6 | 5 | 10.3 | 124 | 395.9 |
| **Grand Total** | **333** | **10597.6** | **204** | **3992.7** | **182** | **3856.5** | **14** | **67.5** | **733** | **18514.3** |

The main animal species exploitated are domesticates, including Bos taurus, Ovis aries, Capra hircus, and subsequently, Sus scrofa domesticus. The standards introduced by Von den Driesch (1976) were used for bone measurement. The size of sheep and goat compared with the reference collection by using the Log Size Index method. Sheep measurements were compared with wild sheep (Ovis orientalis) and goat (Capra aegagrus) published by Uerpmann and Uerpmann (1994), and of domestic cattle (Bos taurus) by Helmer (1992). The average size of sheep and goat populations at Ghal e-Ben, with a value of -0.033 and -0.075, respectively, is smaller than the reference species. The average size for the cattle, with a value of 0.042, is a little bit larger than the reference. The size variations in sheep, goats, and cattle could be explained by exploitation strategies in various ages and sexes during the Bronze Age. Comparison of pig measurement with wild boar reference species (Payne and Bull, 1988) showed the smaller size in most of the Ghal

e-Ben collection. The age of the animal at death was estimated by tooth wear and epiphyseal fusion of bones. These analyses indicate that two-thirds of cattle and sheep/goat populations had been slaughtered between 2 to 6 years after the age of puberty. The equal status for immature and mature animals was observed for porcines. It seems Ghal e-Ben habitants kept females for the years after puberty.

Hunting played a very marginal role in the subsistence economy of Ghal e-Ben, with 3% of identified species. The northern slope of the Alborz Mountains is among the main habitats of red deer; however, represented only by two bones in the collection. The presence of beech marten bone with cut-marks is interesting, probably hunted for their coat or fine fur. The inhabitants also hunted migratory waterfowl from nearby wetlands. The presence of a red fox might be intrusive. It is noteworthy that fish bones are absent in the collection of this season of excavation. Cut marks of the butchering process were the most common traces identified on 56 bones. Cooking and grilling caused very dark brown and black colours on bones, and tool making are among the other human activities traces at the site. Canid and rodent gnawing traces were also observed on various bones. Most of the human and animal traces appeared on domestic animal bones (Fig. 13).

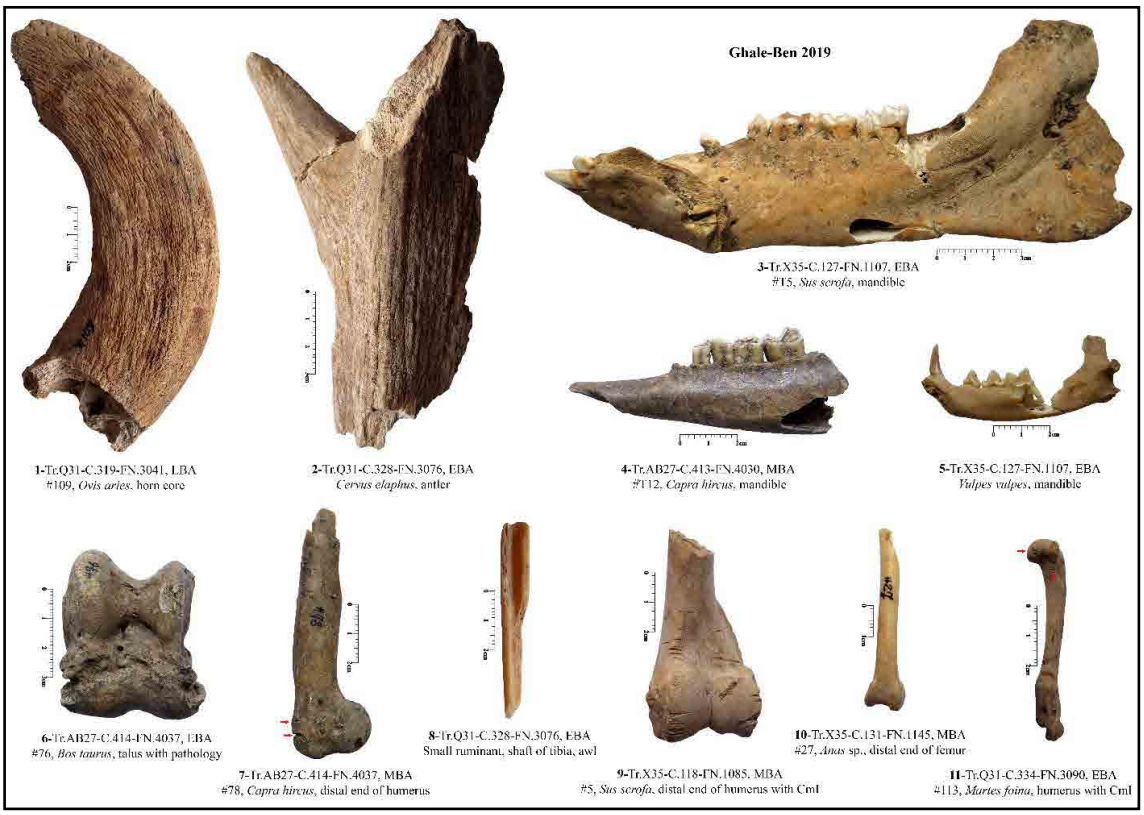



**Fig. 13: Selection of some bones, 1: Sheep horn core; 2: Red deer antler; 3: Pig mandible; 4: Goat mandible; 5: Red fox mandible; 6: Cattle talus with pathology; 7: Goat humerus with cut-mark; 8: Awl made from small ruminant tibia; 9: Pig humerus with cut-mark; 10: waterfowl femur; 11: Beech marten humerus with cut-mark.**

There was a diachronic ascending tendency towards breeding and exploiting sheep/goats and cattle versus pigs from the EBA to the LBA. During the EBA, 36% of identified specimens were allocated to pigs, while cattle and sheep/goats accounted for 31% and 29%, respectively. Unlike

the prior period, this ratio changed during the MBA with increasing sheep / goats to 49% and decreasing cattle and pig portions to 25% and 24%, respectively. The preference for sheep / goats had continued into the LBA, accounting for 59% of the collection, while cattle and pigs comprised 23% and 15%, respectively. The distribution of bone weight of each species also approximately confirmed this tendency (Fig. 14).

Although there is some difficulty in distinguishing between all bones of Caprine, sheep are more common than goats, with an average ratio of 2.5:1. The faunal remains, with the importance of cattle and sheep, are characteristic of residential sites and an indicator of developed animal husbandry. The same pattern in animal exploitation was identified in the nearby Iron Age site in Gillan, Pila Qaleh, with emphasis on the exploitation of cattle. Noteworthy that wild animals were used as a supplementary source in the subsistence economy of Pila Qaleh and Jalaliye (Davoudi *et al.,* 2019), when hunted animals played a very marginal role in Ghal e-Ben.

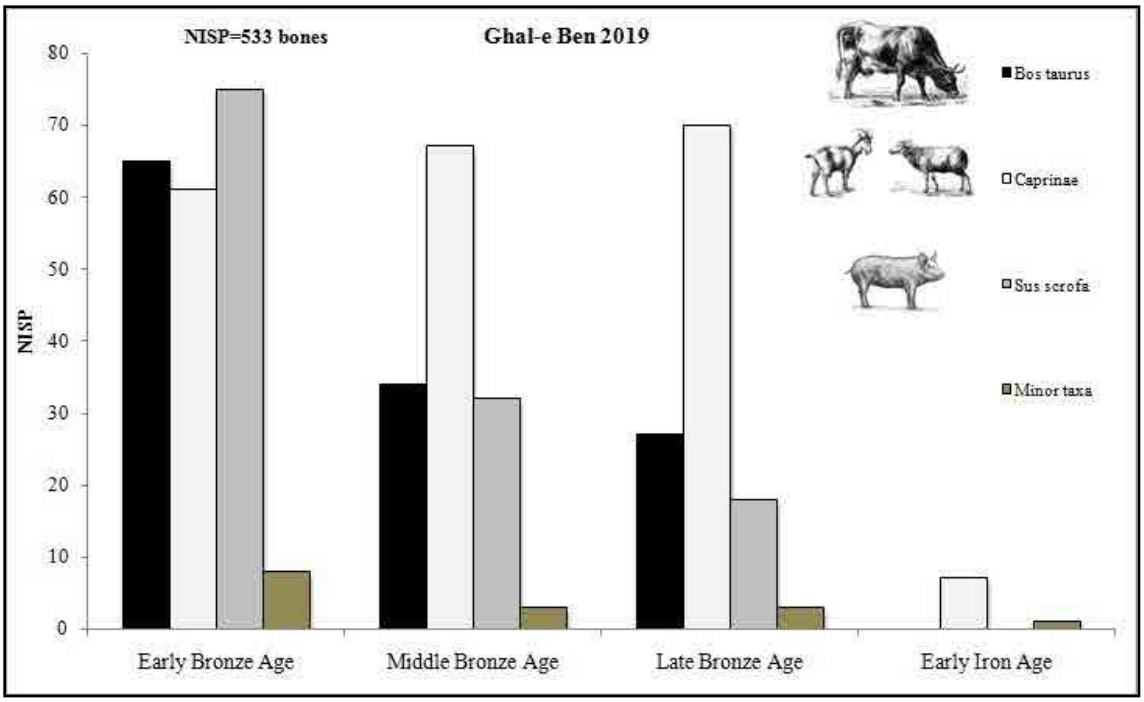



**Fig. 14: Faunal spectra in percent of Number of Identified Specimens (NISP).**

The high proportion of pig is interesting, while there are not enough data about the domestication of boar in northern Iran. If we just consider the least portion of pig in Ghal e-Ben during LBA by 15% of NISP, it is five times more than the average (approximately 3% of collections) of other sites in Iran (Mashkour, 2006). Ghal e-Ben could be a key case study for evaluating the domestication of pig in Iran: It depends on the nature of the northern slopes of the Alborz Mountains. The nearly same strategy is documented in the Bronze Age sites of south-eastern Turkey, such as Kenan Tepe, Musluman Tepe, Hirbemerdon Tepe, Türbe Höyük, etc (Berthon, 2013). In this context, it is very important to define the role of herding versus agriculture in the region. In the extraordinarily lush environment of Mazandaran, the interaction between these two economic activities may appear simple, but must nevertheless have been relatively complex. These studies highlight the complexity of the herding strategies on a micro-regional scale.

**6. Agricultural Economy and Plant Exploitation in the Bronze Age Society of Ghal e-Ben**

The earliest evidence of the agricultural economy of the southern Alborz Mountain dates back to nine millennia BCE, when the last hunter-gatherer of the Caspian Sea independently started to cultivate the agricultural lands mostly in front of caves and finally fully became agricultural sedentary villagers during the second half of the seventh millennium BCE (c.a. 6500 BCE) (Leroy *et al.,* 2017, Fazeli Nashli *et al.,* 2024a; Fazeli Nashli, 2024b, Fazeli Nashli, 2024c, Abbasnejad Seresti, 2024a, Abbasnejad Seresti *et al.,* 2024b). As we mentioned here, the eastern Mazandaran province was populated as "Eastern Gray Ware Culture," while the pathway of the two "steppe societies" (Lunea, 2017) and farming societies in the Gorgan plain and Mazandaran was completely different. In Central Eurasia transformation from hunting to mobile herding without agriculture started during the fourth millennium BCE, and the agricultural economy started during the third millennium BCE. (Spengler *et al.,* 2014; Billings *et al.,* 2022). Archaeological evidence from Ghal e-Ben indicates that the economy of Bronze Age communities in Mazandaran was primarily based on animal husbandry and agriculture. In this rainfed region, Bronze Age farmers practiced dryland farming rather than irrigation (Huang *et al.,* 2023). Ehlers (2001a, 2011b) writes, the natural water potential in the Caspian lowlands, including Gillan and western and central Mazandaran, provided sufficient precipitation for rain-fed agriculture. The region's topography, characterized by a dense network of brooks, ravines, and rivers with large delta fans, has facilitated dry-land farming from prehistoric times to the present.

Archaeological findings suggest that the settlers of Ghal e-Ben extensively cultivated vast areas surrounding their villages. The abundance of botanical remains across all excavation contexts points to a well-developed agricultural system that likely contributed to social inequality during the Bronze Age. Initial surveys conducted by Fazeli Nashli and Mojtaba Safari in the Babol and Qaem Shahr regions indicate that all Bronze Age sites in this area emerged as large settlements. These sites contain extensive cultural layers rich in ash, bones, and seeds, signifying intensive settlement activity. The presence of large populations in these tell-centered landscapes suggests that food production on an extensive scale was essential, leading to social stratification and labor division. The globalization of the economy in the late third millennium BCE. played a significant role in surplus accumulation and diversification of food resources in Mazandaran, particularly through millet cultivation at Ghal e-Ben.

The archaeobotanical analysis of Ghal e-Ben provides crucial insights into past agricultural practices and plant utilization. The study of carbonized plant remains from different contexts has revealed a diverse assemblage of cultivated cereals, pulses, and gathered plants. These findings enhance our understanding of ancient subsistence strategies, crop choices, and potential trade or cultural exchanges in the region. The cereal assemblage from Ghal e-Ben predominantly consists of Triticum aestivum (bread wheat) and Hordeum vulgare (barley). The presence of grain and rachis fragments in context 113 suggests that processing activities such as threshing and winnowing were conducted on-site. The identification of naked Hordeum vulgare indicates a preference for free-threshing barley, which may have been used for human consumption or brewing purposes.

Additionally, Triticum spelt (spelt wheat) was found in multiple contexts, including grain and glume base remains, highlighting its significance in local agriculture.

Beyond cereals, the archaeobotanical assemblage includes several pulse crops, which were essential protein sources in ancient diets. Identified species include Vicia ervilia (bitter vetch), Lens culinaris (lentil), Lathyrus sativus (grass pea), and Pisum sativum (pea), recovered from contexts 113, 306, and 114. These legumes would have contributed to soil fertility through nitrogen fixation, supporting sustainable farming practices. Their widespread presence across multiple contexts suggests their integration into daily food consumption and storage strategies (Fig. 15).

In addition to staple crops, the presence of oil and fiber plants such as Linum spp. (flax) and aromatic or culinary plants like Coriandrum sativum (coriander) suggest a broader spectrum of plant use at Ghal e-Ben. Flax remains from context 114 indicate its possible role in textile production or oil extraction. The discovery of Cucumis spp. (melon or cucumber) and Vitis spp. (grape) suggests that fruit cultivation or gathering was also practiced, reflecting dietary diversity and potentially early viticulture in the region.

Overall, the archaeobotanical evidence from Ghal e-Ben underscores a complex and well-developed agricultural system during the Bronze Age. The diversity of cereals, pulses, and gathered plants highlights the adaptive strategies employed by past societies to ensure food security and economic sustainability. Further analysis, including isotopic and genetic studies, could provide deeper insights into crop management, climatic adaptations, and the broader socio-economic dynamics of ancient agricultural communities in the region (see: Huang *et al.,* 2023).

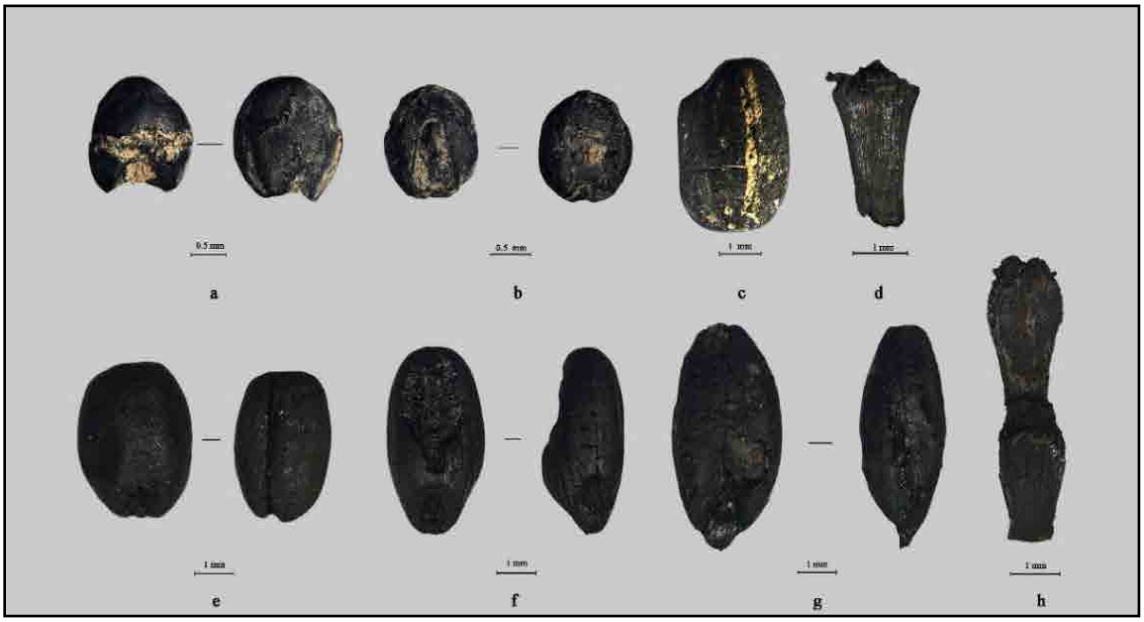



**Fig. 15: Cereal grains and chaff from Ghal e-Ben: a) Panicum miliaceum; b) Setariaitalica; c) Oryza sativa; d) Hordeum vulgare rachis, six-row, hulled type; e) Triticum cf. timopheevii glume base; f) Triticum aestivum/durum; g) Triticum cf. timopheevii; h) Hordeum vulgare var. coeleste (naked, six-row); Triticum aestivum rachis (Huang *et al.,* 2023).**

## 7. Human remains from Ghal e-Ben

During excavations at Ghal e-Ben, skeletal remains of at least nine individuals were uncovered and subsequently analyzed using a modified version of the standard osteological protocol by Buikstra and Ubelaker (1994), (Sołtysiak et al., 2019). The stature of adult individuals was estimated using the formulas proposed by Trotter and Gleser (1952) based on measurements of the upper limbs, originally developed for white males. The assemblage comprised incomplete skeletons of three adults and four subadults, along with one additional adult and one subadult represented only by a few bone fragments. The subadult individuals fell within a relatively narrow age-at-death range of 2 to 6 years, corresponding to early post-weaning children (Table 4).

The most complete skeleton (Q31-C330) belonged to a mature female individual. Sex and age-at-death were confidently determined through pelvic morphology. Most skeletal elements were present, though often incomplete; missing elements included the left scapula, mandible, and substantial parts of the cranial vault. Despite her relatively advanced age at death, no degenerative joint diseases were observed, and dental wear was moderate. Clear single hypoplastic lines appeared on the upper canines and central incisors, which likely indicate an episode of post-weaning stress (Reid and Dean, 2000). Alongside this skeleton, some right-hand bones belonging to another adult individual were found; these bones were more eroded and showed signs of degenerative joint disease.

Another adult skeleton from the same trench (Q31-C305) was identified as a mature male based on cranial morphology and long bone measurements. This skeleton was less complete than the previous one, missing both ossa coxae, as well as the left tibia, fibula, and radius.The second male skeleton (X35-C128) (Fig. 16) is relatively complete, although most epiphyses of the long bones were heavily damaged. This individual was also considered quite old. The subadult skeletons were generally more incomplete than the adults. The oldest child (5–6 years old, AB27-C415) was mainly represented by upper limb bones, with only a few fragments from the lower body and skull preserved. Another subadult individual (X35 C135) (Fig. 17), aged between 3 and 5 years as estimated from tibial length (Boccone *et al.,* 2010), is represented mostly by fragmented long bone diaphysis and small skeletal pieces, with no skull present. Red staining observed on most elements was likely caused by red ochre.

A three-year-old skeleton from trench X35-C121 included the skull and upper body, while lower limbs were mostly absent except for a fragment of the distal femoral metaphysis. Finally, an incomplete skeleton of a two-year-old child (Q31-C331) was recovered, represented by fragments of the cranial vault and sphenoid, the lower spine with some ribs, pelvis, right clavicle, and various long bones.

## 8. Environmental crisis during the Bronze Age and the issue of the cultural gap at Ghal e-Ben during the Bronze Age

Environmental determinism has played a fundamental and decisive role in human history from ancient times to the present. To fully understand cultural transformations and developmental trajectories of societies, it is essential to examine the environmental and geographical contexts




**Fig. 16: skeleton (X35-C128).**




**Fig. 17: subadult individual (X35-C135).**

in which these communities existed. Without such an understanding, the nature and causes of cultural, economic, and social changes of the past civilizations cannot be comprehensively grasped. Studying the geographical and environmental settings of our ancestors provides valuable

**Table 4: Basic characteristics of human remains from Ghal e-Ben (Soltysiak *et al.*, 2019 b).**

| Trench | Context | Sex | Age-at-death | Caries | Stature | Chronology |
|---|---|---|---|---|---|---|
| AB27 | 415 | - | 5-6 | | | Early Bronze Age |
| Q31 | 305 | M** | mature | 2/12 | 171 cm | Early Bronze Age |
| Q31 | 330 | F | 45-50 | 0/10 | 168 cm | Early Bronze Age |
| Q31 | 330 | ? | adult | | | Early Bronze Age |
| Q31 | 331 | - | 2 | | | Early Bronze Age |
| X35 | 121 | - | 3 | | | Early Bronze Age |
| X35 | 121 | - | 3 | | | Early Bronze Age |
| X35 | 128 | M* | old | 0/8 | 180 cm | Early Bronze Age |
| X35 | 135 | - | 3-5 | | | Late Chalcolithic |

insights into cultural changes and the evolution of ancient civilizations (Safari *et al.*, 2024; Azizi *et al.*, 2019; Staubwasser *et al.*, 2003; Helama, 2024; Shaikh Baikloo *et al.*, 2020; Fazeli Nashli *et al.*, 2023; Bini *et al.*, 2019; Bal *et al.*, 2024).

Integrated archaeological, geoarchaeological, archaeoseismological, geomorphological, and sedimentological investigations in trenches Q-31 and X-35 of Ghal e-Ben has revealed some environmental crisis significantly influenced the establishment, persistence, and eventual abandonment of settlements in this region during the third and second millennium BCE. One of the most impactful events occurred at the end of the third millennium BCE in Ghal e-Ben and also in Gohar Tepe and was that the seismic fault activity (Nazari *et al.*, 2021), which triggered the abandonment of numerous settlements in the area during the Bronze Age. Closely following this seismic disturbance, the 4.2 ka BP climatic event during the Late Holocene—marked by abrupt aridification and prolonged drought—exerted widespread climatic stress across Iran and the broader Near East. Paleoenvironmental evidence from sediment cores and paleoenvironmental proxies across various Iranian sites—including the Persian Gulf, Lake Neor, Lake Urmia, Hamun Lake, Jazmourian, Konar Sandal (Jiroft), and Gol e-Zard Cave—attests to this extensive environmental fluctuation during the Bronze Age (Carolin *et al.*, 2019, Fazeli Nashli *et al.*, 2022b, Vaezi *et al.*, 2025).

Stratigraphic analysis and radiocarbon dating at Ghal e-Ben (approximately 2299-2142 to 1753-1611 BCE) reveal a period of site abandonment, which we assume corresponds with the 4.2 ka BP event. The interesting point is that the site of Gohar Tepe was abandoned during this time, and after 300 years, the urban site was again reoccupied (Ghasemi, 2017, Nazari *et al.*, 2021). A distinct layer of dry and warm sediments aligns temporally with this event, while the absence of cultural artifacts supports the conclusion that environmental factors drove this desertion. These observations correspond with broader regional patterns of depopulation and cultural disruption linked to climatic stress. In summary, the archaeological record of Ghal e-Ben exemplifies how

abrupt Holocene climate changes, particularly the 4.2 ka BP aridification event, played a critical role in cultural transformations and population movements in ancient Iran. Understanding these past human-environment interactions enhances our comprehension of resilience and vulnerability in the face of environmental and climatic challenges.

Ghal e-Ben was again inhabited in the late Bronze Age, around the 17th century BCE., & then was abandoned around 1500 BCE. after a short occupation during the second millennium BCE. Additionally, geomorphological processes such as the development of meandering watercourses and oxbow lakes led to sediment accumulation, which contributed to the site's eventual desertion. The presence of dense clayey soils with high lime content and freshwater mollusk remains in specific trench contexts points to sustained fluvial and sedimentary dynamics influencing human habitation patterns. Another indication of environmental impact at the site is the formation of meandering water flows and the development of oxbow lakes or stagnant waters, which contributed to the site's eventual abandonment. In trenches Q-31 (Contexts 306, 307, 309) and X-35 (Context 107), dense clayey soils with high lime content and freshwater mollusk remains (shells and river snails) were discovered, indicating sedimentary and fluvial activity. These environmental conditions likely prompted the inhabitants of Ghal e-Ben to leave the area in search of a new settlement (see: Safari *et al.,* 2021).

Our archaeological literature review addresses that the second cultural gap started not only in Ghal e-Ben but also in most of the Bronze Age settlements of Mazandaran and northeastern Iran with a ca. 300-year cultural Hiatus. We propose the time ranges between 1500 to 1200 BCE. of the final Bronze Age faces with a diverse cultural diversity not only in the north and south of central Alborz but also the settlement pattern of the northeastern Iran and central Asia (Vahdati, 2020; Luneau, 2018, 2021; Cerasetti *et al.,* 2022; Vahdati *et al.,* 2025). It is important to point out that the Greater Khorasan Civilization/BMAC collapsed 1600/1500 BCE with profound climatic upheavals, and most parts of Central Asia and the northwestern Iran entered into a new settlement pattern and economic strategies with a large-scale scale of settlement shift. This event coincided with major cultural declines in the Bronze Age, manifesting in reduced settlement activity and a shift from sedentary agriculture to pastoral nomadism in some communities. With such environmental adversities, the inhabitants of Ghal e-Ben exhibited resilience by maintaining occupation into the Iron Age (Fazeli Nashli *et al.,* 2024a).

## 10. Discussion

The eastern regions of Mazandaran, endowed with favourable environmental features such as an abundance of freshwater resources, fertile soils, and rich marine and forest resources, offered an ideal setting for the emergence of farming communities. Based on the current data, most of the excavated sites in Mazandaran were abandoned around 1500 BCE. afterward, and after 400 to 300 years again re-occupied during the Iron Age with fundamental changes in settlement types, mortuary practices, and quality and quantity of craft goods found in the graves, and also changes in subsistence economy and diet. As it was mentioned above, the settlement survey of Mazandaran addresses a sudden increase in population from the beginning of the third millennium

BCE (Heydari, 2017), while during this time in the north central plateau, settlements collapsed and most of the villages were depopulated (Fazeli Nashli *et al.,* 2021).

Back to Mazandaran and the southern part of the Caspian Sea, the population of some settlements such as such as Ghal e-Kesh with 15 hectares and Gohar Tepe with 50 hectares, Tepe Kelar with six hectares, and Ghal e-Ben with more than six hectares (present day is around 2.5 hectares), all support a large scale of population density during the Bronze Age in Mazandaran (Piller and Mahforozi, 2009; Heydari *et al.,* 2018). So far, the best site with secure 14C chronology in Mazandaran belongs to the excavated site of Ghal e-Ben close to Babol and Gohar Tepe close to Behshahr (Fazeli Nashli *et al.,* 2022a; Ghasemi Gorji, 2017; Piller and Mahforozi, 2009). The archaeological site of Ghal e-Ben has a long history, starting from 3200 BCE and ending around 1500 BCE. The other site in the region with a secure chronology is Gohar Tepe, initiating around 3200 BCE, which is clearly also part of the grey ware tradition. It seems the beginning of "Gray Ware Culture" started in Mazandaran from 3000 BCE, such as Tepe Kelar and Ghal e-Kesh.

The Bronze Age layers in Ghal e-Ben began with the "Burnished Gray Ware" 3000 calBCE, the same as the other mentioned sites. The Bronze Age ceramics of Mazandaran exhibit a high degree of resemblance to sites such as Hissar III, Shah Tepe IIA-B, and Tureng Tepe III, indicating a high level of interaction between Mazandaran and north-eastern Iran during the Bronze Age. Also, around 2500-2400 BCE., we see the interaction of Bronze Age socialites of central and western Mazandaran with the Transcaucasian societies in north-western Iran. Here, Transcaucasian ceramics were found in the same contexts with grey ware ceramics in the archaeological layers of Ghal e-Ben and Tepe Kelar.

## 11. Conclusion

In 2020, Jan-Waalke Meyer and colleagues published the conference volume The Iranian Plateau during the Bronze Age. The contributions to this volume represent an important effort to conceptualize Iranian urbanization on its own terms, rather than primarily through comparison with developments in Mesopotamia, Central Asia, or the Caucasus. Building on this approach, we propose understanding Bronze Age Iran as a heterogeneous or "multicultural" civilization characterized by considerable regional variation in settlement, economy, and social organization. In some regions, populations developed intensive agricultural economies centered on large settlements, as seen, for example, in Mazandaran Province. Southwestern Iran witnessed the development of more centralized political formations, while parts of northwestern Iran followed trajectories that retained stronger continuities with prehistoric forms of social organization. Elsewhere, particularly in Kerman and at sites such as Jiroft and Shahr-e Sukhteh, the extensive production, circulation, and consumption of prestige goods and symbolic objects point to increasingly differentiated forms of social organization and inequality during the Bronze Age.

A substantial body of scholarship has examined the influence of the Uruk and Transcaucasian cultural horizons on northwestern Iran and the central Zagros during the Bronze Age. Eastern Iran, however, followed a different trajectory, represented especially by the major centers associated with Jiroft and the Helmand region. These developments suggest an alternative

pathway toward urbanism during the third millennium BCE, closely connected to long-distance exchange, specialized craft production, and the creation and circulation of objects with elaborate mythological and symbolic imagery. In northeastern Iran, meanwhile, the so-called "Great Khorasan Civilization" emerged without a known writing system but exhibited strong cultural connections with Central Asia. Between the third and second millennia BCE, communities across this region participated in extensive networks of material exchange linking southwestern Asia and the Mediterranean with Central Asia and the Indus region, while maintaining economies grounded in agriculture and pastoralism (Lyonnet and Dubova, 2021; Billings *et al.,* 2022; Biscione and Vahdati, 2022). Taken together, these regional trajectories suggest that Bronze Age social complexity and urbanization on the Iranian Plateau cannot be adequately described through a single developmental model.

But now back to the southern coast of the Caspian Sea during the Bronze Age and debates over the context of the Mazandaran Bronze Age and its background of urban development. Certainly, we believe that the archaeological cultures of this region cannot be defined as "prehistoric identities" the same as the Transcaucasian phenomenon observed in northwestern Iran. Culturally, the eastern parts of Mazandaran Province are part of the "Eastern Grey Ware Culture" cultural zone, which is mostly connected with the Gorgan plain and northeastern Iran, Turkmenistan, and Central Asia. We address the Ashkhaneh region, which is nowadays as capital of Samalqan County, a conjunction, frontier, and a corridor of intercommunication and movement of people from the northeastern Iran into the Gorgan plain and Mazandaran, and importantly divides Iran from the steppe civilization (Vahdati 2018; Luneau 2017). Geographically, Ashkhaneh is a wide plain in which the eastern Alborz with the Hyrcanian Forest is located in the south of the plain, and the Kopeh Dagh pediment, which is now 80 percent of such landscape, is located in the Iranian part. Sites such as Qala Khan (Garazhian *et al.,* 2014) and several large Bronze Age sites represent a large population based on an extensive agricultural economy and a combination of pastoral life.

Following the Ali Mahforozi and Christian Konrad Piller, Christopher Thornton and Kyle Olson (Mahforozi and Piller 2009; Olson and Thornton 2019), we define the Bronze Age of the southern part of the Capsian Sea with the "Eastern Grey Ware" as an "urban phase." Sites such as Tureng Tepe arose as a "capital" or as a "regional centre" with its enigmatic monumental architecture, famous terracotta figurines, and craft goods with both local and interregional characteristics, addressing the high degree of complexity of the Bronze Age. Today, the Bronze Age site of Ghal e-Ben, due to modern disturbances, extends intact over fewer than three hectares, but we believe that the site may originally have resembled Gohar Tepe or Tureng Tepe in size, with more than 30ha of occupation, putting it in the class of the largest urban centres with a dependency on a large-scale farming economy during the Bronze Age. We hope that in the near future a large excavation at the site will be possible to illustrate its urban layout.

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**Authors' Contribution**

The authors contributed equally.

**Conflict of Interest**

Authors declared no conflict of interest.

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# روایت جدیدی از عصر مفرغ در جنوب دریای کاسپی براساس کاوش‌های محوطهٔ قلعه‌بِن، ایران


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**چکیده**

بخش مرکزی منطقهٔ جنوبی دریای کاسپی در طول هزارهٔ سوم پیش‌ازمیلاد به‌طور متراکم مسکونی بوده است. از دیدگاه باستان‌شناختی، درک این موضوع اهمیت دارد که محیط‌های سرسبز و حاصلخیز این منطقه از چه زمانی و به چه شیوه‌ای توانسته‌اند جمعیت‌های قابل‌توجهی را در دوران عصر مفرغ پشتیبانی کنند و جوامع ساکن در این ناحیه چگونه در طی هزارهٔ سوم و دوم پیش‌ازمیلاد، ساختارهای جدید اجتماعی-اقتصادی را توسعه داده‌اند. محوطهٔ قلعه‌بِن، یکی از محوطه‌های کلیدی عصر مفرغ در بخش مرکزی استان مازندران است که در سال ۱۳۹۷ مورد کاوش قرار گرفت. استقرار در این محوطه به دورهٔ مس‌وسنگ متأخر، حدود ۳۲۰۰پ.م.، بازمی‌گردد و تا نیمهٔ دوم هزارهٔ دوم پیش‌ازمیلاد، حدود ۱۵۰۰پ.م.، تداوم داشته است. شواهد باستان‌شناختی حاصل از قلعه‌بِن نشان می‌دهد که این محوطه در عصر مفرغ، یک سکونتگاه کاملاً یکجانشین و کشاورزی بوده که جمعیتی قابل‌توجه در آن زندگی می‌کرده‌اند. اقتصاد این جامعه بر ترکیبی از دامداری، شامل: پرورش گوسفند، بز، خوک و گاو و کشاورزی در مقیاس گسترده استوار بوده است. در چارچوب منطقه‌ای، جوامع این ناحیه در هزارهٔ دوم پیش‌ازمیلاد پیچیدگی بیشتری پیدا کردند؛ شواهد این فرآیند را می‌توان در ظهور گورستان‌های بزرگ حاوی اشیائ مرتبط با جایگاه اجتماعی، توسعهٔ نظام‌های جدید کشاورزی و شکل‌گیری شبکه‌های تجارت در مسافت‌های طولانی مشاهده کرد. کشت ارزن دم‌روباهی و ارزن جارویی چینی نشان‌دهندهٔ ورود محصولات زراعی جدید و تحول در نظام اقتصادی کشاورزی این دوره است. برنامهٔ پژوهشی در محوطهٔ قلعه‌بِن نه‌تنها چارچوبی جامع برای گاهنگاری عصر مفرغ در دامنه‌های جنوبی و شمالی رشته‌کوه البرز فراهم می‌کند، بلکه امکان بازنگری در گاهنگاری چندین محوطهٔ دیگر را که پیش‌تر براساس روش‌های نسبی تاریخ‌گذاری شده بودند نیز فراهم می‌سازد.



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## The Stratigraphic Sequence of the Parsa Paradise Gate at Tol-e Ajori

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Tol-e Ajori, Absolute Dating, Relative Chronology, Stratigraphy, Early Achaemenid, Parsa.

**Abstract**

The discovered ancient monument at the site of Tol-e Ajori, located approximately three km northwest of Persepolis, was identified through thirteen seasons of excavation as a gate building similar to the Ishtar gate of Babylon, based on the discovered palaeographic evidence and its architectural function. The stratigraphy of the monument reveals the following phases: the pre-construction phase (Phase 0), construction of the monument (Phase 1), the abandonment of the monument (Phase 2), secondary occupation (Phase 3), human and natural-induced destruction, including an earthquake (Phase 4), the robbery of the building's bricks during the Middle Islamic period, specifically in the Seljuk (Phase 5), and Muzaffarid periods (Phase 6). Absolute dating of five bone samples from Tol-e Ajori—yielding low-confidence radiocarbon results for the Iranian Iron Age (800–400 BCE)—suggests caution in accepting quantitative studies. The relative dating of the gate's construction, the palaeographic characteristics of the thirteen inscribed bricks, which correspond not to the Elamite and Babylonian scripts employed in the Achaemenid royal inscriptions of Darius I and his successors, but rather to the sign forms of the Neo-Elamite and Neo-Babylonian periods, the glazed bricks from Tol-e Ajori, which are technically more archaic than those from Susa or Persepolis, and the building's probable function as a replica of the Ishtar Gate of Babylon, all suggest that the monument should most likely be dated to the reign of Cyrus the Great and associated with the conquest of Babylon in 539 BCE. Accordingly, all the evidence strongly suggests that the Tol-e Ajori gateway was founded before the construction of Persepolis by Darius I, most likely within the period between 539 and 518 BCE.

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## 1. Introduction

Tol-e Ajori is an archaeological site in Bagh-e Firuzi, approximately 3 km northwest of Persepolis (Figs. 1–2). Its reported UTM coordinates are 39 R 068 16 41 / UTM 33 13 37.0. The mound measures approximately 30×40 m and rises 3 meters above the surrounding terrain. It lies within the first-degree buffer zone of Persepolis and was entered on Iran's National Heritage List on 7 June 2006 (registration no. 15530).

Excavations conducted between 2011 and 2023 by the joint Iranian–Italian archaeological mission under the "From Palace to Town" project have substantially expanded our understanding of the early settlement at Parsa. The discovery of Babylonian and Elamite cuneiform inscriptions, together with architectural evidence, led to the identification of the structure as a monumental gate. Despite extensive damage to the site, stratigraphic excavation and systematic classification of the finds have made it possible to reconstruct the building's history. Architectural recording and analysis of construction techniques have also informed reconstructions of the building and its decorative motifs. Three-dimensional modelling has contributed to the interpretation of the monumental gate at Bagh-e Firuzi. Following the conquest of Babylon, early Achaemenid rulers adopted elements of Babylonian religious iconography. The mušḫuššu, associated with the god Marduk, features prominently in the gate's decoration. In the Cyrus Cylinder, Cyrus attributed his conquest of Babylon and the legitimacy of his rule there to Marduk. The Tol-e Ajori gate appears to have drawn on the design of Babylon's Ishtar Gate (ca. 580 BCE), on a larger scale, and to predate the construction of the Persepolis terrace (Askari Chaverdi *et al.,* 2017). Its construction may have commemorated Cyrus's conquest of Babylon in 539 BCE. Building on reports from the six excavation seasons conducted between 2011 and 2017, this article presents the stratigraphic results of excavations at Tol-e Ajori through 2023.



**Fig. 1: The archaeological site of Tol-e Ajori 2010 (photo by Authors); (Joint Iranian & Italian team).**

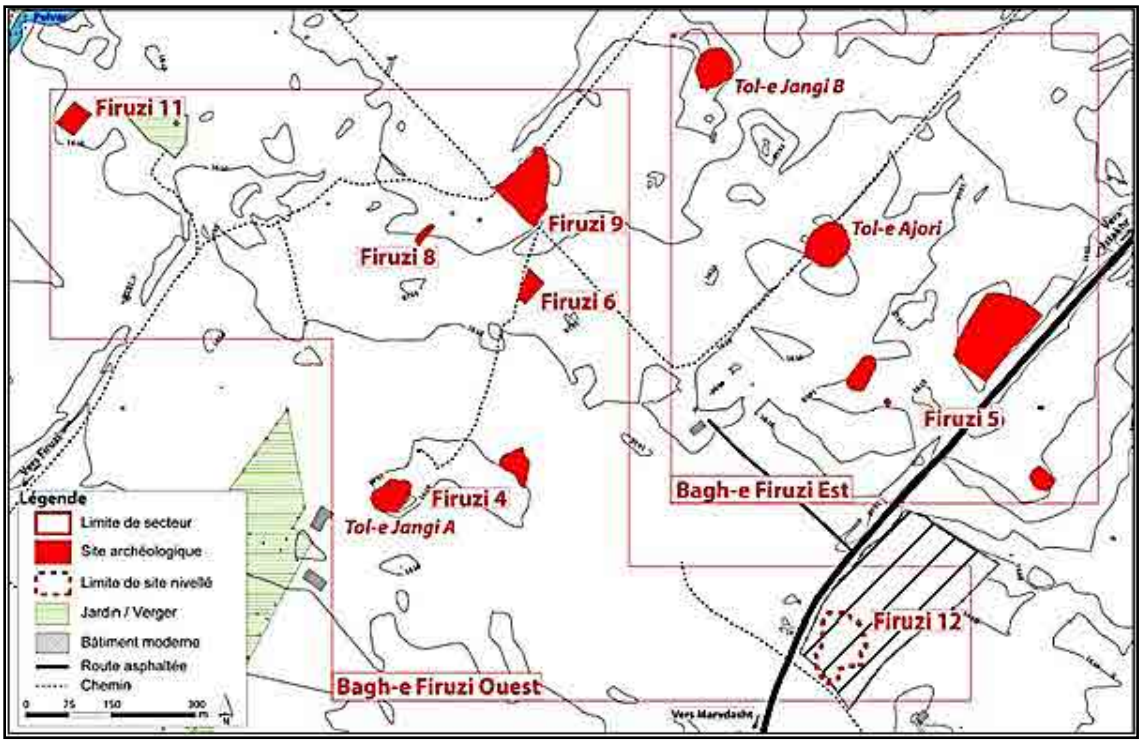



**Fig. 2: Location of the Tol-e Ajori site in the Firuzi sector of Parsa (Plan: S. Gondet); (Joint Iranian, Italian team)**

## 2. Methodology

No inscription naming a ruler has yet been recovered that would establish the monument's date securely. The complex depositional history therefore makes stratigraphic analysis essential. Systematic excavation and the construction of Harris matrices for individual trenches allowed the team to distinguish episodes of construction, abandonment, reuse, destruction, and subsequent brick robbing. Although this approach required slower excavation, it provided a basis for reconstructing the sequence of events.

A Harris matrix was prepared for each trench, recording stratigraphic relationships and the sequence of deposits and cuts. The trench sequences were then correlated to establish a site-wide chronology. This synthesis, rather than the order in which deposits were excavated, provides the basis for the relative sequence discussed here. Correlations among 29 trenches support the proposed phasing (Fig. 5).

## 3. Phases

The sequence comprises a pre-construction phase (Phase 0), construction of the gate (Phase I), abandonment (Phase II), localized reoccupation (Phase III), structural destruction attributed in part to an earthquake (Phase IV), and two episodes of extensive brick robbing during the medieval Islamic period (Phases V and VI; Fig. 5).

### 3-1. Pre-construction phase (0)

The earliest stratigraphic evidence concerns the ground surface before construction (Figs. 3 and 6). Excavations in 2014 identified limited evidence of earlier human activity in Trench 10 (Askari

Chaverdi *et al.,* 2017). In 2015, Trench 11 was excavated below the floor of the central room to investigate the pre-construction deposits. Sophie Cornu, a soil specialist associated with the Pre-Persepolis project, identified predominantly clay-rich deposits. The two lower layers retained recognizable soil structure, whereas the upper layers were heavily compacted and lacked visible soil structure (Figs. 3 and 6). A sherd resembling Shogha pottery was recovered from a pit cut into natural deposits beneath the original floor in the southeastern corner of the central room (Trench 10; Fig. 6; Askari Chaverdi *et al.,* 2017). Excavation below the construction horizon was limited in Trenches 6, 9, 10, and 11; most of these exposures yielded sterile natural clay. Similar compact, yellowish clay was encountered outside the building, including in Trench 12.

### 3-2. Phase I: The construction of the gate

The building is oriented northwest-southeast but deviates by approximately 20 degrees from the east-west axis (Fig. 4). This structure measures 29.06 meters (northeast-southwest) by 39.07 meters (northwest-southeast) and consists of a thick wall with a width of 10.47 meters. The internal room is 10.12 meters wide and 14.20 meters long, while each of the corridors is 4.56 meters wide and 7.42 meters long. Additionally, the lateral projections (towers) are 8.83 meters wide and 5.00 meters long. Two fence-like mud-brick walls, each 1.20 meters wide, were constructed at the southeastern and southwestern corners, with 4 meters of the length of the southeastern wall still visible (Figs. 4, 10, 11). Due to destruction, only mud-brick sediments remain from the southwestern wall. These two walls enclosed the eastern and western facades of the gateway on the southern side (Fig. 11).

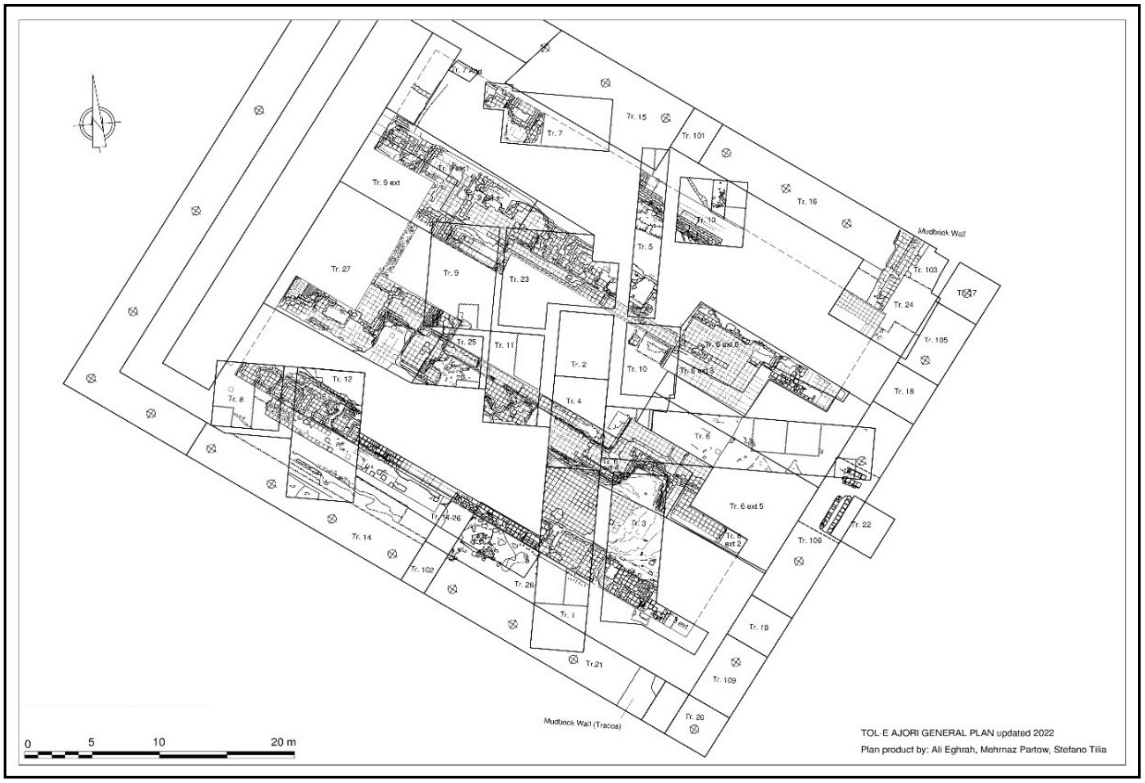



**Fig. 3: Plan of the excavation trenches at Tol-e Ajori. 2024: Main construction phase of the building and periods of temporary occupation (drawing: Stefano Tilia, Mehrnaz Partow, Ali Egra'); (Joint Iranian & Italian team).**

The structure was built of fired brick and mudbrick (Fig. 7). Its plan resembles the southern section of Babylon's Ishtar Gate, and its bricks follow a comparable module, measuring approximately 33 cm on each side (Askari Chaverdi and Callieri 2025).

Glazed bricks covered the wall façades. Geometric and floral patterns decorated the lower courses, while fragments recovered from the collapse deposits suggest that the walls also carried panels depicting bulls and the composite creature known as the mušḫuššu (Figs. 12–13). The reconstructed decorative scheme consists of a blue ground with lotus flowers, geometric patterns, and animal figures. These motifs evoke Mesopotamian royal and religious imagery, particularly the iconography associated with Marduk (Fig. 12). The gate is interpreted as an entrance to a royal garden or paradeisos associated with the substantial building at Firuzi 5 (Fig. 14).

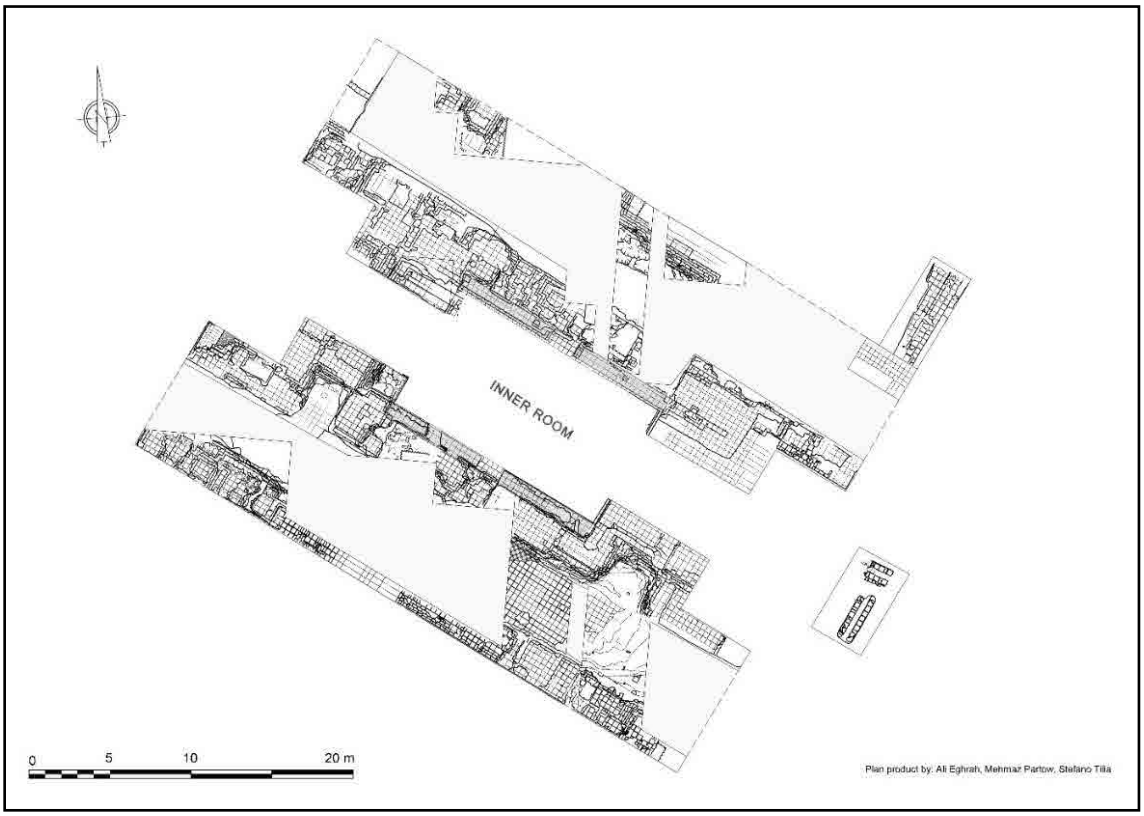



**Fig. 4: Plan of Phase I: Main construction phase of the Gate building, 2024 (drawing: Stefano Tilia, Mehrnaz Partow, Ali Egra'); (Joint Iranian & Italian team).**

### 3-3. Phase II: The abandonment of the building

The excavations provide evidence for the abandonment and subsequent reuse of the gate. Conditions differ between the central room (Trenches 6, 9, 10, and 11; Figs. 3, 6, and 15) and the exterior areas (Trenches 1, 3, 8, 12, and 13; Fig. 3), particularly where later robber trenches disturbed the deposits. In the room and corridors, the earliest post-use deposits consist of accumulated sediment and evidence of animal burrowing. Their character varies among trenches (Figs. 6 and 15).

### 3-4. Phase III: The occupational phase

Occupation deposits overlying the Phase II sediments occur in the central room, corridors, and surrounding areas. During Phase III, occupants levelled parts of the accumulated sediment and adapted the gate for domestic and other activities. Mudbrick walls blocked the northwestern and southeastern passages. Hearths and installations indicate cooking and other activities in the corridors, while channels supplied or directed water around the structure. Some channels may also have served nearby fields or livestock, although these functions remain uncertain. The building had ceased to function as a monumental gate and was being used for local habitation. Comparable reuse of nearby structures is possible but has not been demonstrated. The subsequent destruction of the gate is discussed under Phase IV (Figs. 16–21 and 29–33).

| Occupational phase | Occupational/cultural phase | | Archaeological evidence |
|---|---|---|---|
| Phase VI | Final Phase | | Creamy-buff pottery with combed/wavy patterns. Round-headed metal rods similar to Islamic-era samples from Fars. Two rusted coins from Middle to Late Islamic centuries |
| | VIe | Topsoil | |
| | VId | Horizontal pits dug like tunnels (treasure hunting). | |
| | VIc | Renewed pits from building looting | |
| | VIb | Accumulation/Sedimentation. | |
| | VIa | Third phase of temporary habitation | |
| Phase V | Continuous looting of the gate's bricks | | Buff-colored potsherds with combed patterns and wavy incised decorations (5th to 7th centuries AH). |
| | Vc | Pits filled with fine clay and silt; gradual sedimentation | |
| | Vb | Large pits contain traces of limited temporary habitation (Second transient occupation | Moulded pottery fragments attributed to the 4th and 5th centuries AH (Islamic Period |
| | Va | Digging pits to extract and loot bricks | Numerous pits from successive looting of the gate's bricks |
| Phase IV | Earthquake | | Destruction of the building and extensive accumulation of debris. |
| Phase III | Reuse of the building for habitation; eventual abandonment (Occupation). | | Simple reddish potsherds from the 6th to 1st centuries BC scattered in the sediments. Three-winged Achaemenid arrowheads and a metal rod. |
| Phase II (abandonment of the building) | The gate is abandoned due to disuse | | The building is deserted; fine clay and silt sediments gradually accumulate on the corridor floors |
| Phase I | Construction of the gate | | Similarity to Babylon's Ishtar Gate in design, plan, motifs, colors |
| | Ib | Addition of two mud-brick walls in the SE and SW corners | Similar to the mud-brick fortifications connected to the Ishtar Gate in Babylon |
| | Ia | Construction of the gate building (29.06 x 39.07 m) in a NW-SE orientation | Cyrus the Great conquers Babylon in 539 BC |
| Pre-Construction | A limited number of potsherds scattered on the surface before the gate's construction | | Pottery similar to inverted-rim vessels, painted black on a red background of Shogha type |

**Fig. 5: The main occupation and construction phase, abandonment and collapse of the gate, together with the temporary occupation phases (Joint Iranian & Italian team).**

**A: Documentation within the Interior Spaces of the Building: Inner Room and Corridors**

Two mud-brick walls identified within the boundaries of Trench 6 (at the entrance of the southeastern corridor) and Trenches 9 and 27 (at the entrance of the northwestern corridor) clearly indicate that the objective of constructing these walls was to utilize the interior space of the gate (Figs. 3, 17, 18). The mud-brick wall at the southeastern entrance is constructed of mud-brick and rammed clay, though its composition also incorporates scattered bricks looted from the original structure (Fig. 18). Similarly, the northwestern entrance wall was built with greater precision, featuring two outer rows of broken bricks and brick fragments in the center, likely serving as the wall's foundation, while the main body consisted of mud-brick and rammed earth (Fig. 17). The most prominent evidence of occupation during this phase was discovered in Trench 10: a furnace located in front of a looted bench. This furnace utilized four bricks for its base, with additional bricks lining the margins to define its sides and was constructed parallel to the walls of the main room. A series of post-holes were excavated around the furnace and in the corner of the room, suggesting the presence of a canopy or shelter (Figs. 3, 6). Ash recovered from this furnace had been dispersed in subsequent accumulations and contained both bone fragments and pottery. Additionally, a high-quality pestle made of polished black stone was recovered (Fig. 29). This phase represents the primary evidence of secondary occupation within the ruined structure. Soil accumulations containing several worked stone fragments from statues/Figures, as well as scattered potsherds lying flat on the occupational surface across the interior hall, along with ash and bone, indicate habitation in the interior section during the third phase (Fig. 16).

During this same phase, the northwestern entrance (Trench 27) and the southeastern entrance (Trench 6) were also inhabited (Figs. 3, 17, 18). The presence of the clay remains of a circular oven, 50 cm in diameter and 30 cm deep, at the northwestern entrance (Fig. 20), along with a jar situated on a platform made of rammed earth (Figs. 19, 20, 33), and the remains of a water channel (of which only a few bricks from the base and perimeter remain in the central part of this entrance; Fig. 26), demonstrates that the northwestern entrance was fully occupied during the third phase (Fig. 17). Correspondingly, numerous cooking furnaces accompanied by ash at the southeastern entrance, particularly the remains of a water channel where the surrounding and floor bricks are well-preserved in the central section (Fig. 3), all indicate that the southeastern entrance of the gate was extensively inhabited during the third phase (Fig. 18).

**B: Documentation of the Building's Surroundings: Peripheral Spaces around the Exterior**

During this third phase, the residential settlement was not confined to the interior of the central room and the northwestern and southeastern corridors; rather, the entire exterior lateral facades and the surrounding areas of the building were utilized for habitation. The structural similarity between the arrangement of broken bricks in the northwestern corridor (Figs. 3, 17) and the brickwork structures in Trenches 8, 12, and 26 on the western side of the building indicates that all these constructions were carried out during Phase III (Fig. 3). The buttress adjacent to the western wall of the building in Trenches 8, 12, and 26 suggests that it was likely constructed to support Phase III

habitation and was associated with activities occurring around the building (see: Askari Chaverdi & Callieri 2025: Fig. 25). During this phase, the peripheries of both the eastern and western exterior facades of the gate were occupied, and occupational remains were recovered from all these areas (Fig. 21). Furthermore, the remains of several bricks found at the entrance of the northwestern corridor (Trench 27; Fig. 14) and the southeastern entrance of the gate (Trench 22; Fig. 3) may be related to water channels and water management for the inhabitants' use, as well as for directing water toward agricultural fields (Figs. 3, 14), (see: Askari Chaverdi & Callieri 2025: Fig. 32).

In addition to occupational remains such as bones and broken potsherds found throughout the building's perimeter, 26 trilobate bronze and iron arrowheads (Fig. 32) and 17 clay sling bullets (Fig. 30) were recovered from the surrounding area and the two northwestern and southeastern entrances. This indicates that defensive measures were taken to protect the inhabitants during this phase. Moreover, a significant number of carved stone fragments, including parts of the face, jaw, mouth, and paws of broken stone lions, were recovered from this phase, specifically from trenches around the building (Trenches 1 and 3) and inside it (Trench 10). All these gray and white marble fragments belonged to the Phase III context (Fig. 31). Additionally, a vast quantity of broken orange and red Achaemenid pottery fragments was recovered from this phase, consisting primarily of bowls, jars, and plates characteristic of this period.2

### 3-5. Phase IV: Structural Destruction, Massive Rubble Accumulation, and Earthquake

In Trench 23, the eastern brick wall exhibits displacement and a fissure 10–15 cm wide extending for approximately 5 m (Figs. 22–24). The deformation suggests a sudden structural event, possibly an earthquake. Similar damage was recorded in the opposing western wall. Substantial accumulations of collapsed brickwork were documented in the central room and corridors (Fig. 25).

On the interior face of the western wall, the decorated outer masonry had shifted downward by approximately one brick course and outward by as much as 13 cm (Fig. 25). The displacement deformed the façade, although the lowest course of glazed bricks remained largely in place.

Above deposits associated with abandonment, excavation revealed damaged masonry and extensive accumulations of brick and mudbrick debris (Fig. 25). In Trench 9, glazed bricks in the southwestern corridor wall were fractured, and the wall had buckled near its junction with the central room, although displacement was less pronounced than in Trench 11. A compact deposit containing small glazed and unglazed brick fragments underlay more substantial collapse deposits. These observations are consistent with major structural failure, but the precise sequence and cause of destruction require further investigation.

### 3-6. Phases V and VI: Short-term Settlement Phases

The fired bricks of the original structure were extensively removed for reuse during Phases V and VI. Robbing concentrated on the brick façades of the eastern and western walls, often leaving their mudbrick cores in place. The resulting linear robber trenches trace the original wall alignments and helped establish the building's plan (Fig. 26). Ceramic evidence suggests repeated episodes



**Fig. 6: The interior floor level of the gate structure; four cut locations in trenches 6, 9, 10, and 11 for identifying the zero soil surface prior to construction (Joint Iranian & Italian team).**



**Fig. 7: Phase I: Construction of the western wall of the gate, the brick section in both interior and exterior views; the mudbrick core of the wall and architectural features of the use of bricks in horizontal and vertical rows (Joint Iranian & Italian team).**

of removal between the fourth and eighth centuries AH, interspersed with temporary occupation of parts of the ruins (Fig. 27).

### 3-7. Phase V: The Extensive Pillage

The most extensive brick robbing appears to have occurred while substantial portions of the gate remained standing. Robbers removed successive courses from the façades, cutting into the masonry to recover bricks (Fig. 26). The material may have been reused in buildings near Parsa. Mold-made pottery recovered from the robber pits resembles ceramics from Istakhr dated to the fourth and fifth centuries AH (tenth and eleventh centuries CE). Other finds indicate that brick removal continued into the sixth and seventh centuries AH (Fig. 5).



**Fig. 8: Phase I: Architectural structures of Phase 1; Trench 9, foundation of the northeastern tower, Tol-e Ajori 2022 (Joint Iranian & Italian team).**

### 3-8. Phase VI

Horizontal pits cut into the rubble indicate renewed brick robbing during Phase VI. Corroded copper coins attributed to the eighth and ninth centuries AH were recovered from pit fills and upper deposits (Fig. 27). Irregular surfaces and small cleared spaces suggest intermittent, possibly seasonal occupation among the ruins. No substantial occupation is documented after this phase.

## 4. Chronology

Many buildings in the Bagh-e Firuzi area appear to belong to a phase distinct from the construction of the Persepolis terrace. Their individual dates must therefore be established before the settlement model proposed by Sumner for Parsa/Matezziš can be evaluated.



**Fig. 9: Extension trenches 4, 5, and 6 from Trench 6, the large southeastern and southwestern towers of the building. Tol-e Ajori. 2021 (Joint Iranian & Italian team).**



**Fig. 10: Phase I: The mudbrick enclosure wall of the gate in the lateral section of the eastern wall (Joint Iranian & Italian team).**



**Fig. 11: Phase I: Reconstructed wall (fortification) of the eastern and western sections of the gate (Drawing: Bardia Shirvani); (Joint Iranian & Italian team).**

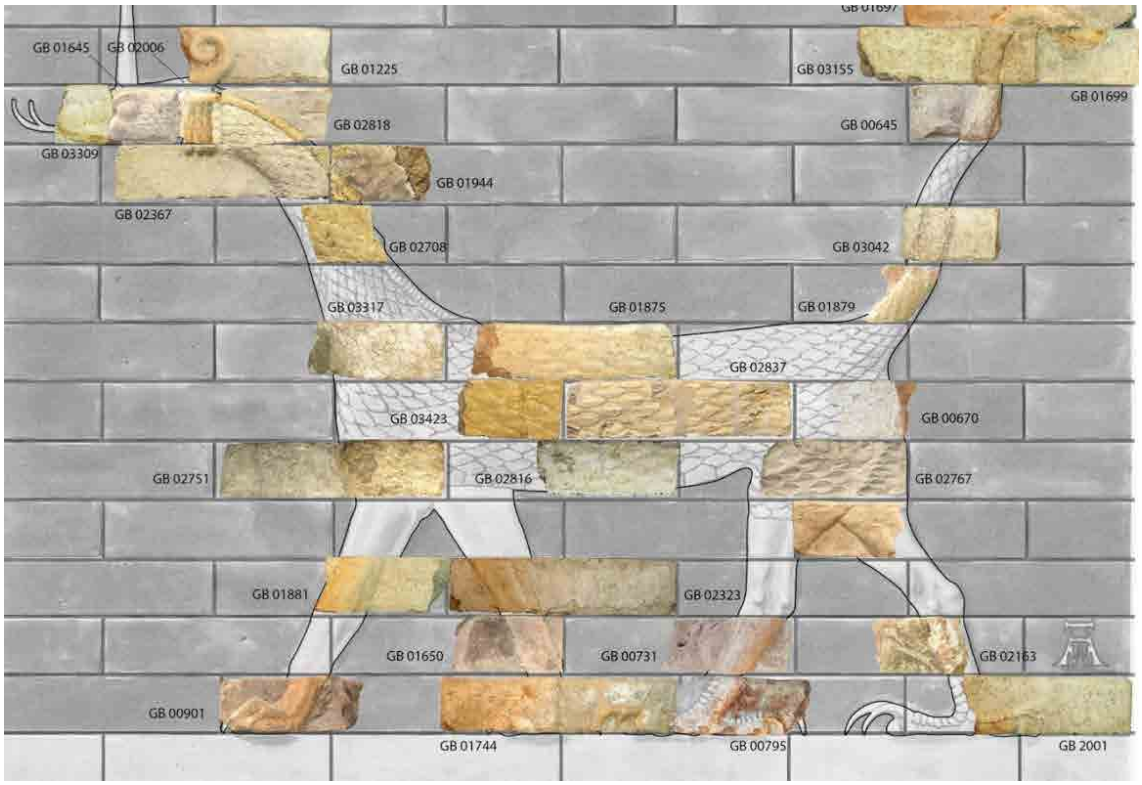



**Fig. 12: The reconstructed mušḫuššu panels were created by placing several glazed bricks from Tol-e Ajori into the design of the Ishtar Gate panels (by Eris Arlotti); (Joint Iranian & Italian team).**

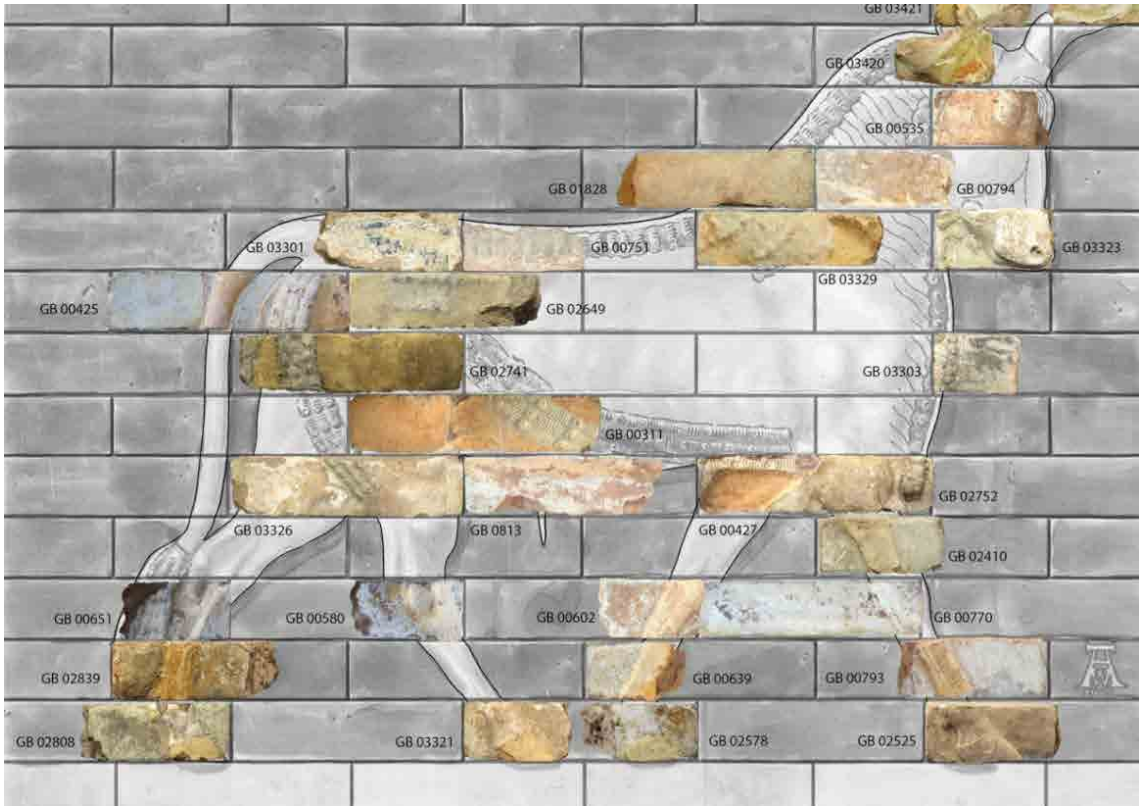



**Fig. 13: The reconstructed bull panels were created by placing several glazed bricks from Tol-e Ajori into the design of the Ishtar Gate panels (by Eris Arlotti); (Joint Iranian & Italian team).**

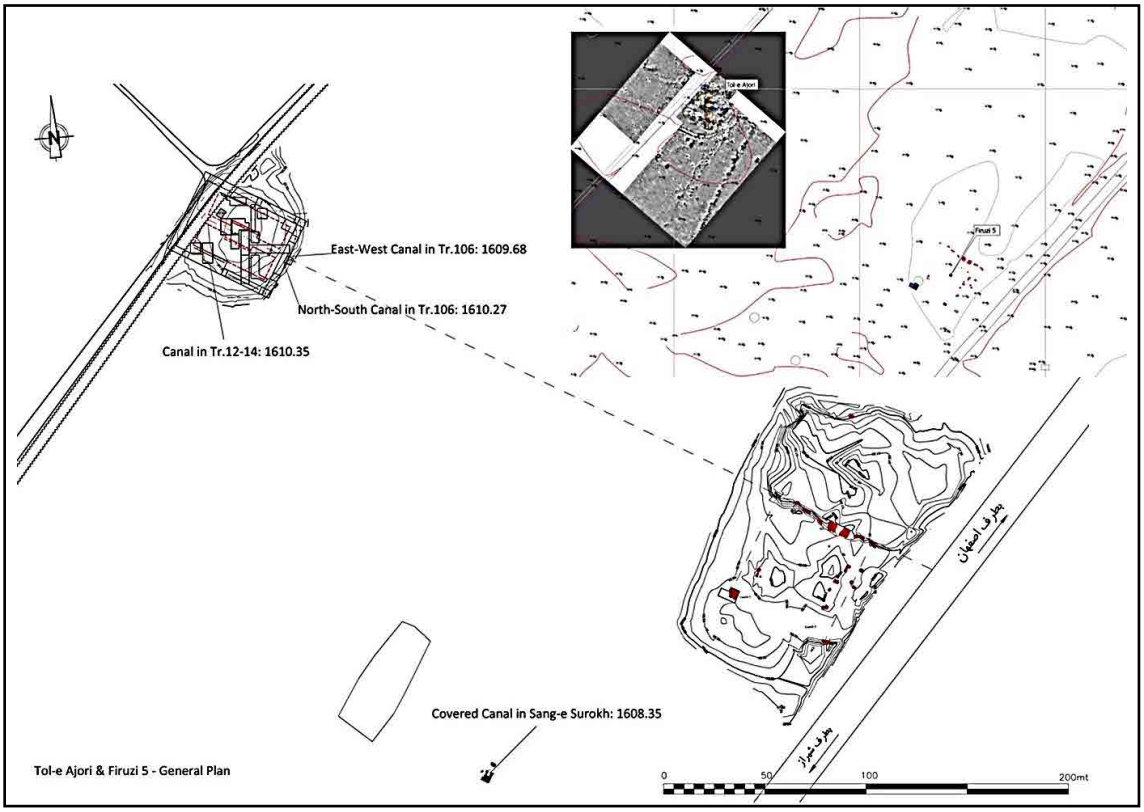



**Fig. 14: The gate building opened onto the palace located in the Firuzi 5 site (Map: Stefano Tilia); (Joint Iranian & Italian team).**



**Fig. 15: Phase 2; naturally deposited sediment spread across the floor of the central room and the corridors due to building cracks; Trench 11(Joint Iranian & Italian team).**



**Fig. 16: Phase 3: occupational surface over the Phase Two deposited sediment; Trench 11; (Joint Iranian & Italian team).**



**Fig. 17: Phase 3, temporary occupation and closure of the northwest entrance of the gate with a mudbrick wall and broken brick foundation; Trench 9; (Joint Iranian & Italian team).**



**Fig. 18: Phase 3; temporary occupation and closure of the southeast entrance of the gate with a mudbrick wall and occupational surface; Trench 6; (Joint Iranian & Italian team).**



**Fig. 19: Phase 3: northern portico of the building and jar-shaped vessels from the third phase; Trench 27, Tol-e Ajori; (Joint Iranian & Italian team).**



**Fig. 20: Phase 3: kiln with a flue wall from Phase Three at the northwest entrance of the gate; Trench 27, Tol-e Ajori; (Joint Iranian & Italian team).**



**Fig. 21: Phase 3: occupational traces on the outer edge of the eastern wall of the gate; Trench 16, Tol-e Ajori; (Joint Iranian & Italian team).**

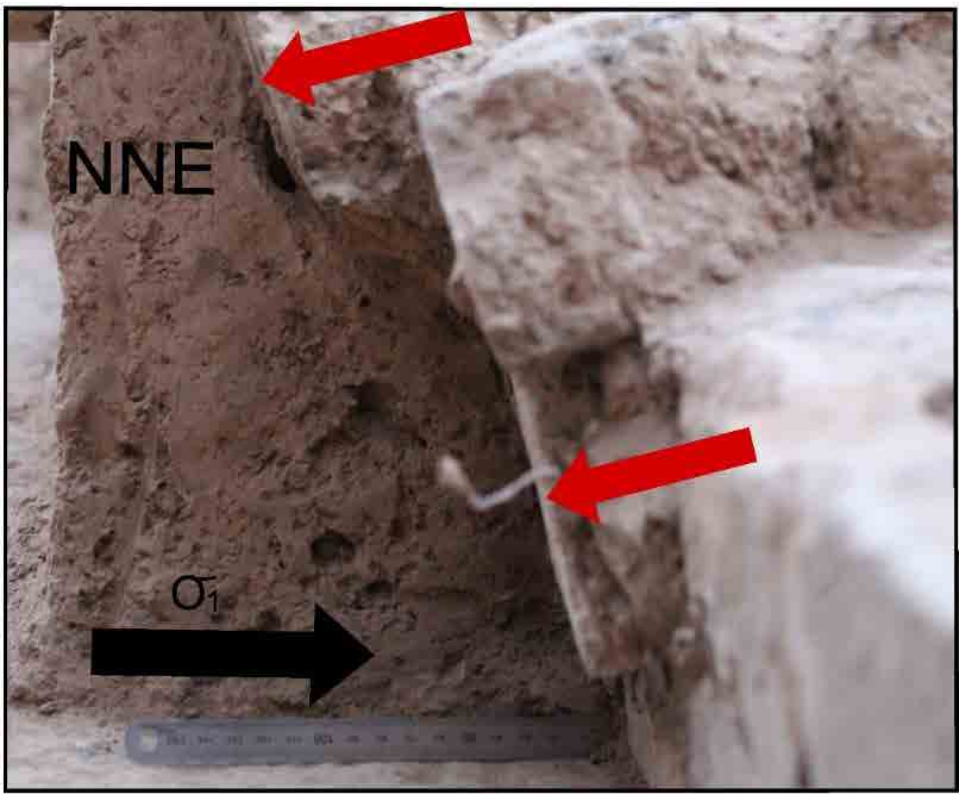



**Fig. 22: Phase 4: significant leaning of the lower part of the wall toward the northeast in Trench 25; (Joint Iranian & Italian team).**



**Fig. 23: Phase 4: massive displacement and sliding (equivalent to one course of settled bricks) of the brick wall identified in Trench 23; (Joint Iranian & Italian team).**

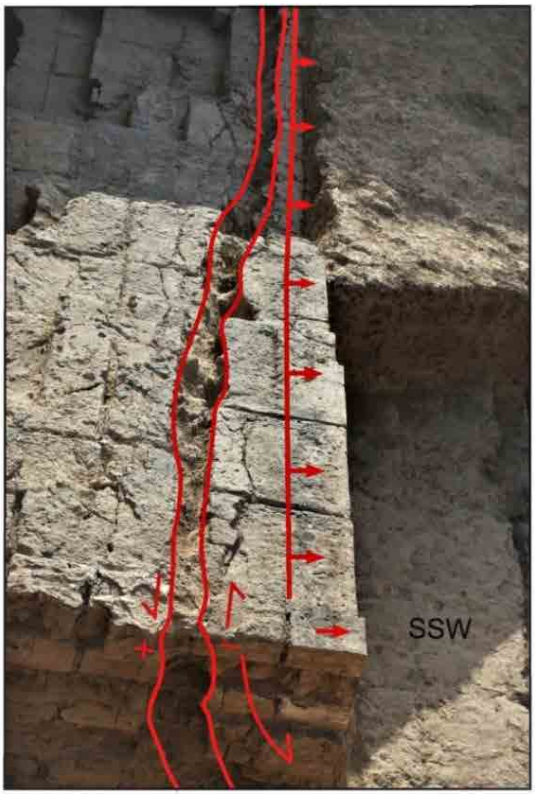



**Fig. 24: Phase 4: longitudinal extension of the fracture due to the rupture and sliding of the remaining brick wall in Trench 23; (Joint Iranian & Italian team).**



**Fig. 25: Phase 4: earthquake; layer containing thick and compact accumulations of brick fragments; Trench 11; (Joint Iranian & Italian team).**



**Fig. 26: Extensive and successive looting of the bricks from the eastern and western walls throughout the gate building (Seljuk period, based on Seljuk-period mold-made ceramics found on the floors of the looting pits); (Joint Iranian & Italian team).**



**Fig. 27: Horizontal looting pits along with occupational traces; Trench 3. (Al-Muzaffarid period, based on Al-Muzaffarid blue-glazed ceramics found on the floors of the looting pits); (Joint Iranian & Italian team).**

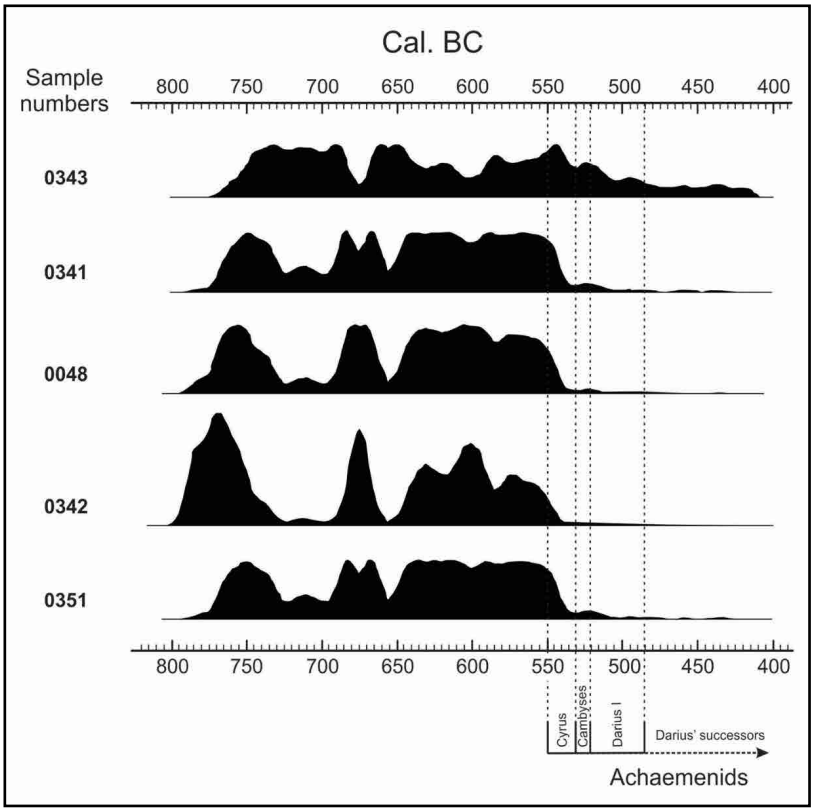



**Fig. 28: Radiometric datings from Tol-e Ajori (graphic elaboration by M. Djamali of data by F. Terrasi) (Joint Iranian & Italian team).**



**Fig. 29: Pestle; Trench 10, Phase 3, Tol-e Ajori; (Joint Iranian & Italian team)**



**Fig. 30: Clay sling bullets; phase 3 (second phase of temporary occupation), Tol-e Ajori; (Joint Iranian & Italian team).**

Sumner considered that, although ceramic assemblages dating to the Early Achaemenid period, i.e. "earlier than the initiation of construction at Persepolis, ca. 520 B.C.", had not yet been found in the Persepolis plain (Sumner, 1986: 7 and fn. 10), the settlement system discussed in his paper was "assumed to represent the cultural landscape in the Persepolis plain and surrounding districts from a date soon after the end of Cyrus' reign until the social and economic changes following Alexander's conquest" (Ibid). According to him, Matezziš was already an important town during Cambyses' reign, and the rebel Vahyazdata was brought here in 521 BC for execution: "At that



**Fig. 31: Various fragments of the broken stone mouth from a stone lion, phase 3 (secondary occupation); Tol-e Ajori; (Joint Iranian & Italian team).**

time the town of Matezziš (Persepolis West) was inhabited and the elite dwellings at Firuzi and Dasht-e Gohar were already standing" (Sumner, 1986: 28).

The chronological assessment begins with the radiocarbon evidence from the excavations.

Thanks to the support of the Franco-German project "Paleopersepolis" led by Dr. Morteza Djamali at the IMBE, Aix-en-Provence - Marseille, five bone samples were submitted to C14 dating, carried out at the Laboratory of the Center for Isotopic Research on Cultural and Environmental Heritage, Second University of Naples at Caserta, Italy, directed by Professor Filippo Terrasi. One of the samples (Sample 0351) was collected in one of the stratigraphic units below the floor level of the central room in Trench 10, three samples (0341, 0342, 0343) were collected in the same trench in stratigraphic units of the first episode of reuse of the ruins after the first abandonment and pillage, while a fifth one (Sample 0048) was collected in one of




**Fig. 32: A portion of the metal arrowheads from the phase 3; Tol-e Ajori; (Joint Iranian & Italian team).**



**Fig. 33: Phase 3; Achaemenid jar from Trench 27, Tol-e Ajori; (Joint Iranian & Italian team).**

the units of the first phase subsequent to destruction in the outer area of Trench 1.

The 14C dating analyses of the bone sample collected from the layer predating the construction of the gate provide information of the archaeological horizon prior to the construction of the gate, while the analyses of the samples recovered from the secondary occupation in Tr. 10 must provide a terminus post quem for its destruction.

The results of the analyses of four of the samples are strikingly similar (Fig. 28). Indeed, Sample 0341 and Sample 0351 have given a calibrated age (2σ-range) of 696-540 BC respectively at 76% and 75.6% probabilities, Sample 0342 has given a calibrated age (2σ-range) of 647-547 BC at 48.2% probabilities and Sample 0048 has given a calibrated age (2σ-range) of 654-541 BC at 59.2% probabilities. Only Sample 0343 has yielded a wider chronological range, with a calibrated age (2σ-range) of 764-477 BC at 97.3% probabilities.

What is indeed striking is the same age of the sample from the pre-building phase and of the samples from the secondary occupation after the first destruction. The lower limit of the latter samples coincides with that of the former. The fact that in the four similar samples, the calibration curve is practically constant throughout the duration of the range and that there are no evident peaks means that the better approximation can be anywhere within the range and at the same time shows the biases of C14 dating analyses for the Achaemenian period. In theory, given that the historical situation forces us to exclude a pre-Achaemenian dating for this Babylonian-inspired building, the significant section of the curve is reduced to its end, i.e. around 540 BC: to this date we should add the time difference provoked by the apparent age at burial due to the fact that the samples consisted in bones, corresponding to c. 10 years, bringing thus the lower limit to c. 530 BC. However, the problems shown by the calibration curve during the Achaemenian period reduces the reliability of this dating.

The time span within which the dating of the samples is possible is particularly wide and goes well beyond the period that best justifies from a historical point of view the Babylonian presence in Persia, i.e. from the conquest that Cyrus made of the city of Babylon in 539 BC (Haerinck, 1997).

While more than one colleague has encouraged us not to exclude the last decades of the Neo-Elamite kingdom (Kaniuth, 2018), the lack of other chronological data of such antiquity leads us to be more cautious and to exclude a pre-Achaemenid dating for this building. Therefore the significant part of the curves for three of the samples belonging to the secondary occupation is reduced at their end, i.e. around 540 BC: to this date we must add the shift caused by the so-called "apparent age" of the burial, due to the fact that the samples were composed of bone, bringing the lower limit to 530 BC. The low reliability of radiocarbon for the Iron Age in Iran suggests some caution in accepting the quantitative datum to the letter, but the concurrence of the dates is nevertheless a clue in favour of high dating. The Achaemenid period (ca. 550–330 BCE) largely overlaps with the so-called Hallstatt plateau of the radiocarbon calibration curve, a relatively flat section extending approximately from 800 to 400 cal BCE and named after the Hallstatt cultural period of Central Europe (Reimer *et al.*, 2020; Meadows *et al.*, 2022).

Radiocarbon ages falling within the plateau can yield broad or multimodal calibrated probability distributions so that even measurements with laboratory uncertainties of approximately ±25 radiocarbon years or less may produce calibrated age ranges spanning several centuries, in some cases approximately 250–340 calendar years at the 95.4% probability level (Meadows et al., 2022). Consequently, individual radiocarbon dates may be insufficient to distinguish events occurring within different parts of the Achaemenid period.

## 5. Discussion

Systematic excavations at Tol-e Ajori have established a stratigraphic sequence comprising seven principal phases in the history of the monument. The stratigraphic evidence provides a basis for pre-construction, the building's construction, occupation, abandonment, destruction, and subsequent reuse. Together with evidence from twelve other archaeological sites in the Firuzi sector, near Persepolis, the monumental gate at Tol-e Ajori contributes to our understanding of the early Achaemenid period, particularly the interval between Cyrus the Great's conquest of Babylon in 539 BC and the construction of the Persepolis terrace under Darius I, beginning around 518 BC.

The excavations have also yielded evidence relevant to the chronology of the monument. Particularly valuable are thirteen fragments of glazed bricks bearing cuneiform inscriptions.

Thus far, the inscriptions have yielded only Elamite and Babylonian logograms or syllabic signs; no Old Persian inscriptions have been identified at Tol-e Ajori (Basello, 2013; 2014; 2017). Although the absence of Old Persian inscriptions cannot be regarded as conclusive, given the limited number of surviving fragments, it remains relevant to the chronological assessment of the monument. More persuasive is the palaeographic evidence. The signs preserved on the thirteen inscribed fragments correspond more closely to Neo-Elamite and Neo-Babylonian writing traditions than to the forms of Elamite and Babylonian script employed in the royal inscriptions of Darius I and his successors (Basello, 2017: 270, 272). These palaeographic characteristics support an attribution of the gate to the early Achaemenid period.

Other finds provide additional chronological evidence, although their implications are less clear when considered individually. Preliminary ceramic analysis has identified sherds attributable to the Late Plain Ware tradition in deposits associated with the secondary occupation of the gate following its abandonment. These ceramics, however, have a broad chronological range extending from the sixth to the first centuries BC and therefore offer limited precision. The same deposits have yielded trilobate bronze arrowheads of a type generally associated with the Achaemenid period.

The structural evidence for a major earthquake following the initial abandonment and partial dismantling of Tol-e Ajori may also have chronological implications. No comparably extensive earthquake damage has been identified at the Persepolis terrace. Two explanations are possible: either the terrace sustained damage that was subsequently repaired so thoroughly that its traces are no longer apparent, or the terrace had not yet been constructed when the

earthquake struck Tol-e Ajori. The latter possibility appears more plausible in light of the available evidence (Berberian, forthcoming a, b). Archaeoseismologist Manuel Berberian has further suggested that the decision to construct the Persepolis terrace on bedrock, rather than on the less stable sediments of the plain, may have reflected an awareness of the destructive effects of the earthquake at Tol-e Ajori and other buildings in Bagh-e Firuzi. According to this interpretation, the geological conditions of the plain amplified the earthquake's effects on these earlier structures.

Additional evidence from the architecture, decoration, and spatial organization of Tol-e Ajori supports the possibility that the monument predates the construction of the Persepolis terrace. The masonry techniques and architectural design of Tol-e Ajori reflect Mesopotamian traditions. At the same time, the arrangement of a monumental gate providing access to a palatial complex recalls Gate R at Pasargadae.

The glazed-brick decoration at Tol-e Ajori also belongs to a technologically earlier tradition than that represented by the glazed bricks of Persepolis and Susa, which demonstrate further developments in production techniques (Razmjou, 2004; Amadori *et al.,* 2017a; 2017b; Daucé, 2010: 329–330). The decorative programme likewise differs from that of Persepolis. Its emphasis on mythological creatures recalls certain aspects of the imagery associated with Palace S at Pasargadae. Particularly distinctive is the representation of the mušḫuššu, a composite creature associated with the Babylonian god Marduk. This motif is absent from the surviving monumental decoration of Pasargadae, Persepolis, and Susa, although it appears on impressions of Late Babylonian seals preserved in the Persepolis archives (Garrison, 2009: 46; Matin, 2021).

Geophysical surveys conducted in the fields between the archaeological sites of Bagh-e Firuzi have identified long, linear anomalies interpreted as a network of ditches or canals. Although less dense than the corresponding network west of Persepolis, these features exhibit orientations that differ from those recorded nearer the terrace. This difference suggests that the two areas may reflect distinct episodes of spatial planning (Gondet, 2011; Askari Chaverdi *et al.,* 2013).

Taken together, these observations support the hypothesis that the Tol-e Ajori–Firuzi 5–Sang-e Surakh complex (Fig. 14) belongs to an earlier phase of development than the Persepolis terrace. The comparatively early techniques employed in the glazed-brick decoration, the monument's architectural resemblance to the Ishtar Gate of Babylon, and its possible commemorative association with Cyrus's conquest of Babylon in 539 BC are consistent with construction during the reign of Cyrus. Under this interpretation, the gate may have served as a monumental expression of the Persian conquest of Babylon.

The combined archaeological, architectural, palaeographic, and historical evidence therefore favours a date for the foundation of the Tol-e Ajori gate before the construction of the imperial complex at Persepolis under Darius I, possibly between 539 and 518 BC. None of these lines of evidence independently establishes a precise construction date. Their convergence nevertheless

lends support to the proposed chronology. Alternative dates based on particular aspects of the evidence, including those discussed by Kaniuth (2018: 351), warrant consideration, but must also be assessed against the broader archaeological and historical context. Further discoveries may permit a more precise chronological attribution.

This evidence also bears on the function of the gate and the character of the surrounding complex. The monument's scale, architectural form, and decoration suggest an association with the Achaemenid royal establishment. This interpretation receives additional support from the occurrence of the word "king" in Babylonian and Elamite among the surviving cuneiform inscription fragments. The possible involvement of Babylonian workers in the construction of Tol-e Ajori would also be consistent with documented Achaemenid practices of employing Babylonian labor in imperial building projects.

The results of the excavations consequently favor interpreting Bagh-e Firuzi East, approached through the monumental gate at Tol-e Ajori and perhaps centered on the building at Firuzi 5, as an imperial complex rather than solely as the dispersed urban quarter proposed by Sumner (1986). Its arrangement may have resembled the extensive royal paradeisos at Pasargadae, with its monumental gateway, palace, and bridge. Such an interpretation recalls Stronach's characterization of an unfinished "garden capital" (Stronach, 1997). The spatial relationships among the principal components of Bagh-e Firuzi East reinforce this interpretation. The alignments connecting Tol-e Ajori, Firuzi 5, Sang-e Surakh, and the canals identified through geophysical survey suggest a coordinated arrangement of buildings and associated infrastructure. These features evoke what Stolper described as "the architectural trappings of a remarkable political centre" (Stolper, 1984). Comparable principles of spatial organization are evident at Pasargadae and Persepolis, lending further support to the proposed imperial character of the complex.

In his study of Babylonian texts associated with the Persepolis Fortification archive, Matthew Stolper (1984: 307) argued that Matezziš "was already the chief place in the region before the reign of Darius and so before the construction of Persepolis began." Stolper drew particular attention to eleven Babylonian legal documents of uncertain provenance, dating to the reigns of Cambyses and Bardiya, which refer to Babylonian temple workers at a place identified in the texts as Humadēšu. Following a suggestion by Ilya Gershevitch, Ran Zadok (1976: 69–70) identified Humadēšu with the Old Persian Uvādaicaya mentioned in the Bisotun inscription, corresponding to the Elamite Matezziš. On this basis, Stolper concluded that Matezziš "was the home of an enclave of Babylonians during the reign of Cambyses" (1984: 307). The employment of Babylonian temple workers in the Persian heartland is also documented elsewhere. During the reign of Cyrus, Babylonian workers were employed at the site known in Greek sources as Taoke, which Wouter Henkelman has identified with Tamukkan in the Elamite Persepolis texts and Tahmaka in Babylonian documents referring to workers dispatched to the site (Henkelman, 2008: 116–117; see also: Tolini, 2008). Another location in Fars associated with Babylonian labour during the reign of Cambyses is Matnânu, identified with Matannan in the Persepolis texts (Stolper, 1984; Henkelman and Kleber, 2007: 164).

The identification of Humadēšu with Matezziš, and the location of Matezziš in the Persepolis region, have gained considerable acceptance, although earlier scholarship advanced alternative interpretations (Hansman, 1975; Zadok, 1976). We therefore follow the identifications proposed by Stolper, Sumner, and Henkelman, while recognizing that they remain open to reassessment. Even if the identification of Humadēšu with Matezziš were ultimately rejected, documentary evidence from other sites would still establish the employment of Babylonian workers in Fars under the early Achaemenid kings. This broader historical context is consistent with the material evidence for Babylonian involvement at Tol-e Ajori.

Sumner (1986) proposed that several of the elite buildings at Bagh-e Firuzi belonged to a programme of territorial development predating the reign of Darius I. Although he acknowledged that no ceramic assemblages securely attributable to the early Achaemenid period had yet been identified in Fars (Sumner 1986: 4), he considered the settlement system described in his study to represent the cultural landscape of the Persepolis plain and its surrounding districts from shortly after the end of Cyrus's reign until the transformations associated with Alexander's conquest (Sumner, 1986: 7). Sumner further argued that Matezziš was already an important settlement during the reign of Cambyses. He connected this interpretation with the execution of the rebel Vahyazdata at Matezziš in 521 BC, concluding that "At that time the town of Matezziš (Persepolis West) was inhabited and the elite dwellings at Firuzi and Dasht-e Gohar were already standing" (Sumner, 1986: 28).

This reconstruction has not been universally accepted. Gondet (2011), in particular, questioned whether the buildings at Bagh-e Firuzi and the palace at Dasht-e Gohar were contemporary. His argument rests partly on the corresponding orientations of the tomb at Takht-e Rostam and the large building at Dasht-e Gohar. Jean-Claude Bessac and Rémy Boucharlat had previously reconsidered the traditional attribution of Takht-e Rostam to Cambyses, proposing instead that Darius I constructed the tomb for his father, Hystaspes, an interpretation also supported by Henkelman. On this basis, Gondet suggested that the building at Dasht-e Gohar may likewise date to the reign of Darius I and represent an extension of his imperial building programme (Gondet, 2011: 338–339). This interpretation raises a broader methodological problem concerning the chronological attribution of architectural forms conventionally associated with the early Achaemenid period. Similar architectural features occur at Pasargadae and at several buildings in Borazjan generally attributed to the reign of Cyrus. The definition and chronological significance of an "early Achaemenid style" are also examined in E. Matin's doctoral research, currently being prepared for publication (Matin, Forthcoming b).

The present evidence does not permit us to offer a revised date for Dasht-e Gohar. Nevertheless, the results from Tol-e Ajori favour the broader chronological framework proposed by Stronach and accepted by Stolper, which places the beginnings of imperial construction in the Pārsa plain "both during and directly after the reign of Cyrus," rather than exclusively during the reign of Cambyses, as Sumner proposed.

The proposed chronology for Tol-e Ajori also provides a possible explanation for the two distinct spatial planning systems identified in the Pārsa/Matezziš region. If the Persepolis terrace represents a major phase of imperial development initiated under Darius I, the Tol-e Ajori–Firuzi 5 complex may belong to an earlier programme of construction. The architectural, decorative, and spatial evidence thus supports the existence of an early Achaemenid phase preceding the establishment of the Persepolis terrace. This interpretation is broadly consistent with the historical and archaeological reconstructions advanced by Hallock (1977), Tilia (1974, 1978), Stronach (1997), Stolper (1984), Sumner (1986), and Henkelman and Kleber (2007), although these scholars differ in their proposed chronologies and interpretations of individual sites.

The extent and precise function of the complex comprising the Tol-e Ajori gate, the palace at Firuzi 5, and the canal or bridge structure at Sang-e Surakh remain uncertain. One possibility is that these features formed part of a royal paradeisos comparable to that at Pasargadae. The evidence does not, however, exclude the possibility that the complex also incorporated elements of a dispersed urban settlement, anticipating aspects of the later development of Pārsa. The relationship between this complex and the elite buildings elsewhere in Bagh-e Firuzi, which Sumner interpreted as components of a broader aristocratic settlement, is particularly difficult to establish because of the distances separating the surviving structures. At present, their respective orientations provide the principal basis for assessing whether individual buildings belonged to the same spatial planning system or to successive phases of development.

## 6. Conclusion

The glazed bricks at Tol-e Ajori appear to reflect an earlier technical tradition than those employed at Susa and Persepolis. Together with the gate's close resemblance to Babylon's Ishtar Gate, this evidence supports the possibility that the monument was built after Cyrus's conquest of Babylon in 539 BCE and before construction began at Persepolis. The proposed association with Firuzi 5 and the stone bridge at Goud-e Gamishi (Sang-e Surakh) would place these features within an earlier phase of development, although their contemporaneity requires independent assessment.

Geophysical surveys between the Bagh-e Firuzi sites identified linear anomalies interpreted as ditches or canals. These features are less densely distributed than those west of Persepolis and follow a different orientation from features near the terrace. The contrasting alignments may reflect separate episodes of planning. Taken together, the architectural, decorative, and topographical evidence supports a date for the Tol-e Ajori gate before Darius I's construction of Persepolis, perhaps between 539 and 518 BCE. None of these observations independently establishes that date, and further evidence is needed to refine the chronology. The excavations nevertheless document a monumental gate in the Firuzi sector and a sequence of abandonment, secondary occupation, structural destruction, and later brick robbing.

One possible explanation for the gate's construction is that Cyrus commissioned a monument in his homeland to commemorate the conquest of Babylon. Its Babylonian iconography is consistent with such an interpretation, but the available evidence does not establish the patron or precise construction date. Further study of the inscribed glazed-brick fragments may identify the ruler referred to as "king" in two inscriptions. Even without such a discovery, Tol-e Ajori provides evidence for monumental building activity in the early Achaemenid period in the region where Darius I later established Persepolis.

Thirteen seasons of excavation and associated epigraphic research have substantially expanded the evidence for early Parsa. Further interdisciplinary study is needed to clarify the monument's chronology, its relationship to neighboring buildings, and the wider settlement history. The Iranian–Italian Joint Archaeological Mission and the Iranian authorities are also working to make the site accessible to visitors to Persepolis.

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**Authors' Contribution**

This article is the result of excavations conducted by two joint Iranian and Italian teams from Shiraz University and the University of Bologna. Both directors have jointly contributed to the presentation, final analysis, and conclusion of the findings from thirteen seasons of excavation.

**Conflict of Interest**

The authors declare no conflict of interest and have adhered to publishing ethics regarding citations and references.

**Endnote**

1. In this brief article, only an abstract of Phase I is provided, as a comprehensive description including architectural details of Phase I has been published in a Persian article; see: Askari Chaverdi, A., & Callieri, P. (2025). "The Architectural Structure and Decorations of the Monumental Gate of the Paradise of Parsa in the early Achaemenid Period (Tol-e Ajori)," Journal of Archaeological Studies, 118(1): 213–268. Also cf. https://doi.org/10.22059/jarcs.2025.402260.143376

2. The ceramic finds from this stage exceed 500 sherds and will be published in a separate volume.

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# یک تاریخچهٔ لایه‌نگاری از سرگذشت دروازهٔ پردیس پارسه در تل آجری


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**چکیده**

بنای مکشوفه در محوطهٔ باستانی تل آجری در سه کیلومتری شمال‌غربی تخت‌جمشید طی ۱۳فصل کاوش بـه اسـتناد کتیبه‌هـای مکشـوفه و کاربـری آن به‌عنـوان دروازه‌ای همتـای دروازهٔ ایشـتار بابـل شناخته شد. لایه‌نـگاری ایـن بنـا دورهٔ قبـل از ساخت بنـا(۰) ساخت دروازه (دورهٔ ۱)، زمان ترک‌شدن بنـا (دورهٔ ۲)؛ سکونت مجـدد در مقیـاس محلّی (دورهٔ ۳)؛ غـارت و نابـودی بـا منشأ انسـانی و طبیعـی؛ زلزلـه (دورهٔ ۴)، و غارت آجرهای بنا در سده‌های میانهٔ اسلامی: دورهٔ سلجوقی (دورهٔ ۵) و آل‌مظفر (دورهٔ ۶) را نشـان می‌دهـد. تاریخ‌گـذاری مطلـق پنـج نمونـهٔ اسـتخوان از تـل آجـری بـا قابلیـت پاییـن اطمینـان رادیـو کربـن بـرای عصـر آهـن ایـران (۸۰۰-۴۰۰ پ.م.) نشـان‌دهندهٔ احتیـاط در پذیـرش مطالعـات کمّـی اسـت. تاریخ‌گذاری نسبی ساخت دروازه، جنبه‌های دیرینه‌نـگاری ۱۳آجـر نبشته، نَـه بـا شـیوهٔ نـگارش ایلامی و بابلی در کتیبه‌های هخامنشی داریـوش اول و جانشینانش، بلکه با نشانه‌های متأخر سنّت دورهٔ ایلام نـو و بابل نـو، قدمت آجرهای لعابدار تل آجری که از نظر فنی به شیوهٔ باستانی‌تری نسبت به آجرهای شوش یـا تخت‌جمشید تعلق دارد و کارکرد احتمالی نسخه‌ای از دروازهٔ ایشتار بابل درنظر گرفت کـه در تئـوری بایـد بـه احتمـال زیـاد در دورهٔ سلطنت کـوروش و مرتبـط بـا فتـح بابـل در سـال ۵۳۹پ.م. باشـد. تمـام عناصـر قویـاً حکایـت از پایه‌گـذاری دروازهٔ تـل آجـری قبـل از سـاخت دژ شـاهی تخت‌جمشـید توسـط داریـوش اول، بـه احتمـال در بـازهٔ زمانـی ۵۳۹ تـا ۵۱۸پ.م. دارد.



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## Comparative Study of the Political Status of Susa during the Sasanian Period: Climax and Decline, Based on Written Sources and Archaeological Evidence

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**Abstract**

The city of Susa, as one of the oldest urban centers in Iran, faced significant political, economic, and social ups and downs during the Sasanian period. Although written documents mark Shapur II's attack on Susa as the end of the city's life, archaeological data present a more complex and dynamic picture of Susa's situation during this period. The present study aims to examine the factors that led to the rise and fall of the city of Susa during the Sasanian period based on the analysis of written sources and archaeological evidence. The main question of the study is what factors led to the climax and decline of the status of Susa during the Sasanian period and how material evidence reflects these developments. The research hypothesis is based on the fact that Susa experienced relative prosperity in the early Sasanian centuries, especially during the reign of Shapur I, following the transfer of artisans from Antioch and the urban reconstructions that occurred. Susa's ultimate decline was not the result of a sudden destruction, but rather the result of the centralization policy of the Sasanian state, the development of newly founded cities such as Gondeshapur and Ērān-Xwārrah-Šābuhr, demographic changes, and political-religious restrictions. The research methodology is descriptive-analytical and comparative, adopting a historical approach, and the data are analyzed based on written evidence from early Islam, such as travelogues and chronicles, Christian testimonies, and its combination with the finds from archaeological excavations at Susa, including architectural evidence, coins, seals, pottery, wall paintings, metal and glass works. The results show that although Susa faced a serious crisis in the fourth century, archaeological evidence indicates that the city continued to be inhabited, active, and urban in nature until the late Sasanian period and decline is a gradual, structural process, not a sudden collapse

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## 1. Introduction

As one of the oldest urban centers on the Iranian Plateau, Susa played a pivotal role in the region's political, economic, and cultural transformations throughout antiquity. Having served as a prominent metropolis during the Elamite, Achaemenid, Seleucid, and Parthian periods, the city entered a new developmental trajectory with the rise of the Sasanian Empire—a phase characterized by structural shifts in governance, centralizing policies, and the functional reconfiguration of ancient cities. In conventional scholarship, Sasanian-era Susa has frequently been framed through a narrative of urban decline or sudden catastrophe, particularly in the aftermath of Shapur II's campaign. However, such historiographical accounts have largely privileged textual sources and early archaeological interpretations over comprehensive analyses of material culture.

Archaeological investigations at Susa—most notably within the Ville Royale (Royal City)—demonstrate that the urban dynamics of the Sasanian period were far more nuanced than a simplistic model of abrupt collapse suggests. Diverse material assemblages, including architectural remains, emergency burials, wall paintings, clay bullae, ceramics, metalwork, glassware, and particularly numismatic hoards, paint a multifaceted picture of the city's urban trajectory. These data attest not only to episodes of crisis and destruction, but also to robust patterns of continuity in occupation and economic activity. Consequently, this material record invites a critical reassessment of whether Shapur II's intervention signaled the definitive demise of urban life at Susa, or merely represented an episodic crisis within a broader, gradual transformation.

Concurrently, the Sasanian administration's macro-urban strategies—specifically the foundation and expansion of new royal cities such as Gundeshapur, Ērān-Xwārrah-Šābuhr, and Īwān-e Karkheh—significantly reconFig. d political and economic networks across Khuzestan. Within this decentralized regional framework, although Susa relinquished its former primacy, it retained substantial regional, religious, and commercial significance. The documented coexistence of Zoroastrian and Christian communities, the endurance of administrative apparatuses, and ongoing integration into interregional trade networks all underscore the city's enduring socio-economic vitality under Sasanian rule.

Accordingly, this study critically interrogates the socio-spatial trajectory of Susa under the Sasanians through an integrated synthesis of textual evidence and archaeological data. By moving beyond monocausal determinism, it aims to offer a nuanced, evidence-based paradigm of Susa's role within the wider Sasanian imperial and urban landscape.

### 1-1. Research Questions

• To what extent does archaeological evidence—specifically architectural, spatial, and numismatic data—substantiate or challenge the hypothesis of Susa's abandonment following the military campaign of Shapur II?

• How did imperial Sasanian urban policies and centralizing strategies, particularly the foundation of royal cities such as Gundeshapur and Ērān-Xwārrah-Šābuhr, reshape or diminish Susa's regional and administrative prominence?

• In what ways did economic dynamics (trade and artisanal production), religious diversity (the coexistence of Zoroastrian and Christian communities), and strategic connectivity within regional communication networks mediate the continuity versus decline of Susa under Sasanian rule?

### 1-2. Research Methodology

The present study is historical-analytical in nature and has been conducted using a descriptive, analytical, and comparative approach.

### 1-3. Literature Review

Scholarship on Susa during the Sasanian era has predominantly developed along two interpretive strands: textual historiography and archaeological investigation. Within the realm of written accounts, early Islamic historians and geographers—notably al-Ṭabarī, Ibn al-Athīr, and al-Balādhurī—provide crucial data regarding Susa's administrative, military, and strategic standing, as well as its involvement in the late Sasanian socio-political landscape and the subsequent early Islamic conquests (Ṭabarī, 1983, Vol. 2: 582–585; Ibn al-Athīr, 2004: 460; Balādhurī, 1998: 367–371). While indispensable for reconstructing the overarching historical framework, these accounts warrant rigorous source-critical scrutiny and systematic cross-examination with the material record, given their chronological distance from the events and their inherent theological and narrative biases.

Among modern historians, Bartold highlighted the regional importance of Susa in later historical horizons while examining the urban landscape of Khuzestan (Bartold, 1979: 199). Pigulevskaja, analyzing Iranian cities in the Parthian and Sasanian epochs, characterized Susa as a settlement with an illustrious heritage that was nevertheless relegated to a subordinate role within the newly established Sasanian imperial apparatus (Pigulevskaja, 1993: 223–327). In their broader institutional histories, Christensen and Nöldeke addressed the territorial reorganization of Khuzestan and the repercussions of royal centralization on the region's urban networks (Christensen, 2011: 184; Nöldeke, 2009: 80–90). Furthermore, Frye accentuated imperial fiscal and strategic policies, identifying Khuzestan's commercial routes as a primary catalyst for the sustained continuity of Susa's urban life (Frye, 2009: 524–531). Daryaee has further refined this institutional perspective, arguing that the restructuring of Sasanian state power marginalized traditional urban centers in favor of newly founded royal foundations—a policy that fundamentally transformed Susa's regional standing (Daryaee, 2013: 14–38; 2018: 140).

In archaeological scholarship, the pioneer excavations directed by Loftus, Dieulafoy, de Morgan, and de Mecquenem yielded foundational empirical data; however, their methodological preoccupation with the Elamite and Achaemenid strata often resulted in the unstratified clearance or under-recording of late Sasanian contexts (De Morgan, 1900: 58, 1905: 1; De Mecquenem, 1943: 68–77). A pivotal methodological shift

occurred with Roman Ghirshman's excavations. Uncovering Level IV of the Ville Royale—characterized by widespread destruction layers and emergency intramural interments—Ghirshman

attributed these archaeological signatures directly to the punitive campaign of Shapur II, thereby positing an abrupt abandonment of the city (Ghirshman, 1950: 571–573, 1952: 7–9).

Subsequent field research and re-evaluations by scholars such as Boucharlat, Wenke, de Miroschedji, Gyselen, and Potts have substantially problematized this catastrophic model. Material evidence—specifically numismatic assemblages, administrative clay sealings (bullae), ceramic typologies, and intra-site spatial distributions—demonstrates substantial urban continuity at Susa well beyond the fourth century CE (Boucharlat, 1985: 78, 1987b: 358–363; Wenke, 1987: 220–256; de Miroschedji, 1987: 52; Gyselen, 1977: 61–74; Potts, 1999: 428–430). These findings necessitate a critical revision of the traditional narrative of rapid decline. Consequently, while existing literature addresses isolated facets of Susa's history and archaeology, a holistic, diachronic analysis that systematically synthesizes textual hermeneutics with stratigraphic and material data remains conspicuously absent. This study aims to fill this historiographical lacuna by providing an evidence-based reassessment of Susa's spatial, political, and socio-economic trajectories within the wider Sasanian imperial system.

**2. Ge** d in the western part of Khuzestan Province, between 47°40′ and 48°37′ east longitudes and 31°54′ and 32°31′ north latitudes. It borders the cities of Dehloran, Andimeshk, Dezful, Shushtar, Ahvaz, and Susangerd, and is bounded by Iraq to the west (Khuzestan Statistical Yearbook, 2021: 37) (Map. 1).

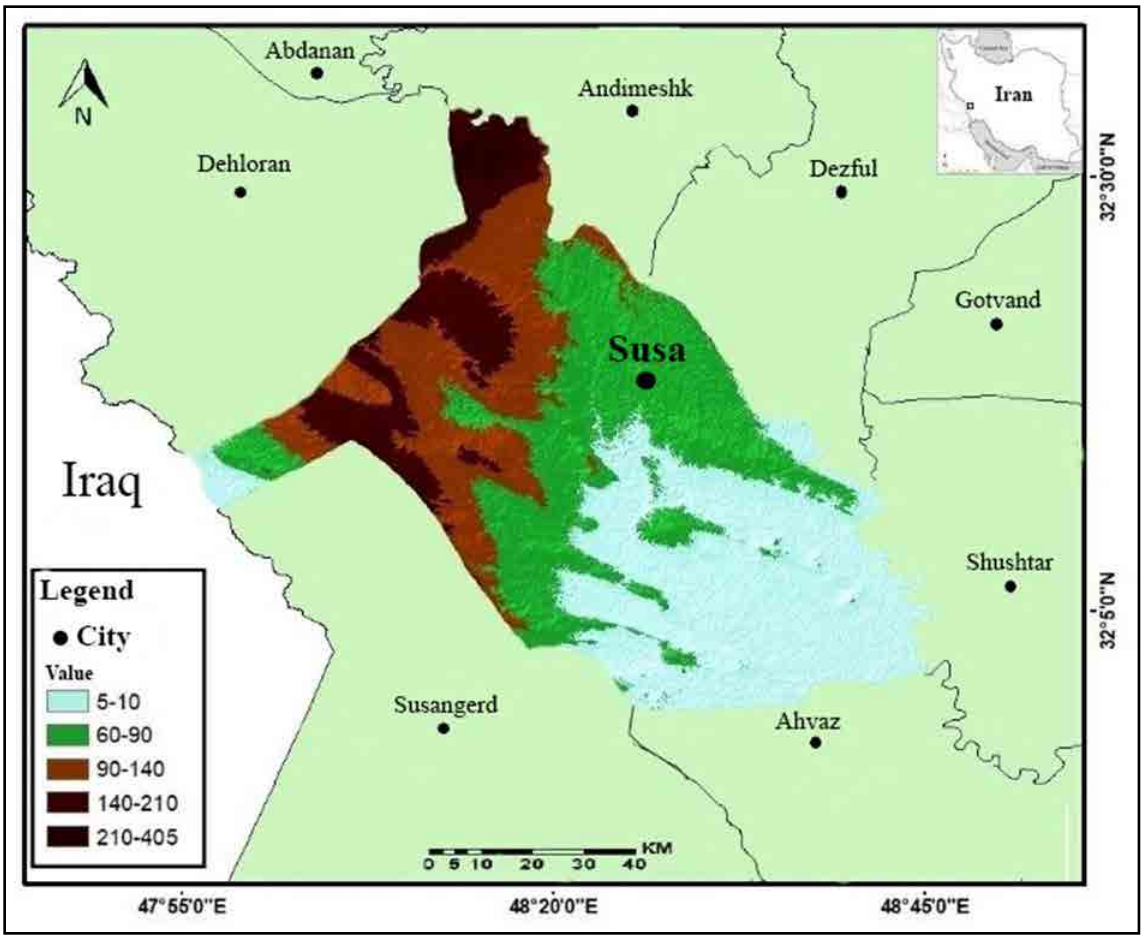
To systematically address these research questions, this article is structured around two analytical axes: textual traditions and archaeological datasets. Following a critical evaluation of both corpora, the final section provides an integrated synthesis that re-evaluates Susa's urban trajectory within the wider imperial framework.

### 2.1. Part One: Written Sources

As the cornerstone of historiographical inquiry, written sources furnish foundational data that delineate the chronological and thematic parameters of the study. Through rigorous source criticism—encompassing provenance authentication, textual transmission analysis, the identification of authorial biases, and systematic cross-referencing with independent datasets—scholars can disentangle empirical historical realities from later narrative accretions. Building upon these methodological imperatives, this section undertakes a critical evaluation of the relevant textual corpus to reassess Susa's administrative, political, and socio-economic standing during the Sasanian era.

#### 2-1-1. The City of Susa from the Reign of Ardashir I to Shapur II According to Written Sources

With the asce nt of Ardashir I (Ardashir-e Papakan) in Istakhr and the rapid expansion of his territorial ambitions, a direct military confrontation with Artabanus IV (or V), the last Arsacid King of Kings, became inevitable. According to al-Tabari, Artabanus designated the plain of Hormozgan as the battlefield in a letter to Ardashir in 224 CE (Tabari, 1983, Vol. 2: 583).




**Map. 1: The location of Shush County relative to other counties (Authors, 2025).**

Recognizing the decisive nature of this engagement for the survival of the Arsacid dynasty, Artabanus likely selected this site for two strategic reasons: its proximity to Susa, and the city's historical standing as a staunchly loyal Parthian stronghold that functioned as a final bastion of anti-Sasanian resistance in southwestern Iran (Ghirshman, 1991: 347).

Nevertheless, Dietrich Huff underscores the lingering ambiguity regarding the exact geography of the engagement, arguing that the plain identified by al-Tabari as "Hormozgan" was most likely situated between Isfahan and Nihavand. Similarly, Geo Widengren, drawing upon the Nihayat al-Arab fi Akhbar al-Furs wa-l-Arab, identifies the battlefield as Gurbadgan (modern Golpayegan) (Huff, 2008: 38; Jalilian, 2016: 31; Widengren, 1971: 738–740). In contrast, Arthur Christensen, relying on al-Tabari, notes that Artabanus ordered the local dynast (shahriyar) of Susa to advance against Ardashir, defeat him, and deliver him to Ctesiphon. Ardashir, having intercepted the plan, pre-emptively occupied the area, fortified his position with an entrenchment, secured local water supplies, and achieved a decisive tactical advantage. He subsequently vanquished the local ruler and annexed the province (Christensen, 2011: 59; Tabari, 1983, Vol. 2: 583–584). Following its capture in early 224 CE, Susa reportedly faced punitive measures from Ardashir for its unwavering Parthian allegiance (Gropp, 2005; Verstandig, 2007: 434).

Regarding the precise topography of the clash between Ardashir and Artabanus, Shahram Jalilian categorizes five proposed locations: (1) the vicinity of Rayy; (2) outside Nihavand; (3) along the Jarrahi River near Ramhormoz; (4) Susa; and (5) Golpayegan in northern Isfahan Province (Jalilian, 2016: 58).

The early Sasanian rulers frequently established new administrative foundations in close proximity to major Parthian centers to capitalize on preexisting economic networks and

local prestige (Pigulevskaja, 1993: 223). Within this strategic framework, Ardashir likely founded Hormozd-Ardashir—designated in early Islamic sources as Suq al-Ahwaz (Tabari, 1983, Vol. 2: 585)—near the ancient metropolis of Susa to stimulate regional urbanization and foster imperial integration (Frye, 2009: 293).

Following the accession of Shapur I and the conclusion of his major campaigns against Rome, the crown prioritized domestic stabilization and the reconstruction of urban infrastructure damaged during his predecessor's reign. Shapur I partially remediated the devastation inflicted upon Susa under Ardashir (Noldeke, 2009: 89–90). Following the defeat of Valerian and the sack of Antioch in 260 CE, Shapur deported skilled artisans, particularly textile workers and weavers, and settled them across Khuzestan, notably within Shushtar and Susa (Pigulevskaja, 1993: 327; Winter and Dignas, 2007: 254; Canepa, 2009: 54; Bonner, 2020: 53; Shapur Shahbazi, 2010: 378). The resettlement of Roman captives from Antioch in 260 CE is likewise corroborated by the Chronicle of Seert, a medieval Nestorian Arabic compilation produced after 1036 CE (Winter and Dignas, 2007: 255, citing Histoire nestorienne [Chronique de Seert], PO IV, 220 ff.).

During the reign of Bahram II, the Roman emperor Carus briefly captured Susa; however, Carus's unexpected death facilitated the prompt restoration of Sasanian authority (Noldeke, 2009: 80). Concurrently, during Bahram II's punitive expedition against his brother Hormoz, a local Zoroastrian priest (mowbed) in Susa instigated a regional uprising against royal authority and temporarily seized control of the city before the revolt was decisively suppressed by Bahram II (Daryaee, 2013: 14).

### 2-1-2. Susa During the Reign of Shapur II According to Written Sources

Following the official legitimization of Christianity in the Roman Empire via the Edict of Milan in 313 CE[1] (Winter and Dignas, 2007: 33; Schippmann, 2004: 40), Shapur II initiated systemic measures against domestic Christian populations, seeking to curb communities perceived as ideologically or politically aligned with Rome (Duchesne-Guillemin, 1983: 886; Jalilian, 2017: 206; Labaf-Khaniki, 2021: 172).

According to late antique historical and ecclesiastical accounts, Shapur II resolved to suppress Christian communities throughout the empire during this protracted conflict. Susa, as one of the major episcopal and urban centers of Khuzestan, became a direct target of imperial intervention following its participation in civic insurrections against central Sasanian authority. Syriac Christian sources record that the city was assaulted by an imperial contingent deploying war elephants, resulting in substantial physical destruction and depopulation (Fiey, 1979: 141–143).

In modern historiography, this punitive operation has generally been interpreted as an effort to enforce domestic political cohesion and neutralize regional enclaves susceptible to external instigation (Labaf-Khaniki, 2021: 173).

Nevertheless, hagiographical and martyrological narratives present a more nuanced picture of the underlying mechanisms of persecution. According to traditions associated with Simeon Bar Sabbae, Christians within the Sasanian realm were targeted or executed primarily for their refusal to remit a punitive double capitation tax (Wood, 2013: 20–21, 67). In a similar vein, the Martyrdom of Mar Aqebshma frames this augmented fiscal demand as a deliberate royal scheme engineered to systematically dismantle the Christian presence in the Sasanian state (The Martyrdom of Aqebshma, 1981: 361–362). In contrast, modern critical scholarship challenges these sectarian characterizations. Jackson Bonner argues that such narratives are chronologically problematic and ideologically amplified, noting that the supplementary levies were fundamentally instituted to finance imperial military campaigns against the Roman Empire. From this institutional perspective, co-opting local bishops into the tax-collection apparatus served as a pragmatic fiscal mechanism designed to integrate the Christian minority into the imperial administrative apparatus rather than an ideological policy aimed at systemic eradication, notwithstanding the documented episodes of state-sanctioned violence (Bonner, 2020: 72).

**2-1-2-1. Reflections on the Proposed Causes for the Destruction of Susa by Shapur II**

In evaluating the underlying catalysts for Shapur II's campaign against Susa, scholars such as Westphal, Brock, Hartranft, Dodgeon and Lieu argue that the royal administration targeted the city primarily due to suspicions regarding the civic population's pro-Roman sympathies and questionable imperial loyalty (Brock, 1982: V 14; Westphal, 1901: 9; Hartranft, 1989: 264; Dodgeon and Lieu, 1994: 90).

In contrast, Jean Maurice Fiey[2] contends that imperial persecution of the Christian community at Susa was comparatively restrained during this period, citing the hagiographical Life of Miles, bishop of Susa around 330 CE, as explicit confirmation (Fiey, 1979: 141). According to this tradition, Miles proselytized Susa for three years with minimal success before abandoning his see. Fiey further observes that several prominent notables accused of sedition against Shapur II were Zoroastrians rather than Christians, thereby challenging purely sectarian interpretations of the imperial suppression. Nevertheless, late antique Christian martyrologies consistently recount a catastrophic military operation involving 300 war elephants that allegedly razed the settlement, employing the classical literary topos of ploughing the razed city into arable fields (Fiey, 1979: 141–143).

Challenging these hyperbolic narratives, Jean-Baptiste Chabot rejects the notion of Susa's wholesale destruction under Shapur II as ungrounded, demonstrating substantial historical continuity in the post-fourth-century horizon. In his analysis, Susa's uninterrupted ecclesiastical status—manifested in the well-documented sequence of East Syriac (Nestorian) bishops participating in synods between 410 and 605 CE—attests to sustained urban vitality well after

the mid-fourth-century crises (Chabot, 1902: 683). In this context, the testimony of Libanius[3] concerning the return of the Roman envoy Spectatus from the court of Shapur II is particularly illuminating. Libanius records that high-level diplomatic deliberations regarding disputed borderlands and territorial concessions from the reign of Narseh took place directly in Susa. Spectatus's diplomatic exchange with the Sasanian monarch indicates that Susa continued to function as an operational venue for imperial diplomacy and courtly assemblies during this period (Dodgeon and Lieu, 2002: 195). The hosting of such high-level diplomatic assemblies provides unequivocal textual evidence of the city's enduring administrative infrastructure and political significance under Shapur II.

### 2-1-3. Susa from the Successors of Shapur II to the Islamic Conquest According to Written Sources

Under the successors of Shapur II, particularly during the reigns of Khosrow I and Khosrow II, imperial Sasanian strategies in urban geography and fiscal organization focused increasingly on the development of newly founded centers and the consolidation of centralized administrative and commercial corridors. Historical evidence indicates that while extensive building programs were executed across newly established foundations in Khuzestan, Susa was largely bypassed by direct royal patronage. Nevertheless, this institutional shift did not entail terminal stagnation or the collapse of urban life; rather, it marked Susa's transition from a primary imperial administrative center to a settlement of secondary, regional importance (Frye, 2009: 524–526).

During this period, the Sasanian crown placed renewed emphasis on the fiscal regulation of long-distance trade and the maintenance of economic infrastructure. Khosrow I (Anushirvan) fostered commercial activity and urban stability by repairing transportation infrastructure, bridges, caravanserai networks, and port facilities. Khuzestan, situated at the nexus of strategic commercial arteries—including regional segments of the former Royal Road and Silk Road networks—benefited directly from these imperial initiatives. Integrated into this regional trade matrix, Susa shared in the resulting economic vitality (Frye, 2009: 524–526).

During the reign of Khosrow II (Parviz), specifically during the civil conflict of 590–591 CE, the rebel general Bahram Chobin gained temporary control over southwestern and northeastern Iran, bringing Susa within his operational orbit. However, Khosrow II's restoration and his subsequent marriage to Shirin—who, according to the Armenian chronicle of Sebeos, originated from Khuzestan[4] (Sebeos, 1999: 104)—did not fundamentally disrupt the social or administrative status of the city (Daryaee, 2013: 38; Christensen, 2011: 340). This stability suggests that high-level dynastic turbulence had limited structural impact on Susa's entrenched regional position.

In the final phase of the Sasanian period, sustained imperial investment in newly founded urban hubs across Khuzestan and Fars prevented ancient centers such as Susa from reclaiming their past geopolitical primacy. As Theodor Noldeke observed, systematic patronage of newly founded cities led to the gradual administrative marginalization of older settlements (Noldeke, 2009: 89–90). Susa conformed to this broader developmental pattern, functioning primarily as a provincial hub (Mehrabi and Aghajani, 2016: 176). Nonetheless, the city retained strategic and

defensive importance until the final years of the empire. Under Yazdegerd III, Susa was governed by Hormuzan of Mehrgan-Kadhag, an influential military leader affiliated with the aristocratic magnate houses. The protracted resistance mounted by Hormuzan and his garrison against early Muslim forces underscores Susa's enduring function as a fortified citadel in Khuzestan (Baladhuri, 1998: 367–371). Although this defensive line ultimately fell, the protracted siege demonstrates the city's lingering military capacity and logistical infrastructure.

The fall of Susa occurred during the caliphate of Umar ibn al-Khattab, with Arabic historical sources describing the assault commanded by Abu Musa al-Ashari and Abu Sabrah ibn Abi Ruhm al-Qurashi. However, the precise nature of the settlement's capitulation—whether via active resistance or negotiated terms—remains ambiguous, as extant primary narratives preserve conflicting accounts (Tabari, 2004, Vol. 5: 1904–1911; Choksy, 2008: 29). In contrast, the seventh-century Syriac text known as the Khuzistan Chronicle explicitly confirms that Susa was both heavily populated and defensively intact during the Islamic expansion. In this account, Susa's fortifications are cited alongside those of Gundeshapur and Karkheh, demonstrating its parity with the foremost late Sasanian administrative strongholds in southwestern Iran (Khuzistan Chronicle, 2016: 98–100; Potts, 1999: 430). Synthesized collectively, these textual sources corroborate the continuous survival of Susa's urban fabric up to the threshold of the early Islamic period.

**2-1-4. Evaluation of the Written Sources**

A critical evaluation of the textual sources reveals that on the eve of the Sasanian consolidation of power, Susa was recognized as a formidable stronghold loyal to the Arsacid dynasty. Consequently, the civic center encountered profound political suspicion and endured punitive measures initiated by the nascent imperial apparatus. The accounts preserved by al-Tabari and Arthur Christensen regarding the Battle of Hormozdgan and Susa's broader engagement in the succession conflict—despite unresolved historiographical debates concerning the precise geographical setting of the engagement—clearly demonstrate the strategic indispensability of the city during the formative phase of the Sasanian Empire.

During the reign of Shapur I, Susa was progressively integrated into imperial recovery programs following its initial subjugation. The deportation and resettlement of Antiochene artisans in Khuzestan, especially within key urban settlements such as Susa and Shushtar—corroborated by classical historiographical traditions and East Syriac chronicles—reflect targeted administrative policies designed to invigorate the regional fiscal landscape through captive skilled labor. These records substantiate that Susa retained an active socioeconomic role within the broader urban networks of third-century southwestern Iran.

The preponderance of textual accounts, however, converges on the reign of Shapur II and the purported wholesale destruction of the city. Later chroniclers frequently ascribed this military punitive operation to local Christian sympathies toward Rome, civilian resistance to extraordinary wartime taxation, or municipal sectarian friction. Nevertheless, source-critical scrutiny indicates that these narratives were heavily colored by the confessional tendentiousness of Christian martyrologists, often producing exaggerated depictions of terminal obliteration. In particular, the

literary topos of ploughing the razed city into arable fields and the alleged cessation of urban life stand in sharp contrast to subsequent historical documentation.

Textual evidence from the post-Shapur II centuries confirms that despite forfeiting its former imperial primacy, Susa persevered as a viable urban center of considerable regional significance. Historical records documenting the continuous presence of East Syriac (Nestorian) bishops between the fifth and seventh centuries CE, coupled with Syriac references to Susa's fortified defenses on the eve of the Islamic expansion, furnish concrete proof of uninterrupted civic and religious occupation. Furthermore, Libanius's testimony regarding bilateral diplomatic negotiations convened directly at

Susa indicates that, even in times of systemic tension, the settlement preserved key courtly and administrative functions.

In early Islamic historiographical traditions, the protracted resistance mounted by Susa's garrison against the advancing Muslim forces, along with the settlement's frequent contextualization alongside late Sasanian strongholds such as Gundeshapur and Shushtar, reaffirms its enduring military and strategic vitality during the final decades of Sasanian authority. These combined notices demonstrate that Susa functioned as an active administrative node within Khuzestan up to the threshold of the Islamic conquest.

In sum, the documentary record corroborates that while Susa weathered severe sociopolitical crises and targeted military disruptions, literary claims alleging absolute devastation and post-fourth-century abandonment cannot be uncritically accepted. Consequently, historical interpretations derived from these texts achieve analytical validity only when systematically confronted with the archaeological record; a rigorous interdisciplinary synthesis of textual testimonies and material culture remains essential for reconstructing the dynamic urban trajectory of Sasanian Susa.

### 2-2. Section Two: Archaeological Evidence

The archaeological record of Susa constitutes an essential empirical foundation for reassessing Sasanian historiography, enabling a critical investigation into the site's urban trajectory independent of textual representations. Systematic investigations at Susa commenced in the mid-nineteenth century with preliminary soundings directed by William Kennett Loftus on the Apadana mound (Loftus, 1857: 349–434). Subsequently, Marcel-Auguste Dieulafoy and Jane Dieulafoy concentrated their field operations on Susa's principal mounds, conducting excavations at the Apadana that were primarily exploratory in orientation (Dieulafoy, 1887: 668). Later, Jacques de Morgan and Roland de Mecquenem carried out extensive clearance operations across the site, largely driven by museum-oriented recovery strategies focused on monumental Elamite artifacts. The resulting excavation reports reveal that Seleucid, Parthian, Sasanian, and early Islamic strata were frequently removed without systematic stratigraphic recording, receiving only cursory notices in the preliminary documentation (De Morgan, 1900: 58; 1905: 1; De Mecquenem, 1943: 68–77).

A decisive turning point in the stratigraphic study of Sasanian Susa emerged with the excavations directed by Roman Ghirshman. In 1949, Ghirshman exposed a distinct occupation horizon in the northern sector of the Royal City (Ville Royale)—subsequently designated as Level IV (Chantier IV)—which yielded conspicuous evidence of severe destruction, mudbrick domestic architecture, hasty or emergency intramural interments, and an apparent disruption in urban continuity (Ghirshman, 1952: 7–9). Ghirshman correlated this archaeological horizon directly with the punitive campaign of Shapur II, concluding that Sasanian Susa was permanently abandoned following this catastrophic event. Supported by the apparent association between the destruction debris and contemporaneous burials, this historical interpretation was broadly accepted across scholarly literature for several decades.

Nevertheless, closer scrutiny of the archaeological dataset indicates that Ghirshman's interpretive model requires substantial revision. While Level IV unquestionably exhibits the material correlates of an acute localized crisis and sudden structural collapse, it represents only a restricted spatial sector within the vast topography of Susa. Methodologically, extrapolating the occupational sequence of an isolated excavation sounding to the settlement as a whole is fundamentally problematic, particularly given the confined exposure of those early trenches. Furthermore, the absence of refined stratigraphic control in adjacent sectors of the site severely limits any macro-spatial assessment of residential continuity or intra-site spatial shifts following this destructive horizon.

Accordingly, Level IV of the Ville Royale should be contextualized not as the definitive terminus of Sasanian urbanism at Susa, but rather as the material signature of a severe, episodic rupture in the site's occupational history—a crisis visibly imprinted upon its architectural fabric and burial practices, yet methodologically insufficient to demonstrate wholesale desolation. A more accurate historical reconstruction can be achieved only through the systematic analysis of complementary archaeological datasets, including stratified numismatic sequences, administrative clay sealings (bullae), and broader ceramic distributions across the site.

The architectural remains uncovered in Level IV of the Ville Royale provide a coherent layout of the spatial organization and urban fabric of Susa during this phase of the Sasanian era (Fig. 1). Ghirshman's excavations revealed that the domestic architecture in this level consisted predominantly of mudbrick structures characterized by substantial, thick load-bearing walls, occasionally reinforced with baked bricks. These complexes were organized into contiguous residential blocks separated by open public spaces, internal courtyards, and narrow circulation corridors, reflecting a dense and systematically planned urban quarter (Ghirshman, 1952: 7–8). The incorporation of central courtyards within individual domestic units, alongside built-in ovens (tanurs) and hearth installations inside the rooms, demonstrates an established residential function accompanied by domestic-scale production. This evidence confirms that Level IV represents a stable, well-integrated urban neighborhood rather than a transient or strictly defensive encampment. Moreover, the structural continuity among the residential compounds and the absence of occupational

gaps across the sector confirm that this quarter maintained spatial and functional cohesion prior to the crisis.

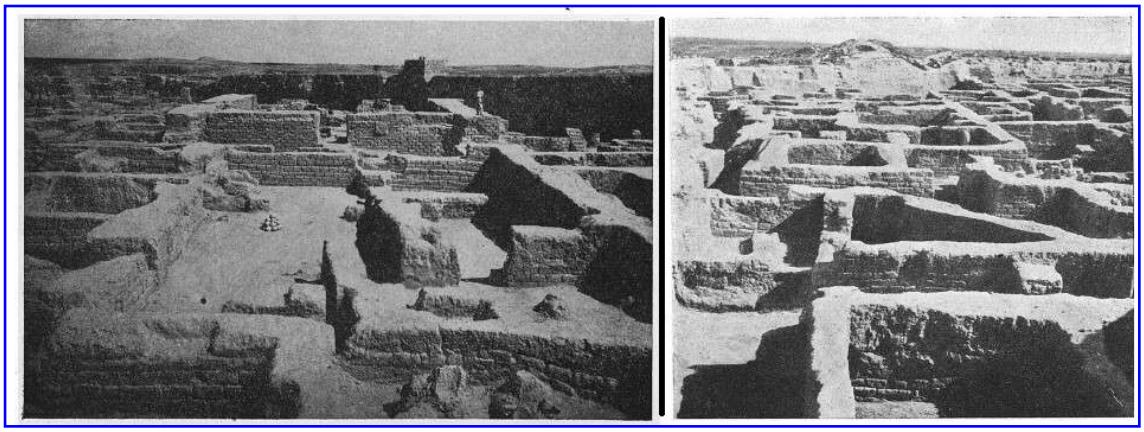


**Fig. 1: Residential fabric of Shush during the Sasanian period (Ghirshman, 1952: 8).**

Within Level IV (Fig. 2), located several hundred meters from the Achaemenid palace complex, Ghirshman uncovered a polychrome painted plaster mural (fresco on stucco) preserved on an interior room wall. The composition features a classic aristocratic hunting scene, depicting a mounted archer pursuing game animals, notably wild boars and stags, with several beasts rendered as pierced by arrows or slain. In addition to the zoomorphic figures, the iconographic program incorporates floral elements alongside a radiant solar disc. The mural was executed using an earth-toned and mineral pigment palette comprising yellow, dark red, pink, blue, and deep brown hues (De Waele, 2004: 353).



**Fig. 2: Painted stucco from the Sasanian period (replica in the Susa Museum), (Chevalier, 2001: 90).**

The chronological attribution of this wall painting, however, remains a subject of ongoing scholarly debate. Ghirshman dated the stucco painting to the first half of the fourth century CE (Ghirshman, 1991: 183 [1370: 183]), a chronological assessment later endorsed by Umberto Scerrato (Scerrato, 2004: 80 [1383: 80]). In contrast, Eric De Waele challenged this Sasanian

dating, arguing on stylistic and comparative grounds that the mural should instead be assigned to the late Parthian period (De Waele, 2004: 354).

One of the most distinctive architectural features of this stratum is a substantial edifice preserving the remains of decorative wall paintings (Boucharlat, 1987b: 358). Such elaborate ornamentation points to a specialized function extending beyond that of an ordinary domestic dwelling, likely representing an elite residence or an administrative-ceremonial complex. The presence of such prominent edifices integrated directly into the residential fabric underscores the functional heterogeneity of urban space in Sasanian Susa. Unfortunately, the intermediate Level III of the Ville Royale (fifth–sixth centuries CE), Level 5A of the Eastern Apadana (late Parthian to early Sasanian), and Levels 4B–C of the Eastern Apadana (late Sasanian) have yielded sparse material culture; consequently, these occupational phases have contributed only marginally to our broader understanding of long-term Sasanian urban dynamics at the site (Boucharlat, 1987a: 238, tab. 28).

Excavations conducted by Pierre de Miroschedji in Ville Royale II revealed a pronounced stratigraphic hiatus between the late Parthian sequence and the early Islamic horizon (De Miroschedji, 1987: 52). The apparent absence of an intervening Sasanian occupation layer in this sector raises significant spatial questions: does this lacuna imply that the Sasanian urban settlement contracted away from this area, or does it reflect localized spatial reorganization? Regrettably, owing to the coarse stratigraphic control characteristic of earlier soundings, this distributional hypothesis cannot be definitively substantiated.

Alongside the architectural evidence, anomalous human interments documented within domestic rooms, courtyards, and circulation corridors attest to an acute disruption of the urban spatial order following a cataclysmic event. Disposing of human remains directly within the inhabited civic perimeter—wholly bypassing standard regional funerary practices—points to emergency conditions and an acute inability to access formal extramural necropoleis. These bioarchaeological data correlate closely with indicators of sudden structural collapse, corroborating the occurrence of an intense crisis, most likely military or political in origin.

Nevertheless, contextual analysis of Level IV in the Ville Royale demonstrates that although anomalous intramural burials within residential compounds and thoroughfares signify severe sociopolitical breakdown under crisis conditions, the spatial layout of the stratum confirms that this catastrophe did not precipitate the absolute collapse of the city. The overarching structural coherence of the urban fabric, the architectural continuity, and the presence of elite domestic units confirm that this quarter was systematically organized prior to the disruptive horizon; thus, architectural and funerary trauma alone cannot substantiate the total abandonment of Susa. These hasty interments inside the settlement reflect an immediate inability to transport the deceased to extramural cemeteries, yet the crisis failed to permanently dismantle the fundamental urban armature. Consequently, the archaeological signature of Level IV should be interpreted as an acute, episodic transition within Susa's broader urban evolution rather than the terminal collapse of its civic life (Ghirshman, 1952: 7–8).

Several of these interments were uncovered directly beneath collapsed wall debris or embedded within destruction strata, confirming that mortality was roughly synchronous with the architectural destruction. This stratigraphic correspondence between structural collapse and mortuary deposits reinforces the hypothesis of a sudden and violent military assault. In this light, Ghirshman's interpretation of these remains as the physical manifestation of an urban massacre retains a degree of archaeological plausibility, even if the precise historical agency cannot be conclusively established without complementary data. Nonetheless, the spatial distribution of the burials demonstrates that they do not represent systemic demographic eradication or permanent civic abandonment. Emergency burials typically reflect episodic ruptures in institutional order, after which social reconstitution or spatial reorganization regularly occurs. At Susa, the spatial restriction of these interments to specific sectors of the Ville Royale and their absence in other explored sectors confirm that the crisis was localized or spatially circumscribed rather than universally obliterative (Ghirshman, 1952: 7–8).

In sum, the intramural burials of Level IV represent tangible manifestations of an acute anthropogenic catastrophe in the history of Sasanian Susa that temporarily destabilized its civic order. However, these funerary anomalies are insufficient on their own to substantiate total urban desolation, emphasizing the necessity of evaluating them in tandem with other material datasets. Significantly, the material culture recovered from Level IV includes definitive physical markers of an established Christian community, such as a silver

pectoral cross found associated with a skeleton and cross motifs incised or stamped onto ceramic vessels (Fig. 3) (Ghirshman, 1950: 571–573).

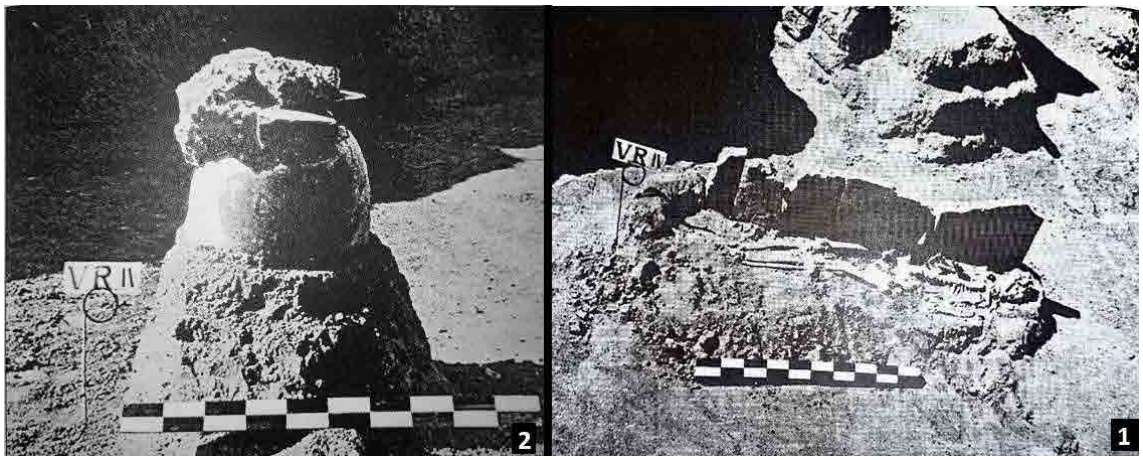



**Fig. 3: 1: Remains of a burial 2: A burial jar with a depiction of a Nestorian cross, from the city of Shush (Labaf Khaniki, 2021: 195-196, citing Ghirshman, 1950).**

Numismatic evidence from Susa constitutes one of the most critical categories of material data for evaluating urban continuity versus disruption across the Sasanian sequence. Contrary to Ghirshman's interpretive model—which postulated the permanent abandonment of Susa following the military campaign of Shapur II based on the destruction of Level IV—the coin hoards recovered from the site provide a far more complex and contradictory trajectory. In particular, two

major late Sasanian coin hoards discovered in 1932 and 1976 offer decisive chronological insights into monetary circulation.

In 1932, a ceramic vessel containing a hoard of 2,278 Sasanian silver drachms was uncovered near ground surface on the eastern slope of the Ville Royale mound. Because the latest coin in this assemblage dates to the third regnal year of Yazdegerd III, Roland de Mecquenem assigned a provisional deposition date of ca. 634–635 CE to the container. The composition of this hoard spans the reigns of Khosrow I through Yazdegerd III, with the overwhelming majority of the specimens—numbering 2,173 coins—issued under Khosrow II (De Mecquenem, 1943: 68).

The second assemblage, comprising 1,171 coins, was excavated in 1976 (Fig. 4). The earliest specimen in this hoard dates to the reign of Khosrow I Anushirvan (r. 531–579 CE), weighing approximately four grams, recovered from a sealed earthenware jar plugged with clay (Gyselen, 1977: 61–71). The coins in this second hoard represent a chronological range extending from 575 to 622 CE and were predominantly minted across active mint centers in southwestern Iran and Mesopotamia (Labaf-Khaniki, 2021: 172).



**Fig. 4: A hoard of 1,171 silver Drahms discovered in Shush (Chevalier, 2001: 89).**

The coins recovered during the 1931–1932 excavations originated from three distinct mints (Unvala, 1934: 239–244), whereas the 1,171 specimens unearthed in 1976 were struck across 31 different mints (Gyselen, 1977: 64; Kervran, 1985: 91–93). In marked contrast to the Seleucid and Parthian periods, there is no conclusive numismatic evidence confirming the active operation of an imperial Sasanian mint within Susa itself (Boucharlat, 1985: 78). The mint abbreviation “AI” or “AIRAN” appears prominently on many of these coins; Sellwood attributed this signature to Ērān-Xwarrah-Šābuhr, positing it as an honorific name for Susa, which he argued functioned as an active mint during the Sasanian period (Sellwood, 1985: 42). However, Potts, Gyselen, and Gasche have disputed this identification, contending that even if the monogram “AI” represents

Ērān-Xwarrah-Šābuhr, it cannot be conflated with Susa, as the site in question corresponds unequivocally to Eyvan-e Karkheh (Potts, 1999: 428; Gyselen & Gasche, 1994: 26–29).

Beyond numismatic assemblages, Sasanian clay sealings (bullae) recovered from excavations at Susa constitute indispensable sphragistic evidence for reconstructing the city's administrative apparatus and socioreligious dynamics. A corpus of 33 Sasanian bullae, discovered during soundings by Jacques de Morgan, Roland de Mecquenem, and Roman Ghirshman, is currently preserved in the Bibliothèque nationale de France (Gignoux, 1971: 535–542). Unlike the fragmentary architectural record from certain levels, this sphragistic repertoire provides critical insight into the institutional standing of Susa within the broader Sasanian imperial bureaucracy.

Epigraphic and iconographic analysis of these sealings confirms that Susa functioned as an active node within the imperial administrative network. The seal legends record not only Susa itself but also other regional centers with which it maintained direct administrative and economic exchanges, including Rēv-Ardašīr and Hāmān-Ardašīr—both foundation cities dating to the reign of Ardashir I (Gignoux, 1971: 540–541; Miri, 2016: 167). These administrative linkages demonstrate that Susa was fully integrated into the regional network of newly established Sasanian foundations rather than being marginalized from state infrastructure.

The analytical value of the Susa bullae extends beyond administrative toponymy; the official and clerical titles inscribed on them elucidate the city's institutional and religious landscape. Titles such as mlkly (accountant or archivist), mgw (magus), and mgwpty (mōbed or chief magus) directly attest to

the active presence of imperial bureaucratic offices and official Zoroastrian hierarchies in Susa (Potts, 1999: 428). The recurrence of these titles confirms that, despite the expansion of a sizable Christian community, Susa remained subject to the regulatory oversight and governance of formal Zoroastrian and administrative authorities.

When synthesized with the material markers of Christianity—including the silver pectoral cross and cross emblems stamped or incised on funerary vessels—the sphragistic data delineate a multi-confessional urban environment characterized by the coexistence of Zoroastrian and Christian populations. Such confessional diversity is consistent with a major urban center possessing a Hellenistic heritage and enduring regional trade connections. Nevertheless, the dominance of Zoroastrian administrative designations across the bullae confirms that institutional authority remained firmly vested in formal state institutions, leaving the Christian population, while demographically prominent, within a politically subordinate framework.

Ceramic assemblages and portable material culture (Fig. 5) provide further diagnostic markers for evaluating economic capacity, production technologies, and everyday living conditions during the Sasanian period. Analysis of the Sasanian ceramic corpus from Susa indicates that vessels were manufactured from refined clays employing specialized technological processes, including advanced wheel-throwing and mold-casting techniques. The morphological diversity—spanning utilitarian wares to fine ceremonial vessels—alongside floral, zoomorphic, and geometric decorative motifs demonstrate the unbroken continuity of craft traditions and the vitality of local

ceramic workshops (Chevalier, 2001: 125; Mohammadifar, 2015: 72). Consequently, this material record demonstrates that Susa did not merely consume regional finished goods but maintained a productive and active role in ceramic manufacturing and intra-regional distribution networks throughout the Sasanian era.




**Fig. 5: 1- Turquoise-glazed ceramic jug. 2- Brown-green glazed ceramic jar, dating to the Sasanian period (Chevalier, 2001: 125).**

Alongside the ceramic evidence, the recovery of luxury artifacts—including silver vessels, quartz bowls mounted on openwork gold bases, and a marble bust depicting a bearded male—points to the enduring presence of affluent elite strata within Susa (Overlaet, 1993: 227–228; Harper, 1978: 85; Carter, 1978: 171; Martinez-Sève, 1996: 171–180). Such prestige items typically characterize vibrant urban centers endowed with significant capital accumulation and integrated into interregional exchange networks; their presence at Susa is fundamentally irreconcilable with the hypothesis of terminal urban desolation in the fourth century CE. These material indicators demonstrate that even during intervals of acute political rupture and military crisis, socio-economic groups possessing substantial resources continued to sustain an elite habitus within the settlement.

Another diagnostic category of material culture comprises equestrian harness equipment, including bronze and iron bits, cheekpieces, and muzzles, recovered alongside equine skeletal remains from Level IV of the Ville Royale. Morphologically and stylistically, these equestrian fittings display close affinities with the harness equipment represented on Sasanian rock reliefs and toreutic silver vessels, objects conventionally associated with the upper aristocracy and the administrative or military echelon (Harper, 1978: 81). The recovery of such specialized paraphernalia confirms that Susa retained strategic and social significance as an active base for nobility and imperial functionaries during the Sasanian period.

Within this portable material horizon, the glassware assemblage (Figure 6) holds particular interpretive significance. The substantial volume of glass vessels unearthed at Susa has led numerous researchers to identify the city as a primary regional center for glass manufacture in the Sasanian period (Mohammadifar, 2015: 72). The technological sophistication, typological variety, and spatial prevalence of these vessels attest to the operation of specialized ateliers and the advanced pyrotechnological mastery of local artisans. High-temperature vitreous production—requiring steady access to specific raw materials, complex pyrotechnology, and an expansive commercial distribution network—provides compelling material evidence for the uninterrupted endurance of urban industrial infrastructure and market vibrancy at Susa across this sequence.




**Fig. 6: 1- Small translucent glass bottle. 2- Translucent glass tripod vessel from the Sasanian period (Chevalier, 2001: 90).**

In synthesis, the material corpus—encompassing ceramic assemblages, prestige artifacts, and evidence of industrial production—portrays Susa as an urban center that, despite recurrent political and military crises, maintained robust economic vitality, continued to support an affluent elite habitus, and sustained consistent productive output. When corroborated by numismatic and sphragistic data, these findings indicate that the city's Sasanian-era trajectory should not be misconstrued as a definitive urban collapse. Rather, this period reflects a gradual attenuation of Susa's regional primacy, directly correlated with the emergence of newly established imperial foundations and the implementation of overarching Sasanian state-building initiatives.

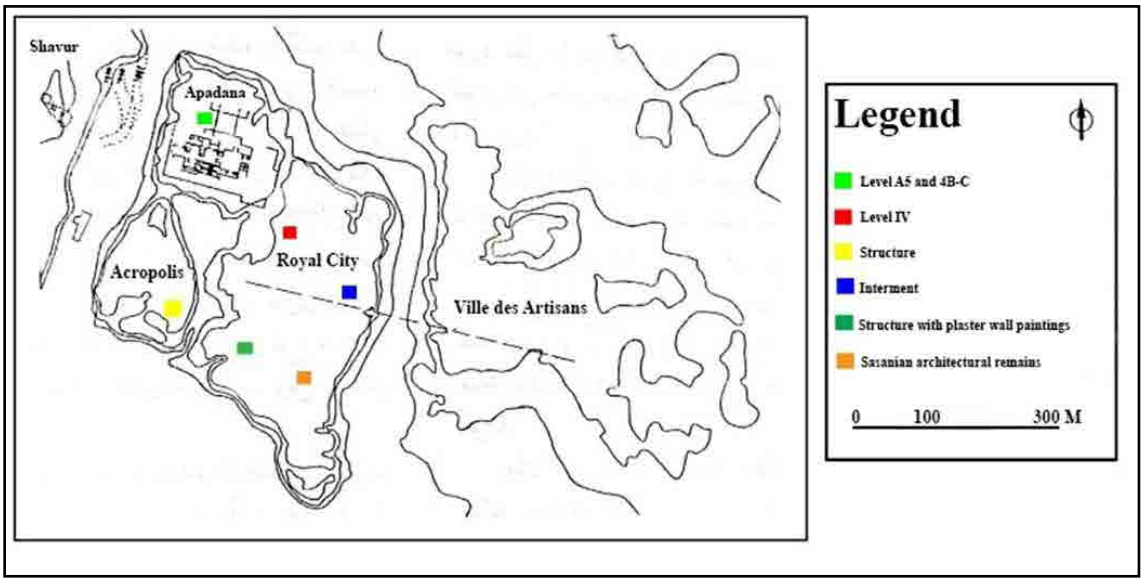
### 2-3. Evaluation of the Archaeological Evidence

Archaeological inquiry provides an empirical framework for the critical assessment of historiographical narratives, enabling a nuanced reconstruction of urban morphology and transformative processes. The distribution of Sasanian material remains across the Susa site—specifically the Ville Royale, the Acropolis, and the Eastern Apadana—is illustrated in Map 2, facilitating a stratigraphically grounded spatial analysis of the settlement's urban evolution.

The concentration of Sasanian Level IV deposits (indicated in red) within the Ville Royale perimeter confirms that this sector functioned as the primary locus of occupation during the Sasanian period, distinguishing it from the Acropolis or the Apadana. The presence of intramural burials (indicated in blue), embedded directly within the urban fabric of the Ville Royale and juxtaposed with architectural units, signifies an emergency reappropriation of civic space and underscores a profound disruption of the established urban order.

The prominent structure containing plaster wall paintings (indicated in dark green) is located in the southern sector of the Ville Royale, situated contiguously to the primary thoroughfare connecting the mounds. Given its spatially privileged and central location, this edifice likely fulfilled a function exceeding that of a standard residential unit.

The limited distribution of Levels 5A and 4B–C in the Eastern Apadana (indicated in light green), coupled with the relative paucity of Sasanian material culture in this sector, suggests a definitive spatial shift of the urban focus from the Apadana to the Ville Royale during the Sasanian era. Furthermore, Sasanian architectural remains (indicated in orange) documented along the southern fringes of the site indicate a restricted yet contiguous horizontal expansion in this direction. Conversely, the absence of dense Sasanian occupation within the Ville des Artisans (Artisans' City) suggests either a functional reconfiguration of this sector or a substantial decline in its prominence throughout the period.




**Map 2: Location of artifacts from the Sasanian period discovered during archaeological excavations, plotted on the map of Shush drawn by Keller Hardy Guilbert, with modifications made by the authors (Hardy Guilbert, 2013: 262).**

The material record from Level IV of the Ville Royale at Susa—most notably extensive structural destruction alongside emergency intramural burials within domestic units—attests to an acute rupture in civic life, an episode that Ghirshman attributed directly to the punitive campaign of Shapur II. Nevertheless, numismatic evidence substantially challenges this catastrophic model; the coin hoards recovered from Susa include issues dating to late Sasanian sovereigns, from Khosrow I and Khosrow II through Yazdegerd III, thereby confirming the

persistence of monetized transactions and economic vitality well into the twilight of the Sasanian state.

Furthermore, other archaeological datasets remain irreconcilable with the hypothesis of total urban abandonment in the fourth century CE. The assemblage of Sasanian clay sealings (bullae) preserving administrative and clerical titles—specifically identifying imperial bureaucrats and Zoroastrian priests (magi)—attests to an unbroken administrative apparatus and the enduring institutional footprint of the Sasanian state within Susa. In addition, the recovery of refined ceramic wares and prestige objects, such as silver plate, an openwork gold-mounted quartz bowl, and a marble bust of an elite individual, indicates that Susa continued to support affluent strata integrated into interregional socioeconomic networks. Diagnostic equestrian fittings and pyrotechnological evidence for specialized vitreous production further underscore both the maintenance of elite military culture and the continuity of regional manufacturing traditions. Concurrently, the juxtaposition of Christian symbols with Zoroastrian administrative sphragistics illustrates persistent confessional pluralism and civic complexity.

Synthesized as a whole, these convergent lines of evidence demonstrate that the destruction horizon documented in Level IV reflects an acute, localized crisis rather than the definitive terminus of Sasanian Susa. Multifaceted archaeological data, anchored particularly by numismatic hoards and administrative sealings, confirm the sustained continuation of settlement, bureaucratic governance, and socioeconomic vitality until the final decades of the Sasanian era.

**3. Discussion**

The integrated examination of textual sources and archaeological datasets demonstrates that the trajectory of Susa during the Sasanian era cannot be subsumed under a simplistic paradigm of abrupt cataclysm followed by terminal abandonment. Instead, the settlement traversed an intricate developmental arc marked by institutional resilience, structural recalibration, and phases of localized crisis. Historiographical and hagiographical narratives—especially those focused on the reign of Shapur II—heavily accent widespread ruin and religious repression, framing the monarch's intervention in terms of punitive annihilation. However, these accounts reflect distinct confessional agendas, martyrological topoi, and rhetorical conventions that inherently exaggerate the finality of imperial retribution. This historiographical tendency underscores the methodological imperative of systematic source criticism (Quellenkritik) and the sustained corroboration of literary testimony against independent material evidence.

While the stratigraphic record of Level IV in the Ville Royale unambiguously attests to an acute fourth-century CE disturbance horizon, projecting this spatially circumscribed phenomenon across the entirety of Susa constitutes an unwarranted interpretive leap, particularly given that early excavation campaigns frequently stripped upper layers without adequate stratigraphic controls. In sharp contrast to assumptions of total depopulation, the numismatic record provides compelling evidence of systemic continuity. The coin hoards recovered in 1931–1932 and 1976, spanning from the reign of Khosrow I through Yazdegerd III, establish that Susa remained firmly

embedded within the imperial monetary economy until the very close of the Sasanian period. Even setting aside the debate over an active mint at Susa itself, the high density of currency and the wide spectrum of represented mint marks reflect sustained commercial integration and liquidity, demonstrating robust economic function long after the fourth-century crisis.

At a macro-historical scale, the gradual recalibration of Susa's regional standing must be contextualized within the broader spatial planning of the Sasanian court and the administrative reordering of Khuzistan. The establishment of planned imperial centers such as Weh-Andiyōk-Šābuhr (Gundeshapur), Ērān-Xwarrah-Šābuhr, and Ērān-šahr-Šābuhr (Eyvān-e Karkheh) progressively decentralized administrative and fiscal authority away from older regional nodes. Through this spatial restructuring, Susa relinquished its ancient regional hegemony; nonetheless, this functional shift represented an institutional reconfiguration within the imperial hierarchy rather than the complete extinction of its urban and socioeconomic life.

**4. Conclusion**

At the dawn of the Sasanian period, Susa functioned as an entrenched stronghold aligned with the Arsacid dynasty. Consequently, in the wake of Ardashir I's decisive victory over Artabanus IV, the city incurred deep imperial suspicion and severe retribution from the nascent Sasanian state. Under Shapur I, however, Susa underwent partial restoration to mitigate the consequences of its initial subjugation. The deportation and resettlement of Antiochene artisans across Khuzistan—specifically documented in centers such as Susa and Shushtar by both classical and Syriac chronicles—reflect deliberate royal measures to harness specialized labor and stimulate regional productivity. These initiatives demonstrate that Susa retained an active, functional role within the administrative and economic infrastructure of the third-century Sasanian Empire.

Although the settlement experienced a profound rupture during the fourth century CE—stratigraphically attested in Level IV of the Ville Royale by pervasive structural collapse and emergency intramural interments typically associated with the punitive campaign of Shapur II—numismatic datasets firmly substantiate the preservation of urban life, commercial circulation, and administrative oversight well into the late Sasanian era. A critical reassessment of the historiographical corpus reveals that narratives proclaiming the total annihilation of the city were shaped by rhetorical topoi and confessional framing, diverging markedly from documented material realities. Accordingly, the recalibration of Susa's status is best understood as a protracted structural transformation impelled by imperial centralization, the development of newly founded royal foundations, and the geographic redistribution of regional administrative nodes. While Susa forfeited its ancient political preeminence, it nonetheless persevered as an active civic, ecclesiastical, and economic center until the eve of the Islamic conquest.

In conclusion, this inquiry demonstrates the imperative for a rigorous, critical reinterpretation of Susa's archaeological record and warns against broad generalizations derived from localized excavation trenches. The methodological shortcomings of early field campaigns and the widespread loss of late stratigraphic horizons make fresh, modern stratigraphic excavations indispensable for

achieving a comprehensive understanding of Susa's urban trajectory and functional significance within the Sasanian imperial system.

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The authors confirm adherence to standard ethical guidelines for academic publishing. This article is derived from the master's thesis of the first author, who served as the primary researcher and drafted the manuscript. The research design, data analysis, and manuscript preparation were carried out under the supervision of the second author (thesis supervisor) and the co-direction of the third author (thesis advisor), both of whom contributed substantially to the execution of the study and the critical revision of the final paper.

**Conflict of Interest**

The authors declare that there is no conflict of interest regarding the authorship and publication of this article.

**Endnotes**

1. In 313 CE, Roman Emperors Constantine and Licinius issued the Edict of Milan, which granted religious tolerance and restored confiscated property to Christians throughout the empire. Constantine's subsequent patronage of Christianity and personal identification as a protector of Christians established an ideological tension with the Sasanian state regarding the loyalties of Persian Christian subjects.
2. Jean-Maurice Fiey (1914–1995) was a French priest and ecclesiastical historian.
3. Libanius, Epistulae 331 (To Aristaenetus). This correspondence confirms that negotiations between the Roman envoy Spectatus and Shapur II were convened directly at Susa.
4. For more details, see Ghasemipour 2021: 97–122.

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# بررسی تطبیقی جایگاه سیاسی شهر شوش در دورهٔ ساسانی (اوج و افول) براساس منابع مکتوب و شواهد باستان‌شناسی


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**چکیده**

شهر شوش به‌عنوان یکی از کهن‌ترین مراکز شهری ایران، در دورهٔ ساسانی با فراز و فرودهای سیاسی، اقتصادی و اجتماعی قابل‌توجهی روبه‌رو بوده است. اگرچه در پژوهش‌های تاریخی، حملهٔ شاپور دوم به شوش اغلب به‌عنوان نقطهٔ پایان حیات این شهر تلقی شده، داده‌های باستان‌شناسی تصویر پیچیده‌تر و پویاتری از وضعیت شوش در این دوره ارائه می‌دهند. پژوهش حاضر باهدف بررسی عوامل اوج و افول شهر شوش در دورهٔ ساسانی و تحلیل منابع نوشتاری و مدارک باستان‌شناسی انجام شده است. پرسش اصلی این پژوهش آن است که، چه عواملی موجب رونق و سپس کاهش جایگاه شوش در دورهٔ ساسانی شده‌اند و شواهد مادی چگونه این تحولات را بازتاب می‌دهند. فرضیهٔ پژوهش بر این استوار است که، رونق نسبی شوش در سده‌های نخست ساسانی، به‌ویژه در دورهٔ شاپور اول، در پی انتقال صنعتگران انطاکیه و بازسازی‌های شهری رخ‌داده است و افول تدریجی آن نَه نتیجهٔ یک تخریب ناگهانی، بلکه حاصل سیاست تمرکزگرایانهٔ دولت ساسانی، توسعهٔ شهرهای تازه‌تأسیس نظیر گندی‌شاپور و ایران‌خورهٔ شاپور، تغییرات جمعیتی و محدودیت‌های سیاسی-مذهبی بوده است. روش پژوهش توصیفی-تحلیلی و مقایسه‌ای با رویکرد تاریخی است. داده‌ها برپایهٔ مدارک اسنادی صدر اسلام و تلفیق آن با بررسی یافته‌های حاصل از کاوش‌های باستان‌شناسی شوش، شامل شواهد معماری، گنجینه‌های سکه، گل‌مهرها، سفال‌ها، نقاشی‌های دیواری، آثار فلزی و شیشه‌ای تحلیل شده‌اند. نتایج پژوهش نشان می‌دهد که هرچند شوش در قرن چهارم میلادی با بحرانی جدی مواجه شد، شواهد باستان‌شناسی از تداوم سکونت، فعالیت اقتصادی و حیات شهری این شهر تا اواخر دورهٔ ساسانی حکایت دارند و افول شوش را باید فرآیندی تدریجی و ساختاری نَه فروپاشی ناگهانی دانست.



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## Unraveling "Aḥmad"; Meaning and Function of a Recurring Inscription on Samanid Slip-painted Pottery

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**Abstract**

Samanid slip-painted ceramics represent some of the most significant examples of the conjunction of text and object in Islamic art. In these works, Arabic inscriptions, primarily featuring ethical and sapiential themes, function not merely as decorative elements but as integral components of the vessel's semantic structure. Despite numerous studies on the inscriptions of these ceramics, the repeated appearance of the word Aḥmad at the center of certain groups of these wares continues to be a subject of interpretative debate. Previous research, lacking consensus, has variously identified this word as a personal name, a potter's signature, or a benedictory or auspicious phrase, yet without offering a systematic and simultaneous analysis of its placement, the themes of encircling inscriptions, and their formal characteristics. This article, focusing on a collection of ceramics inscribed with Aḥmad, re-examines the meaning and function of this word on these wares. It employs a semantic analysis of the encircling inscriptions, a paleographic examination of the script, and a comparison with the tradition of potter's signature (Raqam) in Islamic ceramics. The findings indicate that these ceramics exhibit a tendency towards a limited and repetitive set of themes and are formally restricted to approximately two distinct styles of Kufic script. These structural commonalities, along with supplementary evidence from inscriptions featuring nisba (genealogical attributions) on similar wares, strengthen the possibility that this group is linked to a small workshop or a network of familial production associated with an individual named Aḥmad. Consequently, Aḥmad functioned as an identity marker, subtly connecting the maker's individuality with workshop identity. It simultaneously evoked layers of spiritual or ethical associations linked to this name in the contemporary viewer's mind.

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## 1. Introduction

Within scholarship on the epigraphy of Islamic-period ceramics, slip-painted wares—sometimes also referred to as "Samanid Epigraphic Ware"—occupy a distinctive position and rank among the most prominent examples of the interrelation between text and object in Islamic art. The inscriptions on these works, owing to their visual and semantic characteristics, have consistently attracted scholarly attention. Executed exclusively in Arabic, in Kufic script, and most often in a dark pigment on a light,[1] relatively uncluttered ground, these inscriptions convey a range of themes, including Arabic proverbs and maxims as well as benedictory formulas. The third and fourth centuries AH, the period when production of these ceramics appears to have reached its height, seem to present a paradoxical situation: while Arabic script and language enjoyed broad and official use across Islamic lands, semi-independent dynasties such as the Samanids, characterized by Iranian cultural orientations, were emerging, and Persian, drawing on a rich repository of indigenous counsel and wisdom literature, was widely current; nevertheless, the inscribed ceramics of this period are not only written exclusively in Arabic, but in terms of content also draw largely on Arabic ethical and sapiential traditions (see: Volov, 1966: 107, 108; Pancaroğlu, 2002: 65; Hillenbrand, 2015: 57–58).

Despite the wide distribution of such wares -from Greater Khurasan, Transoxiana, and Gurgan to Sistan and Kerman (Ataie *et al.,* 2012: 80–82)- our knowledge of their production system, workshops, and artisans remains limited. The scarcity of excavations at production sites for this category of ceramics, together with the very small number of surviving potters' signatures, are among the principal reasons for this uncertainty. Among the diverse inscriptions found on these wares, the word Aḥmad, which repeatedly appears on ceramics attributed to Nīshāpūr, raises questions about its nature and function. The word is often placed alone, as an independent element at the center of bowls and plates, whereas other inscriptions are written in a circular band along the inner rim of the vessel.

A potter's signature on Islamic ceramics is not in itself a rare phenomenon, and numerous examples of potters' signatures survive from different periods of Islamic ceramic production. Yet, contrary to common practice in Islamic material culture, the name Aḥmad on Samanid ceramics is never accompanied by a term such as ʿamal (work of), which signals manufacture and would serve as an explicit marker of a potter's signature (Watson, 2004: 211). This circumstance has led some scholars to interpret the word not as a proper name or a potter's signature, but rather as a descriptive expression derived from the superlative Aḥmad, in the sense of "most praiseworthy" (see: below for a detailed discussion and references). The absence of a systematic analysis that simultaneously considers the written form, placement, and thematic context of this word has left its nature and function disputed. The corpus examined in this study consists of 36 slip-painted ceramic vessels: 34 bearing the inscription Aḥmad and two bearing related inscriptions, namely ʿAlī ibn Aḥmad and bin Aḥmad. The corpus was compiled from published literature and online museum and collection databases and comprises objects in museum collections, auction catalogues, and documented private collections, most of which are attributed to Nishapur (see:

Table 1). Focusing on this corpus, the present study seeks to examine the nature and function of this word by 1) analyzing the semantic context of the encircling inscriptions; 2) conducting a formal and paleographic analysis of the script; 3) examining its compositional position within the vessel's decorative structure; and 4) comparing it with documented examples of potters' signatures in other Islamic works, in order to clarify its place within the production system and the epigraphic culture of slip-painted ceramics.

**2. The Meaning and Function of the Word Aḥmad: A Critical Review of Previous Scholarship**

The word Aḥmad, derived from the root ḥ m d, appears in lexicographical sources both as a proper name and in the sense of praise and commendation (Ibn Manẓūr, 1404: 155–158, s.v. ḥ m d). Morphologically, the word is formed in the elative pattern (afʿal al tafḍīl) and may have two possible meanings: "more/most praised," derived from maḥmūd, or "more/most praising," derived from ḥāmid. Although, according to the analogical rules of the Grammarians of Baṣra, the second interpretation is structurally more consistent, a number of lexicographers and scholars of religion, setting aside strictly grammatical considerations, have preferred the first meaning, namely "most praised." By contrast, some commentators, citing a Prophetic tradition stating that on the Day of Resurrection praises will be revealed to the Prophet that had never before been revealed to anyone and that with those praises he will praise his Lord, have regarded the interpretation "most praising" as preferable (Pakatchi, 2020).

The word Aḥmad appears on numerous slip-painted ceramics, written as an isolated element at the center of the vessels. In most examples, Arabic inscriptions encircle the inner rim of the vessel, enclosing the word Aḥmad, while the space between the central inscription and the encircling band is typically left empty and undecorated (Figs. 1 & 2). Only rarely does the word Aḥmad appear alone in the middle of the vessel without any accompanying inscription along the rim (see: Tab. 1, no.34, and perhaps no.33).



**Fig. 1: Slip- painted dish, The Khalili Collection (Grube, 1994: No. 95).**



**Fig. 2: Slip- painted dish, Doha, Museum of Islamic Art (Hillenbrand, 2015: Fig. 4.3).**

Various interpretations have been proposed by scholars concerning the nature and function of the word Aḥmad. Krachkovskaya (1955: 51) was the first to suggest possible explanations for its function: she proposed that Aḥmad might be either the name of the potter or the name of the patron or owner of the vessel. She notes that Aḥmad was a common personal name at the time and points out that at the end of the third century AH / beginning of the tenth century CE the ruler of Samarqand also bore this name (295–301 AH / 907–914 CE), thereby raising the possibility of a connection with Aḥmad b. Ismāʿīl, the third Samanid amir.

Bolshakov[2] (1966: 58) reports an oral communication from D. Rice,[3] who regarded the word Aḥmad as the potter's name, though Bolshakov himself neither explicitly confirms nor rejects this view. He observes that the placement of the word at the center of the base on many Nishapur ceramics has led to its interpretation as the potter's signature. Yet, as Watson has noted, the word is never accompanied by verbs such as ʿamal (work of), which would indicate "making" (Watson, 2004: 211).

In contrast, Wilkinson firmly argued that the word Aḥmad should not be regarded as the potter's name. Noting its frequency and popularity on Nishapur ceramics, he suggested that it "can almost be regarded as a sign of Nishapur manufacture," much as the word barakah appears as a popular and recurring term on Afrasiyab (Samarqand) ceramics (Wilkinson, 1961: 131; 1973, 94; Wilkinson, 1979: 121). On this basis he initially interpreted the term in the sense of "may he do that which is praiseworthy" (Wilkinson, 1973: 94, 99), but later proposed the meaning "Thanks be" (Wilkinson, 1979: 121). Wilkinson's interpretation, however, lacks lexical precision. The word Aḥmad does not in fact carry the meaning suggested by him; rather, its lexical sense is "more/most praiseworthy". Even with this meaning, however, the reason for its placement at the decorative center of the vessel remains unclear. Unlike words such as barakah (blessing) or yumn (good fortune), Aḥmad does not intrinsically convey benedictory or auspicious connotations, nor does it mean "thanks" or other supplicatory expressions proposed by Wilkinson.[4] In both

grammatical category and semantic field, therefore, the word Aḥmad differs fundamentally from terms such as barakah and yumn.

Ghouchani, who assembled the largest corpus of examples bearing the inscription Aḥmad, identified the word in all fifteen cases as the name of the potter (Ghouchani, 1986: nos. 40, 44, 65, 81, 90, 98, 99, 104, 106, 108, 111, 114, 117, 120, 121). Ettinghausen (1955: 123) likewise showed a tendency to interpret Aḥmad as a signature. Hillenbrand (2015: 62), however, adopting a more cautious position and drawing on the views of earlier scholars, writes:

"It is natural to assume that this is the name of the craftsman, though since this is usually unaccompanied by the standard formula ʿamal or its variants, it may not in fact be a signature at all. It could be interpreted to mean 'most commendable'; and of course in that event it could be a pun with the additional meaning of Aḥmad as the name of the potter."

Ernst J. Grube (1994: 86) likewise suggests that the word might best be understood with reference to the triliteral root ḥā'- mim- dāl, from which numerous words and expressions are derived, such as ḥamīd (praiseworthy, laudable), the best known of which is al ḥamdu li llāh (praise be to God). Accordingly, the inscription Aḥmad on these bowls might allude to this concept or simply mean "more laudable" or "more commendable". Nevertheless, he considers one example in the Khalili Collection to support the interpretation of the word as a signature.

In a different interpretation, Aanavi (1969: 77–78) -referring to the Muslim science of numbers- notes that the words Aḥmad and Aḥad were sometimes used in auspicious word combinations and in numerical magic squares. The difference between the two words lies only in the letter mīm,[5] whose numerical value of forty carried extended mystical connotations. Moreover, while Aḥmad shares a root consonant with the name Muḥammad, the word Aḥad refers to the notion of divine unity ("One" or "Oneness") associated with Allah. On this basis, Aanavi suggests that the appearance of Aḥmad on some Samanid ceramics may have been connected with symbolic or mystical associations. Yet this interpretation relies less on contemporary textual or material evidence than on transhistorical letter and number-based associations, and its historical evaluation within the context of Samanid ceramics therefore remains problematic.

The foregoing survey shows that earlier interpretations of the word Aḥmad largely fall into four broad approaches. The first regards the word as the potter's name and signature, interpreting its placement at the center of vessels as an indication of the maker's individual identity. The second interprets Aḥmad as an elative adjective meaning "more praiseworthy," or a closely related notion, and attributes to it a function akin to blessing or auspiciousness. A third approach proposes the possibility of a dual usage, whereby the word could function simultaneously both as a proper name and as an elative adjective. A fourth interpretation suggests that the word may carry mystical or symbolic associations.

Nevertheless, most of these interpretations rely primarily on lexical analysis, without systematically examining formal evidence, stylistic features of the script, the spatial placement of the inscription, or the content of the encircling epigraphic texts. This lack of structural analysis and systematic comparison of the material evidence has meant that some conclusions remain closer

to conjectural hypotheses than to demonstrable arguments. Any assessment of the function of the word Aḥmad, therefore, cannot rest solely on semantic considerations but must take multiple forms of evidence into account. In the following sections of this study, these hypotheses will be critically evaluated in light of the material evidence provided by Samanid ceramics in order to clarify more precisely the function of the word Aḥmad within the ceramic tradition of the period.

**3. Themes of the Inscriptions**

In a preliminary survey of the content of inscriptions on Samanid ceramics, Pancaroğlu classifies these inscriptions into two general categories: first, benedictory inscriptions expressions of good wishes, and second, proverbs. She further subdivides the proverbs, on the basis of their themes, into three principal subgroups -generosity, virtuous conduct, and knowledge- each of which is in turn divided into more specific subcategories (Pancaroğlu, 2002). The distribution of these themes in the inscriptions of the Aḥmad specimens is presented in Table 2.

Although certain criticisms may be directed at her classification, it nevertheless provides a useful and reliable preliminary framework for the present analysis. Examination of the 34 identified examples in which the inscription Aḥmad is placed at the center yields meaningful results. Among the benedictory formulas commonly encountered in the inscriptions of Samanid ceramics, only the structure "barakah wa yumn wa surūr wa saʿādah …" recurs on the Aḥmad wares, while the other diverse forms of benedictory expressions that are abundant on Samanid ceramics are conspicuously absent from this group (Tab. 1, nos. 1–6).

Within the group of proverbs, the highest frequency is associated with themes related to wealth and generosity/greed (17 examples; Tab. 1, nos. 7–23). This is followed, at a considerable distance, by the theme of knowledge (4 examples; Tab. 1, nos. 24–27). In the category of Virtuous Conduct, only one ware pertains to loyalty, one to patience, and one to the qualities of the noble man (Tab. 1, nos. 28–30); the other themes belonging to this group are absent from the Aḥmad ceramics. This is notable given that virtues of moral conduct constitute some of the most frequent inscriptional themes on Samanid ceramics (see: Pancaroğlu, 2002: 61). These observations indicate that the inscriptions on the Aḥmad ceramics are predominantly centered on the theme of generosity and the nature of wealth, and secondarily on Knowledge. The concentration of themes around generosity and Knowledge appears neither accidental nor simply reflective of the broader Samanid pattern; rather, it represents a "distinctive selection" that may reflect the intellectual inclinations and aesthetic preferences of the potter or the workshop supervisor responsible for producing these objects.

Although most of the themes found in the inscriptions of Nishapur ceramics are likewise related to generosity, knowledge, and the avoidance of greed (Ghouchani, 2001: 17), it should be noted that even if, following Wilkinson's suggestion, the Aḥmad ceramics are attributed to workshops in Nishapur[6] (Wilkinson, 1973: 94), the inscriptions of the Aḥmad group - apart from a few exceptions- remain confined within this limited thematic range, while other themes found on Nishapur ceramics in particular, and on Samanid ceramics in general, are almost entirely absent

(Tab. 2. and Chart 1). Moreover, the inscriptions on the Aḥmad ceramics are not only restricted in their thematic scope but also display no diversity in the selection of phrases. In effect, they consist only of the limited and repeated use of a small number of Arabic proverbial and wisdom statements.[7] This "deliberate restriction of statements" appears not to indicate a poverty of themes but rather to be the likely result of the stabilization of a limited set of inscriptional formulas within the framework of a workshop tradition.

**4. Script and Composition of the Inscriptions**

A study of the types of Kufic script used on these ceramics likewise reveals clear similarities among these wares. In general, only two varieties of Kufic script appear on the Aḥmad ceramics. The first variety (Fig. 1 and Tab. 1, nos. 1-12) is Kufic with triangular terminals and bifurcated alifs (in two forms, Khafī and Jalī) (Masoumzadeh, 2015: 109–110; Jabbari and Masoumzadeh, 2011: 35–36). The Jalī type -whose letters are thicker and whose vertical strokes curve toward the left- appears in the benedictory inscriptions "barakah wa yumn …" (Tab. 1, nos. 1–6). The Khafī type, whose letters have thin bodies and lack curvature, occurs on vessels bearing the text "al rizqu maqsūm wa l ḥirṣu …" (Tab. 1, nos. 7–10) as well as on two vessels decorated with the inscription "man ayqana bi l khalaf jāda bi l ʿaṭiyyah" (Tab. 1, nos. 11–12), making a total of twelve wares. Notably, this type of script, among Samanid ceramics -so far as the author's survey indicates-appears predominantly on pieces bearing the Aḥmad, while examples executed in a similar script but lacking the central word Aḥmad are very limited.[8] In all of these specimens except one vessel[9] (Tab. 1, no. 6), the inscriptions are written in a counterclockwise direction, with the alifs oriented toward the rim of the vessel.

In the second group (Fig. 2; and Tab. 1, nos. 13–34), a more cursive Kufic written with a brush and closer to a manuscript hand is employed in a broadly similar manner (22 examples in total). With the exception of a few cases[10] (Tab. 1, nos. 28–30), the remaining inscriptions are written clockwise, and their alifs are oriented toward the center of the vessel. In this type of script on Samanid ceramics, the stroking is much freer: verticals tend to become diagonal, curving lines appear with greater frequency, and a thick-to-thin graduation takes place within the line (Volov, 1966: 116).

On the basis of the foregoing evidence, the ceramics known as the Aḥmad group not only display thematic convergence in their inscriptions but also employ, in terms of script, almost exclusively two varieties of Kufic. These similarities strengthen the likelihood that they are associated with a single artist or workshop comprising a limited group of craftsmen.

Another important point concerns the marks employed by Samanid potters to guide the reading of inscriptions, which usually indicate the beginning or the end of the text. On Samanid ceramics these marks display a wide range of forms, from simple shapes such as a single dot or an attenuated oval to more complex motifs such as palmettes, triangles whose sloping sides are lobed, or bell like forms (Hillenbrand, 2015: 67).

In contrast to this broad variety on Samanid ceramics in general, however, the Aḥmad ceramics

also display visual consistency and a distinct stylistic tendency in their system of marking. In most of these examples—with the exception of those featuring bifurcated alifs, which entirely lack beginning and ending marks—bell like forms (lobed triangles ranging from simple to complex) are the most frequent, followed by oval shapes resembling the unripe fruit of a pomegranate (Tab. 3). This restricted range of marking forms, together with the other inscriptional uniformities observed within this group, may indicate the stabilization of specific patterns within a relatively limited workshop milieu.

**5. Strong Evidence for a Potter's Signature**

Signatures inscribed on Islamic ceramics that bear the name of the potter or workshop are of particular significance for the study of ceramic production, as they represent nearly the only documented evidence relating to potters and remain essential for reconstructing their careers. In most cases, the signature is placed in the foot ring or on the bottom of a vessel, although in certain instances it appears in a more prominent place (Blair, 1998: 148). In the early Islamic period, the recording of a potter's Raqam (signature) was not unknown, yet it was by no means a widespread practice (Jenkins, 1983: 13). The earliest evidence in this regard dates to the late first and second centuries AH at Jerash in Jordan (Grube, 1994: 11; Watson, 2004: 104, Cat. Aa.14; Blair, 1998: 150). Although signatures remained relatively rare in the third and fourth centuries AH, signed vessels occur comparatively more frequently among Abbasid blue and white ceramics—a phenomenon whose underlying causes have yet to be fully explained (Grube, 1994: 43). By contrast, among the contemporary Samanid slip-painted wares, the potter's name is explicitly recorded on only a small number of vessels. For instance, on a cup-bowl preserved in the Khalili Collection the potter's name appears explicitly together with the word "work of": ʿamal al Ḥusayn ibn ʿAli ibn ʿUmar ibn … (?) Junābīdī. Later in the inscription the phrase ʿamila laka (made for you) is also included. Its phrasing, placement within the interior of the cup, and the form of the inscription—which is more a scribble than calligraphy—all support the interpretation of this text as a signature (Grube, 1994: 86, no. 77).

Although it has been emphasized that the name Aḥmad never appears together with a term denoting "making", two vessels preserved respectively in the al Sabah Collection (Fig. 3) and the Khalili Collection (Fig. 4) provide important indications of a signature and suggest the possible existence of at least one potter named ibn Aḥmad. The first vessel, in the al Sabah Collection (Watson, 2004: 211, cat. Ga.6), is a bowl bearing light inscriptions on a dark ground—the reverse of the color scheme seen on the other vessels. The word Aḥmad, identical in form to that on the other bowls, is written alone at the center of the vessel. At the end of the rim inscription containing the phrase Aḥsin i-ṣabra wa khudhi l-ʿulā, however, the words ʿamal bin ("the work of the son of") probably appear, which may be completed by the word Aḥmad placed in the center of the bowl, yielding the phrase ʿamal bin Aḥmad. The vessel may therefore have been produced by the son of the well-known potter Aḥmad (Tab. 1, no. 35). In this instance, the potter retains the central placement of the name Aḥmad while transferring the remainder of the signature to the rim. This reading is particularly significant given the vessel's close adherence to the established

stylistic and compositional scheme of the Aḥmad group. In this context, the word ʿamal supports the interpretation of Aḥmad as a personal name within a signature formula, while bn further suggests a filial relationship. The vessel may thus represent the next generation within the same workshop tradition; indeed, it is difficult to account for such a precise replication of this distinctive arrangement if the inscription referred to the son of another potter named Aḥmad and no form of direct workshop continuity were assumed.

On another bowl in the Khalili Collection (Grube, 1994: 102, no. 101), the name of this potter appears clearly at the end of the inscription between two decorative finials: ʿAlī ibn Aḥmad. Grube regards this vessel as clear evidence that Aḥmad should be understood as a personal name and that ʿAlī was his son; he therefore suggests the possibility that both Aḥmad and his son ʿAlī were potters (Grube, 1994: 102). The rim inscription on this bowl, which emphasizes the transience of worldly wealth, employs a phrase that also occurs on some other vessels of this group (Tab. 1, no. 36; cf. nos. 17 and 18). This textual correspondence, coupled with a calligraphic style that closely resembles that of the Aḥmad group (with a slightly thinner stroke), further reinforces Grube's interpretation of a direct filial relationship and workshop continuity.

In addition to genealogical evidence, the epigraphy of the bowl in the al-Sabah Collection offers a significant point of comparison (Fig. 3). The ornamental Kufic script employed by bin Aḥmad on this piece clearly differs from the simpler inscriptions attributed to Aḥmad. Here, the script has not only departed from its initial simplicity but has also achieved a level of visual complexity through the extensive use of superimposed ornaments. This aligns with Lisa Volov's analysis (Volov, 1966: 124), which identifies it as characteristic of the "third degree", the most complex variant of plaited Kufic stylization on Samanid ceramics. Indeed, the presence of this advanced decorative style, in comparison with other inscriptions in the Aḥmad group, may indicate a distinct choice made by bin Aḥmad, the next generation of potters in this workshop, whether working contemporaneously with Aḥmad or, possibly, after him.



**Fig. 3: Slip- painted dish, al-Sabah collection (Watson, 2004: 211, cat. Ga.6)**



**Fig. 4: Slip- painted dish, The Khalili Collectio (Grube, 1994: No. 101).**

These findings lend support to the hypothesis that Aḥmad functioned as a potter and perhaps the head of a family workshop, particularly in light of the occurrence of the name ʿAlī ibn Aḥmad/ bin Aḥmad on the ceramics discussed above. Within this structure, Aḥmad was not an isolated potter but may have been the focal point of a workshop lineage in which the tradition of epigraphy was reproduced on the basis of a set of fixed and limited formulas. This evidence suggests that the term Aḥmad on Samanid vessels, irrespective of the absence of verbs denoting "making," may have functioned not only as a personal signature but also as a "workshop signature."

However, the fundamental distinction between the signature on Aḥmad's ceramics and that on the single signed vessel attributed to al-Junābīdhi lies in its epigraphic morphology. The inscription on al-Junābīdhi's piece is rendered in a loose and unpretentious manuscript hand (Grube, 1994: 86), whereas the word Aḥmad on the Samanid vessels adheres to a standardized, precise, and reproducible calligraphic practice. This formal contrast—from the placement of the signature in the center of the vessel to the quality of the script's execution—clearly indicates that the "signature" in Aḥmad's works, beyond registering personal identity, also functioned as a mark with consistent visual standards. Some scholars, relying on this central placement, have argued against its function as a signature. However, this view contradicts the prevailing tradition in contemporary Abbasid blue-and-white pottery. In those wares, the potter's name, often accompanied by the verb ʿamal ("work of"), frequently appears in the center of the vessel and is undoubtedly recognized as a signature (cf. Grube, 1994: no. 32; Fehervari, 2000: no. 21; Ghouchani, 1986: nos. 58, 88, 100, 105). Therefore, the central placement of the name Aḥmad on Samanid ceramics not only fails to negate its function as a signature but may also support the significance of this name within the framework of individual or workshop identity.

To better understand the nature of the name Aḥmad, it is necessary to consider the function of the signature (raqam) in Islamic pottery production. In Islamic ceramics, it is not always clear

whether the name inscribed on a vessel belongs to an individual potter or to a workshop (Blair, 1998: 148–149). In this tradition, a signature is not necessarily merely a reflection of the artist's individuality; rather, it may function simultaneously as a personal identity and a workshop mark. In the absence of contemporaneous documentary information on this issue, it is useful to consider the role of signatures in other, better-documented periods of Islamic art as comparative evidence. In this regard, Marilyn Jenkins's studies on Fatimid pottery, particularly her analysis of works attributed to the renowned potter Muslim ibn al-Dahhan, are especially significant (Jenkins, 1968). By examining the stylistic characteristics of twenty signed pieces by Muslim, as well as stylistically related examples, Jenkins concluded that Muslim, as a skilled and prominent potter who was permitted to dedicate a bowl to someone closely associated with the Caliph, also signed works made by other potters. He may therefore have been the supervisor and master of an important workshop (Jenkins, 1968: 364). A similar situation can be observed in Mamluk ceramics, particularly in works signed by Ghaybi, the most renowned Egyptian potter of the fifteenth century. In these cases, the signature functions not only as the potter's personal identifier, but also as an indicator of workshop management and the production process. Examination of ceramics signed by Ghaybi suggests that the diversity of styles and motifs in these works was most likely the product of a workshop with multiple artisans, rather than simply the output of a single artist (Watson, 2004: 418).

However, comparing the position of Aḥmad's workshop with these later models reveals important nuances and distinctions. Unlike the large Fatimid or Mamluk workshops, where stylistic diversity reflects collective and semi-industrial production, the works attributed to Aḥmad display a notable degree of stylistic and thematic consistency. The uniformity of the epigraphic morphology and the repeated use of a limited set of aphoristic statements suggest that, although Aḥmad may also have functioned as a workshop mark, the identity of this workshop remained strongly governed by an individual and systematic standard.

Although Krachkovskaya primarily considers the inscriptions on Samanid pottery to be predominantly secular and non-religious (Krachkovskaya, 1955: 55), the existence of examples with phrases derived from the Qur'an, such as al-Mulk u li-Allah (sovereignty belongs to God) or more fully al-Mulk u li-Allah al-Wāḥid al-Qahhār (sovereignty belongs to God, the one, the almighty) on Samanid ceramics (Tab. 1, nos. 30–32; see also: Ghouchani, 1986: nos. 103, 112, 130, 134; Ventrone, 1974: 225; Grube, 1994: no. 103; Hillenbrand, 2015: Fig. 4.20) as well as scholarly works that have traced the origins of many of these phrases and proverbs to prophetic traditions or the teachings of Imam Ali (Ghouchani, 2001; Ghouchani, 1986: 9; Bolshakov, 1969: 46–47), cast serious doubt on this assessment. Accordingly, given that Aḥmad is one of the names of the Prophet of Islam, the possibility of a form of religious association cannot be entirely ruled out. As Sheila Blair also emphasizes, a certain deliberate and conscious ambiguity is employed in many Islamic inscriptions, allowing for different interpretations (Blair, 1998: 149). In the textual traditions of the Islamic world, a dual reference sometimes forms between a personal name and a sacred name or phrase, thereby intentionally blurring the distinction between them.[11] Within this

**Table 1: Corpus of Samanid Ceramics Bearing the Inscription "Aḥmad"**

| No. | Illustration | Inscription | Inscription Theme | Location / Venu Illustration Source |
|---|---|---|---|---|
| 1 |  | برکه و یمن وسرور و سعاده و سلـ[امه؟]<br>احمد | Good Wishes | The Al-Sabah Collection, Kuwait National Museum<br>Watson, 2004: 213, Cat. Ga.9 |
| 2 |  | برکه و یمن و ...؟ و سرور<br>احمد | Good Wishes | The Metropolitan Museum of Art, Inv. No. 1996.269<br>URL.1 |
| 3 |  | برکه و یمن و سرور و سعاده<br>احمد | Good Wishes | The Khalili Collection<br>Ghouchani, 1986: No. 106 |
| 4 |  | [بر]که و یمن و سرور و ... و سعا[ده]<br>احمد | Good Wishes | National Museum of Iran, Inv. No. 3972<br>Ghouchani, 1986: No. 90 |
| 5 |  | برکه و یمن و سرور و<br>احمد | Good Wishes | Bonhams, London, Lot 105<br>URL.2 |
| 6 |  | برکه و یمن وسرور و سعاده و سلا[مه]<br>احمد | Good Wishes | Christie's, London, Lot 94<br>URL.3 |
| 7 |  | الرزق مقسوم و الحرص ...؟<br>احمد | Sustenance and Greed | Hetjens Museum, Düsseldorf<br>Ghouchani, 1986: No. 44 |
| 8 |  | الرزق مقسوم و الحرص ...؟<br>احمد | Sustenance and Greed | Museum of Islamic Art in Cairo, Inv. No. 15589<br>Najafi, 1989: No. 284 |
| 9 |  | [ال]زق مقسو[م و] الحرص ...<br>احمد | Sustenance and Greed | British Museum, Inv. No. 1948,1009.1<br>URL.4 |
| 10 |  | [ال]زق مقسو[م و] الحرص...؟<br>احمد | Sustenance and Greed | Tareq Rajab Museum, Kuwait, Inv. No. CER68TSR6<br>Fehervari, 2000: 54, No. 47 |

| | | | | |
|---|---|---|---|---|
| 11 |  | من ایقن بالخلف جاد بالعطیه . برکه<br>احمد | Generosity | The Khalili Collection, Inv. No. POT762<br>Grube, 1994: No. 95 |
| 12 |  | من ایقن بالخلف جاد بالعطیه بر[که]<br>احمد | Generosity | Christie's, Live Auction 21892, Lot 30<br>URL.5 |
| 13 |  | لا الجود یُفنی الـ[مال قبل فنائه. ولا البخل فی مال ا]لشحیح یزید<br>احمد | Generosity vs. Greed | The Metropolitan Museum of Art, Inv. No. 39.40.16<br>URL.6 |
| 14 |  | لا الـ[جـ]ـود یفنی المال قـ[ـبل فنـ] ـائه و لا الـ[ـبخل فی مال الشحیح یزید]<br>احمد | Generosity vs. Greed | Current location unknown<br>Ghouchani, 1986: No. 99 |
| 15 |  | یری البخیل سبیل الـمـال واحـده ...ان الجواد یـری فی ماله سبلا<br>احمد | The Generous Man vs. the Miser | Bonhams, London, Lot 57<br>URL.7 |
| 16 |  | یری البخیل جد[یـ]ـل المال واحده ان الجواد یری فی ماله سبلا، بالیمن<br>احمد | The Generous Man vs. the Miser | Current location unknown<br>Ghouchani, 1986: No. 104 |
| 17 |  | الحمد یبقا ذخره للفتی و المال لا یبقا لارباب<br>احمد | The Nature of Wealth | Current location unknown<br>Ghouchani, 1986: No. 114 |
| 18 |  | الحمد یبقا ذخره للفتی و المال لا یبقا لارباب<br>احمد | The Nature of Wealth | The Israel Museum, Jerusalem, Inv. No . 73.51.220<br>URL.8 |
| 19 |  | اذا کان مال لا محاله ذاهب فاضله ما اورث الحمد صاحبه<br>احمد | The Nature of Wealth | National Museum of Iran, Inv. No. 3076<br>Ghouchani, 1986: No. 120 |
| 20 |  | اذا کان مال لا محاله ذاهب فاضله ما اورث الحمد صاحبه<br>احمد | The Nature of Wealth | Museum für Kunst und Gewerbe (MKG) Hamburg, Inv. No. 1959.96<br>URL.9 |

| | | | | |
|---|---|---|---|---|
| 21 |  | و ليس الفتى المعطى على اليسر وحد [ه] و<br>لكنه المعطى على العسر و اليسر<br>احمد | Generosity | Private collection, Belgium<br>Ghouchani, 1986: No. 40 |
| 22 |  | و ليس الفتى المعطى على اليسر وحده و<br>لكنه المعطى على العسر و اليسر، باليمن<br>احمد | Generosity | National Museum of Oriental Art, Rome, Inv. No. 1006<br>Ghouchani, 1986: No. 117 |
| 23 |  | ليس جود الجواد من فضل مال انما الجود<br>للمقل المواسى<br>احمد | Generosity | Current location unknown<br>Ghouchani, 1986: No. 65 |
| 24 |  | العلم اشرف الاحساب و المروه اشبک<br>الانساب<br>احمد | Knowledge | Harvard Art Museums, Inv. No .2002.50.83<br>URL.10 |
| 25 |  | العلم اشرف الاحساب و المروه اشبک<br>الانساب باليمن<br>احمد | Knowledge | The Metropolitan Museum of Art, Inv. No.1975.168<br>URL.11 |
| 26 |  | العلم اشرف الاحساب و الـ[مر]وه اشـ[بک]<br>[الانسـ]اب<br>احمد | Knowledge | Bonhams, London, Lot 96<br>URL.12 |
| 27 |  | العلم اشرف الحساب /انما الجود للمقل<br>المواسى<br>احمد | Knowledge/<br>Generosity | Boisgirard-Antonini, Paris, Lot 164<br>URL.13 |
| 28 |  | الحيله ابلغ من القدر ؟<br>والحر لايخلف، باليمن<br>احمد | The Noble Man | Boisgirard-Antonini, Paris, Lot 170<br>URL.14 |
| 29 |  | اعلم ان الحلم و القرار ... شرف العبيد و<br>الاحرار<br>احمد | Patience/<br>The Noble Man | Doha, Museum of Islamic Art, Inv. No. P0.1031.2009<br>Hillenbrand, 2015: Fig. 4.3 |
| 30 |  | المُلک لله الواحد القهار الوفا عزاز<br>احمد | Loyalty/<br>The Names of God | The Khalili Collection, Inv. No. POT808<br>Grube, 1994: No. 103 |
| 31 |  | ... ملک؟ الواحد القهار<br>احمد | The Names of God | San Antonio Museum of Art, Inv. No. 2006.6.5<br>URL.15 |

| | | | | |
|---|---|---|---|---|
| 32 |  | المُلک لله الواحد ... الواحد؟<br>احمد | The Names of God | Hegmataneh Museum Photograph by the Author, 2025 |
| 33 |  | احمد | ؟ | The Metropolitan Museum of Art, .Inv. No. 48.101.294<br>URL.16 |
| 34 |  | احمد | - | National Museum of Oriental Art, Rome, Inv. No. 5743<br>Ventrone, 1974: Fig. 2 |
| **Potteries Inscribed with *bin Aḥmad* / *ʿAlī ibn Aḥmad*** | | | | |
| 35 |  | احسن اصبر و خذ العلا. عمل بن<br>احمد | Patience | The Al-Sabah Collection, Kuwait National Museum<br>Watson, 2004: 213, Cat. Ga.6 |
| 36 |  | الحمد یبقا [ذخره] للفتی و المال لا یبقا<br>لارباب. علی بن احمد | The Nature of Wealth | The Khalili Collection, Inv. No. POT806<br>Grube, 1994: No. 101 |

**Table 2: Statistical Data on Inscription Themes (based on Pancaroğlu classification (2002) and data from the present study).**

| Theme of the Inscription | Subgroups | Number of Vessels with the Inscription *Aḥmad* | | Number of Vessels with the Inscription *bin Aḥmad / ali ibn Aḥmad* |
|---|---|---|---|---|
| | | Count within the subgroup | Total count within the theme | |
| Expressions of Good Wishes | - | - | 6 | - |
| Generosity / Wealth | The Qualities of Generosity vs. Those of Greed | 12 | 18 | - |
| | The Nature of Wealth | 4 | | 1 |
| | The Generous Man vs. the Miser | 2 | | - |
| Virtuous Conduct | Modesty | - | 3* | - |
| | Patience and Deliberation | 1 | | 1 |
| | Speech and Silence | - | | - |
| | The Noble Man | 2 | | - |
| | Loyalty and Devotion | 1 | | - |
| Knowledge | - | - | 4 | - |
| The Names of God | - | - | 3 | - |

*** The total number of vessels in the "Virtuous Conduct" category is 3. However, one vessel contains two distinct thematic subgroups (Patience and The Noble Man), resulting in 4 subgroup occurrences.**

**Table 3: Typology of Epigraphic Markers for Beginning and Ending: (1) Small Circle; (2) Annular Ellipses; (3a–d) Scalloped/ Bell-shaped Triangles, from simple to complex (Author. 2025).**

| Types of Epigraphic Markers | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | | | |
| | | a | b | c | d |
|  |  |  |  |  |  |

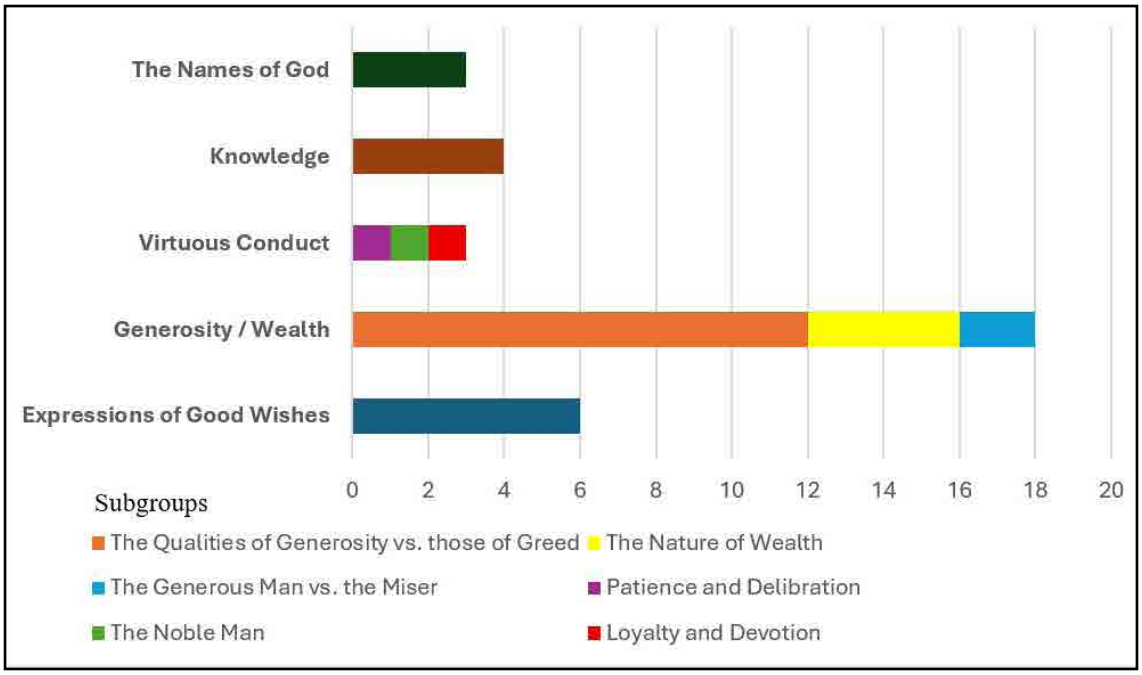



**Chart 1: Statistical distribution of inscription themes across the studied sample (categorized according to Pancaroğlu's typology and data collected in the present study).**

framework, the mention of the name Aḥmad on these ceramics could, in addition to denoting the maker's identity and workshop mark, also activate a layer of associated spiritual connotations. Therefore, it can be hypothesized that the word Aḥmad, as a polysemous sign, could have evoked the maker's name, the workshop's identity, and perhaps the spiritual or ethical values attributed to this name in the mind of the contemporary viewer.

## 6. Conclusion

An examination of the corpus of slip-painted ceramics bearing the inscription Aḥmad shows that this term cannot be explained solely through lexical semantics or by means of semantic analogy. Its precise interpretation requires simultaneous attention to the broader context and internal structure of the inscriptions, the placement of the writing within the vessel's overall composition, the type of script employed, and the tradition of signing (Raqam) in Islamic pottery. The evidence suggests that Aḥmad in this group of ceramics was not used merely as a devotional or benedictory expression. Rather, it appears to function as a deliberate, recurrent, and structurally integrated sign; a polysemous sign that is typically positioned at the center of the vessel and that follows relatively consistent patterns in both calligraphic execution and visual arrangement.

An examination of the inscriptions themselves further reveals that, in contrast to the thematic diversity of Samanid pottery more broadly, these works gravitate toward a limited set of recurring themes, primarily centered on concepts such as the nature of wealth, generosity/greed, and knowledge. Beyond the restricted semantic field, the inscriptions themselves are also strikingly repetitive in their phrasing. Such thematic uniformity and structural repetition are difficult to attribute to isolated or independent choices and instead point to the potential existence of a consistent production logic underlying these works; one that appears to have regulated both the selection of textual content and the manner of its execution.

Palaeographic analysis further reinforces this conclusion. The almost exclusive and repeated use of two variants of Kufic script, together with the consistent calligraphic ductus and the overall structure of the inscriptions, suggests that these objects emerged within a relatively uniform production tradition. This degree of formal consistency, combined with the thematic similarities, strengthens the likelihood that these ceramics were produced within a single workshop or among a small, closely connected group of potters.

Even more significant are the pieces bearing the inscriptions bin Aḥmad and ʿAlī ibn Aḥmad. These examples suggest that Aḥmad was most likely the name of an actual individual rather than a merely benedictory formula or an adjectival epithet. At the same time, the manner in which this name appears differs from the typical signatures of potters. Whereas conventional signatures are usually placed in marginal positions and rendered in relatively simple form, Aḥmad consistently appears in a central position and in a carefully executed and repetitive calligraphic form. This suggests that the name may not only have functioned as a signature but also gradually came to operate as a kind of workshop identifier.

Nevertheless, the probable structure of such a workshop cannot be fully equated with the larger and more complex workshops of the later Fatimid and Mamluk periods. In those later contexts, stylistic and decorative diversity often reflects the participation of multiple artisans working within a shared production environment. By contrast, the works associated with Aḥmad display a remarkable degree of formal and thematic coherence. If the workshop hypothesis is accepted, this coherence points rather to a relatively small and concentrated production unit, bound together by a single epigraphic tradition and strongly associated with a particular individual or central nucleus.

Taken together, the available evidence suggests that Aḥmad on Samanid ceramics should not be understood merely as a decorative or semantic element. Rather, the name appears to have operated on several levels simultaneously: it likely referred to a specific individual, while also potentially functioning as a visual and identificatory marker that conveyed workshop prestige and evoked broader layers of cultural meaning and association.

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**Conflict of Interest**

The author declares no conflict of interest.

**Endnotes**

1. The reverse of this combination -namely, light motifs and inscriptions on a colored background- was also employed on Samanid slip-painted ceramics (see: Ataie *et al.,* 2012: 77-78).

2. Bolshakov's series of articles in the journal Epigrafika Vostoka (Эпиграфика Востока) are considered among pioneering classical studies in the field of Samanid ceramic inscriptions (Bolshakov, 1958, 1963a, 1963b, 1966, 1969). In these articles, he provided analyses of Arabic inscriptions on Central Asian ceramics, including classification of themes, script style, and syntactic structure. These works remain a foundational reference point for the study of Samanid inscriptions and the identification of their thematic and epigraphic characteristics.

3. David Storm Rice

4. Unlike barakah or yumn, which are abstract and benedictory concepts, the word Aḥmad is directly connected to a specific agent or referent; it is precisely this element of personal specificity that calls Wilkinson's purely benedictory interpretation into question.

5. For examples of such mystical interpretations concerning the relationship between Aḥad, Aḥmad, and the letter mīm, see Shabistarī in the preface to Golshan-e Rāz:

«احد در میم احمد گشت ظاهر / در این دور اوّل آمد عین آخر»

"Aḥad became manifest in the mīm of Aḥmad; in this cycle, the first appeared as the very last" (Shabistarī, 1989: 67); and Shāh Niʿmatullāh Walī in his Dīvān:

«از احد احمد آشکارا شد / هم به احمد احد هویدا شد/ در شهادت احد کمر بربست / میم احمد ز غیب پیدا شد»

"From Aḥad, Aḥmad became manifest; through Aḥmad, Aḥad was revealed; In the station of testimony, Aḥad girded the waist; the mīm of Aḥmad emerged from the unseen" (Shāh Niʿmatullāh Walī, 1964: 258). These examples indicate that, as Aanavi has noted, the symbolic association between Aḥad and Aḥmad attracted attention in certain Islamic mystical and ḥurūfī traditions, although it cannot be directly applied to the context of Samanid ceramics.

6. In most other sources as well, the Aḥmad ceramics have been attributed to Nishapur; only a single ware was assigned to Samarqand by Arthur Lane, without the presentation of supporting evidence (Lane, 1947: Fig. 15A). Notably, that same example is attributed to Nishapur in the online catalogue of the British Museum (see: URL.4).

7. A statistical examination of the themes of the inscriptions on the Aḥmad ceramics indicates that only ten recurring statements are employed to express their most frequently occurring concepts, such as generosity/wealth and knowledge (see Tab. 1). This stands in contrast to ceramics attributed to Nishapur and to other Samanid wares, where the diversity of statements is considerably greater. Ghouchani has identified more than fifty distinct expressions and sentences on these ceramics (see: Ghouchani, 1986: 9–10; Ghouchani, 2001; see also: Pancaroğlu, 2002: 69–72; Ventrone, 1974).

8. A sherd discovered in the excavations at Nishapur (Wilkinson, 1973: 121, no. 40) is also written in the same script. Owing to the

fragmentary condition of the piece, however, it is not clear whether it originally bore the name Aḥmad. Yet, judging from the surviving letters, the inscription most likely read barakah wa yumn wa surūr wa saʿādah … (Wilkinson, 1973: 99, 102), a formula that is very common on the Aḥmad wares; it is therefore probable that this fragment likewise originally contained the word Aḥmad at its center.

Another bowl, executed in a similar script but without Aḥmad and bearing only the phrase barakah li ṣā[ḥibihi] is preserved in the National Museum of Iran (Ghouchani, 1986: no. 86). A further bowl with the inscription "man ayqana bi l khalaf …," executed in an identical script and style, is held in the Khalili Collection (Ghouchani, 1986: no. 102). Other comparable examples listed by Grube (1994: 98, no. 95, footnote 1) generally share only the triangular terminals of the letters, while displaying a more complex script and more elaborate decoration.

9. In this piece, which appeared at auction, the rendering of the letters in the word Aḥmad also lacks stylistic consistency. Whereas the alif is executed in a triangular bifurcated form, the dāl is written in a manner that corresponds to examples from the second group of the Aḥmad wares. This inconsistency in the execution of the letters, together with certain other details in the principal inscription of the vessel, raises doubts about the authenticity of the piece.

10. The composition, the position of the baseline, and, to some extent, the movement of the stroke in these wares differ from those of other specimens in the second group.

11. Examples of wordplay and the interweaving of a seal owner's personal name with religious phrases or sacred names are attested on Sasanian seals (Bivar, 1969: 63), as well as on later Islamic seals (see: Mousavi, 2022: 69–85; for the invocation yā Aḥmad on Qajar seals see also pp. 74, 365, 401, 411).

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# مـطالعات باسـتان‌شـنـاسی

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# واکاوی واژهٔ «احمـد»: معنـا و کارکـرد یـک کتیبـهٔ تکرارشـونده بـر سـفال‌های منقـوش گلابـه‌ای سـامانی


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**چکیده**

سفال‌های منقوشِ گلابه‌ای دورهٔ سامانی، یکی از روشن‌ترین مصادیق درهم‌تنیدگی شئ و نوشتار در هنر اسلامی به‌شمار می‌آیند؛ آثاری که در آن‌ها کتیبه‌های عربی با مضامین عمدتاً اخلاقی و حکمی، نَه صرفاً عنصری تزئینی، بلکه جزئی از ساختار معنایی ظرف هستند. باوجود پژوهش‌های متعدد دربارهٔ کتیبه‌های این سفال‌ها، تکرار واژهٔ «احمد» در مرکز گروهی از این آثار همچنان محل اختلاف تفسیری است. پژوهش‌های پیشین، بدون دستیابی به اجماع، این واژه را گاه نام شخصی، گاه امضای سفالگر و گاه عبارتی دعایی یا تبرکی دانسته‌اند، بی‌آن‌که تحلیلی نظام‌مند و هم‌زمان از جایگاه، مضامین کتیبه‌های پیرامونی و ویژگی‌های صوری آن‌ها ارائه دهند. این پژوهش با تمرکز بر مجموعه‌ای از نمونه‌های دارای کتیبهٔ «احمد» و با بهره‌گیری از تحلیل معناشناختیِ کتیبه‌های پیرامونی، بررسی پالئوگرافیکِ خط و مقایسه با سنت رقم‌گذاری در سفالگری اسلامی، به بازخوانی ماهیت و کارکرد این واژه بر این سفال‌ها می‌پردازد. نتایج این پژوهش نشان می‌دهد که این آثار از نظر مضامین به مجموعه‌ای محدود و تکرارشونده گرایش دارند و از حیث صوری نیز تقریباً به دو گونهٔ مشخص از خط کوفی محدود می‌شوند. این همسانی‌های ساختاری، همراه با شواهدی تکمیلی از رقم‌های مشتمل‌بر نسب در نمونه‌های مشابه، احتمال وابستگی این گروه به یک کارگاه کوچک یا شبکه‌ای از تولید خانوادگی مرتبط با فردی به‌نام «احمد» را تقویت می‌کند. بدین‌سان، «احمد» را می‌توان نشانه‌ای هویتی دانست که در پیوندی ظریف میان فردیت سازنده و هویت کارگاهی شکل‌گرفته و هم‌زمان می‌توانسته است لایه‌ای از تداعی‌های معنوی یا اخلاقیِ پیوسته به این‌نام را در ذهن مخاطب هم‌عصر زنده سازد.



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## The Comprehensive Perceptual Horizon of the Urban Society of Nishapur in the 9–10th Centuries Based on Kufic Inscriptions on Pottery

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**Abstract**

Inscribed pottery from ninth- and tenth-century Nishapur constitutes one of the most significant bodies of material evidence for the social and intellectual life of early Islamic Iran. Although these vessels served utilitarian purposes, their Kufic inscriptions also communicated ethical, social, and spiritual ideas. Their potential for reconstructing the perceptual and moral horizons of Nishapur's urban society, however, has received comparatively little systematic attention. This study examines sixty Kufic inscriptions from Nishapur through qualitative discourse and content analysis, comparing their themes with contemporary textual traditions associated with futuwwa (chivalric ethics), the Malāmatīyya, Sufism, and other intellectual and religious currents. Drawing on material culture studies and cognitive and perceptual approaches to archaeology, it treats inscribed vessels as media through which ethical concepts circulated in everyday urban life rather than simply as decorated objects bearing texts. The analysis finds the strongest correspondence with themes associated with futuwwa and the Malāmatīyya, alongside varying degrees of correspondence with Sufism, the Ahl al-Hadith, courtly literary culture (adab-i dīvānī), the Karrāmiyya, and the Muʿtazila. This pattern points to an intellectual landscape characterized by overlapping ethical and spiritual vocabularies rather than sharply bounded sectarian traditions. The inscriptions suggest that concepts associated with distinct religious and intellectual currents circulated together within the material culture of Nishapur. The prominence of futuwwa and Malāmatī themes, therefore, need not indicate the religious affiliation of the vessels' makers or users. Instead, it may reflect ethical ideals that held particular currency among urban groups connected with commerce and craft production. Nishapur's inscribed pottery thus provides evidence for a shared moral vocabulary through which diverse intellectual traditions entered everyday material and social life.

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## 1. Introduction

Inscribed pottery from Nishapur constitutes one of the most significant sources of material culture from the 9-10th centuries. Beyond their artistic and archaeological value, these objects carry layers of thought, ethics, and cultural language belonging to the urban society of Khurasan. These artifacts, particularly within the context of Nishapur as one of the major urban and intellectual centers of the Islamic world, make it possible to examine the connection between material culture and systems of meaning. A distinguishing feature of this pottery is the widespread presence of Kufic inscriptions bearing ethical, religious, and aphoristic content, which elevates these objects beyond the level of everyday utilitarian wares and transforms them into media for the transmission of meaning.

During this period, Nishapur experienced a highly dynamic, multi-discursive environment in which various intellectual currents, including Sufism, futuwwa, Malamatiyya, Karramiyya, Muʿtazilism, as well as the traditions of the ahl al-hadith and the administrative (dīwānī) class, coexisted and shaped the social and cultural life of the city. Rather than producing rigid boundaries, this intellectual coexistence gave rise to a network of ethical and behavioral concepts that were reflected across different levels of urban society.

Despite the considerable volume of historical and textual scholarship on the intellectual currents of Khurasan and Nishapur, comparatively little attention has been paid to the capacity of material-culture data, particularly inscribed pottery, for reconstructing the intellectual and perceptual horizons of urban society. In most studies, these inscriptions have been examined either descriptively or treated merely as linguistic, religious, or literary evidence, even though such data can play an important role in understanding the relationship between thought, ethics, and everyday life. A systematic analysis of these inscriptions within a discursive and perceptual framework can therefore address an important gap in the study of Nishapur's urban culture during the early Islamic centuries.

Within this context, ceramic inscriptions may be regarded as one of the few available material sources for reconstructing systems of meaning. Through the use of condensed language, rhetorical concision, and aphoristic structures, these inscriptions articulate concepts such as asceticism (zuhd), contentment (qanāʿat), reliance on God (tawakkul), generosity (jūd), magnanimity (murūwwat), silence, and self-restraint, concepts that also occupy a prominent place in the prevailing intellectual discourses of the period.

The necessity of undertaking this research can be justified from several perspectives. First, the inscribed pottery of Nishapur represents one of the few surviving material sources of Khurasan's urban culture in the early Islamic centuries; a systematic analysis of these objects can yield information beyond what textual sources alone provide. Second, given that a substantial portion of the written sources from this period is oriented toward the religious and intellectual elite, material culture offers access to broader strata of urban society. Third, the integration of a cognitive-archaeological approach with discourse analysis in the study of Islamic-period Iranian pottery remains at an early stage, and this research can offer a methodological model for similar studies.

The present study aims to reexamine the Kufic inscriptions on Nishapur's slip-painted pottery as cultural-semantic data. Its main objectives are as follows: (a) to identify the ethical and intellectual themes present in the inscriptions on Nishapur pottery; (b) to analyze the relationship between these themes and the intellectual discourses prevailing in Nishapur during the ninth–tenth centuries CE; (c) to reconstruct part of the perceptual horizon of Nishapur's urban society through material-culture data; and (d) to examine the degree of overlap and interaction among the discourses of futuwwa, Malamatiyya, Sufism, the ahl al-hadith, Karramiyya, Muʿtazilism, and administrative (dīwānī) literary culture as reflected in this data.

In light of the objectives stated above, this research seeks to answer the following two questions: (a) What ethical and intellectual themes do the Kufic inscriptions on Nishapur pottery convey, and to what extent do these themes correspond to the intellectual discourses prevailing in Nishapur during the ninth–tenth centuries CE? (b) Which discourses are most prominently represented in these inscriptions, and what does this imply about the intellectual structure of urban society?

**Research Method:** The present study is fundamental in purpose and descriptive-analytical in nature and method. Employing an interdisciplinary approach grounded in the principles of cognitive archaeology and discourse analysis, it examines the perceptual horizon of Nishapur's urban society during the 9-10th centuries on the basis of Kufic pottery inscriptions. To this end, the texts of the inscriptions were first classified into semantic clusters and then assessed through comparative analysis against the intellectual discourses prevailing in the period under study, not with the aim of definitively attributing them to a particular sect, but in order to identify the degree of conceptual overlap between the inscriptions and each discourse. The interdisciplinary approach of the present study is likewise formed through the integration of archaeology, intellectual history, and cultural semiotics; that is, the themes of the inscriptions are classified through comparison with the intellectual discourses of the period under examination, and the material data are then interpreted using the tools of discourse analysis within the framework of cognitive archaeology.

**Data Collection Method:** The present study collected its necessary data through library-based and documentary research. In the first stage, the primary corpus of the study was assembled, comprising 60 Kufic inscriptions recorded on slip-painted pottery from Nishapur dating to the 9-10th centuries. The texts of these inscriptions were extracted primarily from specialized publications on Nishapur pottery, in particular the two works "Inscriptions on Nishapur Pottery" by ʿAbdullah Qouchani (1985), and "Nishapur Pottery by Wilkinson (1973), an article titled "Serving Wisdom: The Contents of Samanid Epigraphic Pottery" by Pancaroğlu (2002), and other related studies.

In this regard, only inscriptions whose full text was legible were selected, and repeated inscriptions were excluded; consequently, the sample constitutes a purposive selection from the available population, rather than a random sample or one representative of the entirety of Nishapur's ceramic production during the 9-10th centuries. It must be emphasized that these 60 inscriptions were not derived from direct field study of the vessels themselves, but were extracted through documentary compilation from published specialized sources. Accordingly, the number

of parent vessels bearing these inscriptions is not necessarily known, and certain inscriptions, such as "برکه لصاحبه" (blessing to its owner), may be repeated across several different vessels.

From the outset, this research has adopted a textual-discursive approach rather than a statistical-quantitative one; its aim has been to analyze the content of the inscriptions as semantic units, not to examine the frequency of their distribution among vessels. The inscriptions were first transcribed as texts and then classified into semantic clusters on the basis of qualitative content analysis. In the analytical stage, the method of comparative conceptual analysis was employed; that is, the themes of the inscriptions were assessed against the intellectual and ethical discourses prevailing in Nishapur during to the 9-10th centuries, including futuwwa, Malamatiyya, Sufism, the hadith tradition, and rationalist literary culture. This assessment was carried out not as a definitive attribution, but on the basis of the degree of conceptual overlap and discursive similarities.

## 2. Literature Review

Studies related to inscribed Nishapur pottery have primarily focused on the introduction, classification, and artistic and epigraphic analysis of these works. Such studies have presented Nishapur pottery as one of the most important ceramic productions of Iran in the early Islamic centuries, with attention given to their technical characteristics, typology, decorative motifs, and place within the history of Islamic art (see for example: Fehervari, 1973; Allan, 1991; Watson, 2004). Likewise, in certain works such as "Nishapur Pottery", these objects have been examined within the broader framework of locally produced or imported Nishapur wares recovered through archaeological excavation (Wilkinson, 1973). In other studies, such as "Inscriptions on Nishapur Pottery" and the article "Serving Wisdom: The Contents of Samanid Epigraphic Pottery," the focus has been limited to the transcription of the inscriptions and brief commentary on their relationship to hadith, Arabic poetry, or proverbs (Qouchani, 1985; Pancaroglu, 2002). Nevertheless, the predominant orientation of these studies has been descriptive and typological, with comparatively little systematic analysis of the inscriptions' themes in relation to the intellectual and social structures of urban society. Certain studies, in addition to transcribing a number of inscriptions, have also examined the themes employed within them. For example, the article "Identifying the Elements of Futuwwa in Nishapur Pottery Inscriptions" examined several inscriptions derived from the sayings of Imam ʿAli and interpreted them as connected to futuwwa thought current in that period (Zakariya-ye Kermani *et al.,* 2013).

The second group comprises studies concerned with the intellectual and religious currents of Nishapur during the 9-10th centuries. These extensively conducted studies have examined the formation and development of currents such as Sufism, futuwwa, Malamatiyya, Karramiyya, and Muʿtazilism within the social context of Khurasan, analyzing their roles in the society of that period. In addition, matters such as the characteristics or distinguishing features of these sects and their comparison with one another are among the other issues addressed in this body of research. At the same time, primary religious texts, such as futuwwat-nāmas and the historical-religious works of this period, have also assisted the researcher in arriving at a more accurate understanding

of these sects. Accordingly, primary historical sources have been drawn upon in analyzing the themes related to Malamatiyya, Sufism, and futuwwa. Among the most important of these sources is "al-Malāmatiyya, al-Ṣūfiyya wa Ahl al-Futuwwa" by Abū al-ʿAlāʾ ʿAfīfī, in which the principles and foundations of the Malamati current are explained by one of the leading scholars in this field; concepts such as the avoidance of ostentation (riyāʾ), the concealment of virtue, the internalization of spiritual conduct, silence as an instrument of self-vigilance, and the subordination of outward appearance to inner reality are directly reflected in this work (Afifi, 1997: 98–110). Likewise, "al-Lumaʿ fī al-Taṣawwuf" by al-Sarrāj al-Ṭūsī, one of the most authoritative primary sources for understanding Khurasani Sufism, explains concepts such as asceticism (zuhd), reliance on God (tawakkul), patience (ṣabr), sincerity (ikhlāṣ), and the seven principles of Sufism within the social context of this same period, thereby providing a direct basis for comparison with the themes of the inscriptions. In particular, in the section "Discourse on Sincerity", al-Sarrāj al-Ṭūsī states explicitly that Sufism rests upon five principles: fasting, prayer, performing prayer in congregation, sincerity in deeds, reliance on God, contentment with God's knowledge, and silence (Siraj Tusi, n.d.: 91). Furthermore, "Talbīs Iblīs" by Ibn al-Jawzī, which contains documented, firsthand critiques of the intellectual currents of this period, including the Sufis and ascetics, offers valuable information regarding the deviations and behavioral characteristics of these currents and allows for a more critical assessment of the inscriptions' themes. Among other matters, in the chapter on Iblīs's deception of the Sufis, traits such as false claims of reliance on God, the renunciation of wealth, avoidance of gainful work, and pretensions to asceticism are criticized, criticism that, in turn, indicates the prevalence of these concepts in the general culture of the period (Ibn al-Jawzi, 2015: 163–175). The use of these primary sources alongside various secondary sources has enabled a more precise assessment of the degree of correspondence between the inscriptions' themes and the prevailing intellectual discourses. Among these secondary sources, particular mention should be made of Bulliet's valuable work "The Patricians of Nishapur", which examines the social, religious, and familial structure of Nishapur and the connections among the urban elite, Sufism, futuwwa, and social culture (Bulliet, 1972). Nevertheless, the principal weakness of this category of primary and secondary sources is that they rely predominantly on textual and historical material and have given comparatively little attention to the reflection of these discourses in material culture and everyday objects.

The third group comprises studies related to cognitive archaeology, semiotics, and discourse analysis. In this connection, Foucault (1969), in "The Archaeology of Knowledge", and Eco (1975), in "A Theory of Semiotics", emphasized the multilayered nature of meaning and the role of social context in the production and interpretation of signs. Miller (1987), in "Material Culture and Mass Consumption", likewise characterized objects as bearers of signs with communicative and identity-related functions within social contexts. Renfrew and Bahn (2023), in "Archaeology: Theory, Method, and Practice", further introduced the concept of the "perceptual horizon" as a framework for understanding how past societies perceived and interpreted the world. Nevertheless, in the existing applications of these approaches, comparatively little attention has been paid to

specific bodies of data such as inscribed Islamic pottery, and, in particular, the corpus of slip-painted Nishapur ware, and the direct relationship between these theoretical frameworks and the concrete data of material culture has been rarely formulated.

Taken together, the review of previous research indicates the existence of three fundamental gaps in the existing scholarship: first, the predominance of descriptive, classificatory, and comparative approaches in studies of Nishapur pottery; second, the separation of historical analyses of intellectual currents from material-culture data; and third, the absence of a coherent application of cognitive-archaeological approaches to the analysis of Kufic inscriptions. The present study seeks to address these gaps by integrating these three domains, thereby making it possible to reconstruct the intellectual culture of Nishapur through material-culture data.

## 3. Theoretical Framework

The present study rests on the view that material culture is not merely a passive reflection of social structures but an active component within systems of meaning production and reproduction. In contemporary material-culture studies, objects are regarded as bearers of signs that, within specific social contexts, possess communicative and identity-related functions (for further discussion, see: Miller, 1987). On this basis, the inscribed pottery of Nishapur can be analyzed not merely as utilitarian artifacts but as media that convey ethical and spiritual themes in a concise, aesthetic, and representable form. Within this framework, the inscriptions are treated as "text" and the pottery vessel as "medium," and the act of consumption is understood as a meaning-generating process.

The principal analytical foundation of this study is the approach of "cognitive archaeology," which examines the modes of perception of past societies on the basis of their material remains. The key concept within this approach is the perceptual horizon, that is, a set of mental frameworks, cultural expectations, and interpretive patterns that determine which signs are meaningful, comprehensible, and acceptable to a given society (Renfrew & Bahn, 2023: 435). The aim of this research is not to reconstruct individual beliefs or to establish definitive sectarian affiliations, but rather to identify those ethical and spiritual statements that were recognizable and reproducible within the perceptual horizon of Nishapur's urban society during the 9-10th centuries.

The framework of discourse analysis is likewise employed to analyze the themes of these inscriptions. Discourse here refers to a network of concepts, values, and semantic rules that confers meaning upon phenomena and organizes them into a comprehensible form (Foucault, 1969: 130). Within the context of 9-10th centuries Nishapur, the discourses associated with Sufism, futuwwa, Malamatiyya, Karramiyya, the ahl al-hadith, and Muʿtazilism are treated as semantic fields. One of the important principles within this framework is the acceptance of discursive overlap: in the intellectual milieu of Nishapur during this period, the boundaries between intellectual currents were fluid and permeable, and a single ethical statement could carry meaning within several discourses simultaneously (Eco, 1975: 54-56). Accordingly, the relationship between the

inscriptions and the discourses is assessed not in terms of definitive attribution, but in terms of degree of semantic correspondence.

Within this framework, the concept of the "economy of meaning" is employed to explain the distribution of themes. By economy of meaning is meant the system governing the distribution and circulation of concepts within the cultural space of a society, a system in which, analogous to a material economy, certain "semantic goods" are produced, exchanged, and consumed more than others (Thompson, 1971). Within this system, concepts possessing three characteristics, concision (the capacity for compression), ethical weight (the capacity to convey values), and material representability (the possibility of being inscribed upon an object), appear more frequently in material culture. From this perspective, concepts prominent in the discourses of Sufism, futuwwa, and Malamatiyya, such as humility, contentment, the avoidance of ostentation, and chivalry (jawānmardī), readily lend themselves to becoming aphoristic phrases suitable for inscription on pottery, whereas discourses such as Muʿtazilism, which are concentrated on abstract theological debates, possess lesser capacity for material representation.

Within the theoretical framework of "consumption and identity," the selection of objects is understood as reflecting not only functional needs but also social values and identities (Bourdieu, 1979: 180). On this basis, the choice of inscriptions bearing specific ethical themes, such as generosity, magnanimity, contentment, or the avoidance of ostentation, as in phrases like "من ایقن بالخلف جاد بالعطیه" (he who is certain of recompense gives generously) or "العلم اشرف الاحساب و المروه اشبک الانساب" (knowledge is the noblest of merits, and magnanimity the most intertwined of lineages), may be regarded as a form of ethical-identity representation. That is to say, through the selection of an object bearing such themes, the consumer defines himself in relation to a particular set of values. Consequently, inscribed pottery constitutes not merely a reflection of existing discourses but also an instrument for their reproduction and consolidation within the social sphere.

**4. The Historical and Discursive Context of Nishapur**

During the 9-10th centuries, the city of Nishapur was one of the most important cultural, political, and economic centers of Khurasan. Owing to its economic standing, the presence of craft guilds, and its extensive commercial networks, the city provided a favorable environment for the formation and interaction of diverse intellectual and religious currents. The intellectual atmosphere of the city was shaped not by the isolated presence of distinct sects, but by the coexistence and interaction of discourses, each of which represented a portion of the perceptual horizon of urban society. Among these, Sufism, futuwwa, Malamatiyya, and Karramiyya were counted among the most influential currents in the intellectual life of Nishapur.

Sufism spread throughout Khurasan from the 8-9th centuries, onward, and Nishapur became one of its major centers (Mousavi Bojnourdi, 2014: vol. 13, 107–116). The prevalence of Sufism in Nishapur was not confined to specific mystical circles but gradually became part of the city's urban culture and its ethical mode of life (Zarrinkoub, 1984: 12). Teachings such as asceticism,

humility, tolerance, and attention to the inner dimensions of religion contributed to the penetration of Sufism into urban culture (Garazhian *et al.,* 2021: 114; Golpınarlı, 2004: 23). Nevertheless, Khurasani Sufism during this period was not uniform. One strand of the Sufi tradition, influenced by the "Baghdad Ṣaḥwiyyūn" (the sober school), emphasized severe asceticism, withdrawal from society, and abstention from economic activity—an orientation that, according to Shafiʿi Kadkani, failed to secure a lasting position within Khurasani urban society (Shafiei Kadkani, 2022: 22–23). By contrast, from the 9th century onward, an alternative outlook developed among a group of Sufis who regarded commerce, trade, and professional occupation not as reprehensible but as a means of serving the people (Kulabadi, 1992: 364–365). This latter orientation created common ground between Sufism and both futuwwa and Malamatiyya. The influence of Sufism among certain prominent families and groups of craft guilds likewise attests to its connection with the city's social structure (Bulliet, 1972: 134-138).

Futuwwa, or traditional chivalry, was an ethical code grounded in generosity, mutual aid, and social responsibility that was prevalent among urban craftsmen and guilds (Mousavi Bojnourdi, 2014: vol. 13, 116). This current gradually became linked with Sufism, and particularly with Malamatiyya, giving rise to a form of social-mystical ethics within the marketplace and the everyday life of the city (Alizadeh *et al.,* 2024: 103). In this connection, some scholars hold that futuwwa in Nishapur was a multilayered current, connected both to the Sufi tradition and to the city's social and professional structure (Bulliet, 1972: 44-45). From this perspective, futuwwa may be regarded as the practical, social manifestation of a portion of Sufi ethical teachings (Souqandi et al., 2020: 79). Within this same context, Malamatiyya, which emerged in Nishapur during the second half of the 9th century, emphasized the internalization of religion, the avoidance of ostentation, the concealment of virtue, and active participation in society (Mousavi Bojnourdi, 2014: vol. 13, 118). Unlike certain ascetic tendencies, the Malamatis were generally engaged in trade and professional occupations and regarded such engagement as part of their ethical conduct (Ahangaran *et al.,* 2018: 4). By dressing as ordinary people and taking part in the guilds and the marketplace, they sought to keep their spiritual life free from display and pretension (Sulami, 2010: 27–28). These characteristics brought Malamatiyya into close connection with futuwwa and the urban craftsmen (Abolbashari *et al.,* 2016: 6). Some scholars have also regarded the emergence of this current as, to some extent, a reaction to the spread of Karramiyya in Nishapur (Ahangaran *et al.,* 2018: 4). Karramiyya, founded by Muhammad ibn Karrām al-Sijistānī in the 9 century CE, was another of the major religious currents of Khurasan (Mousavi Bojnourdi, 2014: vol. 13, 118). Emphasizing asceticism, simplicity of living, and reliance on God, this current gained influence among the lower classes and in the rural districts of Khurasan, with its khānaqāhs (Sufi lodges) playing an important role in disseminating its teachings (Madelung, 2002: 75; Rouhi, 2012: 25). Although some Karramis maintained a cautious attitude toward gainful occupation, this negative view of commerce shifted among certain followers of Karramiyya, particularly from the 10th century onward, as craftsmen and merchants gradually began joining the movement (Isfarayini, 1995: 99; Bahranipour and Kāzemi, 2024: 82). Alongside these currents, the Muʿtazila were also

present in Nishapur, though they were unable to achieve wide influence within the city's social and cultural strata. Following the decline of the Muʿtazila's standing within the Abbasid caliphate from the first half of the 9th century onward, adherents of this school were present in certain Iranian cities, including Nishapur; however, opposition from traditionalist currents, the ahl al-hadith, and segments of the Sufi community prevented their extensive spread within the city (Moftakhari and Ghobadpour, 2004: 64). Furthermore, the rationalist and theological nature of Muʿtazilī teachings, compared with the ethical and popularly accessible discourses of Sufism, futuwwa, and Malamatiyya, possessed less capacity for presence in everyday culture and for representation in the form of concise, aphoristic expressions.

Taken together, the intellectual atmosphere of Nishapur during the 9-10th centuries, resulted from the interaction of discourses that, despite their doctrinal differences, shared considerable common ground in many ethical and ascetic concepts; the connection of certain of these currents, particularly futuwwa and Malamatiyya, with the marketplace, the guilds, and urban life, nevertheless appears to have been more pronounced. Shafiʿi Kadkani has likened this situation to four colored paintings that all depict the same landscape, yet each accentuates a different color (Shafiei Kadkani, 2022: 27). From this perspective, the Kufic inscriptions on Nishapur pottery may likewise be regarded as a reflection of this shared semantic space, a space in which the boundaries between discourses remained continually fluid and interactive.

**5. Findings**

The data for this study comprise a corpus of Kufic inscriptions recorded on slip-painted pottery recovered from Nishapur, dating to the 9-10th centuries (Table 1). This corpus is treated as a textual body within the framework of material culture and is analyzed as a source for reconstructing the semantic and perceptual patterns of the urban society of that period.

The research corpus consists of 60 varied inscription samples, which in terms of content comprise ethical, religious, and aphoristic expressions (Table 1 and Figure 1). It must be emphasized that this figure refers to the number of inscriptional texts, not the number of ceramic vessels; as noted in the Method section, the number of parent vessels bearing these inscriptions is not necessarily known, owing to the documentary (rather than purely field-based) nature of the data collection, and certain texts, such as "برکه لصاحبه" (blessing to its owner) or "برکه و یمن و سرور لصاحبه" (blessing, prosperity, and joy to its owner), appear on more than one vessel.

Rather than articulating a systematic body of theological or juristic doctrine, these expressions are predominantly formulated as short, condensed, slogan-like statements possessing a high capacity for conveying ethical meaning within everyday contexts. Formally, all of the samples are rendered in Kufic script, indicating a degree of standardization in the production and inscription of these works within Nishapur's pottery workshops. This corpus is regarded not merely as a collection of discrete texts but as a coherent whole, within which the recurrence of linguistic and semantic patterns makes it possible to identify dominant discursive structures. Accordingly, each

**Table 1: Corpus of Kūfic inscriptions extracted from Nishaburian slip-glazed pottery (Author, 2025).**

| No. | Inscription Text (Arabic) | English Translation | Theme (Initial) |
|---|---|---|---|
| 1 | الحیاء شعبهٔ من الایمان و الایمان من الجنهٔ | Modesty is a branch of faith, and faith [leads] to Paradise. | Modesty / religious ethics |
| 2 | الطائم الشاکر بمنزلهٔ الصائم الصابر | The grateful eater ranks with the patient faster. | Gratitude / reliance on God |
| 3 | من کثر کلامه کثر سقطه | He who speaks much, errs much. | Control of speech |
| 4 | اشرف الغنی ترک المنی | The noblest form of wealth is the abandonment of desires. | Asceticism / contentment |
| 5 | التدبیر قبل العمل یؤمنک من الندم | Deliberation before action spares you from regret. | Deliberation |
| 6 | الحر حر و ان مسه الضرر | The free man remains free, even if harm touches him. | Dignity / futuwwa |
| 7 | الحرص علامهٔ الفقر | Greed is a sign of poverty. | Ethics of wealth |
| 8 | الرزق مقسوم | Sustenance is [already] apportioned [by God]. | Reliance on God |
| 9 | من ایقن بالخلف جاد بالعطیه | He who is certain of recompense gives generously. | Generosity / giving |
| 10 | من صبر قدر | He who is patient gains the power [to prevail]. | Patience |
| 11 | الصبر مفتاح الفرج | Patience is the key to relief. | Patience |
| 12 | من کسا الحیاء ثوبه خفی عن العیون عیبه | He who clothes himself in modesty conceals his faults from [others'] eyes. | Modesty |
| 13 | یا طالب الدنیا و الموت یطلبه | O seeker of the world, while death seeks you. | Asceticism / admonition |
| 14 | قد خاطر من استغنی برایه | He takes a risk who relies solely on his own judgment. | Practical reason |
| 15 | اتق توقا | Fear [God] as He should be feared. | Piety / prudence |
| 16 | اذا کان المال لا محاله ذاهب فافضله ما اورث الحمد | Since wealth is inevitably transient, its best use is that which earns praise. | Ethics of wealth |
| 17 | الاخلاص یحصن العمل | Sincerity safeguards one's deeds. | Sincerity |
| 18 | الاناه قبل الرأی | Deliberation precedes judgment. | Deliberation |
| 19 | الجود من اخلاق اهل الجنه | Generosity is among the virtues of the people of Paradise. | Generosity / giving |
| 20 | الحر لا یخلف | The free man does not break his word. | Dignity |
| 21 | الحر بر | The free man is righteous. | Dignity |
| 22 | الحلم اوله مر مذاقه لکن اخره احلی من العسل | Forbearance is bitter in its first taste, but sweeter than honey in its end. | Forbearance |
| 23 | الحمد یبقی ذخره للفتی و المال لا یبقی لاربابه | Praise remains a lasting treasure for the young man, while wealth does not remain for its owners. | Dignity |
| 24 | الزم العفاف تکن | Hold fast to chastity, and you shall be [worthy]. | Chastity / self-restraint |
| 25 | العلم اشرف الاحساب و المروه اشبک الانساب | Knowledge is the noblest of merits, and magnanimity the most intertwined of lineages. | Knowledge / futuwwa |
| 26 | العلم زین للفتی و العقل تاج من الذهب | Knowledge is an adornment for the young man, and reason a crown of gold. | Knowledge / reason |
| 27 | المال ما تنفقه لا ما تجمعه | Wealth is what you spend, not what you hoard. | Ethics of wealth |
| 28 | المنه الاذی | TO remind [others] of a kindness done is itself from of injury. | Social bond |
| 29 | الوفاء عزیز و قلیل فاعله و الجفاء موجد و کثیر فاعله | Faithfulness is precious and rarely practiced, while unfaithfulness is common and widely practiced. | Faithfulness |
| 30 | ان التفکر فی المقال حکمه و القول من بعد التفکر اجمل | Reflection before speech is wisdom, and words following reflection are more fitting. | Practical reason |
| 31 | ان السلامه ما صمت و انما یبدی بطانه ذی العیوب کلامه | Safety lies in silence; it is speech that reveals the inner faults of the flawed man. | Silence |
| 32 | ان الکریم اذا ارقصته خدعته و تیق اللئیم مجرب لایخدع | The noble man, when flattered, may be deceived, while the wary, experienced ignoble man is not [easily] deceived. | Dignity |
| 33 | ان الکریم و ان تغیر حاله فالقلب منه لایزال شریفا | Indeed the noble man, even if his circumstances change, his heart remains noble. | Dignity |
| 34 | توکل تکفا | Place your trust in God, and you shall be sufficed. | Reliance on God |
| 35 | من کثر مزاحه حقر قدره | He who jests excessively diminishes his own worth. | Gravity / dignity |

| No. | Inscription Text (Arabic) | English Translation | Theme (Initial) |
|---|---|---|---|
| 36 | حیاؤک فاحفظه علیک فانما یدل علی فعل الکریم | Guard your modesty, for it indicates noble conduct. | Modesty |
| 37 | خالص الکرام و ارغب النهم و ارع النفس | Be sincere among the noble, restrain [excessive] desire, and watch over the self. | Sincerity |
| 38 | سل تعط | Ask, and you shall be given. | Invocation |
| 39 | کل هنیاً مریاً حلالاً طیباً من طس قناعه | Eat in health and delight, lawfully and wholesomely, from the bowl of contetment. | Contentment |
| 40 | لا الجود یفنی المال قبل فنائه و لا البخل فی مال الشحیح یزید | Generosity does not exhaust wealth before its natural end, nor does miserliness increase the miser's wealth. | Generosity |
| 41 | لفرح الادیب بالادیب کفرح المرید بالمرید | The joy of the cultivated man in [meeting] another is like the joy of the disciple in [meeting] a fellow disciple. | Social bond |
| 42 | لیس الفتی المعطی علی الیسر وحده و لکنه المعطی علی العسر و الیسر | The truly chivalrous man is not one who gives only in ease, but one who gives in both hardship and ease. | Futuwwa |
| 43 | لیس جود الجواد من فضل مال انما الجود للمقل المواسی | The generosity of the generous is not [merely] from surplus wealth; true generosity is that of the poor man who still shares. | Generosity |
| 44 | من ایقن بالخلف جاد و کیفما عودت النفس تعتاد | He who is certain of recompense gives generously, and however the soul is habituated, so it becomes accustomed. | Generosity / certainty |
| 45 | من ایقن بعطفه قنع باحواله | He who is certain of [God's] compassion is content with his circumstances. | Contentment |
| 46 | من عز بر | He who attains honor is [also] dutiful. | Dignity |
| 47 | من قنع قدر | He who is content, gains capability. | Contentment |
| 48 | من کان منطقه ناطقا من فضه فالصمت در انه الیاقوت | He whose speech is [as precious] as silver, his silence is a pearl — indeed a ruby. | Silence |
| 49 | و الجود و الجنه للابرار ... الکفر و البخل بنی النار | Generosity and Paradise belong to the righteous ... [while] disbelief and miserliness belong to the people of Hellfire. | Generosity / religious ethics |
| 50 | و عاجز الرأی مضیاع لفرصته؛ حتی اذا فات امر عاتب القدرا | The man weak in judgment squanders his opportunity; and when the matter has passed, he blames fate. | Practical reason |
| 51 | لا مصیبه اعظم من جهل | There is no calamity greater than ignorance. | Knowledge |
| 52 | بری البخیل جدیل المال واحده ان الجواد یری فی ماله سبلا | The miser sees wealth as a single, unbending path, while the generous man sees in his wealth many avenues [for good]. | Generosity |
| 53 | الملک لله الواحد القهار | Dominion belongs to God, the One, the Subduer. | Monotheism |
| 54 | برکه لصاحبه؛ یا برکه و یمن و سرور لصاحبه | Blessing to its owner; O blessing, prosperity, and joy to its owner. | Blessing |
| 55 | برکه و نعمت لصاحبه | Blessing and bounty to its owner. | Blessing |
| 56 | اذا صرف قلب الرجل الجهاله اهلک ماله و بدنه | When ignorance turns a man's heart, it destroys both his wealth and his body. | Practical reason |
| 57 | احسن الصبر و خذ العلا | Practice patience well, and attain the heights. | Patience |
| 58 | لا فتی الا علی لا سیف الا ذوالفقار | There is no youth but ʿAlī, no sword but Dhū'l-Fiqār. | Futuwwa |
| 59 | الجود حارس الاعراض و الاموال | Generosity is the guardian of honor and wealth. | Generosity |
| 60 | الوفاء عود و قلیل الفاعله و الوفاء موجد و کثیر فاعله | Faithfulness recurs [as a virtue] though rarely practiced, while [its neglect] is common and widely practiced. [Wording close to entry 29; possible OCR variance in source.] | Faithfulness |

inscription is analyzed as a semantic unit situated within a broader system of ethical and cultural representation.

From the standpoint of material context, the inscribed slip-painted Nishapur pottery, in terms of the variety of its script rendering and decorative execution, glaze quality, and refinement of workmanship, ranks among the second-tier ceramic productions of this period. On this basis, it can be argued that these objects were predominantly available to the middle and upper strata of

urban society, since the lower strata typically used simpler and less expensive vessels (Watson, 2004: 72; Wilkinson, 1973: 14). This fact, on the one hand, limits the interpretive scope of the research corpus, since the perceptual horizon reconstructed through these inscriptions does not necessarily reflect the whole of Nishapur's urban society, but rather represents more specifically the value and ethical system of the class that could afford to consume such semi-luxury goods. On the other hand, this very limitation can itself serve as valuable interpretive data: that is, the ethical themes reflected on these vessels are more likely to be connected with the intellectual discourses prevailing among the guilds, craftsmen, and urban elite of Nishapur than with the culture of the lower or rural strata. This point is also worth noting in interpreting the predominance of futuwwa- and Malamatiyya-related themes within the research corpus, since both currents had a well-documented historical connection with the craftsman and urban classes (Bulliet, 1972: 88–90). The research corpus therefore reflects not only workshop production but also represents a form of cultural selection within the process of consumption. Taken as a whole, this dataset, as a cultural-textual corpus, makes it possible to analyze simultaneously the linguistic level (the text of the inscriptions), the material level (the pottery as a cultural object possessing symbolic value, utilitarian function, and a workshop context of production), and the social level (the pattern of consumption and its audience), and thus constitutes the principal basis for reconstructing the perceptual horizon of that segment of Nishapur's urban society which, during the period under study, was able to acquire and use these vessels. It should finally be noted that, at this stage, the inscriptions were recorded and compiled solely as textual units, and any semantic classification or discursive attribution was carried out in subsequent stages of analysis.

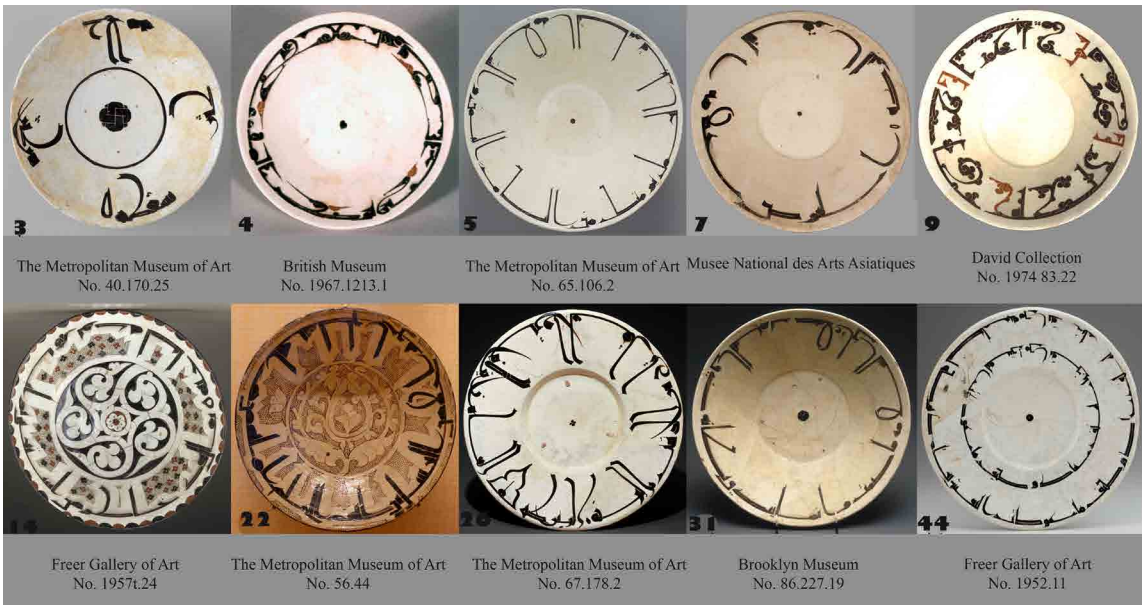



**Fig. 1: A selection of inscribed Nishapur vessels, with the number of each inscription (per Table 1) indicated in the lower-left corner of each vessel (Author, 2025).**

## 6. Analysis of Findings

Examination of the content of the 60 Kufic inscriptions on Nishapur slip-painted pottery, as set out in Table 2, shows that the themes of these inscriptions are predominantly ethical, pedagogical, and

social in character and, unlike many theological and religious texts of this period, rarely involve explicit doctrinal or sectarian discussion. In fact, what is reflected in these inscriptions represents less the specific teachings of a particular sect than a form of "urban ethics" that took shape within the social and economic life of Nishapur during the 9-10th centuries. This urban ethic stood at the point of intersection of the discourses of futuwwa, Malamatiyya, Sufism, Karramiyya, and, to some extent, rationalist literary culture, and it reproduced a set of shared values within the cultural space of the city. It must be emphasized that all inferences in this section are limited to the social stratum of the consumers of these vessels, and their generalization to Nishapur's society as a whole would require additional evidence, such as data derived from archaeological excavation or statistical data, which are not available in the present study.

**Table 2: Semantic clustering and discourse alignment of the research findings (Author, 2025).**

| Row | Semantic Cluster | Inscriptions (No. per Table 1) |
|---|---|---|
| 1 | Invocation and blessing | 38, 53–55 |
| 2 | Control of speech and silence | 3, 30, 31, 35, 48 |
| 3 | Sincerity and self-vigilance | 17, 32, 37, 44 |
| 4 | Generosity and the ethics of wealth | 9, 16, 19, 27, 40, 42, 43, 49, 52, 59 |
| 5 | Chivalric (futuwwa) identity | 6, 20, 21, 23, 25, 26, 33, 46, 58 |
| 6 | Modesty and gravity | 1, 12, 24, 36 |
| 7 | Patience and faithfulness | 10, 11, 22, 29, 57, 60 |
| 8 | Asceticism and contentment | 4, 7, 8, 13, 39, 45 |
| 9 | Reliance on God and certainty | 2, 34, 47 |
| 10 | Practical reason and deliberation | 5, 14, 15, 18, 50, 51, 56 |
| 11 | Social bond | 28, 41 |

One of the most important and frequently recurring themes in the inscriptions is the concept of generosity, giving, and the proper attitude toward wealth. Inscriptions such as "من ایقن بالخلف جاد بالعطیه" (he who is certain of recompense gives generously), "الجود من اخلاق اهل الجنه" (generosity is among the virtues of the people of Paradise), and "المال ما تنفقه لا ما تجمعه" (wealth is what you spend, not what you hoard) all emphasize the virtue of almsgiving, generosity, and the priority of the ethical value of wealth over its accumulation. The frequency of these themes indicates that the question of moral economy was one of the principal components of the perceptual horizon of Nishapur's urban society. Within this intellectual system, the value of wealth was defined not by accumulation but by ethical expenditure, generosity, and the generation of spiritual credit. Such an outlook, which is essentially addressed to a broad audience regardless of occupational or social standing, bears a close affinity with the futuwwa tradition, which emphasized self-sacrifice and social support. The more prominent reflection of this outlook within the context of the guilds and the Nishapur marketplace stems simply from the fact that everyday economic transactions provided a suitable setting for the concrete display of these values, rather than indicating that the teaching of generosity and giving was confined to this particular stratum. At the same time, certain of these themes, particularly inscriptions that present giving as a consequence of certainty and reliance on God, also overlap with the teachings of Sufism and Malamatiyya.

Alongside these concepts, a considerable portion of the inscriptions is devoted to representing the ethical identity of the "fatā", or chivalrous young man. Inscriptions such as "لا فتی الا علی لا سیف الا ذوالفقار" (there is no youth but ʿAlī, no sword but Dhū'l-Fiqār), "الحر حر و ان مسه الضر" (the free man remains free even if hardship touches him), "الحر لا یخلف" (the free man does not break his word), "العلم اشرف الاحساب و المروت اشبک الانساب" (knowledge is the noblest of merits, and magnanimity the most intertwined of lineages), and "ان الکریم و ان تغیر حاله فالقلب منه لایزال شریفا" (indeed the noble man, even if his circumstances change, his heart remains noble) present an image of the ideal human being whose principal qualities are fidelity, dignity, magnanimity, freedom, and rationality. These concepts show the greatest conceptual overlap with the futuwwa tradition and indicate that the ethic of chivalry (jawānmardī) had a prominent presence in the cultural life of Nishapur. On the basis of the themes found within this limited corpus of inscriptions, it may be said that futuwwa among the consumers of these vessels was not based solely on valor or self-sacrifice, but also encompassed a form of culture centered on refinement and courtesy (adab); although the generalization of this finding to Nishapur's society as a whole would require further evidence.

Among these, the inscription "لا فتی الا علی لا سیف الا ذوالفقار" occupies an exceptional discursive position within the research corpus. Unlike the other inscriptions, which employ ethical, aphoristic, and cross-discursive language, this inscription explicitly names a historical figure and carries an overt identitarian-doctrinal weight. Within the futuwwa tradition, ʿAlī ibn Abī Ṭālib was regarded as the progenitor of chivalrous men and the supreme exemplar of futuwwa, and Dhū'l-Fiqār was regarded as the ideal symbol of chivalry. This inscription likewise acquires deeper meaning within the Sufi tradition of Khurasan, since Sufi lineages traced their spiritual descent to ʿAlī through Salmān al-Fārisī and regarded him as their spiritual pole (quṭb). From the Malamati perspective as well, ʿAlī served as a model of concealment and sincerity. The relative absence of this type of explicit identitarian inscription within the research corpus, represented by only a single example among the 60 inscriptions, is itself an analytical finding. It suggests that the culture of pottery inscription in Nishapur employed a language that was predominantly ethical and cross-discursive rather than identitarian and political. Where an exception does occur, it points directly to the heart of the futuwwa tradition.

Another category of inscriptions emphasizes concepts such as modesty, self-restraint, silence, and guarded speech. Among the various discourses current in Nishapur, these themes show the greatest conceptual overlap with Malamati ethics, although their definitive attribution to this particular current is neither possible nor the aim of this study. Expressions such as "man kathura kalāmuhu kathura saqaṭuhu" (he who speaks much, errs much), "ان السلامه ما صمت" (safety lies in silence), and "من کان منطقه ناطقا من فضه فالصمت درّ" (he whose speech is like silver, his silence is pearl) all reflect a form of inward, self-watchful ethic in which the restraint of speech, the avoidance of self-display, and the preservation of sincerity are of fundamental importance. These concepts show the greatest overlap with the Malamati spirit, which emphasized the concealment of virtue, the avoidance of ostentation, and the internalization of spiritual conduct. Nevertheless,

these themes cannot be regarded as exclusive to Malamatiyya alone, since a significant portion of them also has an extensive precedent in Islamic ethical literature and in the hadith or Karrami traditions. For this reason, it is preferable to understand these concepts within a shared discursive field, rather than as definitive markers of sectarian affiliation.

Another group of inscriptions reflects the themes of asceticism, contentment, reliance on God, and the transience of the world. Expressions such as "اشرف الغنی ترک المنی" (the noblest form of wealth is the abandonment of desires), "الحصر علامه الفقر" (greed is a sign of poverty), "یا طالب الدنیا و الموت الیطلبه" (O seeker of the world, while death seeks you), and "توکل تکفی" (place your trust in God and you shall be sufficed) all emphasize the unreliability of the world, contentment, and trust in God. These themes correspond considerably with the ascetic and Sufi traditions of Khurasan, and in some instances traces of Karrami and hadith-oriented attitudes can also be discerned within them. Nevertheless, the presence of these concepts is less pronounced than that of themes related to generosity, magnanimity, and social ethics. This indicates that the semantic space reflected on Nishapur pottery emphasized a form of social and urban ethics more than it did an isolationist asceticism or the complete renunciation of the world.

A further category of inscriptions emphasizes the themes of patience, forbearance, dignity, and faithfulness. Expressions such as "من صبر ظفر" (he who is patient prevails), "الصبر مفتاح الفرج" (patience is the key to relief), "الحلم اوله مر مذاقه لکن اخره احلی من العسل" (forbearance is bitter in its first taste, but sweeter than honey in its end), "احسن الصبر و خذ الاعلاء" (practice patience well and attain the heights), and "الوفاء عزیز و قلیل فاعله و الجفاء موجد و کثیر فاعله" (faithfulness is precious and rarely practiced, while unfaithfulness is common and widely practiced) all express a form of ethics centered on steadfastness and endurance in the face of life's hardships. These themes stand at the point of convergence of several discourses: within futuwwa, patience and faithfulness were core pillars of chivalry, and the breaking of a pledge, even under the most difficult circumstances, was regarded as disgraceful. Within the hadith tradition as well, patience possessed strong scriptural backing and was linked to concepts such as acceptance of divine decree. A noteworthy point within this cluster is the inscription "احسن الصبر و حذ الاعلاء," which presents patience not as passive acceptance but as an instrument for attaining eminence and honor. This active, dynamic conception of patience aligns more closely with the spirit of futuwwa and magnanimity in Nishapur than with an isolationist asceticism. Alongside this, the inscription "من کثر مزاحه حقر قدرته" (he who jests excessively diminishes his own worth) likewise indicates that dignity and gravity of conduct formed part of this same ethical constellation, since excessive levity was regarded as incompatible with social standing and credibility. The frequency of these themes within the research corpus indicates that the people of Nishapur, regardless of their social standing, were familiar with the bitter reality of faithlessness and hardship, and through these inscriptions reproduced a form of ethics of steadfastness within the material space of daily life.

Among the other important themes is attention to reason, prudent judgment, and practical wisdom. Inscriptions such as "التدبیر قبل عمل یوئمنک من الندم" (deliberation before action spares you regret), "الاناه قبل الرای" (patience precedes judgment), "ان التفکر فی المقال الحیکم" (reflection

upon speech is wisdom), and "و لا مصیبه عظیم من جهل" (there is no calamity greater than ignorance) indicate that, alongside ascetic and mystical teachings, a form of rational, refinement-oriented ethic was also present in Nishapur's urban culture. The inscription "اذا صرف قلب الرجل الجهاله اهلک ماله و بدنه" (when ignorance turns a man's heart, it destroys both his wealth and his body) likewise belongs to this cluster; this expression regards ignorance as dangerous not merely at the epistemic level but also at the practical-economic level. The emphasis on the "destruction of wealth and body" shows that practical wisdom in Nishapur during this period carried tangible worldly consequences and was not merely an abstract recommendation. It should be noted that these themes cannot be directly attributed to the Muʿtazila; nevertheless, they undoubtedly reflect an environment in which practical reason, deliberation, and measured conduct were regarded as values. Such concepts were probably connected less to theological disputation than to the literary and cultural tradition of urban and administrative (dīwānī) circles.

In addition to ethical and aphoristic themes, a portion of the inscriptions in the research corpus is devotional, votive, and monotheistic in character. Expressions such as "برکه لصاحبه" (blessing to its owner), "برکه و نعمه لصاحبه" (blessing and bounty to its owner), "سل تعطا" (ask and you shall be given), "کل فیها هنیا مریا" (eat from it in health and delight), and "الملک لله الواحد القهار" (dominion belongs to God, the One, the Subduer) belong to this group. Quantitatively, this cluster represents another major category of inscription on Nishapur pottery, and its omission from analysis would yield an incomplete picture of the perceptual horizon of urban society. The phrase "برکه لصاحبه" may, at first glance, appear to be merely a conventional blessing, yet closer analysis reveals that it carries several layers of meaning simultaneously. From the perspective of futuwwa, this phrase signifies the complete transfer of good to the owner of the vessel; the giver relinquishes not only the material object but also its spiritual blessing to another, an act that itself exemplifies futuwwa-style self-sacrifice. From the perspective of Malamatiyya, the removal of "من" (from me) from the equation, and the attribution of blessing solely to the "owner," accords with the principle of concealment and the negation of self-display: the one who gives or makes the vessel does not mention his own name. From the standpoint of common usage as well, this phrase represented the simplest and most universally accessible message, comprehensible to an unlettered market-goer and yet possessing depth of meaning for the learned scholar. The phrase "الملک لله الواحد القهار" likewise occupies a distinctive place within this cluster; unlike the other examples, which employ ethical language, this inscription constitutes a direct declaration of monotheistic faith, indicating that Nishapur's material culture, alongside its practical ethics, also carried its own doctrinal underpinning. Taken together, the presence of this cluster within the research corpus shows that inscribed Nishapur pottery served not only as a medium for conveying ethics but also as an instrument of blessing, invocation, and the affirmation of social relations, a function that rendered these objects ritual as well as utilitarian.

In sum, the analysis of the themes of Nishapur's Kufic inscriptions shows that these works reflect a shared perceptual horizon within Nishapur's urban society, a horizon in which the boundaries between futuwwa, Malamatiyya, Sufism, Karramiyya, and the hadith tradition remained

continually fluid and interactive. Among these, the discourses of futuwwa and Malamatiyya show the greatest overlap with the themes of the inscriptions, since many of the recurring concepts, such as generosity, dignity, sincerity, self-restraint, modesty, and mutual support, converge at the intersection of these two currents. Nevertheless, the inscriptions cannot be regarded as the direct reflection of any single sect; rather, they should be understood as part of the material and ethical culture of Nishapur's urban society, one that represented desirable values and behavioral models in the form of short, aphoristic expressions. From this perspective, these inscriptions may be regarded as a reflection of part of the shared ethical culture of Nishapur's urban society, particularly that segment which was able to acquire and use these semi-luxury vessels, although demonstrating their active mediatory function in the transmission and reproduction of meaning would require corroborating evidence beyond this corpus.

**7. Discussion**

The findings derived from the analysis of the 60 Kufic inscriptions on Nishapur pottery show that the discursive distribution within this corpus takes the form of a multilayered, overlapping field. According to Table 3, the discourses of futuwwa, Malamatiyya, Sufism, the ahl al-hadith, administrative (dīwānī) literary culture, Karramiyya, and Muʿtazilism are each present to varying degrees within the semantic structure of the inscriptions, while certain concepts overlap with several discourses simultaneously. It must be emphasized that the figures presented in Table 3 do not indicate the exclusive attribution of each inscription to a single discourse, but rather express the degree of conceptual overlap between each discourse and the corpus of inscriptions. This is particularly notable with regard to themes aligned with dīwānī literary culture, since concepts such as deliberation, practical reason, and measured conduct are inherently intermediate in nature and may simultaneously overlap with the discourses of the ahl al-hadith, Sufism, or the broader Arabic wisdom-literature tradition. Accordingly, the attribution of this category of inscriptions to dīwānī literary culture as an independent discourse has been made with caution, and reflects primarily their dominant conceptual aspect rather than a definitive assignment to a specific intellectual current. Consequently, the sum of the figures in the table exceeds 60; this is not a contradiction but rather a reflection of the fluid, multilayered nature of Nishapur's discursive field, a field in which sectarian boundaries, at the level of material culture, are represented as a network of shared concepts. This distribution indicates that what is encountered is not a single, uniform intellectual system, but rather the urban discursive field of Nishapur, within which several ethical and theological traditions stood in interaction and convergence.

Among these, the predominance of futuwwa (41 instances) can be explained in direct connection with the economic and guild structure of Nishapur's urban society. During this period, futuwwa was not merely a matter of individual ethics but a system for regulating social relations within the context of the marketplace and craft occupations. The themes related to generosity, self-sacrifice, and livelihood ethics found in these inscriptions indicate that futuwwa had become the dominant language of urban economic ethics and had succeeded in becoming established within

material culture in the form of concise ethical statements. In the author's view, what renders this numerical predominance significant in relation to the other discourses is not mere frequency but the coincidence of these themes with the communicative function of the pottery itself: a vessel that passed from hand to hand in the course of a transaction or as a gift could itself carry a message about generosity and self-sacrifice, and this alignment between object and message made futuwwa more suitable than more abstractly oriented discourses for inscription on everyday goods. This interpretation accords with the identification of these themes as prominent markers of the futuwwa code in the historical sources (Pourjavadi, 2006: 115–116; Mousavi Bojnourdi, 2014: vol. 13, 119).

**Table 3: Relative distribution of discourses in the corpus of 60 inscriptions studied (Author, 2025).**

| Discourse | Number of Instances | Approximate Percentage |
|---|---|---|
| Futuwwa | 41 | 68% |
| Malamatiyya | 36 | 63% |
| Sufism | 26 | 45% |
| Ahl al-hadith | 15 | 26% |
| Dīwānī literary culture / practical reason | 9 | 16% |
| Karramiyya | 3 | 5% |
| Muʿtazila | 2 | 4% |

Malamatiyya, with 36 instances of correspondence, constitutes a complementary yet fundamental layer within this semantic system. This discourse emphasized the negation of ostentation, self-restraint, and the internalization of ethics (Mousavi Bojnourdi, 2014: vol. 13, 118–119). The extensive presence of themes related to silence, the avoidance of self-display, and guarded speech indicates that an important part of the perceptual horizon of Nishapur's society rested upon internalized ethics. Here, Malamatiyya functions not as an independent sect but as an intra-discursive ethical logic operating alongside futuwwa. One important reason for the predominance of futuwwa- and Malamati-related themes in Nishapur's pottery inscriptions should be sought in the social and economic structure of the city. During the 9-10th centuries CE, Nishapur was a city with a developed economic and social structure, active guild networks, and extensive marketplaces. In the author's view, such an environment, in which exchange, gift-giving, and everyday social interaction flowed continuously among the city's inhabitants, provided fertile ground for the circulation of inscriptions that recalled the ethic of earning credibility through generosity and trustworthiness, not as a value confined to a single stratum, but as a general standard of social judgment: a mode of evaluation in which an individual's standing was organized, in part, through the connection between his economic conduct and his moral credibility (Bulliet, 1972: 88-90). Within such an environment, concepts such as generosity, faithfulness, contentment, magnanimity, and the preservation of honor were not merely abstract teachings but constituted part of the practical ethics of urban life.

Sufism, with 26 instances of correspondence, places greater emphasis on asceticism, renunciation of the world, and reliance on God. In Nishapur, this discourse moved from an early individual asceticism toward a more socially embedded form of Sufism, interwoven with urban

life (Qushayri, 1966: 132; Kulabadi, 1992: 365). Themes related to contentment, reliance on God, and indifference to the world indicate that Sufism, alongside futuwwa and Malamatiyya, played a role in shaping general ethics, though it operated more at the level of spiritual orientation. The ahl al-hadith, with 15 instances of correspondence, represent a layer of religious ethics grounded in prophetic tradition, submission, and reliance on God. Concepts such as apportioned sustenance (rizq), patience, and reliance on God are prominent within this discourse. Unlike futuwwa and Malamatiyya, the ahl al-hadith played a lesser role in shaping social ethics and a greater one in consolidating individual doctrinal and behavioral frameworks. For this reason, its presence in the inscriptions is more limited but consistent. Dīwānī literary culture, with 9 instances of correspondence, reflects a rational-administrative layer of urban culture. Themes related to deliberation, practical reason, and behavioral management indicate that, alongside the ethical-religious discourses, a form of administrative rationality was also active within Nishapur's cultural sphere. This discourse is more closely associated with the tradition of scribes (dabīrān) and administrative written culture, and shows that urban ethics was not purely religious but also possessed a rational dimension. Karramiyya, despite its modest share within this corpus, is historically noteworthy. In the author's view, this limited presence should not necessarily be taken as evidence of Karramiyya's absence from Nishapur's urban culture, but may instead be understood as resulting from a certain mismatch between the doctrinal language of this current and the representational capacities of pottery as a medium. Emphasizing verbal profession of faith and a form of extreme asceticism, Karramiyya was a discourse whose influence, according to the historical sources, was reported mainly among the lower social strata (Madelung, 2002: 73–75; Mousavi Bojnourdi, 2014: vol. 13, 150), strata which, based on the same technical classification of this pottery, were less likely to be the principal consumers of these vessels. The limited presence of Karramiyya in the inscriptions therefore indicates that this discourse corresponded less well with the logic of urban material culture and the moral economy grounded in symbolic consumption. The Muʿtazila, with the least presence of all, operated mainly at the level of theological and abstract discourse. The theoretical, argumentative nature of this current made it less amenable to conversion into concise, aphoristic ethical statements. From this perspective, its relative absence from the inscriptions does not indicate its social non-existence, but rather reflects the limitations of its capacity for material representation.

At the macro level, the overlap among futuwwa, Malamatiyya, and Sufism shows that these three discourses functioned as a single ethical continuum, while the ahl al-hadith and dīwānī literary culture formed two complementary doctrinal and rational layers. Karramiyya and the Muʿtazila lie at the margins of this field, and their limited presence indicates their incomplete correspondence with the representational logic of inscribed pottery. Ultimately, Table 3 shows that Nishapur's pottery inscriptions carry a multilayered ethical system in which economic ethics (futuwwa), inward ethics (Malamatiyya), spiritual asceticism (Sufism), religious belief (ahl al-hadith), practical rationality (dīwānī literary culture), and two more marginal discourses (Karramiyya and the Muʿtazila) are simultaneously present. This situation confirms that what

predominated in 3 and 4th-century CE, Nishapur was not rigid sectarian boundaries, but a fluid, interwoven discursive field represented through material culture.

## 8. Conclusion

The present study, through the analysis of 60 Kufic inscriptions on Nishapur slip-painted pottery, sought to answer two principal research questions. In response to the first question, the findings show that the themes of these inscriptions can be classified predominantly into six semantic clusters: generosity and moral economy, chivalric (futuwwa) identity, self-restraint and silence, asceticism and contentment, patience and faithfulness, and reason and practical deliberation. These themes are not theological or sectarian in nature but ethical-social, formulated in the form of concise, aphoristic statements possessing broad comprehensibility and acceptance. In response to the second question, futuwwa, with 41 instances of conceptual overlap, and Malamatiyya, with 36, show the greatest presence within this corpus. This predominance carries an important implication for the intellectual structure of Nishapur during this period: in 9-10th century Nishapur, the social-economic ethics of futuwwa and the inward, self-watchful ethics of Malamatiyya functioned as a complementary continuum, forming the core of a set of shared values that, given the concise and aphoristic nature of these inscriptions, were accessible to the understanding and acceptance of the general population rather than any single group or class. Sufism, the ahl al-hadith, and dīwānī literary culture constituted complementary layers of this system, while Karramiyya and the Muʿtazila show a lesser presence owing to the limitations of their capacity for material representation. The principal theoretical contribution of this study is that Nishapur's material culture during this period reflects not rigid sectarian boundaries but a fluid discursive field, within which shared ethical values circulated beyond sectarian affiliation. This finding further demonstrates that the cognitive-archaeological approach, in combination with discourse analysis, holds considerable potential for reconstructing the intellectual and social history of Islamic cities through material culture, and may offer a methodological model for similar research within the field of Islamic-period archaeology. Finally, it must be emphasized that the findings of this study are limited to the social stratum of the consumers of these vessels, and their generalization to Nishapur's society as a whole would require supplementary evidence from more diverse material sources.

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**Conflict of Interest**

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**چکیده**

سفال‌های کتیبه‌دار نیشابور در سده‌های ۳-۴هـ.ق. یکی از مهم‌ترین داده‌های فرهنگ مادی جهان اسلام و ایران در سده‌های اولیهٔ هجری به‌شمار می‌آیند که علاوه‌بر کارکرد مصرفی، حامل مضامین اخلاقی و معنوی نیز بودند. با این‌حال ظرفیت تفسیری این کتیبه‌ها به‌عنوان داده‌هایی برای بازسازی افق ادراکی جامعهٔ شهری نیشابور، تاکنون به‌طور نظام‌مند موردتوجه قرار نگرفته است. برهمین‌اساس، هدف این پژوهش بازسازی بخشی از افق ادراکی جامعهٔ شهری نیشابور از خلال تحلیل انطباق مضامین این کتیبه‌ها با گفتمان‌های فکری رایج مانند فتوت، ملامتیه و تصوف است. روش پژوهش مبتنی‌بر تحلیل محتوای کیفی-گفتمانی ۶۰ کتیبهٔ کوفی است که براساس مقایسهٔ مفهومی با منابع متنی و چارچوب نظری فرهنگ مادی و باستان‌شناسی ادراکی صورت گرفته است. در این چارچوب، کتیبه‌ها نَه صرفاً متون تزئینی، بلکه به‌مثابه رسانه‌های معنایی درنظر گرفته شده‌اند که امکان بازخوانی ساختارهای ذهنی و اخلاقی بخشی از جامعهٔ شهری را فراهم می‌کنند. یافته‌های پژوهش نشان می‌دهد که فتوت و ملامتیه بیشترین سهم را درمیان گفتمان‌های قابل‌انطباق دارند و در کنار آن‌ها تصوف، اهل حدیث، ادب دیوانی، کرامیه و معتزله نیز با درجات متفاوتی حضور دارند. این توزیع بیانگر آن است که فرهنگ فکری جامعهٔ شهری نیشابور در این دوره ماهیتی چندلایه و هم‌پوشان داشته و مرزهای فرقه‌ای در سطح فرهنگ مادی به‌صورت شبکه‌ای از مفاهیم اخلاقی و معنوی بازنمایی شده است. نتایج حاصل از پژوهش پیشِ‌رو مشخص می‌کند که سفال‌های کتیبه‌دار نیشابور بازتاب فرهنگ مادی جامعه‌ای بوده‌اند که در آن مرزهای فرقه‌ای، به‌جای تقابل، در قالب زبانی مشترک از فضایل اخلاقی بازنمایی می‌شده است؛ غلبهٔ فتوت و ملامتیه در این‌میان، بیش از آن‌که بیانگر وابستگی مذهبی صرف باشد، احتمالاً بازتاب اولویت‌های اخلاقی اقشار میانی و بالای شهری مرتبط با تجارت و پیشه‌وری است.



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## Mapping the Physical and Political Geography of Greater Khorasan in the 3rd–4th Centuries AH (9th–10th Centuries CE) Using GIS

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**Abstract**

The present study aims to provide a spatial representation of the natural, human, and political geography of Greater Khorasan in the third and fourth centuries AH, using a Geographic Information System (GIS). Drawing on the geographical-historical data found in texts from the early Islamic centuries, this research reconstructs a coherent map of Greater Khorasan, identifies its settlements, natural features, and political and Administrative boundaries of the period, and offers a framework for converting the descriptive data from historical texts into spatial data. Geographical texts of the third and fourth centuries AH contain scattered information about cities, roads, borders, and natural features, which become capable of spatial reconstruction once organized within a GIS environment. In this study, the extent and districts of Khorasan were first determined on the basis of geographical-historical texts, and a comprehensive map of its boundaries, settlements, road network, and natural features was then produced . The spatial and descriptive data extracted from geographical-historical sources — including The Best Divisions for Knowledge of the Regions by al- Maqdasi, the various works titled The Routes of the Kingdoms , and local histories — were organized as spatial data and processed in ArcGIS Pro to reconstruction map of The Greater Khorasan. The results of the study, which led to the drawing of the detailed map of settlement coordinates, natural and human features, and in particular the historical boundaries of Khorasan, show that the accounts of the geographical sources of the third and fourth centuries AH display considerable connection in their descriptions of the cities, routes, and borders of Khorasan, and that these features can be reconciled with present-day locations through the use of appropriate software. The drawing of a comprehensive map of Greater Khorasan through the integration of geographical-historical textual data offers a relevant and reliable representation of the spatial structure, historical boundaries, and natural and human elements of the region in the third and fourth centuries AH; it also demonstrates the value of mapping software for historical analysis and description in interdisciplinary research..

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## 1. Introduction

The region of Greater Khorasan is among the most important historical and geographical domains of the Iranian-Islamic world, having played an unparalleled role in the formation of civilisation, culture, knowledge, and political institutions in eastern Iran. For this reason, in the geographical and historical sources of the early Islamic centuries (the third and fourth centuries AH), Khorasan is recognised not merely as a geographical extent but as a broad civilisational and cultural concept whose boundaries extended from Rayy and Qumis in the west to the Oxus (Jeyhun) and Tokharistan in the east. Despite the great importance of this region in historical texts, one of the fundamental challenges in studying the history and geography of Khorasan is the lack of precise correspondence between the information recorded in the works of geographers and historians of the early Islamic centuries and the present-day locations of the region. Changes in the names of cities and districts, shifts in the courses of rivers and roads, and differences in the methods of measuring distances and determining boundaries in ancient texts have made it difficult to identify precisely the historical borders of eastern Iran and to reconstruct them on the basis of present-day data, thereby creating problems for historical, archaeological, and geographical studies.

Given that geographical and social phenomena have changed over centuries — including changes in names and, at times, in geographical locations, such as riverbeds, the locations of cities or villages, and road routes — it is necessary to examine the extent to which the information on geographical phenomena in these sources corresponds to their present-day condition. Reconciling the geographical place names of Khorasan and eastern Iran in medieval geographical works with their present-day locations can contribute to a better understanding of the region's long-term historical and geographical development.

In general, historical events have always occurred in relation to their geographical environment, and depicting these events on a map can substantially enhance historical analysis and interpretation. On this basis, the main research question is: to what extent can the descriptive data found in the historical and geographical texts of the third and fourth centuries AH be converted into spatial data within a Geographic Information System (GIS) and used to reconstruct the natural, human, and political geography of Greater Khorasan and analyse its spatial structure? The research hypothesis is that the majority of the cities, districts, roads, borders, and natural features described in these sources — despite some name changes, limited relocations of settlement centres, and transformations arising from historical and natural developments — remain capable of being reconciled with present-day locations, and that, with the use of GIS, they can be organised, analysed, and reconstructed. The main objective of the research is therefore to reconstruct the natural, human, and political geography of Greater Khorasan in the third and fourth centuries AH through the extraction and conversion of descriptive data from geographical-historical texts into spatial data, the production of a comprehensive map of the region, and the provision of a framework for the use of Geographic Information Systems in historical research and historical geography.

## 2. Literature Review

In studies of the historical geography of Iran, maps have been important tools for representing the locations of settlements and the boundaries of historical districts. Among such works are The Historical Geography of the Eastern Caliphate by Le Strange (Lestrange, 1994) and works by Iranian scholars such as Greater Khorasan by Ahmad Ranjbar (Ranjbar, 1984), which draw on historical-geographical information to reconcile past boundaries with present-day conditions. However, in these comparative studies the map has not been central to the analysis but has generally been treated as a visual aid, with identified place names positioned for comparison with present-day boundaries. Among other studies that have come closer to historical GIS is the Historical Atlas of Iran produced by the Geographical Institute of the University of Tehran (Nasr *et al.,* 1971). In this work spatial data were collected and numerous general maps were produced through cartographic methods; however, these maps cannot be readily tested or subjected to spatial analysis, and the perspective they provide is therefore primarily a visual representation of past locations. In other cases, the maps do not accurately depict natural phenomena or certain physical features of the region, routes and roads lack the necessary precision, and some settlements have even been omitted to the extent that the maps provide only a general impression of the region's location. The present study differs methodologically from these works, because the map is not merely a display tool but the product of a process involving the extraction of geographical data from historical texts, their location and georeferencing, digitisation, and spatial analysis using GIS tools.

Several maps from the comparative studies of Ranjbar (Ranjbar, 1984: 25), Le Strange (Le Strange, 1994: 8–10, Map 1), and the Historical Atlas of Iran (Nasr *et al.,* 1971: Map 13) were selected. By georeferencing them using control points at villages common to all four maps, the positional error between them was determined; an example is given in Table 1. These published maps have played an important role in representing the boundaries and historical divisions of the various districts of Iran and Khorasan. However, the maps were drawn mainly for historical and descriptive display purposes and lack a precise coordinate basis and georeferencing. In the present study, as noted above, the scanned images were georeferenced, and the results showed that, although the maps in question are valuable for the general representation of spatial structure and the approximate boundaries of historical districts, they require reconstruction and further spatial adjustment for precise spatial analysis and the determination of geographical boundaries. For example, based on the georeferenced Maps 1 and 2 of the Historical Atlas of Iran, a table of the geographical coordinates of their control points was prepared, and the average distance between the actual points and the corresponding points on the maps was found to be 40.87 kilometres — a substantial discrepancy for spatial analysis in GIS.

Many studies have also been published in international journals on this subject; it should be noted that these studies have made extensive use of descriptions in geographical texts for the spatial reconstruction of specific regions using GIS. Among these studies are the following:

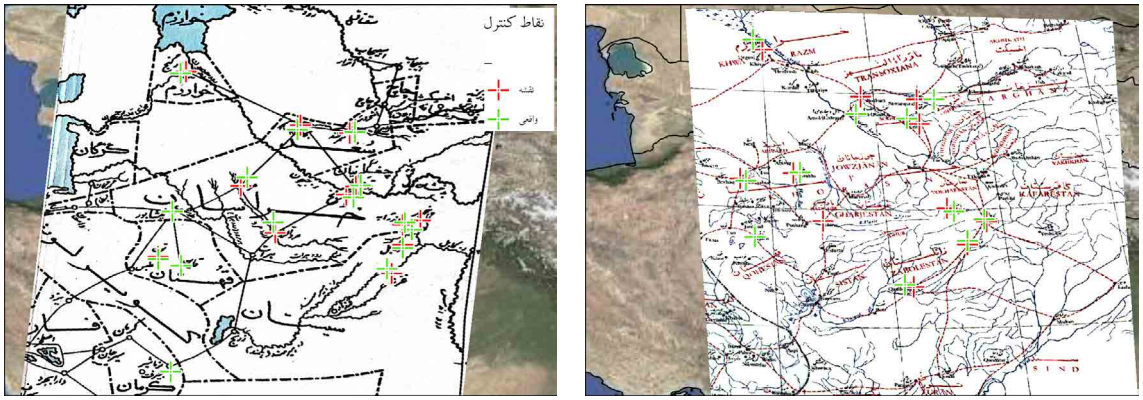


**Fig. 1: Georeferenced map of the Buyid period from the Historical Atlas of Iran (right) and the Khorasan map from The Lands of the Eastern Caliphate (left) (Authors, 2026).**

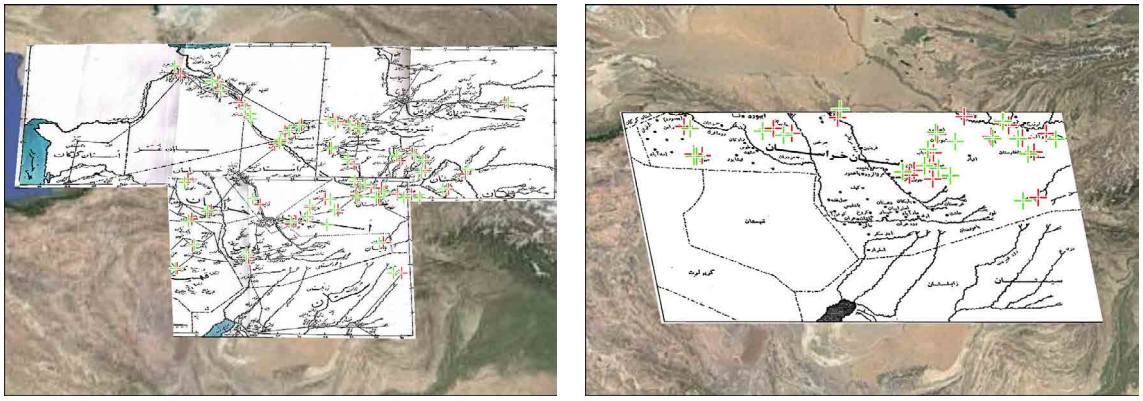


**Fig. 2: Georeferenced map of Greater Khorasan by Ranjbar (right) and three historical maps from The Lands of the Eastern Caliphate (left) (Authors, 2026).**

**Table 1: Sample Ground Control Points Used for the Georeferencing of the Buyid Map from the Historical Atlas of Iran and Their Positional Errors (Authors, 2026).**

| Number | Control Points | Map Coordinates | | Actual Coordinates of Points (WGS 1984) | | Spatial Error Range |
|---|---|---|---|---|---|---|
| | | Longitude | Latitude | Longitude | Latitude | KM |
| 1 | Nishabur | 58.569543 | 36.250245 | 58.823234 | 36.15649 | 24.055 |
| 2 | Sarakhs | 60.880338 | 36.487391 | 61.167119 | 36.509451 | 26.156 |
| 3 | Qaen | 59.219677 | 33.720853 | 59.219677 | 33.720853 | _ |
| 4 | Harat | 62.165142 | 34.395702 | 62.165142 | 62.165142 | _ |
| 5 | Qndahar | 66.102719 | 31.547654 | 65.714944 | 31.633827 | 35.35 |
| 6 | Bamyan | 67.541796 | 34.960075 | 67.843399 | 34.822199 | 31.88 |
| 7 | Ghazni | 68.42937 | 33.374506 | 68.42937 | 33.555467 | 18.35 |
| 8 | Kabul | 69.256623 | 34.382721 | 69.153217 | 34.486127 | 16.318 |
| 9 | Samarkand | 66.223361 | 39.673696 | 66.971982 | 39.67962 | 66.008 |
| 10 | Bukhara | 63.793304 | 39.794337 | 63.592415 | 39.046793 | 86.115 |
| 11 | Urgench | 59.536395 | 41.836619 | 59.131386 | 42.276097 | 63.6 |
| Mean Error Range in the Historical Atlas of Iran | | | | | | 40.87 KM |

Cartography of Andalus Landscape: Mapping Settlements of Muslim Agricultural Colonization in Europe Applying GIS Techniques: this study examines the pattern of Muslim settlements in the southeastern part of the Iberian Peninsula (Spain). The author has sought, by identifying settlement and agricultural patterns in southeastern Iberia, to examine the territorial boundaries, population,

and communication routes of the region using Muslim and Christian literary-historical sources with the aid of GIS tools. The study is to some extent interdisciplinary, and the author, working in the field of architecture, skilfully links elements of history, archaeology, and architecture (Quesada-Garcia, 2024). In terms of its use of historical and literary sources to identify and locate settlements and convert descriptive historical data into spatial data within a GIS environment, this study provides an important methodological basis for the present article. However, its focus is mainly on the settlement patterns and their relationship to agriculture in a specific region, whereas the present study, focusing on Greater Khorasan, examines not only settlements but also natural features, the road network, and political and geographical boundaries within a single spatial framework.

Cartographic Design and Processing of Originally Printed Historical Maps for Their Presentation on the Web: This study examines methods for creating a historical atlas, drawing on examples from the mapping of the Atlas of the Czech Republic. Most of the article concerns technical cartographic issues, such as the organisation and display of layers, map legends, and matters related to map design (Jušťová & Cajthaml, 2023). This study has been used in the present article for its methods of processing, organising, and cartographically displaying historical maps, and it demonstrates the importance of the proper design of layers, map elements, and methods of presenting historical information. However, its main focus is on the design and presentation of historical atlases and the web-based display of maps, whereas the present study uses GIS not only for display but also for the extraction, location, georeferencing, and analysis of historical geographical data.

Mapping the Past with Historical Geographic Information Systems: Layered Characteristics of the Historic Urban Landscape of Nanjing, China, since the Ming Dynasty (1368–2024): This study, which covers a relatively long but compressed period, reconstructs the historical landscape of the city of Nanjing, China. The authors identify the scattered nature of historical data and the lack of an integrated platform as major problems in historical-landscape studies and argue that Historical GIS (HGIS) can help address these problems. In general, the study uses tools such as georeferencing and the digitisation of geographical-historical descriptive data to reconstruct the city of Nanjing over a relatively long period up to the present day through digitisation (Bai et al., 2024). In terms of its use of HGIS to integrate scattered historical data and convert historical geographical information into spatial layers, this study provides a suitable methodological basis for the present research. Likewise, methods such as georeferencing and digitisation employed in that study have been taken into account in designing the spatial process of the present research. However, that study focuses on the transformation of the historical landscape of the city of Nanjing, whereas the present study is regional in scale and seeks the simultaneous representation of settlements, the road network, natural features, and historical boundaries of Greater Khorasan.

## 3. Data Collection and Analysis Method

The research data were extracted through a library-based method from the geographical and

historical texts of the third and fourth centuries AH, including Ahsan al-Taqasim, the various works titled The Routes of the Kingdoms, The Description of the Earth by Ibn Hawqal, and local histories. The information gathered included settlements, provinces, roads, political borders, natural features, and other geographical place names. After extraction, these data were organised as spatial and descriptive data and prepared for processing in ArcGIS Pro.

The spatial coordinates of cities, villages, and other geographical features were extracted using Google Maps imagery and OpenStreetMap (OSM), and recorded in the WGS 1984 geographic coordinate system. All descriptive information for each feature — including its historical name, present name, source, location, province, and other relevant characteristics — was recorded in the attribute table, enabling connections between spatial data and historical information, the classification of features, and the performance of spatial analyses (Makhdoom *et al.,* 2013: 135).

To evaluate and reconcile the historical maps with present-day locations, the maps of al-Istakhri and Ibn Hawqal, as well as selected maps from previous studies, were georeferenced within ArcGIS Pro (Figs. 1 and 2). In this process, known cities, stable natural features, and other identifiable points were used as control points to align the historical maps with the geographic coordinate system. This made it possible to compare the historical data with present-day locations and assess the degree of correspondence between the identified places (Affek, 2013: 376; Rumsey & Williams, 2002: 1–5).

To create the spatial basis of the final map, Google Maps imagery was used to locate features, a Digital Elevation Model (DEM) and hillshade were used to display terrain relief, and Sentinel-2 land-cover data (10 m) were used for land-cover analysis (Table 2). These data, while providing an image of the present condition of the region, also made it possible to compare and analyse certain geographical features described in the historical texts.

After the historical and spatial data were integrated, the final map was prepared in the software's Layout environment. To display the information, the Symbology, Unique Values, Labeling, and Annotation capabilities were used so that features could be classified and represented according to characteristics such as province, sub-district (rustaq), historical source, and other descriptive indicators. The result of this process was a comprehensive map of the natural, human, and political geography of Greater Khorasan in the third and fourth centuries AH, which made it possible to conduct spatial analysis and a comparative examination of the historical data against the present condition (Fig. 3).

**Table 2: Datasets Used in the Study (Authors, 2026).**

| Access | Use | Precision | Raster Layer |
|---|---|---|---|
| Google Earth Engine-Code Editor | Base layer(Map)/ Elevation ratio | 90m | DEM- SRTM GL3 90m |
| Landcover Explorer | Cultivated land ratio | 100m | Land Cover Sentinel2- 100m |
| Google Earth Engine-Code Editor | 3D landscape | 90m | Sentinel2_Terrain_VegEnhanced |

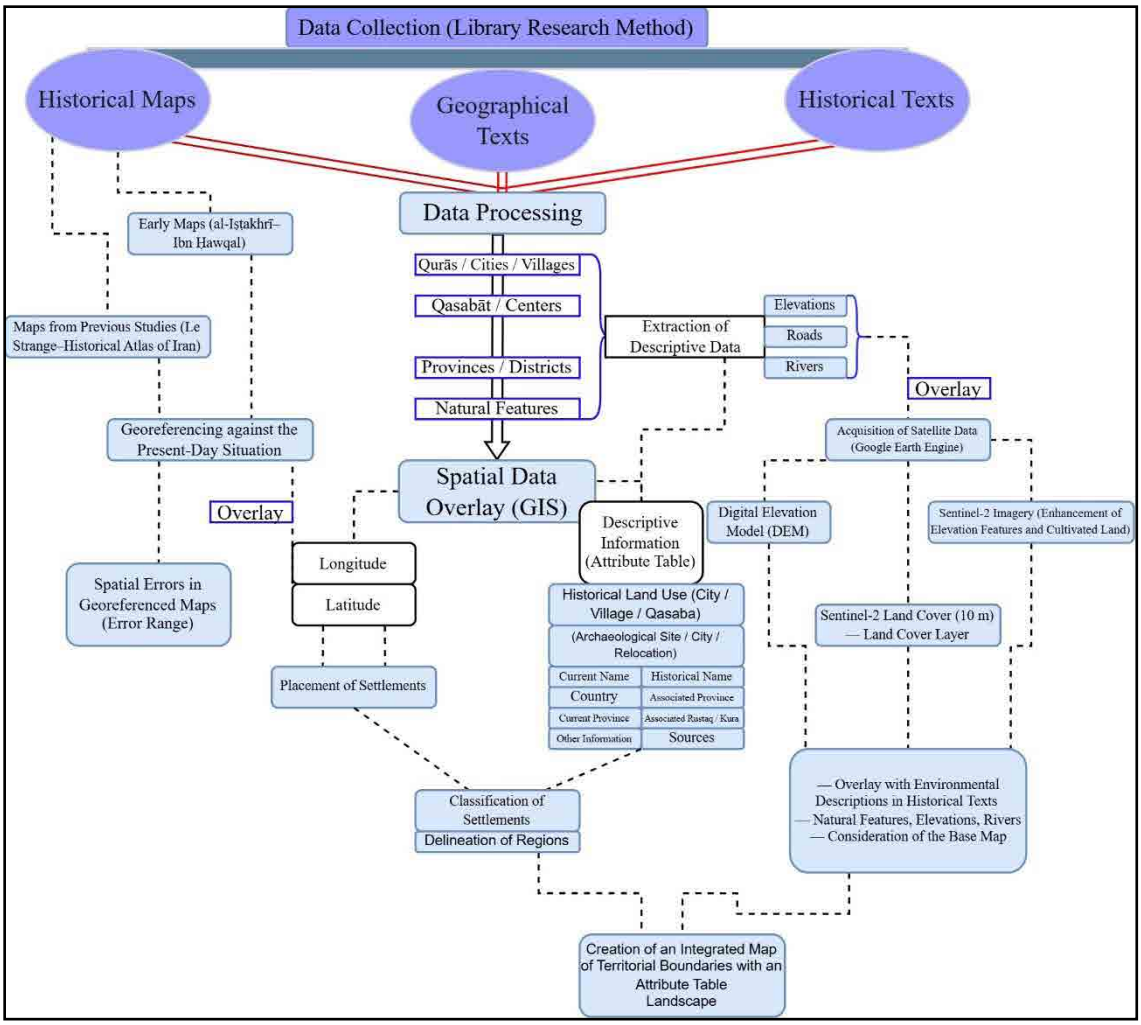



**Fig. 3: Workflow of the research process for reconstructing a comparative map of the natural and political geography of Greater Khorasan using GIS (Authors, 2026).**

## 4. Identifying the Territorial Boundaries of Greater Khorasan Based on Geographical-Historical Texts

Geographical texts such as The Routes of the Kingdoms by al-Iṣṭakhri and The Description of the Earth by Ibn Hawqal provided maps as part of their geographical descriptions. Two maps from these works, drawn to show the boundaries of Khorasan, were examined (al-Iṣṭakhri, 1961; Ibn Hawqal, 1966: 162). Although the maps are not precisely accurate, they display important information about the relationships among settlements, approximate boundaries, and certain natural features of Khorasan. Georeferencing tools were therefore used to reconcile the maps, in relative terms, with present-day coordinates. To examine the effect of the transformation type on the degree of correspondence between the historical maps and present-day coordinates, georeferencing was carried out using two methods, Affine and Spline. The Affine transformation (Fig. 4), being a linear transformation, preserves the overall geometric relationships of the map, whereas the Spline transformation (Fig. 5), by applying non-linear changes, allows for the correction of local distortions and a closer fit of the control points. As can be seen in the image,

the Spline method caused excessive warping of the map (Fig. 5). This method attempts to fit the locations of the georeferencing control points to their true coordinates; consequently, because the map was not drawn with precise coordinates, the resulting image becomes distorted from its original shape. Nevertheless, despite the loss of the original form, it is still possible to identify certain natural features, such as Lake Zarah in southern Khorasan, the highlands of Ghur, and the relationship between the course of the Oxus and the cities. In general, the purpose of employing these two methods was not to compare georeferencing algorithms, but to obtain the image with the greatest spatial correspondence for the approximate boundaries of Khorasan in the maps of al-Istakhri and Ibn Hawqal, and to use it in reconstructing the historical geography of the region.

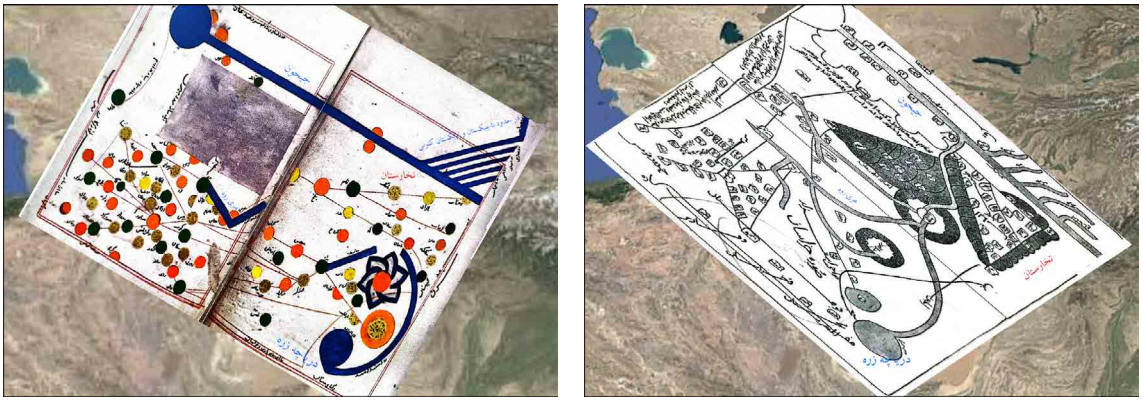


**Fig. 4: Georeferenced maps of al-Istakhri (left) and Ibn Hawqal (right) using the Affine transformation. In this method, the geometric relationships and linear characteristics of the maps are preserved as much as possible (Authors, 2026).**

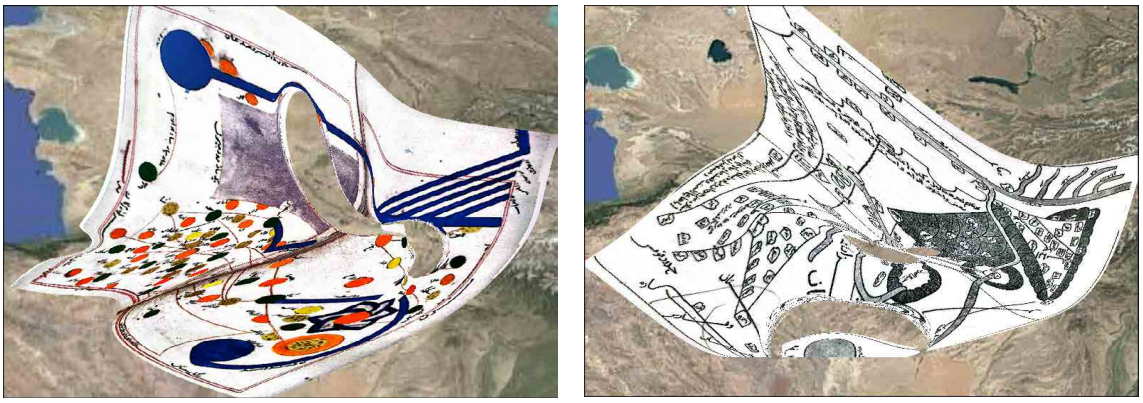


**Fig. 5: Georeferenced maps of al-Iṣṭakhrī (left) and Ibn Ḥawqal (right) using the Spline transformation. The method maximises the fit to the ground control points but introduces local distortions due to the limited geometric accuracy of the historical maps (Authors, 2026).**

Based on the georeferencing of the two maps above (Figs. 4 and 5), the boundaries of Khorasan may be considered as shown in Figure 6. The three present-day provinces of Khorasan in Iran, the greater part of Afghanistan, and small parts of the provinces of Mary and Ahal (Akhal) in Turkmenistan fall within the defined boundaries of Khorasan. However, the lands beyond the Oxus River, which today comprise much of Tajikistan and Uzbekistan — regions such as Khutal, Soghd, and Khwarazm are recognised in some historical-geographical works as part of Khorasan, or are mentioned as being in direct connection with it. On this basis, determining the study area

required a comparative rereading of the geographical texts and a distinction between regions that in various sources are at times considered part of Khorasan and at times independent of, or dependent on, Transoxiana.

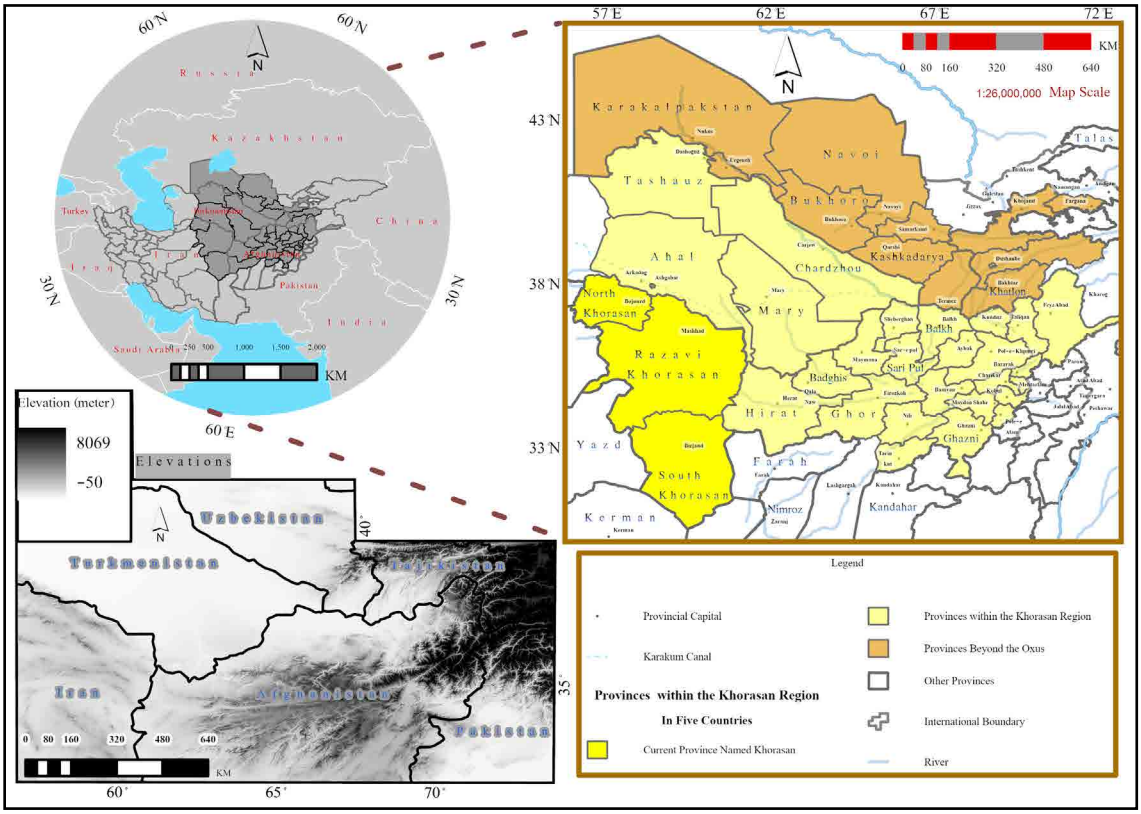



**Fig. 6: Establishment of the preliminary study area based on present-day political boundaries and topographic features as the first step in reconstructing the geographical extent of Greater Khorasan (Authors, 2026).**

A comparative examination of the sources shows that the boundaries of Khorasan in the third and fourth centuries AH were not fixed and differed across the various sources (Bayhaqi, 1971: 18; Sayyed Sajjadi, 2004: 67). These differences stem less from disagreement about the geographical location of the districts than from political developments, the territorial extent of governments, and the descriptive approaches of the geographers. For this reason, in the present study the boundaries of Khorasan were not determined on the basis of a single source; rather, by comparing the body of geographical and historical texts, a boundary was chosen that showed the greatest agreement with the shared accounts of the sources. On this basis, the term "Transoxiana" (Ma wara' al-Nahr) has been used solely for the lands beyond the Oxus, and only those districts whose attribution to Khorasan in the sources is supported by sufficient descriptive evidence have been included in the study area.

## 5. The Territorial Unity of Greater Khorasan in Ancient Geographical Texts

A comparative examination of the geographical texts of the third and fourth centuries AH shows that, although there are disagreements in determining the precise boundaries of Khorasan, most geographers agree on the general framework of the region. These differences are observed mainly

in the border areas, particularly in the eastern and northern parts, and stem less from disagreements in geographical knowledge than from political developments and changes in the territorial extent of governments in different periods.

Ibn Khordadbeh describes Khorasan as an independent land whose eastern border extends to Tokharistan and Ghazna, and which does not include Transoxiana (Ibn Khordadbeh, 1992: 4). Yaqubi, by contrast, placing Balkh at the centre of Khorasan, describes the extent of this land through its distance from the surrounding districts (Yaqubi, 1977: 63). This description shows that the author considered large parts of the region north of Balkh — namely Khutal to Soghd, and, to the east, as far as beyond Badakhshan — to be part of the political territory of Khorasan in the third century AH. Similar evidence is also found in historical sources; for example, Bayhaqi calls Herat the "midpoint of Khorasan," which reflects the role of this city in the region's communication network (Bayhaqi, 1971: 276). Moreover, the fact that this city was regarded as the midpoint of Khorasan in the author's own time, the fifth century AH, is evidence of changes in the political territory of Khorasan.

In some works, such as The Routes of the Kingdoms by al-Istakhri, the boundaries of Khorasan are extended as far as Ghur (al-Istakhri, 1968: 220). This difference can be interpreted in light of the political circumstances at the time the work was written, since the extent of Khorasan's territory changed together with the expansion or contraction of the influence of ruling governments. Al-Maqdasi, too, explicitly emphasises the conventional nature of these boundary divisions, and in places describes Transoxiana and even Sistan as connected with Khorasan (Al-Maqdasi, 1982: 379–381). Overall, comparison of these sources shows that, although the political boundaries of Khorasan are not entirely identical across the various texts, the network of cities, communication routes, and the spatial structure of the region show considerable coherence. On this basis, in the present study the study area was determined on the basis of the shared accounts of the geographical sources, rather than on the description of a single work.

### 5-1. Continuity and Discontinuity of the Trans-Oxus Territories with Khorasan

An examination of the geographical and historical texts of the third and fourth centuries AH shows that the relationship between Khorasan and Transoxiana was subject to the political circumstances of different periods. Although the Oxus River is recognised in most sources as the natural boundary between the two regions, in periods when both banks of the river were under unified rule, this border largely lost its political function, and spatial continuity between the two regions was strengthened. A clear example of this situation is seen in the Samanid period, when, following the defeat of the Saffarids, the territory on both sides of the Oxus was governed as a single realm for nearly a century (Gardizi, 1958: 11; Anonymous, 1983: 88–89).

Despite this political continuity, geographers did not hold identical views on the status of Transoxiana. Ibn Hawqal extends the reach of Khorasan to the districts adjoining the Oxus, and describes Bukhara as the closest city of Transoxiana to Khorasan and the gateway connecting the two lands (Ibn Hawqal, 1966: 188, 203, 218). By contrast, Ibn al-Faqih and the author of Hudud

al-Alam draw a clearer distinction between Khorasan and Transoxiana, placing Bukhara within the territory of Transoxiana (Ibn Faqih, 2014: 162; Anonymous, 1983: 106). Likewise, Beyhaqi's account places the border of the Ghaznavids within the political sphere of Khorasan (Bayhaqi, 1971: 267–270).

Comparison of these accounts shows that the disagreement among the sources relates less to the geographical location of the cities than to political changes and shifts in governmental borders. Accordingly, in the reconstruction of the historical map in this study, Transoxiana was treated as a region independent of Khorasan, but the border areas that are described in various sources as being in direct connection with Khorasan were taken into account in determining the study area.

**5-2. Discontinuity and Continuity of Khwarazm with Khorasan**

Khwarazm is among the districts whose place within the territory of Khorasan is disputed among the geographers of the third and fourth centuries AH. This disagreement is seen not only in determining the geographical boundaries but also in the interpretation of the political, cultural, and linguistic ties of this province with Khorasan. Nevertheless, the fullest and clearest descriptions of this province were made in the third and fourth centuries AH. Al-Istakhri and Ibn Hawqal considered the language of the people of Khwarazm to be a dialect of Khorasan (al-Istakhri, 1347: 238; Ibn Hawqal, 1345: 209); nonetheless, the Khwarazmian dialect was not intelligible to other Iranians, and between the fifth and seventh centuries AH, with the dominance of Turkic elements, this dialect also disappeared (Barthold, 1376: 163–164). Abu Rayhan al-Biruni described Khwarazm as a territory entirely separate from Khorasan (al-Biruni, 1386: 142). Al-Maqdasi is the only geographer to provide a precise account of the cities and subdivisions of Khwarazm;

He divides this province into two parts, on the left and right banks of the Oxus, respectively named Khorasania Khwarazm and Haytal Khwarazm (al-Maqdasi, 1361: 412–415). In the third and fourth centuries AH, the province of Khwarazm was always in direct connection with the Islamic world and with other parts of Khorasan; in a sense, the events occurring within its territory were always bound up with the rest of Khorasan.

In general, as noted earlier, the boundaries of Khorasan were conventional; nevertheless, political changes influenced the views of the geographers. Table 3 lists some of the provinces attributed to Khorasan whose inclusion within the boundaries of Khorasan was disputed among the geographers; al-Ya'qubi, in his work The Book of Countries, one of the earliest geographical texts, likely because of the unified Samanid presence on both sides of the Oxus, included many of the districts beyond the Oxus, and even parts of western Khorasan such as Qumis, among the territories of Khorasan. Nevertheless, the closer the geographical texts come to the fourth century AH, the more the territorial unity among certain provinces attributed to Khorasan breaks down, and geographers no longer state their attribution to Khorasan with certainty.

**6-1. Political Divisions**

In The Book of the Regions of the World the criteria for distinguishing one district from another

**Table 3: Comparison of the Views of Third- and Fourth-Century AH Geographers on the Inclusion of Selected Regions within Khorasan (Authors, 2026).**

| The Best Divisions for Knowledge of the Regions 375AH | Regions of the World 372AH | The Description of the Earth 356AH | The Routes of the Kingdoms 338AH | The Routes of the Kingdoms 300AH | The Book of Precious Records 290 AH | Book of Countries 290 AH | Book of Countries 284AH | Geographer/Province |
|---|---|---|---|---|---|---|---|---|
| ✓ | _ | ✓ | ✓ | ✓ | ✓ | _ | ✓ | Qohestan |
| _ | _ | ✗ | ✗ | ✗ | _ | ✗ | ✓ | Qumis |
| _ | _ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | Khwarazm |
| _ | _ | _ | ✗ | _ | ✓ | ✓ | ✓ | Soghd |
| _ | _ | _ | ✗ | ✗ | _ | ✓ | ✓ | Chaghanian |
| _ | _ | _ | ✗ | ✗ | _ | ✓ | ✓ | Khutal |
| _ | ✗ | ✗ | ✗ | ✗ | ✗ | _ | ✓ | Sistan |
| ✓ | _ | ✗ | ✗ | ✓ | _ | _ | ✓ | Kabulestan |
| _ | ✗ | _ | ✗ | ✗ | ✓ | ✓ | _ | Oshrusana |
| _ | ✗ | _ | ✗ | ✗ | ✓ | ✗ | _ | Farghana |

are stated as follows: "A district is distinguished from another district in four respects: first, by difference of climate… and fourth, by difference of rulers" (Anonymous, 1983: 55). The author further considers factors such as rivers, mountains, and deserts to be influential in determining the boundaries of districts (ibid). On this basis, Khorasan was made up of an extensive territory comprising numerous provinces and rural sub-districts (rustaqs), each with its own centre and sphere of influence.

Ibn al-Faqih divides Khorasan into four parts — Nishabur, Marv, Bukhara, and Balkh — and lists the districts dependent on each (Ibn al-Faqih, 2014: 172). In this division, Herat is considered dependent on Nishapur, and Bukhara is also counted among the main divisions of Khorasan. By contrast, he makes no mention of Kabulistan, a matter that is consistent with the accounts of al-Istakhri and The Book of the Regions of the World regarding its inclusion within the territory of India (al-Istakhri, 1968: 202; Anonymous, 1983: 88, 104). These differences show that the boundaries of Khorasan changed in accordance with political and military developments. Historical sources provide similar information. Qudama ibn Jafar, in his work al-Kharaj, lists about forty districts among the tax territories of Khorasan, extending from Qohistan, Tabas, and Nishabur to Khwarazm, Sughd, Chaghaniyan, Farghana, and Taraz (Qudama, 1991: 141–155). Local histories show the same diversity. The Hakim of Nishapur at times includes Khwarazm, Transoxiana, and Qumis among the territories of Khorasan (Nishaburi, 1995: 62–66, 203), whereas Ibn Funduq, in Tarikh-i-Beyhaq, considers Khorasan an independent province and describes Qohistan, Ghor, Kabul, and Khwarazm as separate from it (Ibn Funduq, 2012: 28-29). These differences appear to reflect political transformations and shifts in the borders of Khorasan across different periods rather than error.

### 6-2. Differentiation of Political Divisions Based on the Affiliation of Settlements with Each Region

In the geographical texts, settlements are usually identified according to the province or district

to which they belong, just as The Book of the Regions of the World emphasises the importance of district boundaries. Accordingly, by employing the capabilities of the Geographic Information System, the attribution of each settlement to its corresponding province or district was reconstructed on the basis of the attribute-table information within the software environment. To this end, features were separated using the Unique Values capability according to province name, so that the general pattern of distribution and the approximate boundaries of each district would become apparent (Fig. 7). It should be noted, however, that in the Persian and Arabic texts of the early Islamic centuries there is no fixed definition of concepts such as city, town, and province, and each geographer presents the division of districts according to his own method (Sayyed Sajadi, 2004: 275). Al-Maqdasi, too, states explicitly that he first introduces the khura (regional divisions) and then lists the cities dependent on each, since his purpose is to explain the geography of the districts rather than merely to order the cities (Al-Maqdasi, 1982: 419).

Consequently, the attribution of certain settlements to a given province is not always definitive, and disagreement among geographers can be observed. In addition, the gap of a century between certain geographical works, together with political and administrative developments, caused the affiliation of some districts to change. On this basis, the attribution of each settlement to the province or district mentioned in the sources was extracted and plotted on the map, so that the approximate boundary of each province, and ultimately the study area of Greater Khorasan, could be determined (Fig. 8). An examination of the distribution of settlements attributed to each province shows that the political divisions of the geographers were not merely theoretical but followed a definite pattern in the distribution of settlements. The density of settlements in certain provinces such as Nishabur, Marv, Soghd, and Bukhara, in contrast to their greater dispersal in border regions such as Badghis, Ghur, and Quhistan, reflects the differing status of these provinces within the spatial organisation of Khorasan. On this basis, the attribution of each settlement to its corresponding province made it possible to draw the approximate boundaries of the political units and, ultimately, to reconstruct the extent of Khorasan (Figs. 7 and 8).

In order to better understand the natural setting of these divisions, a three-dimensional model of the study area was also prepared using Sentinel-2 imagery and the Digital Elevation Model (DEM) (Fig. 9). This model simultaneously displays the region's relief, plains, rivers, cultivated areas, deserts, highlands, and the final study basin, and reveals the role of natural factors in shaping the pattern of settlement and the boundaries of the provinces. As can be seen in Figure 9, the extensive deserts — such as the Khwarazm Desert, the Bukhara Desert, and the Jowzjan Desert — together with the mountain ranges of eastern and central Khorasan, have confined communication among the districts to specific routes. Furthermore, based on the geographers' descriptions of each settlement in Khorasan, many villages in Khorasan have changed their names; of the 271 settlements examined in this study, 56.8% have undergone changes in their names, whereas 43.2% have retained their original names. According to Figure 9, the names of settlements in the provinces of Khwarazm, Marvshahjan, Marval-Rudh, Jowzjan, Badghis, Nisa, Abivard, Zamindavar, Chaghaniyan, and parts of Tokharistan have undergone extensive name

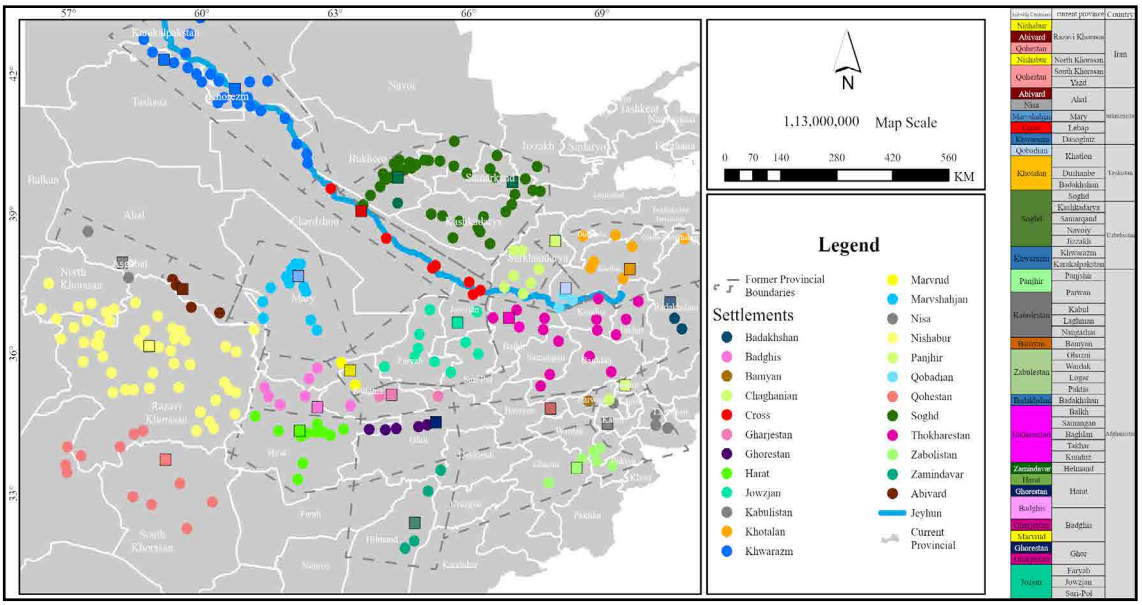



**Fig. 7: Spatial representation of the attribution of Khorasan settlements to different regions based on the descriptions of third- and fourth-century AH geographers (Authors, 2026).**

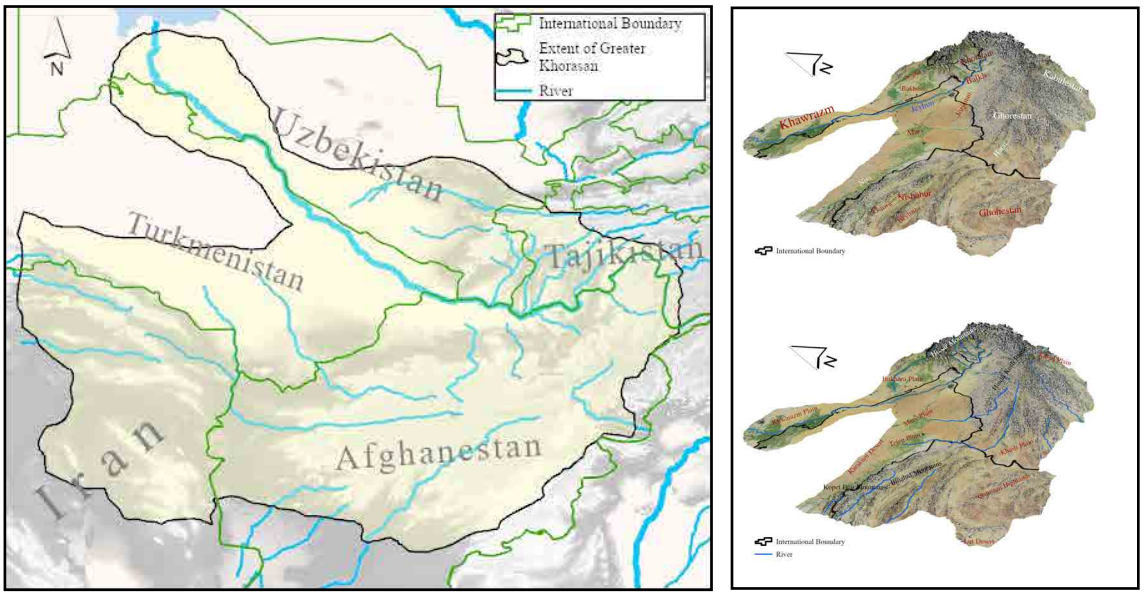



**Fig. 8: Three-dimensional visualisation of the Greater Khorasan study area based on the Digital Elevation Model (DEM), illustrating the regional topographic landscape (Authors, 2026).**

changes. Among the main causes of these changes are shifts in the course of the Oxus in the Khwarazm region, and, in other areas such as Nasa, Abivard, Juwzjan, and Badghis, the continual raids of nomadic peoples. It should be noted that the boundaries of the provinces of Nishabur and Quhistan, which today correspond roughly to the provinces of Razavi, North, and South Khorasan, show the least degree of change in settlement names among the villages examined; nevertheless, changes in the names of rustaqs and certain natural features are observable in this region. This spatial pattern shows that the renaming of settlements in Khorasan was not a uniform process, but occurred mainly in border and transit regions. By contrast, provinces such as Nishabur and Quhistan, which enjoyed relative political stability and greater demographic continuity, preserved

greater continuity in their geographical names. Thus, changes in names can, alongside factors such as shifts in river courses, political developments, and ethnic migrations, be regarded as indicators for reconstructing the historical and spatial transformations of Greater Khorasan.

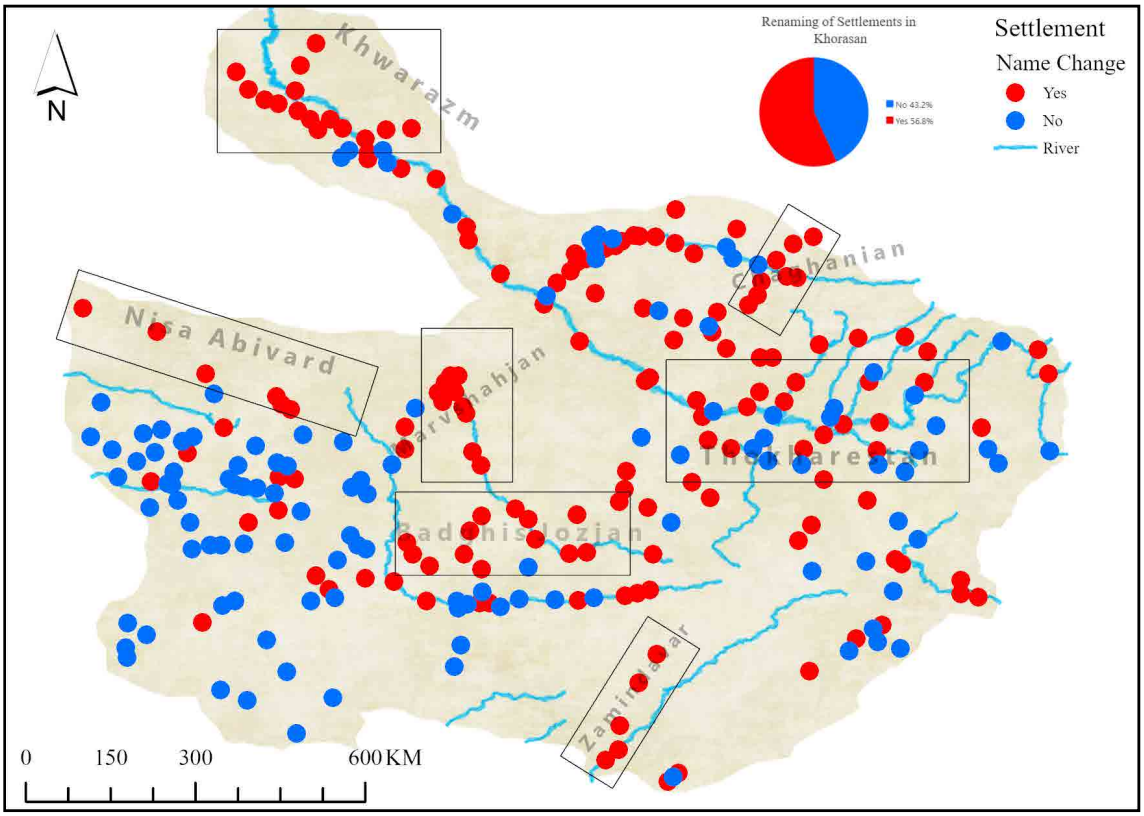



**Fig. 9: Spatial Distribution of Settlements with and without Name Changes in Greater Khorasan (Authors, 2026).**

### 6-3. Environmental Differences among the Provinces of Khorasan and Their Impact on Geographical Reconstruction

The descriptions of the geographers of the third and fourth centuries AH show that the provinces of Khorasan differed noticeably from one another in terms of natural conditions and systems of water-resource use. These differences are also important for the geographical reconstruction of the region, since the patterns of settlement, roads, and boundaries were to a great extent influenced by these natural characteristics.

For example, Marv and Khwarazm developed on the basis of extensive irrigation networks and canals branching off from the Murghab and Oxus rivers, whereas Nishapur and parts of Quhistan relied more on qanats and rain-fed agriculture (Al-Maqdasi, 1982: 465; Anonymous, 1983: 89). Likewise, the geographers' descriptions of the lush oases of Soghd and Bukhara correspond to a considerable extent with the spatial pattern of these regions in present-day spatial data (Ibn Khordadbeh, 1992: 179; al-Istakhri, 1968: 231).

By contrast, certain regions such as Badghis and Khwarazm underwent extensive changes in later centuries as a result of climatic change, shifts in river courses, and transformations in irrigation — a pattern that is observable by comparing the descriptions in historical sources with

contemporary spatial data (Barthold, 1971: 106; Lestrange, 1994: 473–486). Comparison of the geographers' descriptions with land-use data derived from satellite imagery also shows that some of the historical agricultural zones of Khorasan have continued to the present day, while extensive changes have occurred in certain regions (Fig. 10). For example, the concentration of cultivated land in the oases of Soghd, Bukhara, and Marv remains identifiable, whereas in regions such as Tajan, Nisa, and Abivard, the development of modern irrigation networks has led to an expansion of agricultural land compared with the Islamic period. By contrast, in certain areas such as Badghis, the present pattern of land use corresponds less closely with the descriptions of geographers of the early Islamic centuries — a discrepancy that may result from climatic transformations, changes in watercourses, and changes in land-use systems (Al- Maqdasi, 1982: 485; Lestrange, 1994: 442). Accordingly, recognising the environmental differences among the provinces of Khorasan, alongside the locations of settlements, allows for a more precise interpretation of spatial patterns and the reconstruction of the region's historical geography within a GIS environment.

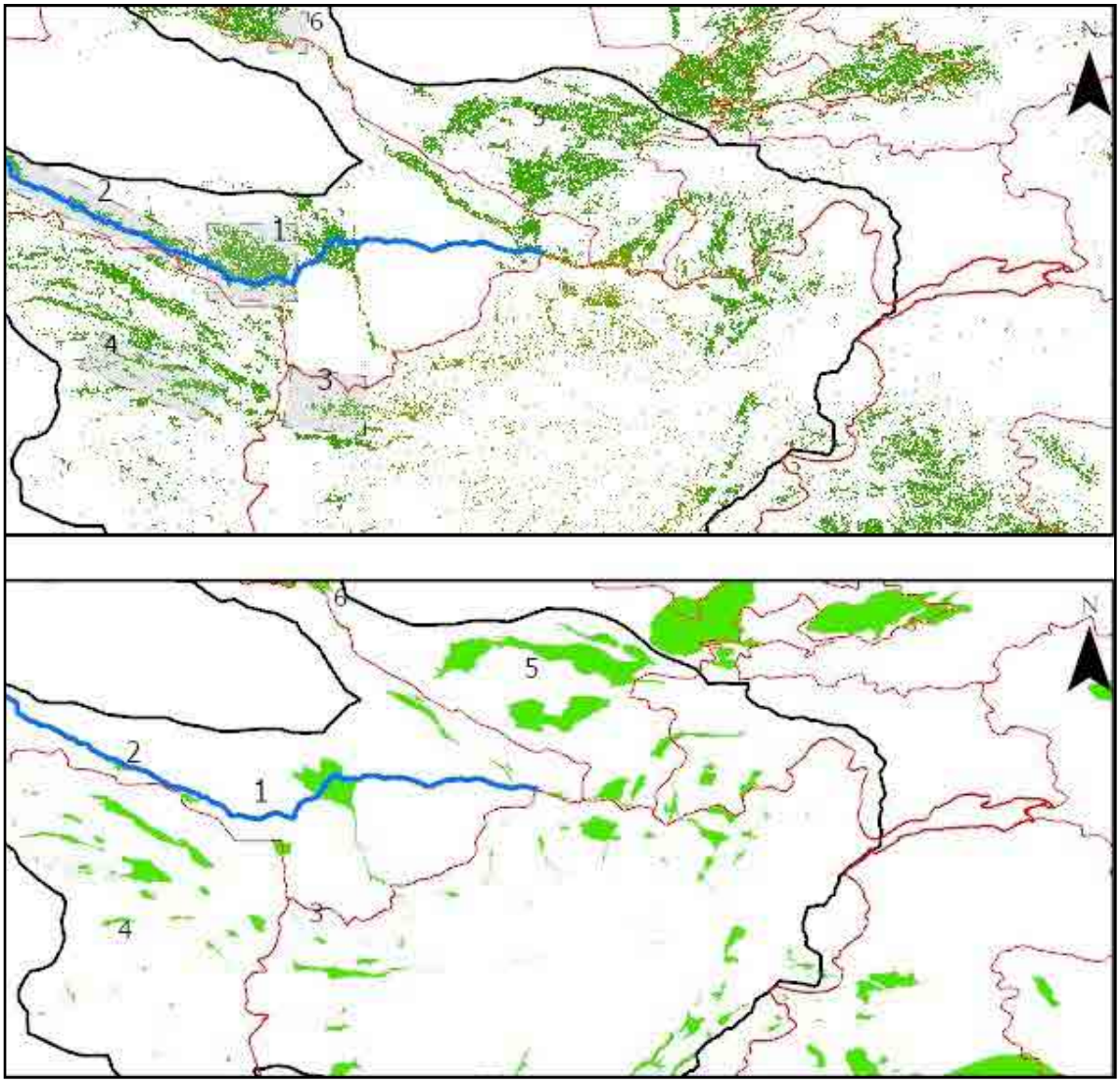



**Fig. 10: Comparison of present-day and reconstructed agricultural land cover within the study area based on Sentinel-2 data and the geographical descriptions of the third and fourth centuries AH (Authors, 2026).**

### 6-4. Communication Routes of Greater Khorasan

To identify present-day communication arteries, OSM data were used. The main trunk routes of Iran, Afghanistan, Turkmenistan, Uzbekistan, and Tajikistan within the Greater Khorasan study basin were separated from secondary roads (Fig. 11), and then reconciled with the descriptions of the geographers of the early Islamic centuries and with the routes connecting cities shown on the maps of al-Istakhri and Ibn Hawqal (Figs. 4 and 5). The communication routes were ultimately represented as a main highway and two secondary routes branching from it, designated Route 1 and Route 2. The main principle in drawing the roads was to link settlements — whether market towns (qasaba), cities, caravanserais (ribat), or small villages — along the principal routes; in their descriptions of roads, the geographers consistently referred to the distances between settlements. The roads were therefore drawn on the basis of OSM arterial-road data, the DEM elevation model, and the relative positions of the settlements (Fig. 11).

Natural conditions are also reflected in the road network of Khorasan. Despite the chronological gap between the geographical texts, the main communication routes are described with only slight differences, while greater divergence is observed in the locations of stopping stations. The evidence from the texts therefore suggests that the roads of Khorasan can be described in three categories: the main east–west highway, the routes connecting the provinces to the highway, and secondary roads. The highway of Khorasan, which formed an important part of the overland route of the Silk Road, began at Rayy and, after passing through Nishapur and Sarakhs, extended towards Marv and Bukhara or Balkh (Yaqubi, 1977: 54–55; Bastani Parizi, 2001: 199). Some secondary routes were also drawn on the basis of the geographers' descriptions, but roads whose exact stopping points could not be identified were not shown on the final map, in order to avoid hypothetical reconstruction.

Khorasan's position at the crossroads of communication routes made the region an important component of the major developments of the Islamic world. All the geographers mention the main route known as the highway of Khorasan — a route connected to the great Silk Road, which began in China and passed through Turkestan (Bastani Parizi, 2001: 200–201). According to the geographical descriptions, the highway of Khorasan passed through the main quarters (arbā') of Khorasan — Nishabur, Harat, Bukhara, Samarqand, and Balkh — and was connected by secondary routes to the other settlements of Khorasan.

Comparison of the reconstructed road network with the present-day main arteries shows that a considerable portion of today's communication axes still follow the same natural corridors as in the past. This overlap can be attributed to the continued role of the plains, mountain passes, river courses, and the avoidance of desert expanses. Although the routes have changed in detail, the overall structure of Khorasan's communication network has shown considerable continuity from the early Islamic centuries to the present.

## 7. The Final Map of Greater Khorasan[1]

At the outset of drawing the map, an attempt was made to establish general coordinates for the

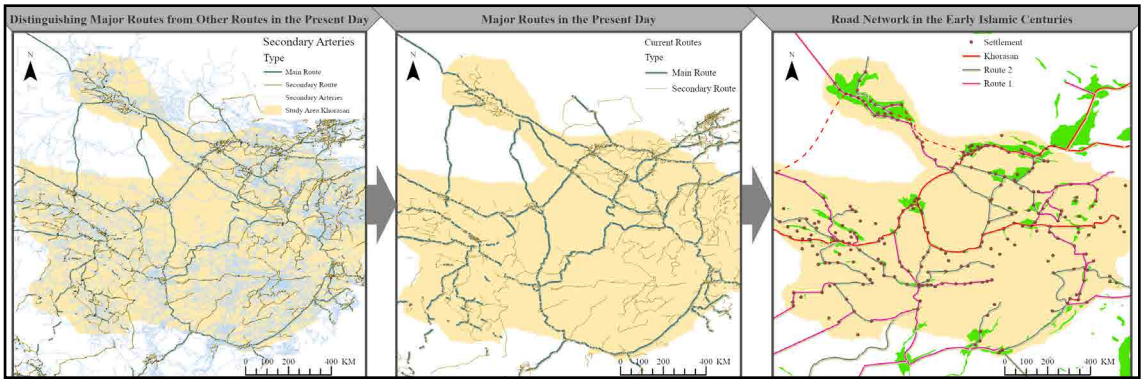



**Fig. 11: Reconstructed Road Network of Greater Khorasan Based on the Contemporary Road Network and Historical Geographic Descriptions (Authors, 2026)**

boundaries of Khorasan as the study area, on the basis of which the extracted data on the names of cities, villages, hamlets, rivers, and highlands were positioned. As noted earlier, many of the region's natural boundaries remain as they were in the past; the highlands, for example, may be counted among the main factors shaping the transformations of Greater Khorasan. For drawing the map, the present-day spatial base was therefore used with the aid of Google Maps imagery (Table 2), and the natural features and other place-names were subsequently drawn upon it. Given the very large scale of the map (approximately one million square kilometres on a single A4 page), an effort was made to avoid overcrowding the map with place names as far as possible. The highlands were shown on the map using a two-dimensional satellite elevation layer to enhance its visual presentation; likewise, the present agricultural basin was applied in green, with some adjustments also made on the basis of the geographers' descriptions in the ancient texts (Fig. 10). Present-day cities were shown with separate symbols, and the present political boundaries were also applied to the map. The former names of regions, villages, highlands, rivers, and lakes were shown in black and dark blue, while, for example, the present name of a city or region was placed in red. Likewise, to provide a clearer overall understanding of interconnected regions, the roads mentioned between regions and villages in the geographical texts were also drawn.

## 8. Conclusion

The present study, focusing on the geographical sources of the third and fourth centuries AH and using GIS software, sought to reconstruct the boundaries and spatial structure of Greater Khorasan. Analysis of the geographers' descriptions — in particular the various works titled The Routes of the Kingdoms and works containing maps such as The Description of the Earth by Ibn Hawqal — showed that, although the boundaries of Khorasan are not uniform or fixed across the various texts, a coherent network of cities, districts, routes, and natural boundaries recurs throughout these works and is capable of being converted into spatial data.

A comparative examination of the historical data against present-day locations showed that a considerable portion of the geographical place names of Greater Khorasan — particularly the main cities, important districts, and natural elements such as mountain ranges, plains, and riverbeds — have retained their spatial continuity to this day. Many discrepancies and differences

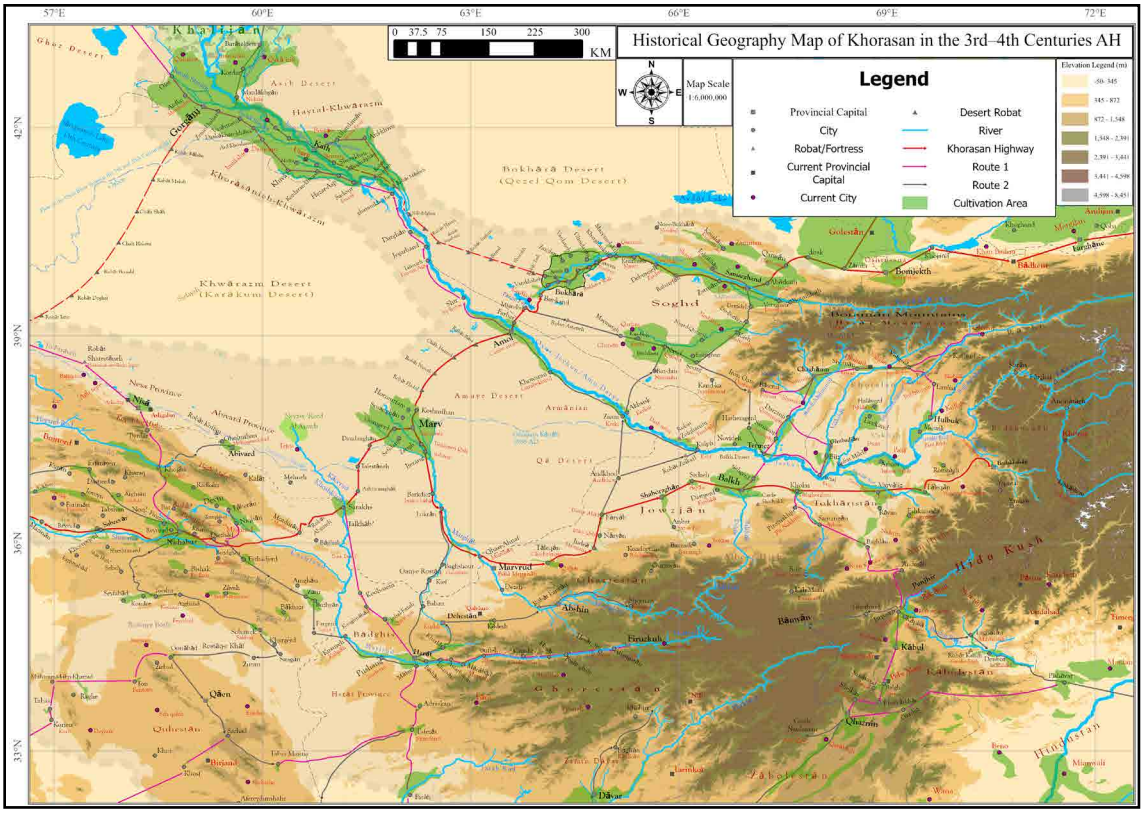



**Fig. 12: Map of Greater Khorasan (Authors, 2026).**

in nomenclature, shifts in river courses, and changes in the centrality of certain districts could be identified and explained through GIS analysis. It was also found that, despite differences among geographers' views regarding the precise boundaries of Khorasan and its border with Transoxiana, their descriptions of distances, routes, and the position of cities display a notable degree of coherence.

The process of reconstructing the historical map in ArcGIS Pro showed that the descriptive data of geographical texts, when systematically extracted and organized within a GIS framework, have considerable potential for representing the spatial structure of the past.

The final map produced offers a relatively precise and reliable picture of the extent of Greater Khorasan in the medieval Islamic period — a picture that can serve as a basis for future historical, geographical, archaeological, and interdisciplinary studies, and can also help clarify certain mistaken impressions regarding the boundaries of Khorasan, its communication routes, and the position of its various districts in the past. In general, the findings of this study show that the geographical data of the medieval centuries, despite their shortcomings and scattered nature, have substantial potential for reconstructing the spatial structure of the past, and that the use of GIS is an effective tool for converting these data into a precise and analysable representation of Greater Khorasan.

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**Author Contributions**

Both authors contributed equally to the preparation of this article, with each contributing 50%.

**Conflict of Interest**

The authors declare that they have no conflict of interest regarding the authorship or publication of this article.

**Endnote**

The map file, in TIFF format, and the settlements of Khorasan broken down in Excel, are available for download and review at: https://zenodo.org/records/21775004?token=eyJhbGciOiJIUzUxMiJ9.eyJpZCI6ImY1MjMxZTIyLTM1ZmYtNGRlMi1hMDIxL-WNhMWNkOTZjOWE2NSIsImRhdGEiOnt9LCJyYW5kb20iOiI1ZWFiNDZjNDI2MTc1M2E3MmY2ZWYyM2I5MmI1ZGY-wMSJ9.nIkdwq_t3HOmAqgs9CD6Wz-GZPUCs7UJY099EkcBIFEwxf8Jh6Gnh9Pfw0gLa7T0TYJkBwZYu6APyv4ek-Za0g

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# مـطالعات باسـتان‌شـنـاسی

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# نقشه‌نگاری جغرافیای طبیعی و سیاسی خراسان بزرگ در سده‌های سوم و چهارم هجری‌قمری (نهم و دهم میلادی) با استفاده از سامانهٔ اطلاعات جغرافیایی (GIS)


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**چکیده**

پژوهش حاضر با هدف بازنمای فضایی و نقشه‌نگاری جغرافیای طبیعی، انسانی و سیاسی خراسان بزرگ در سده‌های سوم و چهارم هجری‌قمری با بهره‌گیری از سامانهٔ اطلاعات جغرافیایی (GIS) انجام شده است. این پژوهش با استفاده از داده‌های جغرافیایی-تاریخیِ متون سده‌های ابتدایی اسلامی، به بازسازی نقشه‌ای منسجم از خراسان بزرگ و شناسایی استقرارگاه‌ها، پدیده‌های طبیعی و مرزهای سیاسی و انسانی آن دوره پرداخته و چارچوبی برای تبدیل داده‌های توصیفی متون تاریخی به داده‌های مکانی ارائه می‌کند. متون جغرافیایی سده‌های سوم و چهارم هجری‌قمری حاوی اطلاعات پراکنده‌ای دربارهٔ شهرها، راه‌ها، مرزها و عوارض طبیعی هستند که با سازمان‌دهی در محیط GIS قابلیت بازسازی فضایی پیدا می‌کنند. در این پژوهش ابتدا محدوده و ناحیه‌های خراسان براساس متون جغرافیایی-تاریخی تعیین و سپس نقشه‌ای جامع از حدود، استقرارگاه‌ها، شبکهٔ راه و عوارض طبیعی آن ترسیم شد. داده‌های مکانی و توصیفی استخراج‌شده از منابع جغرافیایی-تاریخی، ازجمله «احسن التقاسیم مقدسی»، «مسالک الممالک‌ها» و تواریخ محلی، پس از سازمان‌دهی در قالب داده‌های مکانی در محیط ArcGIS Pro پردازش و برای بازسازی نقشهٔ خراسان بزرگ به‌کار گرفته شد. نتایج پژوهش که منجر به ترسیم نقشه‌ای دقیق از مختصات استقرارگاهی، عوارض طبیعی، انسانی و به‌ویژه حدود تاریخی خراسان شد، نشان می‌دهد، روایت‌های منابع جغرافیایی سده‌های سوم و چهارم هجری‌قمری در تعیین شهرها، مسیرها و مرزهای خراسان از انسجام بسیار برخوردارند و با استفاده از بستر نرم‌افزاری قابل تطبیق با موقعیت امروزی می‌باشند. ترسیم نقشه‌ای جامع از خراسان بزرگ با تلفیق داده‌های متون جغرافیایی-تاریخی، بازنمایی منسجم و قابل‌اتکایی از ساختار فضایی، حدود تاریخی و عناصر طبیعی و انسانی این سرزمین در سده‌های سوم و چهارم هجری‌قمری ارائه می‌دهد؛ همچنین لزوم استفاده از نرم‌افزارهای ترسیم نقشه برای تحلیل و توصیف‌های تاریخی را به دانشجویان تاریخ در پژوهش‌های میان‌رشته‌ای را نمایان می‌سازد.



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## Analysis of the Political Status of Balkh during the Shaybanid Period Based on Historical Evidence and Numismatic Data

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**Abstract**

At the beginning of the 10th century AH, the region of Great Khorasan and the city of Balkh, due to their strategic geographical location, became one of the most critical centers of conflict under Safavid rule and remained under constant attention from the Shaybanid government. Since coinage in historical texts is considered a symbol of legitimacy and the establishment of power, analyzing the coinage in Balkh can provide a clearer understanding of the state of power and political dynamics in this region. This is a historical study that employs a descriptive-analytical approach and is based on numismatic research and written library sources. The central issue is the examination of the consistency or contradiction between historiographical narratives and the material evidence derived from the analysis of coins minted by the Shaybanid dynasty in Balkh. Essentially, this study aims to analyze the political reasons and contexts of coin production in Balkh and, through it, to provide a clearer picture of the historical events and political dynamics of the era. The findings of this research indicate that Balkh played a key role in consolidating the political and economic identity of the Shaybanid government. Beyond its economic importance, the city served as an instrument for demonstrating power and extending political influence in opposition to the Safavid state.

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## 1. Introduction

The emergence of the Shaybanid state in the early tenth century AH marked a significant transformation in the political landscape of Transoxiana and parts of Greater Khorasan. As Timurid power gradually declined in the region, the Shaybanid dynasty expanded its influence and established a new political order in Transoxiana, becoming a major force in Central Asian and Khorasani politics. Situated at the crossroads between East and West and along communication networks associated with the Silk Road, Transoxiana remained an important center of economic and cultural exchange in Central Asia. Greater Khorasan, meanwhile, held a distinctive position in the political relations between the Shaybanid and Safavid states because of its geographical location between Central Asia and the Iranian Plateau. The loss of parts of Khorasan following the Battle of Merv made the recovery and expansion of Shaybanid influence in the region a major political objective. Consequently, the rivalry between the Shaybanids and Safavids over control of Khorasan placed major cities in the region, including Balkh, at the center of the political and military relations between the two states.

The rivalry over Khorasan led some cities to change hands between the Safavids and the Shaybanids, leaving the region's political conditions subject to a changing balance of power. Uzbek incursions into areas under Safavid influence, owing to the rapid mobility of their forces and their distinctive military tactics, caused insecurity and social and economic disruption in some areas (Sanson, 1967: 200). Nevertheless, these campaigns cannot be explained solely in terms of military incursions, since gaining political control and expanding influence in key areas of Khorasan were also among the Shaybanids' fundamental objectives (Ghafurov, 2003: 2/ 817). On the other hand, the Safavids also prioritized maintaining control over Khorasan as one of the important regions of their territory. These rivalries resulted in some cities in Khorasan, including Balkh, changing hands between the two states at different times, a situation that is reflected in both the historical sources and the numismatic evidence of the period.

Balkh was one of the major centers of Khorasan during this period, and its location at the intersection of Central Asia and Khorasan gave the city a distinctive strategic position. Following the Battle of Merv, Shah Ismail I was able to wrest parts of Khorasan from Shaybanid control and expand Safavid influence in the region, bringing the city of Balkh under Safavid rule for a period (Fig. 1). This situation, however, did not last, and in subsequent periods, Balkh fell outside the sphere of Safavid influence and once again came under Shaybanid rule (Fig. 2) (Malek Shahmirzadi *et al.,* 1999: 114-116). These political shifts highlight the importance of Balkh in the rivalry between the Safavids and the Shaybanids over control of Khorasan. Evidence relating to the activity of the Balkh mint provides another perspective from which to examine the city's position, as coins minted there offer information on the presence of Shaybanid rulers, the dates of minting, and the position of this center within the region's power relations. Therefore, examining the position of Balkh during this period requires the simultaneous study of historical sources and numismatic data, because coins can shed light on aspects of the political and administrative structures of states and the role of cities within them.

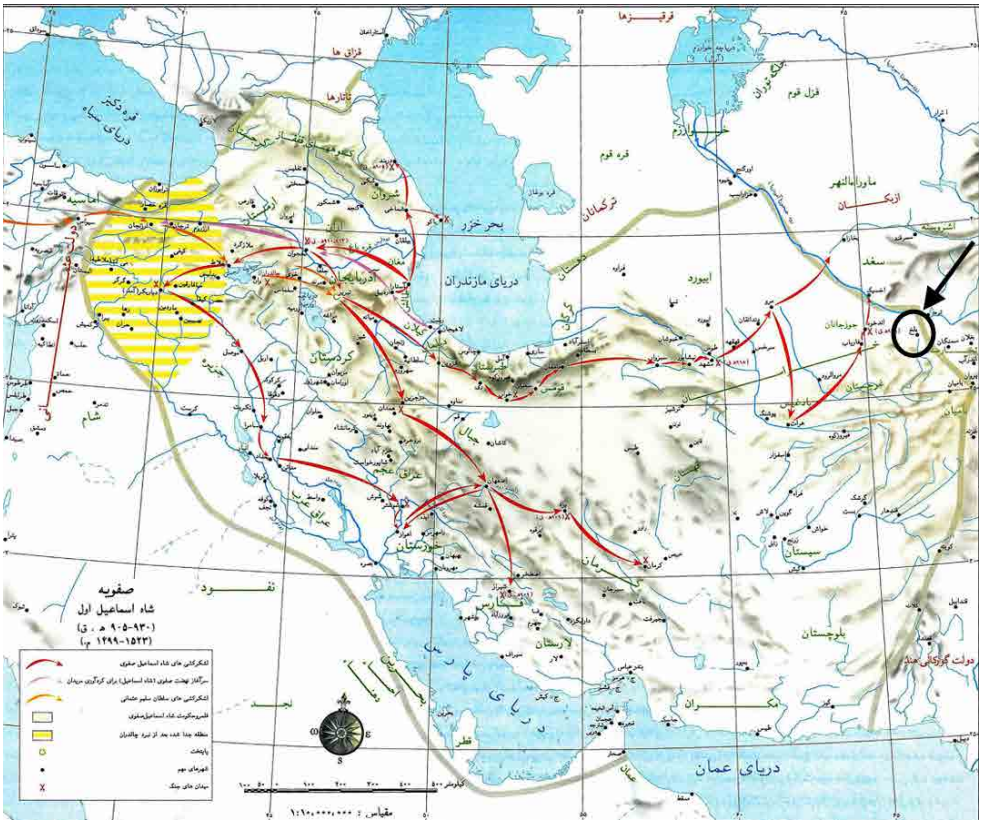



**Fig. 1: The territory of Shah Ismail I's rule and the extent of the Balkh region (Malek Shahmirzadi *et al.*, 1999: 114).**

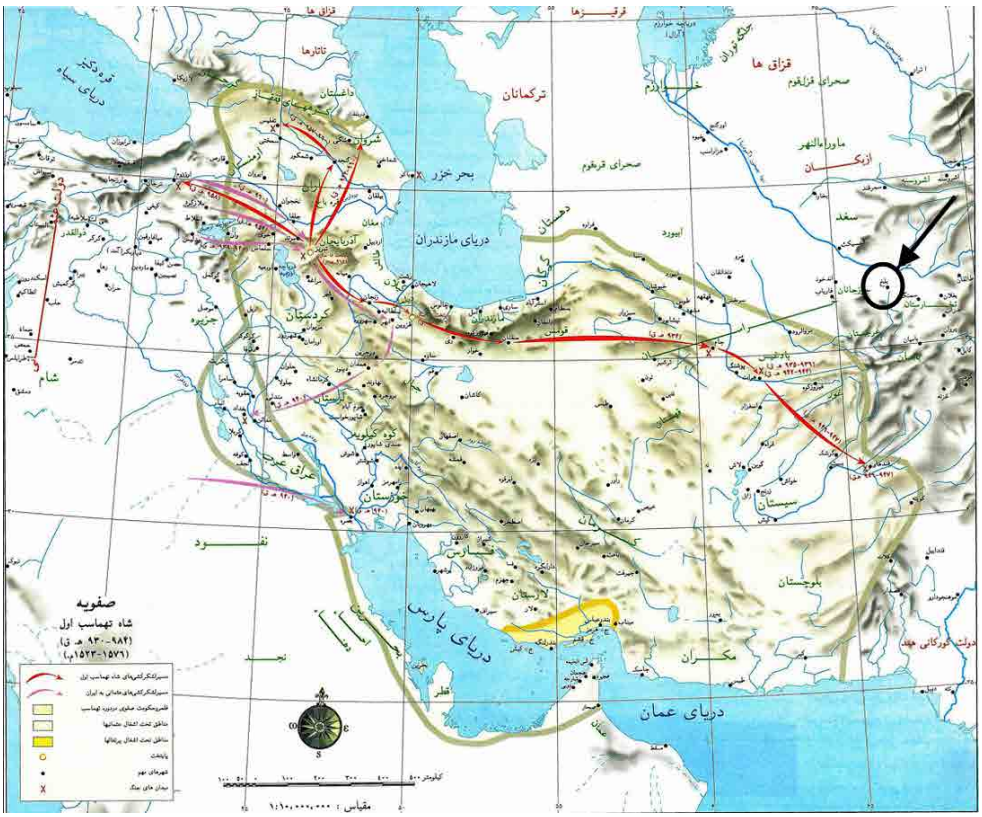



**Fig. 2: The territory of Shah Tahmasp I's rule and the extent of the Balkh region (Malek Shahmirzadi *et al.*, 1999: 116).**

In this study, coins minted in Balkh are used as material evidence, alongside historical sources, to examine the position of the city within the Shaybanid power structure. Information contained in the coins, including the ruler's name, date, and mint, makes it possible to examine the activity of the Balkh mint and its relationship to the political developments of the Shaybanid period. Accordingly, the main research question is how the political position of Balkh within the Shaybanid power structure can be explained and what the numismatic data from coins minted in the city reveal about the political developments and power structure of this period. The main objective of this study is to explain the political position of Balkh during the Shaybanid period through a comparative analysis of historical evidence and numismatic data.

## 2. Research Methodology

The present study adopts a historical, descriptive-analytical approach. Its data were collected and analyzed through the examination of numismatic evidence and its comparison with historical sources relevant to the Shaybanid period. The study focuses on coins minted in Balkh under Shaybanid rulers, as well as under certain local rulers affiliated with the dynasty, as the primary material data. The purpose of examining these specimens was not merely to identify and document the coins; rather, by analyzing the ruler's name, minting date, mint, epigraphic features, and coin weight in conjunction, the study seeks to investigate the continuity, interruption, resumption, and changes in activity at the Balkh mint and its relationship to political developments and shifts in power during the Shaybanid period.

A total of 25 coins minted in Balkh were collected and examined. Numismatic information on the specimens was obtained from specialized databases and digital archives, including Zeno, Classical Numismatic Group (CNG), CoinArchives, and Numista. The specimens were selected based on the availability of usable information, including the ruler's name or attribution, minting date, mint, and a legible image of the coin. In cases where the minting date was unknown, the ruler's name, mint, and the epigraphic and technical features of the coin were used as the primary data. The numismatic characteristics of each specimen were then compared with information available in historical sources in order to elucidate the role of the Balkh mint and the position of the city within the political structure of the dynasty.

### 2-1. Literature Review

Within the broader body of scholarship on the Shaybanid state, the position of Balkh and the coinage of the period can be examined across three main areas of research: historical sources, historical geography, and numismatic studies. Although the available historical and geographical sources were compiled from different perspectives, they provide valuable information on the political structure of the Shaybanid state, the location and significance of major cities in Khorasan, and changes in the territorial extent of the Shaybanid state.

Among the primary historical sources on the *Shaybanids, Ghafurov, in Tajiks: pre-ancient, ancient, and medieval history* (2003), examines the political and social history of Central Asia, devoting part of his discussion to the developments of the Shaybanid period. Another important

work is *Musakhkhar al-Bilād: The History of the Shaybanids* (10th century A.H.) by Muḥammad-Yār (2006), which is regarded as one of the major sources for studying the political history of the dynasty. By providing accounts of Shaybanid rulers, political and military events, and changes in the territorial extent of the state, this work offers valuable information for examining power relations in Transoxiana and Khorasan. In addition to these works, historiographical sources from the Safavid period are important for reconstructing relations between the two states. *Ḥabīb al-siyar fī akhbār afrād al-bashar* by Khwandamir (2001), *Aḥsan al-Tavārīkh* by Hasan Beg Rumlu (1978), *ʿĀlam-ārā-ye Shāh Ṭahmāsb* (1991), and *Alam-ara-yi Abbasi* by Eskandar Beg Munshi (1998) provide information on wars, political relations, and territorial shifts between the Safavids and the Shaybanids, particularly in the border regions of Khorasan. Although these sources primarily approach these events from a political-historical perspective, the present study uses them to reconstruct the historical context of developments in Balkh and to assess these developments against the numismatic data.

In the field of historical geography, several classical works and more recent studies provide important information on the regional position of Balkh. Ibn Hawqal, in Surat al-Ard (1987), Al-Moqaddasi, in *Ahsan al-Taqasim fi Maʿrifat al-Aqalim* (1982), and the author of *Hudud al-Alam* (1993) have demonstrated Balkh's position within the geographical networks of Khorasan and Central Asia by describing the geographical structure, communication routes, and economic characteristics of different regions.

Al-Wāʿiẓ al-Balkhī, in *Fadā'il-i Balkh or The Merits of Balkh* (1971), and Mohammad ibn Shaykh ʿAważ Bāqī Balkhī Muʾmin, in *Jarīde-ye Balkh* (1978), also provide information on the historical background and cultural significance of the city. In more recent studies, Muxtorov, in *Tārīḫ-e ʿomūmī-ye šahr-e Balḫ dar qorūn-e vosṭā* (2002), and Zowārī, in *Joğrāfiyā-ye tārīkhi-ye Balkh* (2009), have examined the city's role in political and regional developments, with a particular focus on its history.

Numismatic studies of the Shaybanids have focused primarily on the identification, classification, and documentation of the coinage of this dynasty. Davidovich (1992), in Corpus[1] of Sixteenth-Century Shaybanid Gold and Silver Coins, presented one of the most comprehensive studies of Shaybanid coinage. Drawing on numerous specimens, she provided information on different coin types, rulers, minting dates, and mints of the dynasty. Burton (1995), in the article[2] "Shaybanid Coins: A Reassessment," reassessed the numismatic evidence of the dynasty and examined several issues concerning the identification and analysis of Shaybanid coinage. Album (2011), in Checklist of Islamic Coins, also documented[3] and classified various Islamic coin types, making the work useful for the identification and comparison of Shaybanid coins. Aqīlī, in Dār al-zarb-hā-ye Īrān dar dowre-ye Eslāmī (1998), examined mints of the Islamic period and their position within the monetary structures of different states. Habibi, in the article Ubayd Allah Khan Shaybani and the Introduction of a Coin Attributed to Him (publication date and venue unspecified), examined the epigraphic and numismatic characteristics of a coin attributed to Ubayd Allah Khan Shaybani.

Despite these studies, the political position of Balkh during the Shaybanid period, particularly in terms of the temporal relationship and interaction among political changes, the presence of rulers, and the activity of the city's mint, still requires closer examination. Existing research on the political history of the Shaybanids, the historical geography of Balkh, and the classification of the dynasty's coinage has primarily focused either on the description and classification of coins or on broader aspects of the political structure of the Shaybanid state. The relationship among numismatic evidence from the Balkh mint, the dates of coin minting, the presence of Shaybanid rulers, and changes in the city's political position during the period under study has received comparatively little independent attention. Accordingly, by focusing on coins minted in Balkh between 906 and 1008 AH and correlating numismatic data with historical sources, the present study seeks to examine the continuity of activity at the Balkh mint, the presence of different branches and rulers of the Shaybanid dynasty, and the relationship between coin minting and the shifts and consolidation of political power in the city.

**3. The Shaybanid State**

The Shaybanids were a branch of the Chinggisid dynasty that emerged as one of the major political powers in Transoxiana in the early tenth century AH, following the weakening and collapse of Timurid authority in the region. The political rise of the dynasty began under Abu'l-Khayr Khan. His successor, Muhammad Shaybani, taking advantage of the prevailing conditions and capturing major Timurid centers, including Samarkand, Bukhara, Balkh, and Herat, expanded Shaybanid territory across Transoxiana and parts of Khorasan (Grousset, 1986: 784-789). From this perspective, the expansion of Shaybanid territory involved more than a change in political sovereignty; it was also accompanied by the establishment of their administrative and governmental mechanisms in major cities across the region. The genealogical chart of Shaybanid rulers presented in this study (Fig. 3) was also used to establish the succession of rulers and to correlate the names recorded on coins minted in Balkh with the political circumstances of each period.

After consolidating his power in Transoxiana, Muhammad Shaybani sought to extend Shaybanid influence toward Khorasan. This policy, however, met with resistance from the Safavids, and in 916 AH, he was defeated and killed by Shah Ismail I at the Battle of Merv (Kenzheakhmet, 2019: 79). Following this event, although Shaybanid influence in some parts of Khorasan temporarily declined, the Shaybanid dynasty was able, by 918 AH, to regain control of significant parts of Transoxiana and the eastern regions and re-establish its rule (Kilic-Schubel, 2016: 2). The political structure of the Shaybanids was also characterized at many points by the simultaneous presence of different branches of the ruling dynasty, with several major cities, including Samarkand, Bukhara, Tashkent, and Khiva, administered by different princes of the Shaybanid dynasty (Hosseinzadeh Shanechi, 1973: 265). Such a structure is particularly significant for the study of Shaybanid coinage, as the presence of multiple rulers' and governors' names on coins may reflect the power relations and modes of political administration within Shaybanid territory.

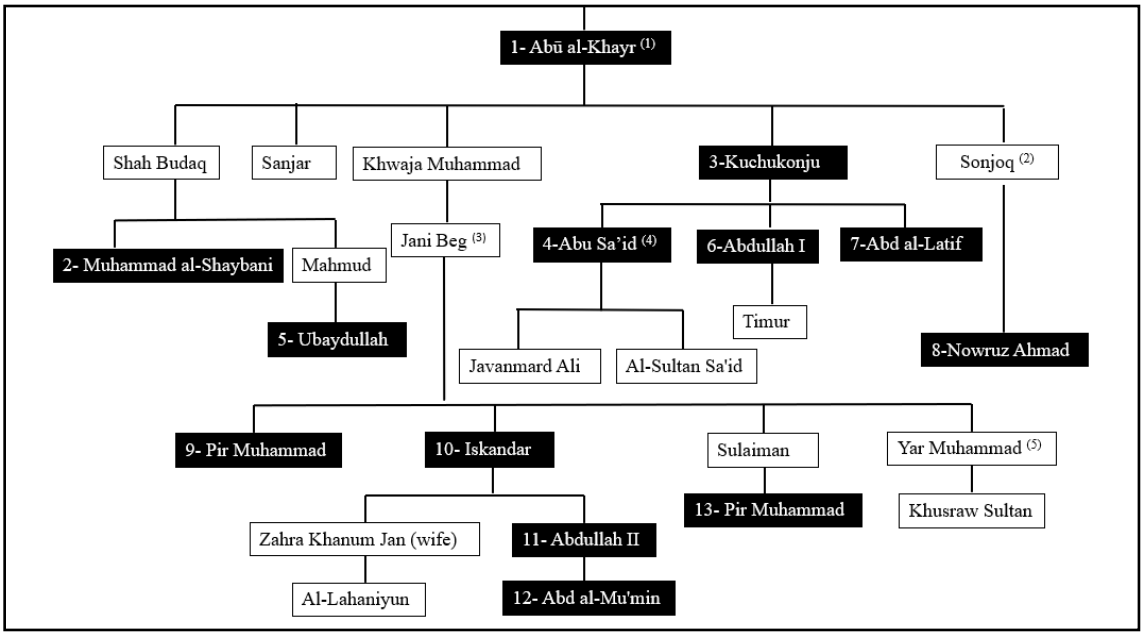



**Fig. 3: Genealogical chart of the Shaybanid dynasty (Zambaur, 2536: 405; Lane-Poole, 1984: 244).**

Among the cities within Shaybanid territory, Balkh held particular political and economic importance because of its geographical position linking Khorasan and Transoxiana. At different times, the city fell within the Shaybanid sphere of territorial and political contestation, and during certain periods it became one of their important centers of power (Fig. 4). From the perspective of the present study, the significance of Balkh extends beyond its political and regional position to the activity of its mint. The continuity of minting activity in Balkh during different periods of Shaybanid rule reflects the importance of the city within their administrative and economic structure. Accordingly, the study of coins minted in Balkh, alongside historical sources, can provide independent material evidence for reconstructing power relations and the position of the city within the political structure of the Shaybanids.

## 4. The Historical and Political Position of Balkh in Geographical Sources

Geographical accounts from the Islamic period describe Balkh as one of the major cities of Khorasan and one of the principal centers of the region. In Kitab al-Buldan, al-Yaʿqubi regarded Balkh as one of the major cities of Khorasan and referred to its position among the various regions of the land (al-Yaʿqubi, 1977: 63). Ibn Hawqal, in Surat al-Ard, likewise described the geographical position of Balkh, identifying it as one of the major centers of Khorasan and referring to the extensive territories associated with it (Ibn Hawqal, 1987: 181). Al-Moqaddasi likewise regarded Balkh as one of the prosperous and important cities of Khorasan and highlighted its distinctive position in the region (al-Moqaddasi, 1982: 430, 438).

In later geographical sources, in addition to the urban and administrative importance of Balkh, emphasis was also placed on its economic potential and role in regional communications. Hudud al-Alam refers to the city's fortifications and flourishing trade and describes Balkh as one of the

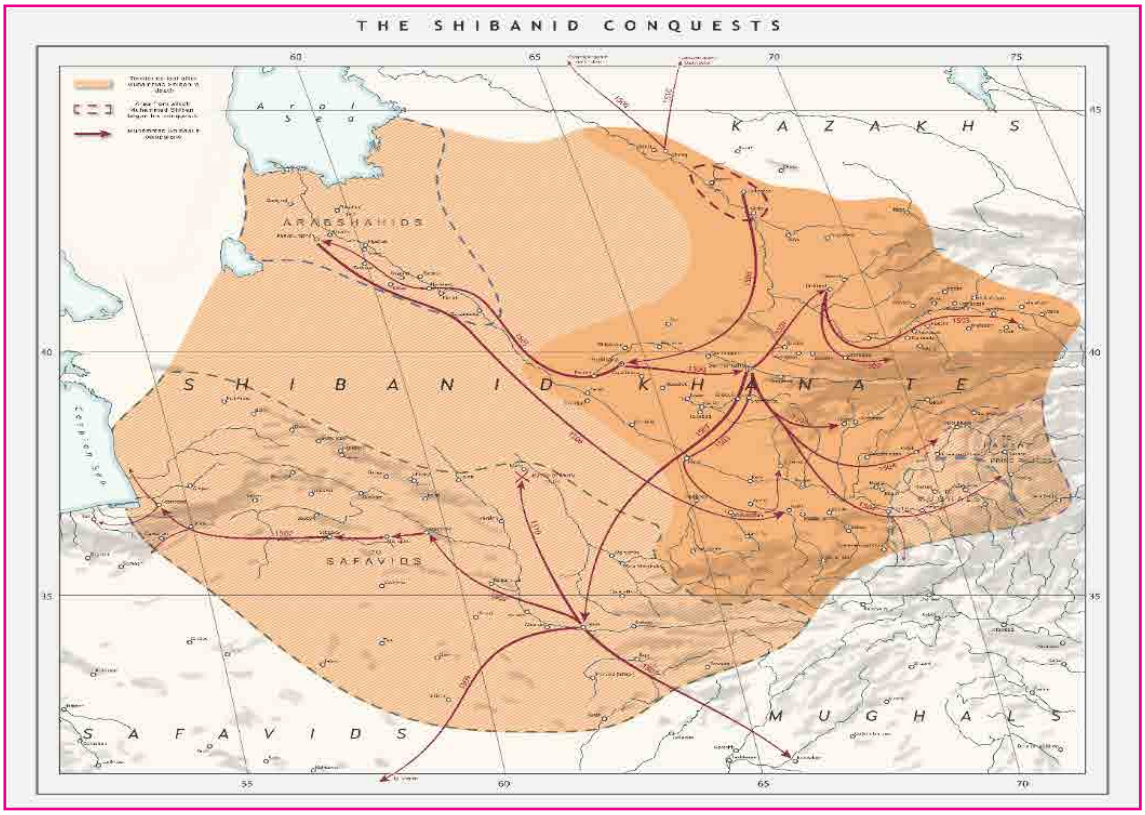



**Fig. 4: The territory of the Shaybanid state in Greater Khorasan and the geographical location of Balkh (https://www.deviantart.com).**

major centers of the region (Hudud al-Alam, 1993: 311). Yāqūt al-Ḥamawī al-Baghdādī also drew attention to the economic importance of Balkh by referring to its abundant agricultural production and the transportation of its products to other regions (Yāqūt al-Ḥamawī al-Baghdādī, 1988: 568). These accounts indicate that, alongside its administrative and regional role, Balkh possessed considerable economic potential and played an important role in regional connectivity.

More recent studies, drawing on geographical and historical sources, have likewise emphasized the position of Balkh within the communication and economic networks of the eastern Islamic world. Barthold relates the importance of Balkh to its geographical location and its role in regional communications in Khorasan (Barthold, 1987: 1/193), and Le Strange has pointed to the city's position along the communication routes of Khorasan and its connections with the eastern regions (Le Strange, 2007: 446-458). Taken together, these accounts indicate that, owing to its geographical location, the extent of its dependent territories, its economic potential, and its position along major communication routes, Balkh occupied a position that extended beyond that of a local urban center. This position provided the historical context for the subsequent importance of Balkh as an administrative and monetary center, including during the Shaybanid period.

## 5. The Importance of Balkh in the Islamic Period Based on Historical Sources

Balkh, known as Bactra or Bactria in the pre-Islamic period, was one of the ancient cities of eastern Iran and Greater Khorasan, whose importance continued beyond the advent of Islam. The

earliest references to the city are found in Zoroastrian sources; Balkh is referred to as "Bākhdi" or "Bakhdi" and is mentioned as one of the sacred lands of Ahura Mazda (Razi, 2000: 194). Some historians of the Islamic period likewise associated Balkh with an ancient historical background and described it as one of the major historical centers of the region (Al-Masʿūdī, 2003: 1/222; Balʿamī, 1987: 1/461).

Following the advent of Islam, the importance of Balkh not only remained undiminished but also increased, as the city became one of the major centers of Khorasan in the political, intellectual, and religious spheres. Ibn Khurdādhbih described Balkh as one of the important cities of Tokharistan, and his account indicates the city's position within the administrative structure of Khorasan in the third century AH (Ibn Khurdādhbih, 1992: 54). Ibn Hawqal likewise, in the fourth century AH, described Balkh as the center of an extensive region encompassing areas such as Banjhir, Badakhshan, Tokharistan, and Bamiyan (Ibn Hawqal, 1987: 181). Al-Moqaddasi also emphasized Balkh's prosperity and importance, highlighting its position among the cities of Khorasan (al-Moqaddasi, 1982: 439). The importance of Balkh during the Islamic period was not limited to its political position; the city also became one of the major cultural and religious centers of the Islamic world. The presence of prominent jurists, mystics, scholars, and poets led Balkh to be referred to in historical sources by such epithets as "Umm al-Bilad," "Balkh al-Husna," and "Qubbat al-Islam" (Al-Wāʿiẓ al-Balkhī, 1971: 29; Muʾmin, 1978: 8; Zowārī, 2009: 4). The continuation of this status in subsequent periods allowed Balkh to remain one of the major centers of Khorasan.

In later periods, particularly during the Timurid era, Balkh continued to hold political and regional importance. Timur's capture of the city in 771 AH, followed by the attention paid by his successors to its reconstruction and expansion, demonstrates the continued significance of Balkh within the political structure of Khorasan. Historical texts indicate that during the reigns of Shah Rukh and Sultan Husayn Mirza Bayqara, some of the damage caused by earlier wars was repaired, and structures such as the Shahrukhiyya Madrasa were established in the city (Samarqandi, 2004: 1/ 419-420; Muʾmin, 1978: 98). Moreover, during the Timurid period and on the eve of the Shaybanid takeover, the territorial extent of the province of Balkh encompassed a considerable number of the surrounding areas (Jahāngushā-yi Khāqān, 1985: 402; Khvāndamīr, 1991: 139; Eskandar Beg Munshi, 1998: 2/968). Accordingly, at the beginning of the tenth century AH, Balkh remained one of the major political and regional centers of Khorasan, and this historical background enhanced its significance in the political rivalry between the Shaybanids and the Safavids, as well as within the administrative and monetary structure of the Shaybanid state.

**6. Balkh during the Shaybanid Period**

At the beginning of the tenth century AH, with the weakening and eventual collapse of Timurid rule, Muhammad Shaybani Khan succeeded in bringing Transoxiana under his control and gradually extended his territory into Khorasan. According to Rumlu, in 906 AH he captured major cities of Transoxiana, including Samarkand and Bukhara, and, after consolidating his power,

turned his attention toward Khorasan (Rumlu, 1978: 69). In the course of this expansion, Balkh also came under Shaybanid control and became one of the important political centers of their newly established state (Jahāngushā-yi Khāqān, 1985: 330-347). The significance of Balkh during this period cannot be explained solely by its geographical position; its location at the intersection of Transoxiana, Khorasan, and the eastern regions made control of the city particularly important to rival political and military powers.

The conquest of Khorasan and the consolidation of Shaybanid power were accompanied by the manifestation of this authority in the formal institutions of government. Ghafurov's account of coinage issued in the name of Muhammad Shaybani in several major cities of Khorasan and Transoxiana, including Balkh, indicates that minting coins in territories under Shaybanid control served as one of the means of asserting political sovereignty (Ghafurov, 2003: 2/808). From this perspective, active mints in major cities were not merely centers for the production of coinage; they could also be used to represent political authority and record the presence of a ruler. The political structure of the Shaybanids, however, also played a role in the significance of Balkh's coinage. At many points, the dynasty's government rested on the division of territory among members of the ruling family and establishing princes and local governors in major centers. Within such a structure, although the authority of the supreme khan remained central, the practical administration of some regions was entrusted to princes and affiliated governors (Burton, 1988: 20). McChesney likewise regarded Balkh as one of the principal appanages of the Shaybanid dynasty and associated its administration with the Janibegid branch (McChesney, 1997: 428-429). Varahram also identifies Balkh, alongside Bukhara, as one of the most important centers of princely residence and economic hubs of the Shaybanid state (Varahram, 1992: 298). This position made Balkh one of the major administrative and monetary centers of the Shaybanid state throughout the tenth century AH and enabled the city to play a significant role in the numismatic developments of the period. Consequently, the presence of the names of different rulers on coins minted in Balkh should be examined within the context of this decentralized power structure, since the appearance of a ruler's name on a coin did not necessarily indicate his complete political independence from the Shaybanid khan. Rather, it could reflect a form of local authority, delegated governance, or a political claim arising from succession struggles.

During the first half of the tenth century AH, coinciding with the emergence of the Safavid state in Iran, Balkh became one of the important points of intersection between the interests of the two powers. The rivalry between the Safavids and the Shaybanids over Khorasan made control of the cities of the region, including Balkh, particularly significant at various points in both military and political terms. Historical sources report numerous military campaigns in Greater Khorasan, including Balkh and its surrounding areas (Jahāngushā-yi Khāqān, 1985: 402; Khvāndamīr, 1991: 139). The continuation of these conflicts had far-reaching economic and social consequences for Khorasan and its cities, including Balkh, and, according to Ghubār, led to a decline in economic prosperity and the migration of some of the region's scholarly and cultural elites (Ghubār, 1989: 1/478). Despite these conditions, some construction and restoration activities were also undertaken in Balkh. One such example was the reconstruction of the Hinduvan Fortress in 945 AH, carried

out on the orders of Qarā Sultan and later completed during the reign of Abd al-Muʾmin Khan (Al-Wāʿiẓ al-Balkhī, 1971: 420; Muʾmin, 1978: 135). This fortification is considered one of the last major architectural works of the Shaybanid period in Balkh, and its remains survived into subsequent periods (Zowārī, 2009: 73).

Overall, an examination of the historical sources indicates that throughout the Shaybanid period, Balkh was not merely a frontier city or a subordinate center. Rather, owing to its geographical position, economic significance, and role within the administrative and political structure of the state, it was one of the major centers of Shaybanid power. Accordingly, an examination of the Balkh mint and the coins attributed to different rulers makes it possible to simultaneously examine the continued importance of the city and changes in the power structure during the Shaybanid period.

## 7. Characteristics of Shaybanid Coinage

Coins are among the most important forms of material evidence for studying the political and economic structures of past societies, as, in addition to their economic function, they formally record information such as the name and title of a ruler, mint location, and date (Farahbakhsh, 2006: 3). During the Shaybanid period, coins likewise constitute an important source for identifying rulers, active mints, and the geographical extent of their authority.

Following the establishment of Shaybanid rule in the early tenth century AH, major mints were active in the cities of Samarkand, Bukhara, Herat, and Balkh. In the early years of Shaybanid rule, Herat was one of the most important centers of coin production; however, over time, the cities of Balkh, Bukhara, and Samarkand also came to occupy important positions within the Shaybanid monetary system (Album, 2011: 300).

One of Muhammad Shaybani Khan's most important measures was the monetary reform of 913 AH/1507 CE. According to Ghafurov, these reforms included establishing a standard weight and specification for silver and copper coins and regulating the exchange relationship between them. This measure contributed to a relative stabilization of monetary transactions throughout the Shaybanid realm and played an important role in consolidating the authority of the newly established government (Ghafurov, 2003: 2/810). In subsequent periods, economic and monetary changes also affected the weight and quality of some coinage. In particular, during the reign of Ubaydullah Khan, the debasement of certain coins and economic difficulties led copper coins to temporarily replace silver coinage in some transactions, although this development did not last long (ibid.: 815).

Shaybanid coinage included gold, silver, and copper coins. Silver coins constituted the principal monetary denomination of the period. The earliest Shaybanid silver tengas weighed approximately one mithqal (about 4.78 g), although variations in their weight can be observed during the first decades of Shaybanid rule. Copper coins were used mainly for local transactions and were often struck without the ruler's name. Gold coins, by contrast, were relatively limited in number, and their known examples have been reported primarily from the mints of Herat and Mashhad (Album, 2011: 300). In terms of both form and content, Shaybanid coins largely

followed the pattern established by late Timurid coinage. The coins generally bear the ruler's name, royal titles, prayers for the continuity of his rule, the mint name, and the date. Some specimens also feature terms such as "Adl" and "Shirmard". Based on the available evidence, the term "Shirmard" was one of the honorific titles used on the coinage of this period. The use of the titles "Sultan" and "Khaqan" on Shaybanid coins also continued until the reign of Abdullah I (Burton, 1995: 320).

One of the important features of the Shaybanid political system was the multiplicity of claimants to power and succession struggles among members of the ruling dynasty. Ghafurov notes that at certain points, the Shaybanid sultans failed to reach agreement over the designation of a successor and the recognition of the khan's authority, a situation that at times led to a form of multiple rulership within their territories. In such circumstances, some princes not only asserted political authority but also had the Friday sermon delivered in their own names and struck coins bearing their own names and titles (Ghafurov, 2003: 2/818). In this regard, Burton has also shown that although political legitimacy within the Shaybanid realm was vested in the khan, local rulers and holders of appanages also struck coins at mints under their control, resulting in a considerable number of coins from this period being issued in the names of different Shaybanid sultans (Burton, 1995: 317). Accordingly, Shaybanid coinage should not be regarded solely as a means of economic exchange; rather, it can be used as archaeological evidence for examining the structure of power, the territorial extent of rulers' authority, and the political developments of the period. On this basis, the present study examines coins struck at Balkh in the names of different Shaybanid rulers and compares the resulting numismatic data with historical information in order to clarify the political position of the city during the Shaybanid period. Accordingly, in the following sections, coins attributed to each of the Shaybanid rulers associated with Balkh will be examined separately with regard to their date, weight, denomination, and quality of striking, and will be compared with the historical evidence.

### 7-1. Coins Struck under Muhammad Shaybani at Balkh (Reign: 905-916 AH)

Historical sources report the conquest of Balkh by Muhammad Shaybani and the incorporation of the city into the Shaybanid realm. Raqim Samarqandi also refers to Muhammad Shaybani's campaign against Balkh following the consolidation of his power in Transoxiana (Raqim Samarqandi, 2001: 83). However, examining the position of Balkh during the reign of Muhammad Shaybani cannot rely solely on historical texts; numismatic evidence can also provide independent evidence in this regard.

Album describes the coins of Muhammad Shaybani as relatively rare during the early years of his reign and states that they were struck primarily at the mints of Bukhara and Samarkand, with a limited number issued at Astarabad, bearing the title "Nasir al-Din, Shirmard". According to him, coins struck between 913 and 916 AH are more numerous and were issued at a larger number of mints. More than twenty mints are also known for the reign of Muhammad Shaybani, the most important of which was Herat; other mints mentioned include Bukhara, Khwarazm, Nishapur, Sabzevar, and Torbat (Album, 2011: 300-301). However, Balkh is not mentioned in this list.

Among the specimens collected for this study, two silver coins struck at Balkh in the name of Muhammad Shaybani have been identified. The first is a silver coin dated 916 AH, weighing 4.32 g, while the second is an overstruck coin from the same year, weighing 4.72 g. The presence of these two dated specimens from 916 AH indicates that, during the final year of Muhammad Shaybani's reign, Balkh had an active mint and coins were struck there in his name. From this perspective, the present numismatic evidence supplements the available information on the distribution of mints during the reign of Muhammad Shaybani and provides evidence for the activity of the Balkh mint in 916 AH.

The year 916 AH is also of particular historical significance, as it coincided with the Battle of Marv and the death of Muhammad Shaybani at the hands of Shah Ismail Safavid (Rumlu, 1978: 147-148). Therefore, these coins indicate that monetary activity in the city continued during the final stage of his reign despite the extensive military upheavals in Khorasan.

The difference in weight between the two specimens is also noteworthy in relation to the weight standards reported for tengas of this period. Album reports the initial weight of Shaybanid silver tengas as approximately one mithqal, equivalent to 4.78 g, and their weight during the period from 913 to 919 AH as approximately 5.15 g. According to him, this increase was also noted in contemporary sources and was regarded as one of the important measures of Muhammad Shaybani (Album, 2011: 300). The two Balkh specimens (Tab.1), weighing 4.32 and 4.72 g, respectively, fall below the reported standard of 5.15 g for this period. This difference in weight, together with the presence of an overstruck specimen, may reflect the particular political and monetary conditions of 916 AH. Although determining the precise cause of this variation requires examination of a larger number of specimens, its coincidence with the final year of Muhammad Shaybani's reign and the military developments in Khorasan is noteworthy. Overall, the coins struck at Balkh in 916 AH not only confirm the presence and authority of Muhammad Shaybani in the city, but also indicate that Balkh continued to hold an administrative and financial position until the end of his reign and that its mint remained active, highlighting the importance of Balkh as one of the centers under the control and attention of the Shaybanid government.

**Tab. 1: Tab.1: An example of coins minted by Muhammad Shaybani in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Muhammad Shaybani | 916 A.H. | Balkh | Silver | 4.32 |  https://www.zeno.ru/showphoto.php?photo=204118 |
| Overstruck Muhammad Shaybani | 916 A.H. | Balkh | Silver | 4.72 |  https://www.zeno.ru/showphoto.php?photo=302791 |

### 7-2. Coins Struck under Ubayd Allah at Balkh (Reign: 940-946 AH)

Historical sources indicate that Balkh was among the areas contested between the Safavids and the Shaybanids during the first half of the tenth century AH. Ubayd Allah Khan, the nephew of Muhammad Shaybani, sought to expand Shaybanid influence into Khorasan after consolidating his position in Transoxiana. Historical accounts report the presence of forces affiliated with him in Balkh and the conquest of the city at various points (Muḥammad-Yār, 2006: 124-125, 174; Raqim Samarqandi, 2001: 95-97, 112; Qazvīnī, 2007: 293). These accounts indicate that Balkh was subject to repeated political changes during this period and that control of the city formed part of the rivalry between the Safavid and Shaybanid powers. However, numismatic data make it possible to examine the political status of Balkh in greater detail.

Among the identified specimens (Tab. 2), one silver coin struck at Balkh in the name of Abu al-Ghazi Ubayd Allah Khan, dated 941 AH and weighing 4.63 g, has been identified. The existence of this dated coin indicates that the Balkh mint was active under Shaybanid rule in that year and that coins were struck there in the name of Ubayd Allah Khan. Accordingly, regardless of the political fluctuations reflected in the historical sources, this coin constitutes direct evidence of the presence and exercise of Shaybanid authority in Balkh in 941 AH.

Album also identifies Ubayd Allah Khan's silver tengas as among the most common coinages of his reign and refers to the quality of striking of specimens from Balkh and Bukhara (Album, 2011: 301). The inclusion of Balkh alongside Bukhara, which was regarded as one of the most important political and economic centers of the Shaybanids, indicates that the city was not merely a frontier or military region, but also held a significant position within the administrative and monetary structure of the state. Therefore, the coin struck at Balkh in 941 AH, in addition to confirming the political presence of the Shaybanids in the city, indicates the continuity of mint activity and the role of Balkh in the monetary system of Ubayd Allah Khan's government.

**Tab. 2: An example of a coin minted by Ubayd Allah in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Abu al-Ghazi Ubayd Allah | 941 A.H. | Balkh | Silver | 4.63 |  https://www.cngcoins.com |

### 7-3. Coins Struck under Burhan Sayyid at Balkh (Reign: 958-964 AH)

Following the death of Abd al-Aziz Khan, competition among the different branches of the Shaybanid dynasty for succession intensified, and Bukhara and other major centers of Transoxiana became involved in political struggles among rival claimants to power. In this context, Burhan Sultan also emerged as one of the claimants to power in the political developments of this period, and according to historical accounts, his reign dates from 958 to 964 AH (Muḥammad-Yār, 2006: 142-155; Raqim Samarqandi, 2001: 130). Under such circumstances, numismatic evidence,

alongside historical sources, can provide information on the presence and claims to power of political contenders.

The only identified specimen (Tab. 3) from this period at Balkh is an overstruck silver coin bearing the name Burhan Khan over a coin of Abd al-Latif, struck in 956 AH and weighing 4.65 g. The significance of this specimen lies in the fact that its date of striking precedes the beginning of Burhan Sultan's official reign by two years. Therefore, the presence of Burhan's name on this coin cannot be interpreted solely within the framework of the monetary system; rather, it should be examined in connection with the political circumstances and succession rivalries of the period.

**Tab. 3: An example of a coin minted by Burhan Sayyid in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Burhan Khan Overstruck on a Coin of Abd al-Latif | 956 A.H. | Balkh | Silver | 4.65 |  https://www.coinarchives.com |

Album identifies "Adl Burhan" as one of the rare coin types of this period (Album, 2011: 301). The rarity of these specimens makes each example particularly significant for reconstructing the political developments of the period. The choice of overstriking as a method is also noteworthy. In this method, rather than striking an entirely new coin, the name or title of a new ruler is added over a coin from an earlier period. The use of such a method may indicate the need to proclaim political authority rapidly under circumstances in which the possibility or opportunity for the large-scale production of new coins was limited. Accordingly, the overstriking of Abd al-Latif's coin with the name of Burhan Khan may be regarded as an indication of an attempt to consolidate his political position before formally attaining the position of khan. However, without additional evidence, each overstruck specimen cannot be directly regarded as an indication of an immediate transfer of power or an attempt to establish legitimacy; rather, the significance of such coins becomes clearer when numismatic data are compared with historical texts.

Musakhkhar al-Bilād states that Abd al-Aziz Khan remained in power until his death and that the succession crisis entered a new phase following his death (Muḥammad-Yār, 2006: 141). However, the existence of an overstruck coin dated 956 AH at Balkh indicates that Burhan's name had entered the monetary system before the formal beginning of his reign and that efforts to establish political legitimacy had probably begun before he attained the sultanate. This issue becomes more significant when it is considered that, unlike some other claimants to power, Burhan did not belong to the principal male line of Ubayd Allah Khan's descendants. Accordingly, his name on the coins of Balkh may be regarded as a means of representing authority and establishing political legitimacy before his definitive establishment as khan. This suggests that Balkh, during the political developments and succession rivalries of the second half of the tenth century AH,

was not merely a local center but also served as an important center for political legitimation and the representation of power within the Shaybanid state.

**7-4. Coins Struck under Nawruz Ahmad at Balkh (Reign: 957-963 AH)**

Nawruz Ahmad, known as Buraq Khan, came to power in Tashkent, and following the accession of Abd al-Latif Khan in Samarkand in 957 AH, the khutba was delivered, and coins were struck in his name. His establishment of power in Transoxiana was accompanied by rivalry among competing claimants to power. Musakhkhar al-Bilād reports Nawruz Ahmad's involvement in the political struggles of this period (Muḥammad-Yār, 2006: 159), while Raqim Samarqandi records his death in 963 AH (Raqim Samarqandi, 2001: 130). The Mirʾāt al-mamālik also states that following Buraq Khan's rise to power, Pir Muhammad Khan in the province of Balkh and Sayyid Burhan Khan in the province of Bukhara refused to recognize his authority, and these disagreements led to confrontation among the competing claimants to power (Kātibī, 2535: 131).

Among the numismatic data for this period (Tab. 4), five silver coin specimens in the name of Nawruz Ahmad, struck at Balkh and dated 959 AH, have been identified. Four specimens weigh 4.11, 4.57, 4.65, and 4.70 g, respectively, while the weight of one specimen is unknown. Album generally assesses the quality of striking of Nawruz Ahmad's coins as satisfactory and notes that the inscriptions are clearly visible on most specimens and that the strikes are generally well centered, although the specimens are not always complete and flawless (Album, 2011: 301). This feature is not entirely consistent in the coins examined in the present study. The difference in weight among specimens of the same date from the same mint is also noteworthy; however, given the limited number of specimens, this difference cannot, by itself, be attributed to fluctuations in the monetary conditions of the period. Nevertheless, the presence of several coin specimens with the same date and mint indicates that coins were still being struck in the name of Nawruz Ahmad at Balkh in 959 AH. Therefore, despite the variation in the weights of the examined specimens, minting activity at this mint had not ceased.

The significance of this evidence becomes apparent when it is analyzed alongside the historical texts. Chronologically, the coins dated 959 AH were struck two years after Nawruz Ahmad came to power, whereas this source reports that Pir Muhammad Khan in the province of Balkh refused to obey Buraq Khan (Kātibī, 2535: 131). Thus, on the one hand, the historical account indicates political fragmentation and rivalry in Balkh, while on the other hand, the coins struck in the same city bear the name of Nawruz Ahmad as the ruler. The coincidence of these two sets of evidence indicates that, at this point, there was a certain discrepancy between the political situation in Balkh and the name of the ruler recorded on its coins. Nevertheless, the continued striking of coins in the name of Nawruz Ahmad under such circumstances indicates that Balkh held an important position in the political struggles of the Shaybanids.

**7-5. Coins Struck under Darwish Ahmad at Balkh (Reign: 981-987 AH)**

Darwish Ahmad, the eldest son of Nawruz Ahmad (Buraq Khan), entered the power struggle among the Shaybanid dynasty following his father's death in Samarkand. After Baba Sultan

**Tab. 4: An example of coins minted by Nawruz Ahmad in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Nawruz Ahmad | 959 A.H. | Balkh | Silver | ? |  https://www.zeno.ru/showphoto.php?photo=252144 |
| Nawruz Ahmad | 959 A.H. | Balkh | Silver | 4.11 |  https://www.cngcoins.com |
| Nawruz Ahmad | 959 A.H. | Balkh | Silver | 4.57 |  https://www.coinarchives.com |
| Nawruz Ahmad | 959 A.H. | Balkh | Silver | 4.65 |  https://www.cngcoins.com/Coin.aspx?CoinID=337481 |
| Nawruz Ahmad | 959 A.H. | Balkh | Silver | 4.70 |  https://www.zeno.ru/showphoto.php?photo=203994 |

claimed rule in Samarkand and sought Darwish Ahmad's assistance in confronting Abdullah Khan, Darwish Ahmad marched toward Samarkand with an army from Tashkent, Turkistan, Akhsi, and Andijan, prompting Abdullah Khan to retreat. Following this event, the descendants of Buraq Khan abandoned their claim to the sultanate of Samarkand and gathered in Tashkent. Darwish Ahmad, as the eldest brother, assumed power and entrusted each of the provinces under his authority to one of his brothers and amirs (Muḥammad-Yār, 2006: 160-161).

Among the numismatic data for this period (Tab. 5), one silver coin specimen in the name of Darwish Ahmad, with Balkh as its mint, has been identified. The date on which this specimen was struck is unknown, and it weighs 4.47 g. Album identifies Darwish Ahmad as one of the local rulers whose known coins were struck only at Balkh, and describes these coins as very rare (Album, 2011: 302). Therefore, despite the limited numismatic evidence, this specimen is

significant for examining the position of Balkh within the political structure under the influence of Darwish Ahmad. This numismatic evidence becomes more significant when considered alongside the account in Musakhkhar al-Bilād. According to this source, after establishing himself in Tashkent, Darwish Ahmad divided his territory among his brothers and amirs (Muḥammad-Yār, 2006: 160-161).

The absence of a date prevents the precise dating of the specimen and therefore makes it impossible to assign the coin to a specific period of Darwish Ahmad's rule. Nevertheless, the existence of a coin bearing his name at Balkh, under circumstances in which power was divided among different branches of the Buraq Khan lineage, indicates that Balkh was situated within the network of local authority of this branch of the Shaybanid dynasty. The significance of this specimen lies less in its precise dating than in demonstrating the presence of the name of a local ruler at the Balkh mint and the diversity of political authorities who had coins struck at this city, thereby highlighting the political position of Balkh within the Shaybanid power structure.

**Tab. 5: An example of a coin minted by Darwish Ahmad in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Darwish Ahmad | ? | Balkh | Silver | 4.47 |  https://www.zeno.ru/showphoto.php?photo=312317 |

### 7-6. Coins Struck under Pir Muhammad I at Balkh (Reign: 963-968 AH)

Pir Muhammad Khan ibn Janibeg Sultan played an active role in the political developments of Balkh and Transoxiana before formally attaining power. Musakhkhar al-Bilād reports that he seized the territories of Balkh in 953 AH and subsequently participated in Humayun's campaign in the Balkh region in 956 AH and the Battle of Darzab in Shibergan in 957 AH (Muḥammad-Yār, 2006: 186). In 957 AH, following the death of Abd al-Aziz Khan and amid the political developments in Bukhara, he marched on the city with his army and captured it. After residing there for one year, he transferred the rule of Bukhara to Muhammad Yar Sultan and returned to Balkh. Following the death of Buraq Khan in 963 AH, Pir Muhammad Khan, together with the other Shaybanid sultans, formally came to power, and the khutba was delivered, and coins were struck in his name and with his titles in Transoxiana, Turkistan, and Balkh (ibid.: 187). Aḥsan al-Tavārīkh also records the transfer of the rule of Turkistan to Pir Muhammad Khan during this period (Rumlu, 1978: 510).

Among the identified coins (Tab. 6), three silver specimens in the name of Pir Muhammad Khan, with Balkh as their mint, have been identified. The dates of striking for none of these specimens are known, and their weights are 4.37, 4.50, and 4.66 g, respectively. Given the limited number of specimens, the difference in weight cannot, by itself, serve as a basis for assessing the

economic conditions of the period; nevertheless, it demonstrates variation in the weights of coins struck at Balkh during this period. Moreover, since the dates of striking are unknown, it is not possible to date them precisely. However, based on the report in Musakhkhar al-Bilād concerning Pir Muhammad Khan's formal accession in 963 AH and the delivery of the khutba and striking of coins in his name at Balkh, 963 AH may be considered one of the most likely periods for the beginning of the minting of these coins.

This political position is also evident in the account of ʿĀlam-ārā-ye Shāh Ṭahmāsb in its account of subsequent developments. This source reports Pir Muhammad Khan's campaign into Khorasan, the conquest of Herat, and the striking of coins in his name following the conquest of the city; it then records his defeat by the forces of Prince Ismail Mirza and his retreat toward Turkistan (ʿĀlam-ārā-ye Shāh Ṭahmāsb, 1991: 338, 340-343). The position of Balkh alongside these centers within the network of Pir Muhammad Khan's political and military developments, together with the continued activity of its mint, highlights Balkh's position as one of the major centers of Shaybanid power during this period.

**Tab. 6: An example of coins minted by Pir Muhammad I in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Pir Muhammad I | ? | Balkh | Silver | 4.37 |  https://www.zeno.ru/showphoto.php?photo=341975 |
| Pir Muhammad I | ? | Balkh | Silver | 4.50 |  https://www.zeno.ru/showphoto.php?photo=157945 |
| Pir Muhammad I | ? | Balkh | Silver | 4.66 |  https://www.zeno.ru/showphoto.php?photo=255057 |

### 7-7. Coins Struck under Iskandar at Balkh (Reign: 968-991 AH)

Iskandar Khan ibn Janibeg Sultan resided in Samarkand following his father's death in 935 AH. In 968 AH, with the agreement of the tribal leaders and the support of his sons, nobles, and notables, he went to Bukhara and assumed power. According to Muskhir al-Bilad, following his accession, the khutba was delivered, and coins were struck in his name and with his titles throughout Transoxiana, Turkistan, Akhsi, Andijan, Balkh, and Badakhshan (Muḥammad-Yār, 2006: 203-204). Raqim Samarqandi likewise reports that his rule continued until 991 AH (Raqim

Samarqandi, 2001: 159). During this period, Balkh was also an important center of political and military developments in the region, and events concerning the city are reported in Musakhkhar al-Bilād (Muḥammad-Yār, 2006: 224-227).

In the collection examined (Tab. 7), one gold coin weighing 4.52 g and one silver coin weighing 4.69 g, both struck at Balkh in the name of Iskandar, have been identified. The dates of striking for both specimens are unknown. Album notes that some Shaybanid coins from this period were also overstruck in Mughal territories, with the name of Akbar and, in some cases, only the names of cities such as Kabul or Qandahar appearing on them. He also emphasizes the decline in supervision and quality control at the mints during the reign of Iskandar (Album, 2011: 301).

Given that both specimens are undated, their precise minting dates cannot be determined. Moreover, the relatively good quality of the gold specimen examined indicates that the general description concerning a decline in quality should not be extended to the entire production of the Balkh mint without examining all available specimens. Nevertheless, the presence of a gold coin alongside a silver coin indicates the diversity of coin types used at this mint. Since gold coins were rarer than silver coins during this period and their striking may have been associated with important political occasions, including accession or military victories, its precise minting date cannot be determined. Nevertheless, placing it in the early period of Iskandar's reign, particularly around 968 AH, is one possible hypothesis for its dating.

Regarding the silver coin, based on the historical account of Iskandar's rule and the subsequent reference to the reign of Abdullah Khan in his father Iskandar's name, it may be suggested that this specimen was struck during the period between Iskandar's reign and the rule of Abdullah II in his father's name. From this perspective, the existence of both gold and silver coin types struck at Balkh, together with the historical account of the expansion of coin striking in Iskandar's name at Balkh, indicates the continuity of activity at this mint and its importance within the monetary and political structure of the Shaybanids during this period.

**Tab. 7: An example of coins minted by Iskandar in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Iskandar Bahadur Khan | ? | Balkh | Gold | 4.52 |  https://www.zeno.ru/showphoto.php?photo=200110 |
| Iskandar Bahadur Khan | ? | Balkh | Silver | 4.69 |  https://www.zeno.ru/showphoto.php?photo=286575 |

### 7-8. Coins Struck under Abd al-Latif Khan at Balkh (A Local Ruler Contemporary with Iskandar Khan; Reign: 947-959 AH)

Abd al-Latif Khan was one of Iskandar Khan's sons. After Iskandar Khan regained control of the provinces of Balkh and Shibergan from Din Muhammad Sultan, he entrusted Shibergan to Abd al-Latif Sultan. When Iskandar Khan himself departed for Tashkent and Turkistan, he sent Abd al-Latif to govern the province of Balkh. During this period, Shahrokh Mirza, accompanied by a number of sultans and amirs, came to the Balkh region under the pretext of visiting the shrine of Hazrat Shah-e Awliya and raided some of its dependencies. Upon learning of this event, Abd al-Latif Khan confronted the amirs and, in 987 AH, marched against them (Muḥammad-Yār, 2006: 219-220).

Among the identified coins (Tab. 8), three silver specimens in the name of Abd al-Latif Khan, with Balkh as their mint, have been identified. None of the specimens has a known minting date, and their weights are 1.113, 1.14, and 4.50 g, respectively. The first two specimens differ substantially in weight from the third; however, because the coins are undated and the number of specimens is limited, this difference cannot be directly attributed to a change in the monetary standard or economic conditions. Nevertheless, it demonstrates variation in the weights of coins struck at Balkh during this period.

The significance of these coins becomes apparent when the numismatic evidence is considered in conjunction with the historical accounts. Given the establishment of Abd al-Latif Khan in Balkh by order of Iskandar Khan and his military presence against forces seeking to seize the province, the striking of coins in his name at Balkh may be interpreted in connection with the political developments of the city. Since the dates of striking are unknown, it is not possible to determine the precise occasion associated with these coins. Nevertheless, under conditions of political instability, these coins may have served, on the one hand, to signal the presence and maintain the authority of Abd al-Latif Khan in Balkh and, on the other hand, if his position had become consolidated, to represent and reinforce his political standing. The possibility that his presence in Balkh may have involved an attempt to establish a more independent position in the province cannot be entirely ruled out. In any case, the concurrence of Abd al-Latif Khan's military presence in Balkh and the striking of coins in his name at the city indicates a connection between the minting of these coins and the political developments in Balkh during this period.

**Tab. 8: An example of coins minted by Abd al-Latif Khan in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Abd al-Latif | ? | Balkh | Silver | 1.113 |   https://www.zeno.ru/showphoto.php?photo=292044 |

| | | | | | |
|---|---|---|---|---|---|
| Abd al-Latif | ? | Balkh | Silver | 1.14 |  https://www.zeno.ru/showphoto.php?photo=329938 |
| Abd al-Latif | ? | Balkh | Silver | 4.50 |  https://www.zeno.ru/showphoto.php?photo=286777 |

**7-9. Coins Struck under Abdullah (Abadullah) II at Balkh (Reign: 986-993 AH)**

Abdullah Khan II was one of the most important rulers of the Shaybanid dynasty. In the course of expanding his territory, he brought a large part of the lands belonging to the dynasty once again under his control. He first took control of Bukhara and Samarkand and subsequently extended his authority to Tashkent and other regions. In this process, Balkh was also among the cities that came under his influence. After achieving political independence, Abdullah Khan reorganized the governmental administration and also undertook reforms in the monetary system, gradually extending his control over Balkh, Samarkand, Tashkent, Ferghana, Badakhshan, and other regions. From 988 AH, he made Balkh the residence of Abd al-Mu'min, his son, who served as his deputy, an action that indicates the position of the city within his political structure. Following Abdullah Khan's death, Abd al-Mu'min came to power, but was killed six months later. As there was no other male successor from the Shaybanid dynasty, the rule of Bukhara passed to Baqi Muhammad, the maternal grandson of Iskandar Khan (Grousset, 1986: 795-797). Historical accounts also confirm the expansion of Abdullah Khan's territory and the position of Balkh in this process. In his account of the developments following the death of Buraq Khan, Raqim Samarqandi describes Abdullah Khan's advance and the conquest of Bukhara, Miankal, Kish, and Nasaf, followed by the conquest of Balkh and its fortress. He also reports the continuation of his conquests in Samarkand, Tashkent, Badakhshan, and Khorasan (Raqim Samarqandi, 2001: 131-132). Musakhkhar al-Bilād likewise records Abdullah Khan's presence in Samarkand in 986 AH and his death in the same city in 993 AH (Muḥammad-Yār, 2006: 206-207).

Two coins from the reign of Abdullah Khan II have been identified (Tab. 9): one gold coin weighing 4.61 g and one silver coin weighing 4.64 g, both dated 991 AH. The identical date of striking of these two specimens and the appearance of the same ruler's name on both gold and silver coins indicate the continued activity of the Balkh mint during this period. Given the use of gold coins in formal contexts, the striking of the gold coin in 991 AH may have been associated with the proclamation or consolidation of Abdullah Khan's rule following the death of Iskandar Khan. At the same time, the striking of the silver coin in the same year may reflect the appearance of the new ruler's name in the more routine production and circulation of coinage. Moreover,

the coincidence of these coins with the year of Iskandar Khan's death, together with Raqim Samarqandi's account of Abdullah Khan's conquest of Balkh and its fortress, strengthens the possibility of a connection between the activity of the Balkh mint and the political developments resulting from the transfer of power. Therefore, the coins of this period can be regarded as material evidence of Balkh's position within the Shaybanid dynasty's political structure.

**Tab. 9: An example of coins minted by Abdullah II in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Abdullah Bahadur Khan II | 991 | Balkh | Silver | 1 Tanka 4.64 |  https://en.numista.com/catalogue/pieces312026.html |
| Abdullah Bahadur Khan II | 991 | Balkh | Gold | 4.61 |  https://www.zeno.ru/showphoto.php?photo=197487 |

### 7-10. Coins Struck under Abd al-Amin at Balkh (Reign: 993-1008 AH)

Following the killing of Abd al-Mu'min Khan, Jahan Sultan Khanim, the daughter of Kapak Sultan and a member of the Shaybanid family, presented a young man of approximately seventeen or eighteen years of age, whom she had concealed in her camp, as the son of Abdullah Sultan. After this claim was confirmed by some members of the camp staff, a group of the amirs of Balkh and officials of Abd al-Mu'min placed him on the throne at Qubbat al-Islam in Balkh, and he took the name Abd al-Amin Khan (Muḥammad-Yār, 2006: 209). However, his rule was accompanied from the outset by opposition in Balkh and the surrounding areas, and revolts and political disputes continued. Under these circumstances, after Shah Abbas became aware of the situation in Transoxiana, Muhammad Ibrahim Khan, with his approval, moved toward Balkh. During these developments, some of the people of Balkh joined Muhammad Ibrahim Khan's camp, while others continued to support Abd al-Amin. Ultimately, as these divisions intensified and support for Abd al-Amin declined, he was forced to surrender in 1008 AH (ibid.: 210–213).

Among the available data (Tab. 10), two silver coins struck in the name of Abd al-Amin at Balkh have been identified. Both specimens are dated 1006 AH and weigh 4.03 and 4.47 g, respectively. The significance of these specimens lies in the fact that they were struck in 1006 AH, two years before Abd al-Amin's surrender in 1008 AH. Thus, while the historical sources report the weakening of his political position in Balkh, the city's mint was still striking coins in his name in 1006 AH. The existence of these coins therefore indicates that, despite the political opposition and declining support for Abd al-Amin, his name continued to be recorded at the Balkh mint as

that of the ruler. It also demonstrates that Balkh remained an important political and monetary center during the developments of this period.

**Tab. 10: An example of coins minted by Abd al-Amin in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Abd al-Amin | 1006 | Balkh | Silver | 4.03 |  https://en.numista.com/catalogue/pieces166596.html |
| Abd al-Amin | 1006 | Balkh | Silver | 4.47 |  https://www.zeno.ru/showphoto.php?photo=334524 |

### 7-11. Coins Struck under Muhammad Ibrahim at Balkh (Reign: 1008-1009 AH)

Muhammad Ibrahim Sultan was a Shaybanid prince during the reign of Abdullah Khan II. Following the political developments in Khorasan and Transoxiana, he was sent toward Transoxiana with the support of Shah Abbas. At this time, the political situation in Balkh was unstable due to the dispute over Abd al-Amin's legitimacy and the opposition of a number of the province's amirs and forces to his rule. During these developments, Muhammad Ibrahim Sultan agreed to the proposal to attack Balkh, as some of the city's amirs did not support Abd al-Amin and might join him (Muḥammad-Yār, 2006: 175-176). In 1008 AH, Muhammad Ibrahim marched toward Balkh with his army and entered the city after the city's amirs joined him. Abd al-Amin was prevented from entering the city, and according to Mollā Jalāl-al-Dīn Monnajem Yazdī, following Muhammad Ibrahim's establishment there, the khuṭba was recited and coins were struck in his name in Balkh (Mollā Jalāl-al-Dīn Monnajem Yazdī, 1987: 177). Muhammad Ibrahim ruled in Tukharistan for more than a year before falling ill and dying while confronting the army of Baqi Muhammad Khan near Balkh (Muḥammad-Yār, 2006: 177).

Among the identified coins (Tab. 11), three silver specimens struck in the name of Muhammad Ibrahim at Balkh, all dated 1008 AH, were identified. Their weights are 4.54, 4.57, and 4.64 g, respectively. The significance of these coins lies in the precise chronological correspondence between the numismatic evidence and the historical account. Their shared date coincides with the year of Muhammad Ibrahim's arrival in Balkh, while the historical account explicitly reports that coins were struck in his name following his entry into the city in the same year. This correspondence indicates that the change in the ruler's name on the coinage of Balkh in 1008 AH accompanied the transfer of political power in the city. From this perspective, the coins of Muhammad Ibrahim not only demonstrate the continued activity of the Balkh mint during the final years of Shaybanid rule, but also provide a clear example of the temporal relationship between the transfer of political

power, the establishment of a new ruler, and the change in the ruler's name recorded on the coinage.

**Tab. 11: An example of coins minted by Muhammad Ibrahim in Balkh (Author, 2026).**

| Reign | Year of Striking | Mint | Metal | Weight (g) | Coin Image |
|---|---|---|---|---|---|
| Muhammad Ibrahim Bahadur Khan | 1008 | Balkh | Silver | 4.54 |  https://www.zeno.ru/showphoto.php?photo=302784 |
| Muhammad Ibrahim Bahadur Khan | 1008 | Balkh | Silver | 4.57 |  https://www.zeno.ru/showphoto.php?photo=302784 |
| Muhammad Ibrahim Bahadur Khan | 1008 | Balkh | Silver | 4.64 |  https://www.cngcoins.com |

## 8. Conclusion

The examination of coins struck at Balkh during the Shaybanid period, together with a comparison of their numismatic characteristics with historical accounts, demonstrates that the city's mint remained active at different points throughout the period and that the names of numerous rulers were recorded on its coinage. This study examines eleven rulers and claimants to power for whom coins bearing the mint name of Balkh have been identified. Variations in the names and titles of the rulers, minting dates, weight characteristics, and the presence of overstruck specimens, considered alongside the historical evidence, provide a basis for examining the role of Balkh within the political and monetary structure of the Shaybanid state.

A comparison of these eleven numismatic groups shows that the Balkh mint was active under rulers from multiple periods and branches of the Shaybanid dynasty. The available specimens represent rulers from different branches and generations of the dynasty and, in this respect, demonstrate the continuity of minting activity at Balkh across different phases of Shaybanid rule. This continuity assumes particular significance in light of the multi-branch structure of the Shaybanid dynasty and the intra-dynastic competition for power. In other words, despite changes in rulers and shifts in power among the dynasty's branches, Balkh remained one of the centers where rulers expressed their presence, names, and claims to authority through coinage. Accordingly, the significance of the coins of Balkh during this period lies less in their number or technical characteristics than in their potential to connect material evidence with political developments. This evidence, particularly where the

date of minting coincides with historical accounts concerning the presence of a ruler or a change in political authority, makes it possible to reconstruct certain phases of Balkh's political history with greater precision. At the same time, the limited number of specimens and the absence of dates on some of the coins require caution against generalizing the findings or directly associating individual coins with specific political events. From this perspective, the Balkh mint may be regarded as one of the arenas in which changes in the Shaybanid power structure were materially expressed and can be studied through numismatic evidence.

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**Authors' Contribution**

The materials were collected by the second author and written under the supervision of the first author, and all of the authors approved the content of the manuscript and agreed on all aspects of the work.

**Conflict of Interest**

The authors declared no conflict of interest.

**Endnote**

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# مـطالعات باسـتان‌شـنـاسی

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# تحلیل جایگاه سیاسی بلخ در دورهٔ شیبانیان براساس شواهد تاریخی و داده‌های سکه‌شناختی


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**چکیده**

در آغاز قرن ۱۰ هـ.ق. خراسان بزرگ به‌دلیل موقعیت راهبردی خود به عرصهٔ رقابت و منازعهٔ صفویان و شیبانیان بدل شد و شهر بلخ در این‌میان از مراکز مهم سیاسی منطقه به‌شمار می‌رفت. پژوهش حاضر با هدف تبیین جایگاه سیاسی بلخ در دورهٔ شیبانیان و بررسی بازتاب تحولات قدرت در فعالیت ضرابخانهٔ این شهر انجام شده است. در این راستا، سکه‌ها به‌عنوان شاهد مادی، در کنار منابع تاریخی، امکان بررسی برخی ابهامات تاریخی و بازشناسی ساختارهای قدرت سیاسی را ایفا می‌کنند. از آنجاکه ضرب سکه در متون تاریخی، نماد مشروعیت و استقرار حکومت تلقی می‌شود، تحلیل ضرب سکه در بلخ می‌تواند درک روشن‌تری از تغییرات سیاسی در این منطقه ارائه دهد. پرسش اصلی پژوهش این است که، جایگاه سیاسی شهر بلخ در دورهٔ شیبانیان در سدهٔ ۱۰ هـ.ق. چگونه قابل تبیین است و داده‌های سکه‌شناختی حاصل از ضرب سکه در این شهر چه تصویری از ساختار قدرت شیبانیان ارائه می‌دهد؟ پژوهش حاضر با رویکرد تاریخی و روش توصیفی-تحلیلی انجام شده است. داده‌های پژوهش بر پایهٔ منابع تاریخی و بررسی سکه‌های ضرب بلخ منسوب به حکام شیبانی گردآوری شده و با تطبیق نام حاکم، محل ضرب و تاریخ سکه‌ها با گزارش‌های تاریخی، ارتباط میان فعالیت ضرابخانهٔ بلخ و تحولات سیاسی این شهر بررسی شده است. نتایج نشان می‌دهد که بلخ، با وجود تغییرات مکرر در وضعیت سیاسی و جابه‌جایی صاحبان قدرت، جایگاهی پایدار و مهم در ساختار سیاسی شیبانیان داشته است. شناسایی سکه‌های ضرب بلخ از هر شش شاخهٔ قدرت خاندان شیبانی، استمرار فعالیت ضرابخانهٔ این شهر را در دوره‌های مختلف نشان می‌دهد و ضرب سکه در این شهر، نه‌تنها کارکرد اقتصادی داشت، بلکه به‌عنوان ابزاری برای نمایش اقتدار سیاسی و تثبیت مشروعیت حکام شیبانی عمل می‌کرد. از این‌رو، سکه‌های ضرب بلخ در کنار منابع تاریخی، نه‌تنها برای شناسایی حاکمان و فعالیت ضرابخانهٔ این شهر، بلکه به‌عنوان شواهدی برای بازسازی جایگاه سیاسی بلخ در ساختار قدرت شیبانیان قابل استفاده‌اند.



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## Archaeological Studies Sgraffito Ware Production Workshops in Iran (10th–14th Centuries CE): Insights from Archaeological Excavations at the Aghcheh Rish Site, Northwest Iran

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**Abstract**

For several centuries (9th to 14th CE), Sgraffito-type pottery was widely distributed across a vast region, including Iran, the Caucasus, Anatolia, Eastern Europe, and Transoxiana. Based on typological studies by Grube and Allen, this pottery tradition is classified into five main groups—Simple Sgraffito, Splashed Glazed Sgraffito, Champlevé/ Garrus, Agh Kand, and Amol—each named after geographic locations in Iran where examples were first identified. Despite this established classification, our knowledge of the actual production contexts—workshops, kilns, tools, and technological processes—has remained speculative, relying mainly on unverified accounts from antique dealers. No systematic archaeological investigations of production sites had previously been undertaken. These gaps raise significant research questions: How did Sgraffito pottery technology develop over a span of five centuries? Which styles represent earlier phases, and which embody the latest technical innovations? In 2015, the authors initiated their fieldwork in the southern part of northwestern Iran, a region with a rich tradition of pottery production. Field surveys led to the identification of more than 20 sites containing substantial remains of Sgraffito pottery. Among these sites, Aghcheh Rish was selected for excavation, making this research the first archaeological project in Iran specifically aimed at identifying and excavating Sgraffito pottery production workshops. Accordingly, the research was based on the analysis of Sgraffito pottery finds recovered from the excavations. Excavations revealed a complex dating from the 9th to 14th centuries CE. Finds included multiple pottery kilns, extensive quantities of Garrus and Agh Kand wares , residential structures, workshop buildings, kiln-support tools such as bars and tripods, glass bracelets, 10th-century coins, tombs, and a historical cemetery. The presence of both domestic and industrial features provides valuable insight into the organization of pottery production and the daily lives of the craftspeople. This article first examines the workshop activities at Aghcheh Rish, offering rare archaeological evidence of Sgraffito production in Iran, and then presents a detailed typological analysis of the pottery assemblage, contributing to a deeper understanding of its technological and chronological development

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## 1. Introduction

The production of sgraffito-type pottery, characterized by its decorative technique of scratching or incising designs into the surface of the clay before firing, represents a significant aspect of ceramic craftsmanship in medieval Iran. The period spanning the 9th to the 14th centuries CE witnessed the flourishing of distinct regional pottery traditions, with sgraffito pottery being a key element in the cultural and economic landscapes of the time. The Aghcheh Rish site, situated in the northwest of Iran, offers a valuable opportunity for understanding the dynamics of pottery production in this period, particularly through the lens of archaeological and archaeometric investigation. Recent archaeological excavations at Aghcheh Rish have uncovered evidence of pottery workshops that date from the early Islamic period through the late medieval era. These workshops are of particular interest because they appear to have been centers for the specialized production of sgraffito ceramics, a craft that involves both skillful artistry and precise technological knowledge. The stratigraphy of the site, coupled with a diverse assemblage of pottery fragments, provides critical data on the continuity and change of production techniques over several centuries. The integration of archaeometric methods, such as petrographic analysis and chemical profiling of ceramics, enables a deeper understanding of the materials, firing techniques, and trade patterns associated with these workshops. This study aims to present new insights into the technological, economic, and social aspects of pottery production at Aghcheh Rish, contributing to the broader discourse on the role of craft production in the medieval Islamic world. Through both traditional archaeological methods and advanced scientific techniques, the research seeks to shed light on the interplay between local traditions and broader regional influences in the context of pottery production.

## 2. Project Aims and Methodology

The primary objective of the excavation was to investigate the archaeological deposits at the Aghcheh Rish site, identify earlier occupation layers, and analyze the sequence of activities. This included recovering artifacts to refine the chronological framework and workshop practices, as well as adding to the regional pottery typology. Understanding the social context of Sgraffito pottery makers was also a significant aim. With a permit for sondages, 23 trenches were planned and designated with letters (1–23). Of these, trenches 4, 9, 10, 11, 16, 17, 18, and 21 were explored in detail, while trench 4 was later abandoned in favor of work in other areas. Trenches 4 and 18 revealed pottery kilns, while others uncovered building structures, a stone floor, and an underground cistern. Trenches with surface scatters of kiln slag, bars, and wasters were targeted for evidence of pottery workshops.

## 3. Geographical Location of the Site

The southern part of Eastern Azerbaijan Province, Iran, has historically been a crucial connection between northwest Iran, the Caucasus, Anatolia, central Iran, and Transoxiana (Figs. 1-2). This strategic location led to the establishment of major cities such as Maragheh, Takht-i Suleiman, Soltaniyeh, and Ujan, which served as capitals of Iran during the Middle Islamic period (14th–

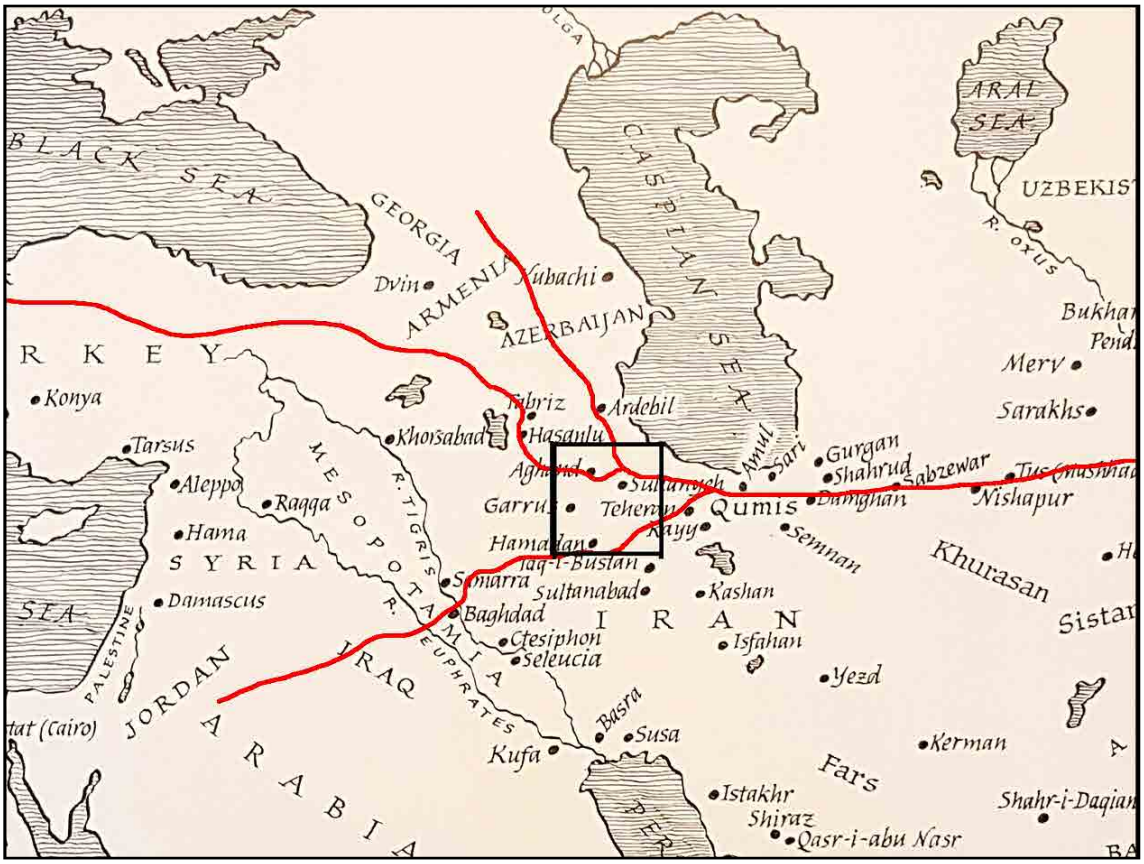
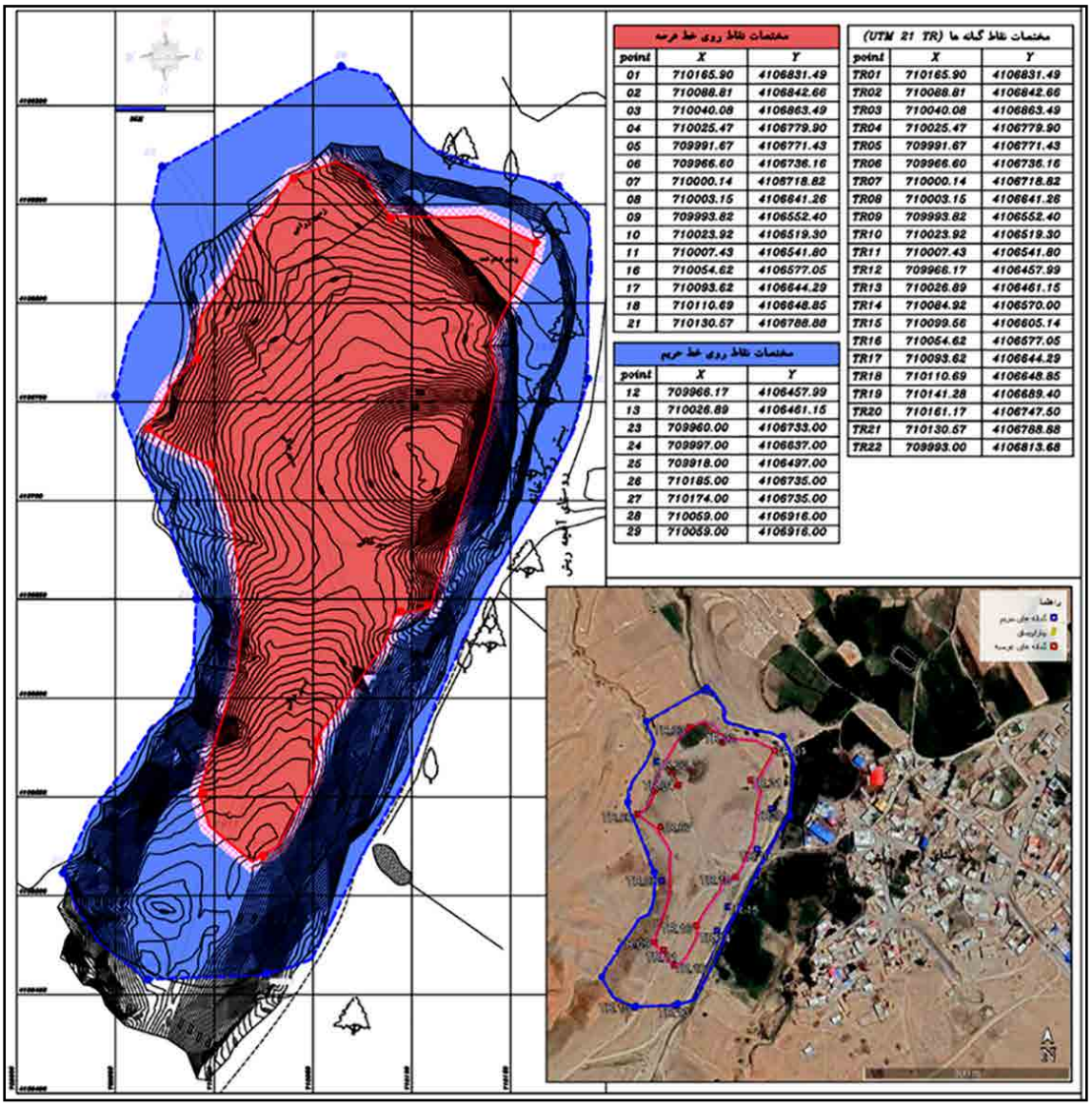



**Fig. 1: The location of the south of northwest Iran, where many important east-to-west routes, including the Silk Road, have passed through its territory (Naumann, 1976: 7).**




**Fig. 2: The location of Aghcheh Rish site and early capitals of the Mongols (Waksman & Kazempour, 2025: 15).**

16th centuries) and were also centers of pottery production, including Takht-i Suleiman. The Aghcheh Rish site, situated west of the present-day village of Aghcheh Rish (Charoymagh County, Eastern Azerbaijan Province) (Fig. 3), lies at the intersection of northwest Iran, central Iran, and the Caucasus and Anatolia. Its proximity to key historical sites, such as Takht-i Suleiman[1] (south), Maragheh[2] (west), Agh Kand[3] (east), and Ujan[4] (north), underscores its importance in the production and distribution of Sgraffito pottery during the 9th–14th centuries.



مختصات نقاط روی خط حرمه

| point | X | Y |
|---|---|---|
| 01 | 710165.90 | 4106831.49 |
| 02 | 710088.81 | 4106842.66 |
| 03 | 710040.08 | 4106863.49 |
| 04 | 710025.47 | 4106779.90 |
| 05 | 709991.67 | 4106771.43 |
| 06 | 709966.60 | 4106736.16 |
| 07 | 710000.14 | 4106718.82 |
| 08 | 710003.15 | 4106641.26 |
| 09 | 709993.82 | 4106552.40 |
| 10 | 710023.92 | 4106519.30 |
| 11 | 710007.43 | 4106541.80 |
| 16 | 710054.62 | 4106577.05 |
| 17 | 710093.62 | 4106644.29 |
| 18 | 710110.69 | 4106648.85 |
| 21 | 710130.57 | 4106788.88 |

مختصات نقاط روی خط حریم

| point | X | Y |
|---|---|---|
| 12 | 709966.17 | 4106457.99 |
| 13 | 710026.89 | 4106461.15 |
| 23 | 709960.00 | 4106733.00 |
| 24 | 709997.00 | 4106637.00 |
| 25 | 709918.00 | 4106497.00 |
| 26 | 710185.00 | 4106735.00 |
| 27 | 710174.00 | 4106735.00 |
| 28 | 710059.00 | 4106916.00 |
| 29 | 710059.00 | 4106916.00 |

مختصات نقاط گمانه ها (UTM 21 TR)

| point | X | Y |
|---|---|---|
| TR01 | 710165.90 | 4106831.49 |
| TR02 | 710088.81 | 4106842.66 |
| TR03 | 710040.08 | 4106863.49 |
| TR04 | 710025.47 | 4106779.90 |
| TR05 | 709991.67 | 4106771.43 |
| TR06 | 709966.60 | 4106736.16 |
| TR07 | 710000.14 | 4106718.82 |
| TR08 | 710003.15 | 4106641.26 |
| TR09 | 709993.82 | 4106552.40 |
| TR10 | 710023.92 | 4106519.30 |
| TR11 | 710007.43 | 4106541.80 |
| TR12 | 709966.17 | 4106457.99 |
| TR13 | 710026.89 | 4106461.15 |
| TR14 | 710084.92 | 4106570.00 |
| TR15 | 710099.56 | 4106605.14 |
| TR16 | 710054.62 | 4106577.05 |
| TR17 | 710093.62 | 4106644.29 |
| TR18 | 710110.69 | 4106648.85 |
| TR19 | 710141.28 | 4106689.40 |
| TR20 | 710161.17 | 4106747.50 |
| TR21 | 710130.57 | 4106788.88 |
| TR22 | 709993.00 | 4106813.68 |

**Fig. 3: The topography of the Aghcheh Rish site and its location to the west of the present-day Aghcheh Rish village (Kazempour, 2023: 78).**

## 4. Typology of the Sgraffito Wares at the Aghcheh Rish Site

Sgraffito ware was very popular and widespread across almost all of the Middle East. In subsequent periods, several versions were developed in Iran and Central Asia, and later during the Mamluk era in Egypt (Bongianino, 2014) Sgraffito was continuously manufactured in both Iran and Central Asia up until the Mongol invasion, after which its production ceased. Several types

of Sgraffito were produced in Iran and can be divided into the following groups: simple Sgraffito over a colored ground slip coated with a clear, colorless glaze; the green-painted so-called Amol group; the carved or Champlevé vessels; and the so-called Aghkand ware (Fehervari, 2000: 81). A white engobe covers the inner surface of the bowl and stops just below the exterior rim. The design was incised into the engobe and filled with green, yellow, and purple glazes. The incised lines prevented the colored glazes from running into adjacent areas. The most obvious prototype for Sgraffito wares is metalwork. Many earlier examples feature motifs almost identical to those seen on metal objects (Atil, 1973: 49). These vessels were made on a wheel and shaped from a ceramic mass composed of fine-grained clayey material slightly rich in carbonate. The body also contains fragments of quartz, potassic feldspar minerals, and volcanic rocks.

**4-1. Style I: Incised Decoration under Glaze (Simple Sgraffito)**

From the 9th century CE onward, the production of sgraffito ware became common throughout the eastern Islamic world, particularly in Iran (Horton, 1996; Whitehouse, 1974; Vroom, 2005). Between the 9th and 14th centuries, the manufacture of sgraffito pottery in Islamic regions such as Iran[1], Iraq, Egypt, and the Levant—as well as in Christian areas such as Anatolia and Greece[6]—attests to the widespread distribution of this technique (Figs. 4-5). Due to its lower cost compared to other ceramic types (such as lusterware), it gained popularity among different social strata (Lane, 1973). Archaeological findings from Samarra indicate the large-scale production of this pottery in Iraq, and it is probable that a significant portion of such wares was distributed from Samarra. Some scholars, however, believe that this style was influenced by Central Asian and Sasanian pottery traditions and reached full development in Iraq (Allan & Robert, 1987). Sgraffito motifs in Iran and Iraq were often simple yet expressive, employing decorative elements such as spirals, blooming flowers, and geometric lines. At the site of Aqche Rish, a considerable portion of the pottery assemblage belongs to the category of incised decoration under a transparent glaze (simple sgraffito). These wares were decorated using a lead glaze and the technique of scratching designs onto a white slip layer, producing patterns through simple engraving (Vroom, 2005: 176; Kennet, 2004: 34). The forms were mostly small utilitarian vessels for everyday use—such as bowls, cups, beakers, and shallow plates. This change may indicate a shift in consumption patterns and dining or serving practices during this period, which were based on pastoralism (Vroom, 2014). The large quantity of animal bones recovered from the cultural layers of Aqche Rish also points to a livelihood based on animal husbandry. The glazes used for this type of pottery generally ranged in color from green, turquoise-blue, and buff to, more rarely, dark brown. At Aqche Rish, brown-glazed vessels were found in cultural layers dated to the 9th–10th centuries CE (Fig. 6). These seem to have been influenced by Chinese pottery traditions of the 8th–9th centuries CE. Brown-glazed ceramics were imported into Islamic lands—including Basra, Siraf, and Samarra—during the 9th century but were soon imitated by Muslim craftsmen, who adopted this glaze for use on incised-decoration wares. At Aqche Rish, many of the simple sgraffito wares feature a turquoise-green glaze. During glazing, due to poor control, the glaze often ran and accumulated

more thickly in certain parts of the vessels, particularly on the base and outer body. They were produced on a slow potter's wheel, with a buff-colored body. The exterior surfaces often display pores, and cracks in certain areas suggest that either the clay used was of poor quality or firing temperatures were not properly controlled. The temper used was mineral (sand and quartz), and proper firing was sometimes achieved. The decorative motifs are mainly geometric—parallel lines, intersecting lines, zigzags, and concentric circles being the most common (Fig. 7). To create these patterns, the vessel surface was first coated with a thin layer of slip, and then designs were incised into a red-bodied ware covered with a thin lead glaze. In some cases, black pigment was applied to the incised surface, enhancing the clarity of the design beneath the transparent glaze. Alongside geometric motifs, abstract and simplified vegetal patterns also appear, such as gently curved branches ending in a leaf—among the most common plant designs at Aqche Rish. Based on fabric analysis and comparison with published examples, much of the simple sgraffito pottery from Aqche Rish was produced locally, with some vessels supplied by other workshops. Their similarity to types found at Siraf, Gorgan, Shahr-e Belqis, Nishapur, Sirjan, and Susa supports this assumption (Stein, 1932: 90–91). Unlike some later sgraffito examples that feature human and animal motifs (such as vessels from later Byzantine Anatolia), the simple types from Aqche Rish contain no depictions of humans or animals. This absence likely reflects cultural–religious restrictions or the lack of direct connections with production centers influenced by Byzantine or Mediterranean art (Waksman et al., 2017; Kennet, 2004: 34), where human and animal motifs were common.



**Fig. 4: Earthenware covered with a white slip with incised decoration under a transparent green glaze (Style I), Iran (Nishapur), 10th century (Watson, 2020: 140, Fig. 73).**



**Fig. 5: Bowl, simple Sgrafiato, under green glaze (Style I), Iran, 11th-12th century (Fehervari, 2000:84, No.84).**

### 4-2. Style II: Incised Splashed Sgraffito

The transfer of pottery technologies through trade routes and diplomatic gifts led to the merging of the splashed-glaze technique with underglaze incised decoration, resulting in the creation of a new style by Muslim artisans in the 10th century CE, known as incised ware with splashed glaze,




**Fig. 6: Earthenware covered with a white slip with incised decoration under a transparent green and brown glaze (Style I), Iran (Aghcheh Rish site) (Kazempour, 2020: 70).**

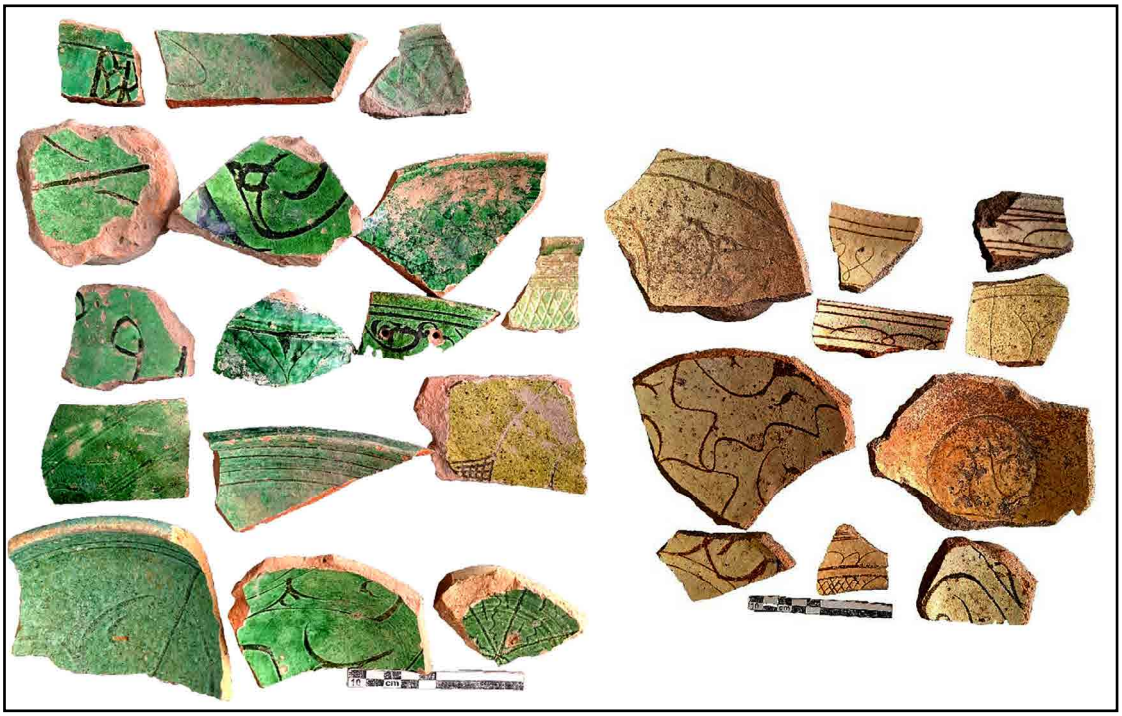


**Fig. 7: Pottery with insiced decoration under transparent green glaze (Kazempour, 2020: 98).**

or the so-called "Samarra style". Understanding the origin and the reasons for the popularity of this type of decoration in that period requires a broad view of the cultural, artistic, and regional as well as interregional trade networks of the time. In the 9th century CE, the settlement of Chinese artists in the court of the Abbasid caliphs coincided with the flourishing Tang dynasty in China (7th–10th centuries CE) (Fig. 8). Techniques such as splashed glaze entered the Islamic cultural sphere and were gradually localized by Iranian artisans, particularly in areas such as Nishapur, Ray, Jurgan, and other cities along the Silk Road (Karimi & Kiani, 1985: 21). Examples from Nishapur (Wilkinson, 1973: 256, Fig. 10), Fustat (Scanlon & Kubiak, 1989: 48), and Siraf (Rougeulle, 2005: 17) also indicate that cultural and commercial interactions between the Islamic world and China laid the groundwork for the formation of the Islamic splashed-glaze tradition. This tradition is especially recognized within the framework of the "Samarra Horizon" as a distinct artistic movement inspired by Chinese ceramics. In some cases, actual Chinese pieces may even have been imported, though more detailed technical studies are still required to confirm this (Wilkinson, 1973: 256–257).

On the other hand, the influence of this artistic tradition was not confined to the Abbasid Caliphate. Recent studies show that cultural centers in the South Caucasus, including cities such as Ani in Armenia, Shamkir in Azerbaijan, and Tbilisi in Georgia, produced in the 9th–10th centuries a type of glazed pottery with splashed-incised decoration strikingly similar to Islamic examples from centers such as Baghdad, Samarra, and Nishapur (Hubbert, 2024). This reflects the broad cultural influence of the Abbasid Caliphate in the Caucasus and, at the same time, highlights the role of ceramics as a tool for constructing individual and political identity in societies that were gradually emerging as independent kingdoms during this period. Culturally, just as in the Caucasus the use of splashed-glaze pottery was regarded as a symbol of social distinction and political identity (Hubbert, 2024), in the Islamic world these ceramics were also perceived as luxury objects with symbolic value, representing the social standing of their owners. This pottery was not confined to Islamic territories; within the Byzantine sphere of influence—especially in the Middle Byzantine period—it became a defining ceramic type. Based on examples from Aqche Rish, this style is very similar in form and decoration to simple sgraffito, with the difference that in this type vegetal motifs and pseudo-inscriptions were very common. Archaeological findings from Aqche Rish show a large quantity of glazed pottery with splashed decoration dating to the 10th–11th centuries CE, indicating the popularity of one of the most important ceramic decoration techniques in the Islamic world during this period. Most examples have green splashed glaze, although brown is also common. In terms of vessel forms, bowls, plates, and small jars are the most frequent. In glazing these vessels, the use of a single-color buff glaze was common, whereas in simple sgraffito green predominates (Fig. 9). Therefore, the splashed-glaze wares from Aqche Rish can be seen both as a reflection of East–West artistic interactions and as evidence of the active role of local elites in recreating and localizing imported styles. Overall, the origin of the splashed-glaze pottery from Aqche Rish should be sought in the connection between Chinese artistic traditions (particularly Tang sancai), the innovations of Iranian artisans, and the broad cultural

influence of the Abbasid Caliphate in the Caucasus and beyond. Within this framework, due to the geographical location of Aqche Rish, the site can be interpreted not merely as a consumer of imported artistic products, but as an active node in the network of cultural transmission from East Asia to the Caucasus and other parts of the Islamic world (Fig. 10).



**Fig. 8: Pottery with insiced under glaze and splashed glaze, Tang daynasty, Chine 825-50 (Ming-liang, 2011: 165, Fig. 113).**



**Fig. 9: Pottery with insiced under glaze and splashed glaze, 9th century, Nishapur (Wilkinson, 1973).**

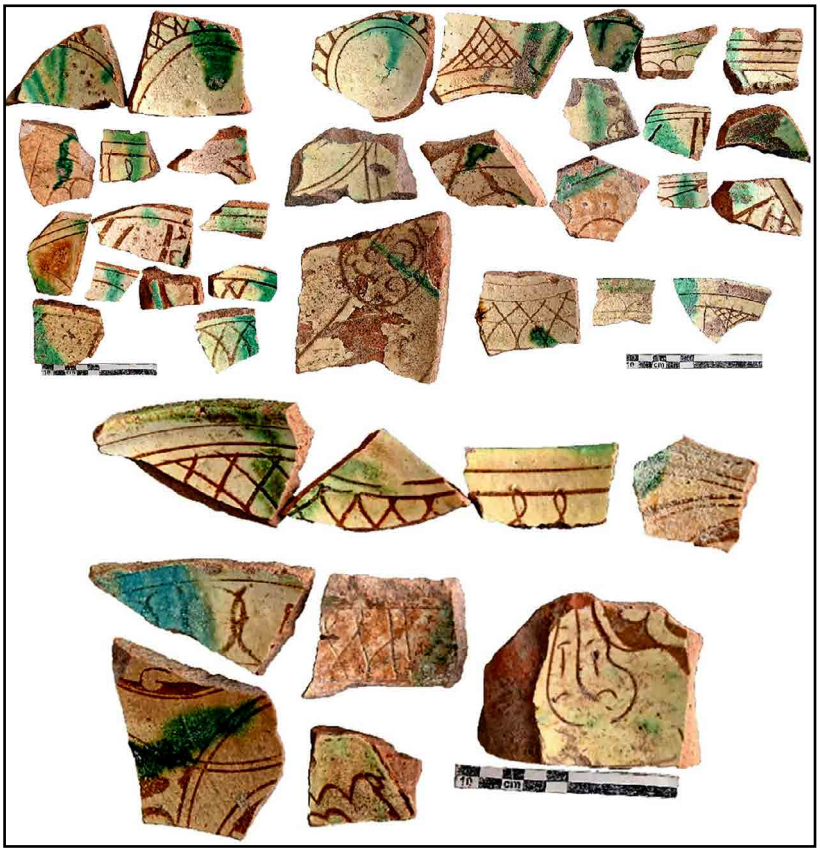


**Fig. 10: Incised splashed Ware (Style II), Iran, Aghcheh Rish site (Kazempour, 2020: 102).**

### 4-3. Style III: Two Slip-Carved Vessels (Champlevé/Garrus)

This style consists of earthenware with incised and carved decoration through a white and green slip under a transparent glaze, dating from the 11th to 14th centuries. During this period, a type of ware known as Garrus was produced, characterized by surface carving. In this technique, slip was first applied to the pottery's surface, and once dried, ornaments were incised using sharp tools. The incised areas absorbed more glaze, resulting in darker borders around the motifs and giving the designs a semi-embossed appearance. The motifs on these vessels include plant, geometric, human, animal, and inscriptional designs. The central workshop for this pottery group was an area called Garrus, located in the south of northwest Iran (Grube, 1976) (Fig. 11). This area, named after the nomadic Garrus tribe, served as their winter camp and covered a significant part of southern northwest Iran. This pottery type is also known by the misnomer " Champlevé/ Garrus," a term that actually refers to a metalworking technique it seeks to imitate (Jenkins, 1983). The designs are carved from the white or colored ground slip, representing an evolution of sgraffito decoration. Instead of simply incising designs into the slip, larger areas were carved out, and the surface was then coated with a transparent glaze—usually green, yellow, or brown. On some pieces, the carved-out areas were painted in red or brown, creating a striking color contrast. In Iran, this pottery type was historically known as Guebri ("fire-worshippers") due to the assumption that it was created and used by Zoroastrians (Jenkins, 1983).

For some time, it was mistakenly believed to be pre-Islamic, specifically late Sasanian, because a few vessels featured fire-altars and Pahlavi inscriptions. However, it is now evident that these carved wares were produced during Islamic times, likely in the 12th and early 13th centuries. It is believed that these vessels were made in northwestern Iran, in the Garrus district or the triangle roughly formed by Hamadan, Kermanshah, and Zanjan. In one of her recent studies, Marilyn Jenkins proposed an earlier date for Champlevé/Garrus and Agh kand wares. Her dating is based on rich finds from a shipwreck excavated off the Turkish coast near Rhodes in 1977. The shipwreck yielded numerous coins, glass vessels, glass weights, and pottery, including 10 Champlevé/Garrus vessels. According to Jenkins, the decoration on these pieces closely resembles that of the late 10th or early 11th centuries. Apart from a few vessels with pre-Islamic motifs, the decoration of these wares commonly includes scrollwork, Kufic inscriptions, and figural representations (Fehervari, 2000: 87) (Figs. 12–13). This group of pottery is very common at the Age Cherish site, featuring green, brown, and yellow glazes. The scratched motifs typically include vegetal, geometric, and animal designs, with abstracted vegetal motifs being especially prevalent. Without any inscriptional elements, animal motifs—often mythical creatures—are also quite common. In terms of chronology, these wares were found in the upper layers above the simple sgraffito-type pottery (Fig. 14). Archaeometric studies indicate that Champlevé/Garrus -type pottery was not domestically produced at the Agcheh Rish site. Instead, while simple sgraffito pottery was locally made, Champlevé/Garrus -type pottery was imported from neighboring regions.

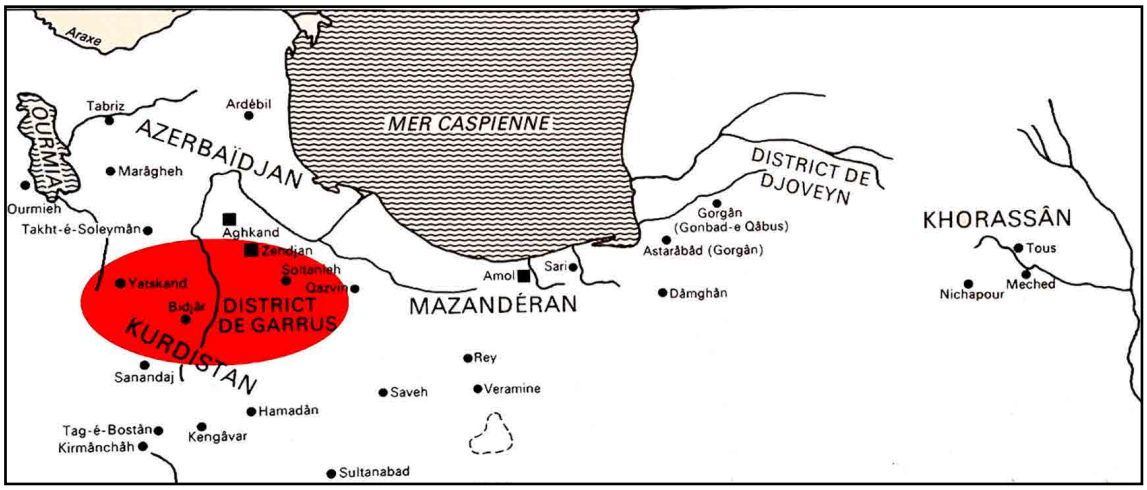



**Fig. 11: The location of the Garrus region in the south of northwest Iran, where Garrus-type pottery (Style III) was produced between the 11th and 12th centuries CE (Soustile, 1985: 67).**



**Fig. 12: Champlevé/Garrus ware (Style III) from Shekh Tepeh Urmiye site (south of northwest Iran), 12th century (Iranian national Museum, 2024).**



**Fig. 13: Champlevé/Garrus ceramic ware (Style III), Body in terracotta with engraved designs, white slip painted brown under a yellowish, lead based glaze, North-west Iran, 12th century (Grube, 1976: 119, Fig.36).**

### 4-4. Style IV: Bowls with Incised Decoration and Polychrome Glazing and Painting (Agh Kand)

During the medieval period, "the movement of skilled workers and goods generated new fashions, new market demands, and the manufacture of new products" (Burlot & Waksman, 2021). A well-known type of pottery is generally associated with the town of Aghkand, near Tabriz (Kazempour, 2023: 98) (Fig. 15). This type originates from a small village in Iranian Azerbaijan, where it is claimed that this variation of sgraffito was made. Unlike the earlier examples—except, perhaps, for some bichrome Amol ware—this type is colorful, painted in polychrome using yellow, brown, green, and occasionally brownish-red colors. The incised lines in the decoration serve the same purpose as copper wires in cloisonné metalwork, keeping the different colors separated in their designated areas. The majority of vessels are large plates or dishes, typically decorated with birds

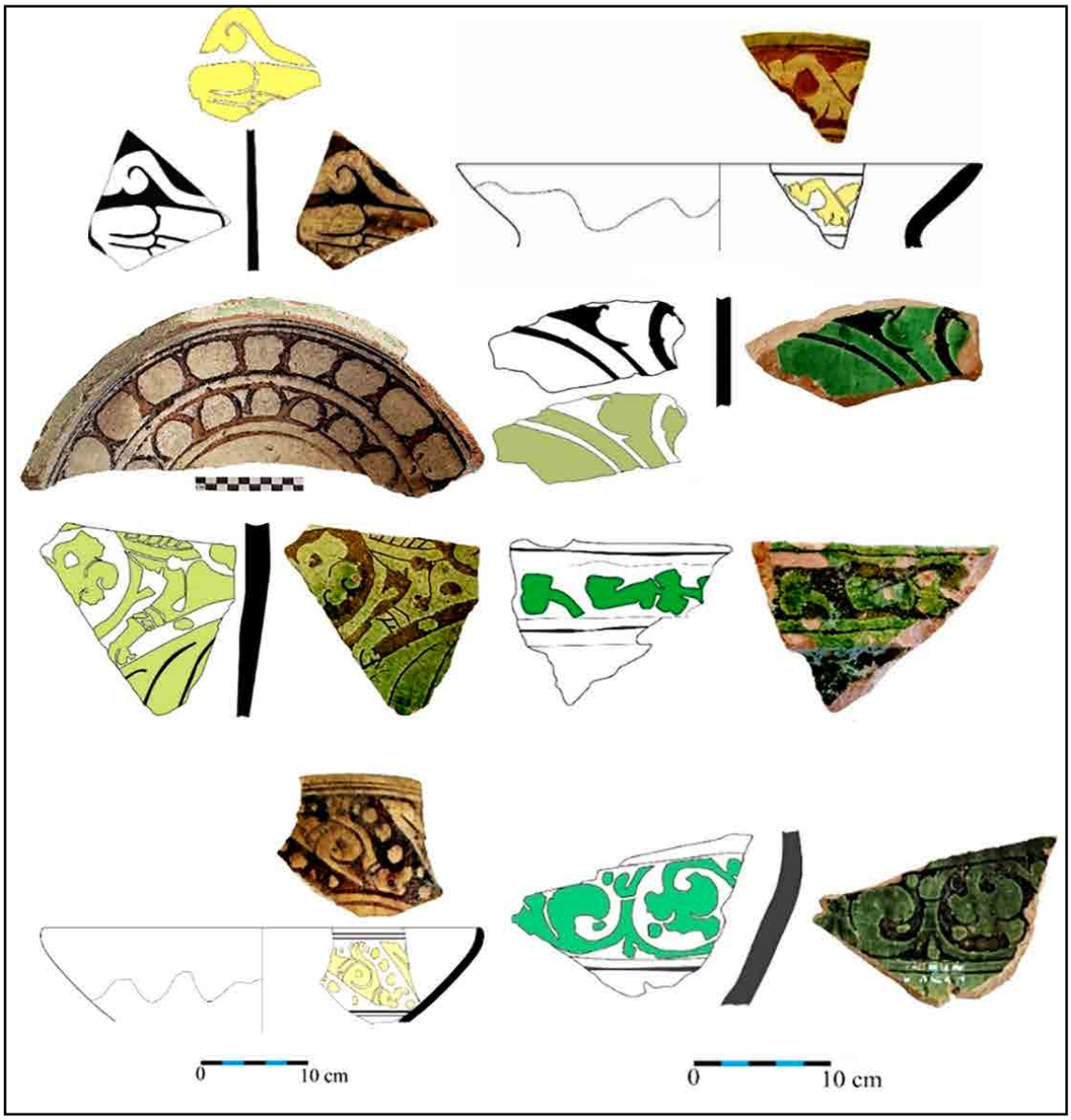



**Fig. 14: Champlevé/Garrus ware (Style III) from Aghcheh Rish site (Kazempour, 2020: 134).**

or animals. Among this group, there is a dated piece in the Islamic Museum in Berlin bearing the date 528 AH/1134 AD. Another bowl in the Louvre bears the signature of an artist, a certain Abu Taleb (Fehervari, 2000: 89). These vessels are decorated with designs engraved with a sharp tool through a heavy slip and colored with polychrome glazes that are carefully applied to specific features of the pattern—for example, brown for the bird, green for the floral scroll, and yellow for the background. This style represents another variety of the Muslim potters' repertoire, where polychrome designs are carried out with colored glazes on the surface rather than through underglaze painting. This antiquated technique links the ware to an earlier, pre-Seljuq tradition, even though a single dated piece in the Berlin Museum collection places it clearly in the twelfth century (Grube, 1976: 111). Incising through the pottery slip was one of the early and common techniques developed by Muslim potters during the 10th–14th centuries. The motifs often include

large birds and animals surrounded by plants and busy backgrounds, covering the base of the wares. In this technique, the glaze of the central and main motif contrasts with that of other parts of the dish, creating a form of demarcation around the motif and giving the dish a polychrome appearance. After firing, the pottery was glazed with different colors within the motifs, enhancing its visual appeal. The most common and characteristic form of Port Saint Symeon Ware consists of hemispherical bowls of standard size and shape, with a ledge rim, a slight ridge at the joint between the body and rim, and a low ring base. For decoration, potters used the sgraffito technique, incising the main motifs into the slip that covered the surface, then emphasizing these patterns with motifs painted in yellow-orange, brown, green, and sometimes dark purple. The entire decoration was covered with a transparent glaze. The iconography consists of floral, astrological, or heraldic patterns, human and animal figures, and fantastical creatures. This style reflects the influence of Seljuk, Mongol, Christian, and Islamic traditions, creating a unique multicultural decorative program, generally secular in nature. This made the pottery a commercial product accepted by a wide variety of consumers across different geographical and religious backgrounds (Burlot & Waksman, 2021). Unlike Garrus-type pottery, which is common at the Agcheh Rish site, Agh Kand pottery is rare. Some pieces were found only in the upper layers of the trenches

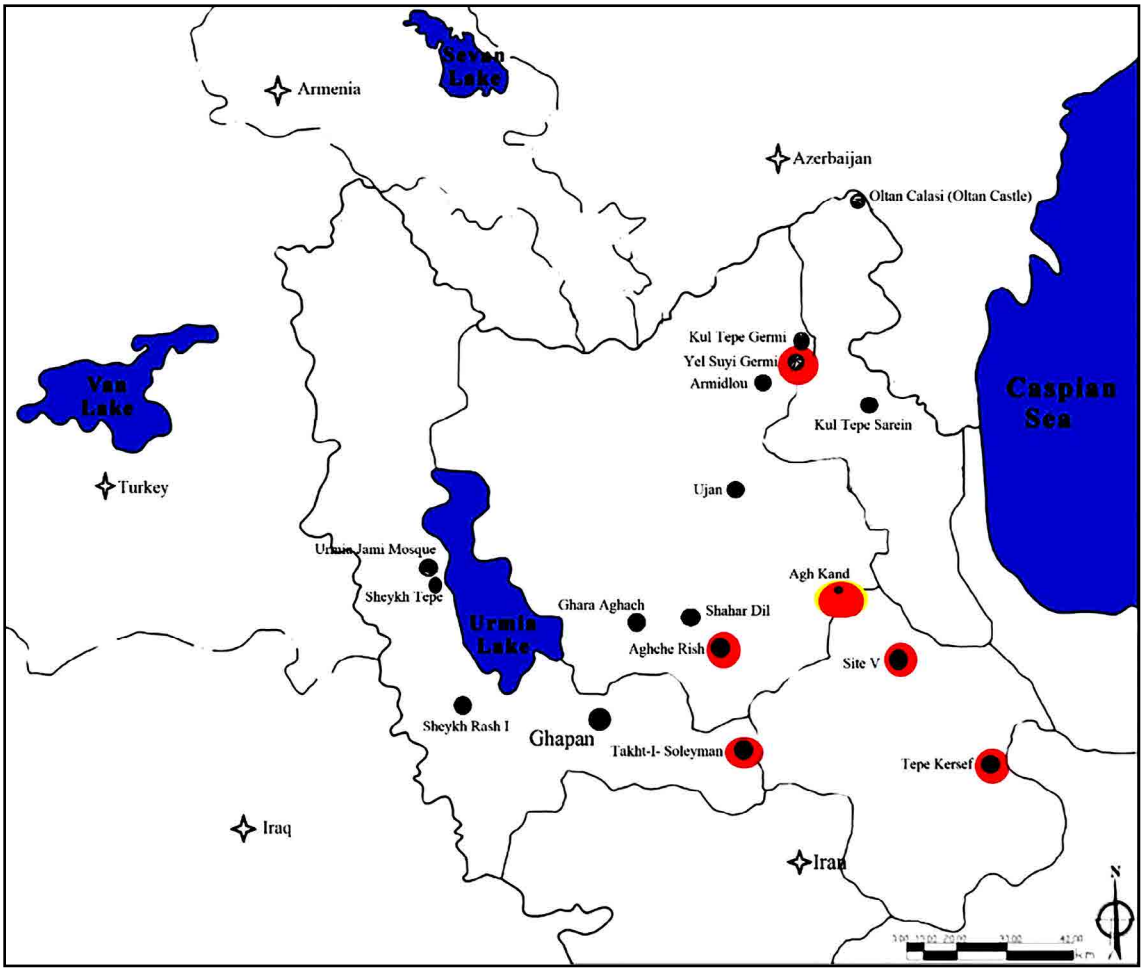



**Fig. 15: The dispersion of the Agh kand type pottery (Style IV) in North West Iran and the location of the Agh kand region, where this type of pottery produced there between 11-14th centuries (Kazempour, 2024: 35).**

or on the surface of the site. One piece even featured an inscription motif, which was uncommon in earlier types (Figs. 16-17). Archaeometric studies conducted on a piece of Agh Kand pottery from the Agcheh Rish site confirmed its local production. Despite its limited distribution at this site, the Agcheh Rish site was one of the centers of Agh Kand pottery production workshops. Chronologically, this type of pottery was found in the upper layers of the trenches (Fig. 18), representing the final evolutionary stage of sgraffito-type pottery.



**Fig. 16: Agh kand type pottery (Style IV), Iran, 12th centuries (Soustile, 1985: 71).**



**Fig. 17: Agh kand type pottery (Style IV), Iran, 12th centuries (Grube, 2012: 22).**



**Fig. 18: Agh kand type pottery (Style IV), Iran, Aghcheh Rish site, 12th centuries (Kazempour, 2024: 30).**

**5. Aghcheh Rish Pottery Workshop Activity**

there is a lack of detailed information about pottery kilns and equipment related to pottery-making in archaeological reports. Consequently, the number of excavated kilns that have been published is limited, and the examples do not represent all periods. Furthermore, most descriptions of known kilns are very brief. Joseph R. Caldwell is one of the few archaeologists in the field of Iranian archaeology who has paid close attention to this subject. Besides providing a detailed description of his excavated kiln, he made ethnographic observations in a pottery workshop in the bazaar of Kashan (see: Caldwell, 1967: 397). Similarly, Rudolf and Naumann, in their excavation at Takht-e Suleiman (1959), included observations on kilns (Fig. 19). During the fourth session of excavation at Siraf (10th century AD), the remains of thirty kilns were uncovered (Whitehouse, 1974: 15). Andrew Williamson's excavation at Sirjan (1970), Nishapur, Kashan (Bahrami, 1988), Jurjan (Mortezaei, 2002), Moshkouyeh (Nouri Shadmehani, 2019) also yielded significant findings (Allan & Roberts, 1987). Additionally, several Islamic cities, which served as the capitals of Iran during the early and middle Islamic periods, were centers for pottery workshops, including Neishabur, Jurjan (Mortezaei, 2002: 78) (Fig. 20), Ray, Sous, and Estakhr. At Sirjan (Amirhajloo & Sedighian, 2023), the study and analysis of materials found in one of the earliest Islamic glazed ceramics workshops, dating to the second half of the 9th century, revealed significant details about production methods. The findings included fritting vessels, kiln furniture, wasters, slags, and a glass chunk, shedding light on the materials and techniques used.



**Fig. 19: Pottery kiln at Takht-e Suleiman (Naumann, 1976: 64).**



**Fig. 20: Remains of a pottery killn at Jurjan, excavated by Dr. Mohammad Yousef Kiani in 1974 (photo Geza Fehervari) (Fehervari, 2000: 41, Plate H).**

### 5-1. Furnace

At the Aghcheh Rish site, where evidence of a furnace was observed, a trench was excavated. Trench 18 (Tr. 18) was strategically placed in the area where surface traces of burning and kiln-related structures were visible (southeast of the site). The excavation revealed evidence of a kiln, kiln bars, tripods, and a large quantity of pottery. In another trench (Tr. 04), located in the northwest of the site, two circular structures—each with a diameter of 30 cm—were discovered at a depth of -30 cm. These structures contained fired bodies and ash nearby. Fragments of sgraffito wares were found filling the structures (Figs. 21–23).




**Fig. 21: Location of Aghcheh Rish pottery kiln (Kazempour, 2020: 87).**

### 5-2. Kiln Bars

Kiln bars are essential equipment used in pottery kilns, and wherever they are found, they indicate the presence of a pottery workshop at that site. Kiln bars, mostly made of clay, are cylindrical and usually measure 2 to 4 cm in diameter. Potters used them inside kilns as supports for pottery during firing (Waksman, 2017: 45) (Fig. 24). It was expected that all Iranian historical capitals excavated



**Fig. 22: Evidence of kiln at Aghcheh Rish (Kazempour, 2020: 86).**



**Fig. 23: Evidence of kiln at Tr.18 Aghcheh Rish (Kazempour, 2020: 88).**

previously would show evidence of kiln bars. However, despite many important sites in Iran (Nishabur, Kashan, Ray, Jurjan, Sultanabad, etc.) being identified as pottery workshop centers, archaeological excavations have not typically uncovered kiln bars or other kiln-related equipment. at least, archaeological reports often do not highlight them. An exception is the archaeological excavations at Sirjan, conducted by Whitehouse in 1974 (Amirhajloo & Sedighian, 2023), where kiln bars were found and documented. Our knowledge has also been enriched by findings from sites in the Caucasus and the Golden Horde territories, where many such pieces of equipment were discovered and mentioned in archaeological reports and articles. The Aghcheh Rish site besides Middle Islamic period sites, including Jurjan (Mortezaei, 2002), Nishapur (Wilkinson, 1963), Kashan, Moshkouyeh (Nouri Shadmehani, 2019) and others is one of excavated site in Iran that has yielded kiln equipment and specialized pottery products. Not only is the site's surface filled with kiln bars, but these bars were also uncovered in two trenches (Tr. 18 and Tr. 20) during archaeological excavation. The kiln bars were located in areas showing evidence of kilns, heat exposure, and burns caused by kiln activity. All of the kiln bars are made of clay, with diameters varying from 3 to 6 cm (Figs. 25–26).



**Fig. 24: Sirjan: Kiln Bars and a clay stopper found in Trench D (Allan & Roberts, 1987: 51. Plate 25).**

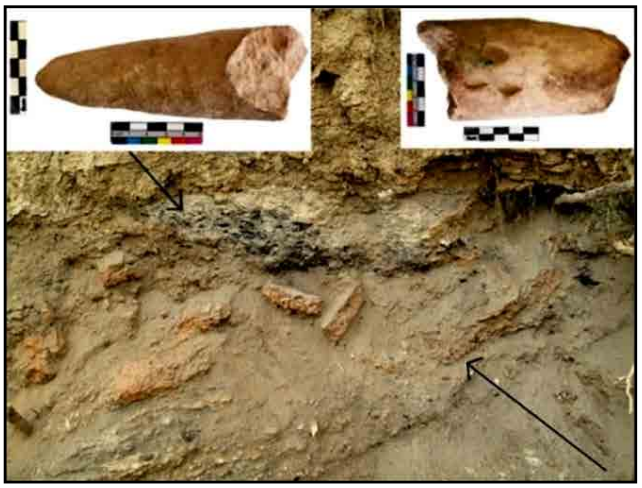


**Fig. 25: Tr.18 of Aghcheh Rish site with evidence of the kiln structure as well as kiln bars (Kazempour, 2020: 80).**

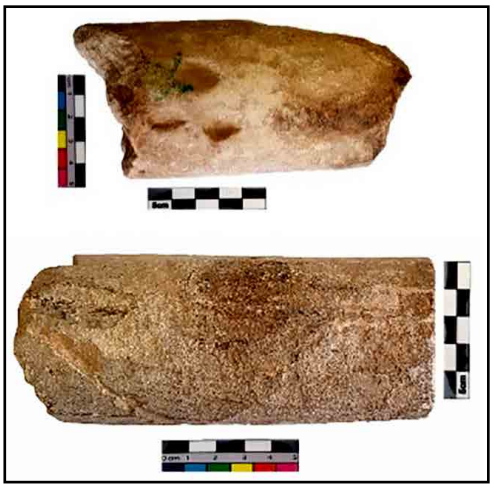


**Fig. 26: Kiln bars found in Tr. 18 of Aghcheh Rish (Kazempour, 2020: 80).**

### 5-3. Tripods

Tripods are essential equipment in pottery workshops and are used during the glazing stage (Fig. 30). Unlike in the Caucasus and Anatolia (Figs. 27–29), where archaeological reports frequently mention tripods, there are few reports of tripods in Iran. In the archaeological excavations at Sirjan a large number of tripods, along with workshop equipment and kiln bars, were found. At the Aghcheh Rish site, in Trench 18 (at a depth of -70 cm), tripods were discovered in an area that had been burned due to the heat from the furnace. On one of the three legs, there was a green glaze that had adhered during the glazing process (Figs. 30–31).

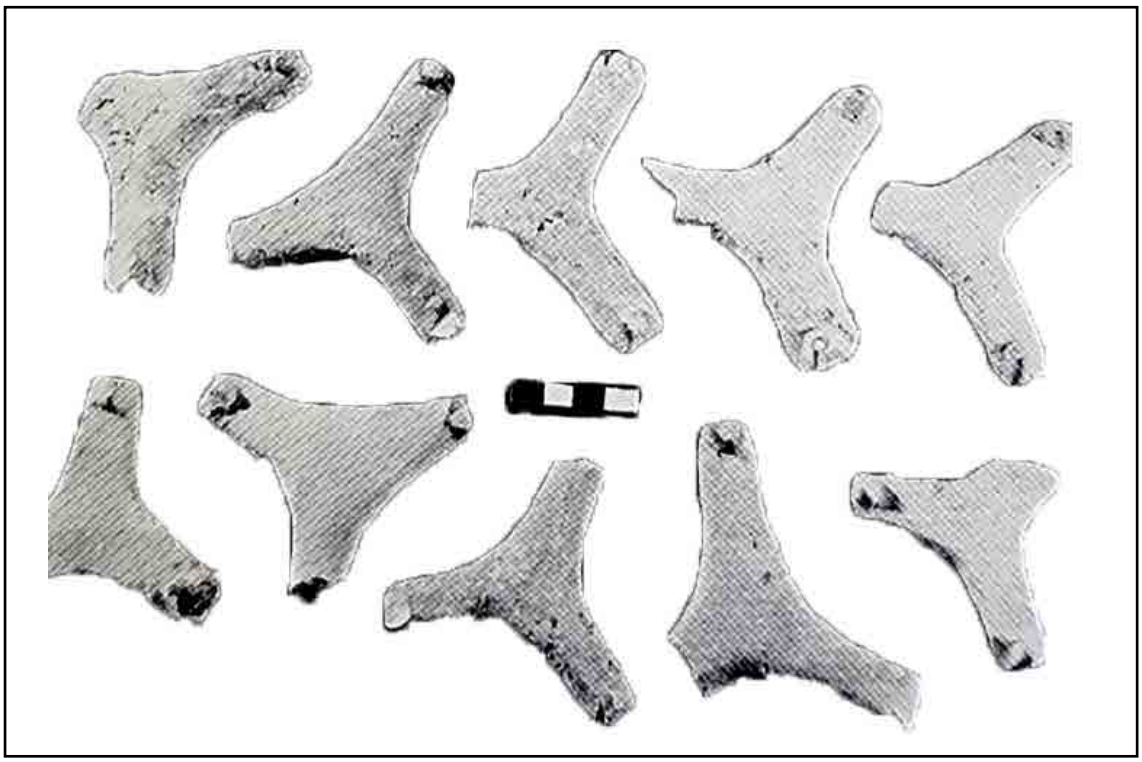


**Fig. 27: Tripod from Krima (Golden horde) (Techenko, 2018:12).**




**Fig. 28: Tripod stilts (BZY901–902, from Ephesus (Waskman *et al.*, 2017: 667).**

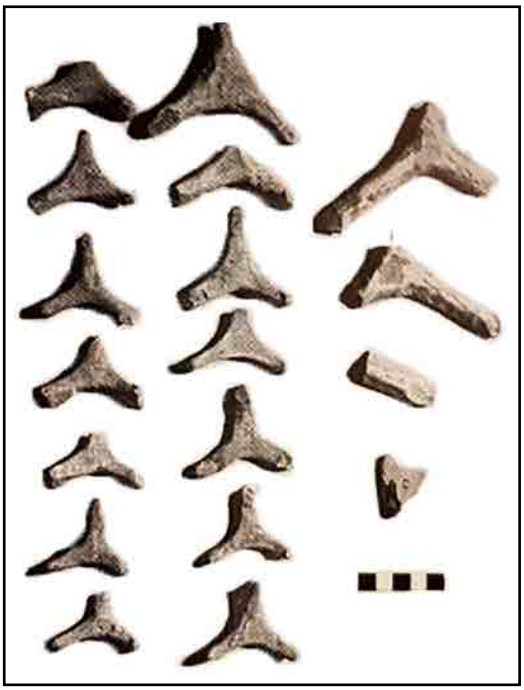


**Fig. 29: Sirjan: example of the three types of pot-spacers found at Sirjan (Allan & Roberts, 1987: 51, Plate 24).**



**Fig. 30: Tripod from Tr. 18 Aghcheh Rish site (Kazempour, 2020: 77).**

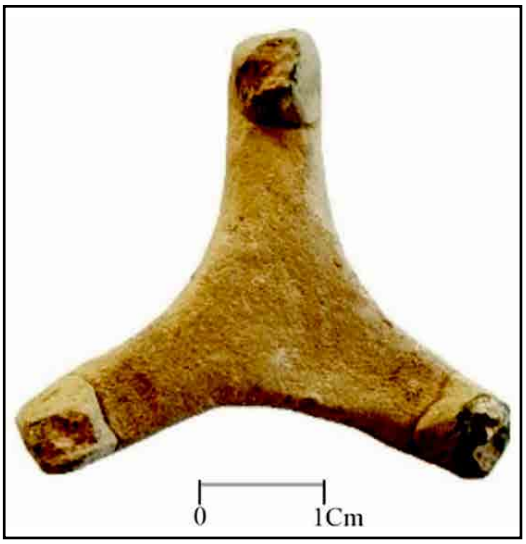



**Fig. 31: Tripod funded from Tr.18 Aghcheh Rish site (Kazempour, 2020: 75).**

## 6. Archaeometric Investigations of the Aghcheh Rish Samples

Kiln furniture—fragments of kiln rods, tripod stilts, and wasters—were found during the Aghcheh Rish excavations. These findings attest to the presence of a pottery workshop. Samples were taken for chemical analysis using WD-XRF at the Lyon laboratory and were used as local references to chemically define the pottery manufactured at Aghcheh Rish. Hierarchical clustering revealed two main groups:

• One group includes all the local references, which are identified as Aghcheh Rish production (Style V). The pottery samples consist of unglazed common wares, monochrome and polychrome sgraffito wares, and one example of Champlevé/Garrus ware.

• The second group is a very homogeneous group, distinct from the first, which includes other samples of Champlevé/Garrus wares (Style III), including all those of the Champlevé/Garrus type, as well as monochrome (Style I) and Agh Kand type (polychrome sgraffito) (Style IV) wares.

These results suggest that Champlevé/Garrus wares were imported to Aghcheh Rish from a site located in a geological context not very different from Aghcheh Rish, due to overall geochemical similarities (Waksman & Kazempour, 2025) (Fig.32).

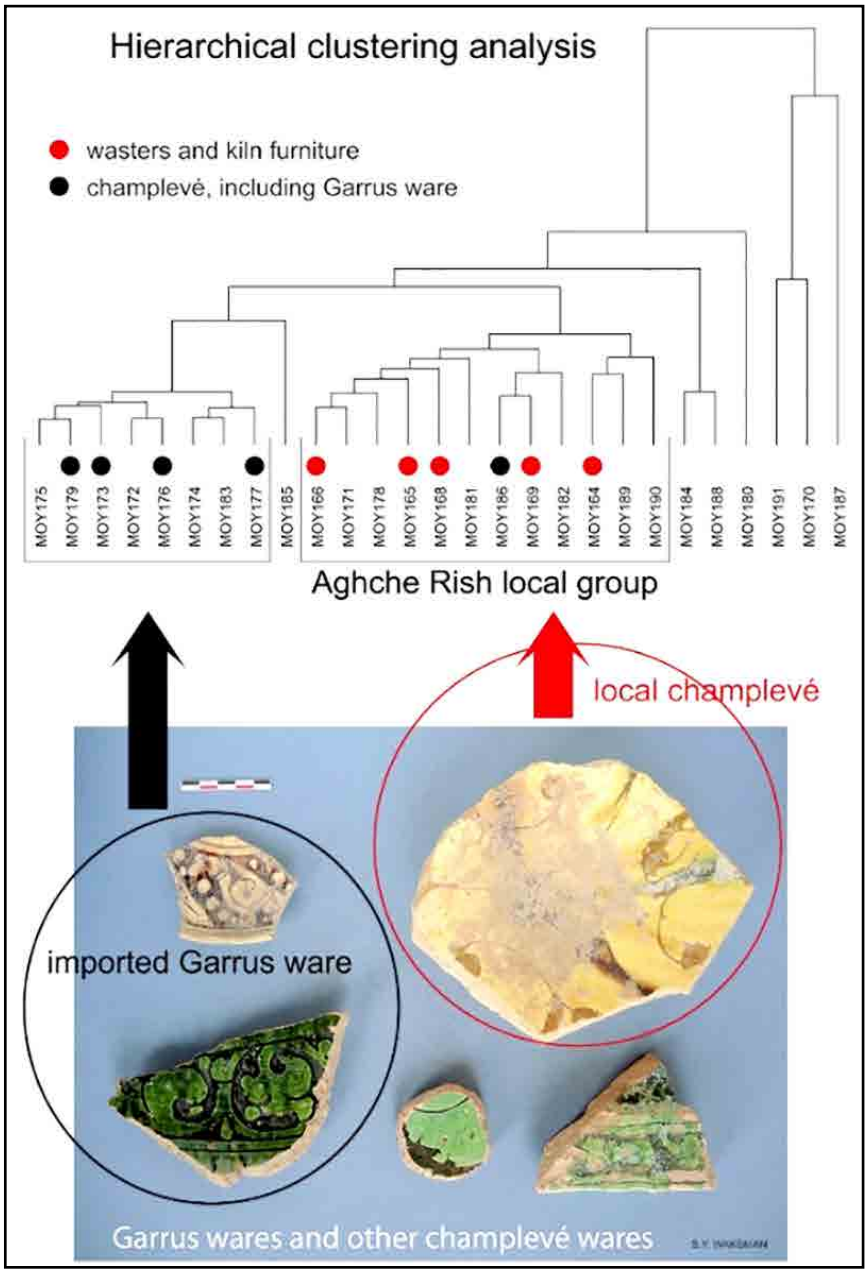
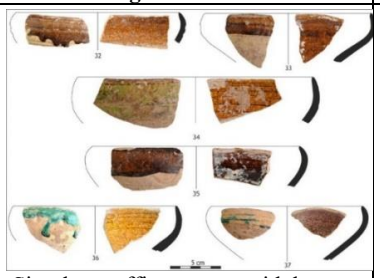
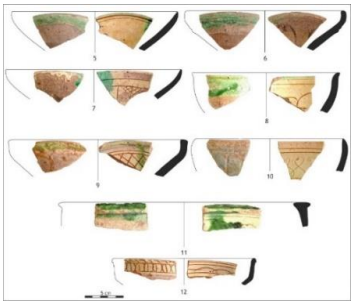
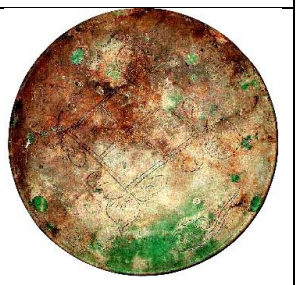
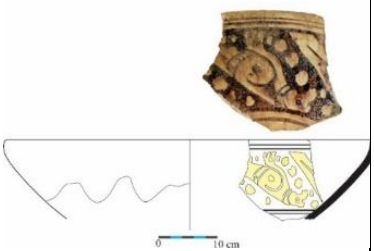


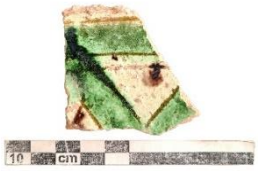

**Fig. 32: Archaeometry study of the Agche Rish samples (Waksman & Kazempour, 2025).**

## 7. Conclusion

Sgraffito-type pottery was produced for 500 years (from the 9th to 14th centuries) across a wide area of Islamic lands and was one of the most common types of pottery in that era. During archaeological excavations, large quantities have been found at Neishabur, Sirjan, Sus, Siraf, Istakhar, Takht-e Suleiman, and Sheikh Tepe Urmia, Anatolia, Egypt and Syria (Table 1). However, because the main focus in these excavations was not the study of sgraffito pottery, no information was provided regarding the presence of kilns and related equipment. The archaeological excavation at the Aghcheh Rish site is significant because its primary focus is on the production of sgraffito-type pottery, positioning this site as one of the pottery production centers. It also provides a chronology for four types of sgraffito pottery for the first time. In Trench No. 4, two round furnace structures were found along with several kiln bars. In Trench No. 18, a heated surface, a large amount of ash, and a brick structure with heavily heated bricks were discovered. Next to this structure, a tripod and a large number of sgraffito-type pottery were found, along with kiln bars. All these findings were located together, giving us a detailed understanding of the furnace structure and its related equipment. In addition to these findings, the stratigraphy of the site allowed for chronological analysis, revealing the sequence of production of different types of sgraffito pottery. Based on the stratigraphic studies, it was found that in the lower layers of the trenches (7th to 10th centuries CE), simple sgraffito pottery was more abundant, with very little Champlevé-type pottery. In the middle layers (10th to 12th centuries CE), Champlevé-type pottery was found in combination with splashed sgraffito-type pottery. In the upper layers, which are more recent (12th to 13th centuries CE), Agh Kand and Aghcheh Rish-type pottery are more abundant. Finally, to complete the archaeological studies, 25 pieces of Aghcheh Rish pottery were transferred to the laboratory at Lyon University in France for laboratory and archaeometric studies. Based on Dr. Waksman's research, it was found that the pottery from Aghcheh Rish can be divided into two groups: locally produced pottery and imported pottery. The archaeometric evidence emphasized the production of simple sgraffito pottery (first type), Aghcheh Rish-type pottery (fifth group), and Agh Kand (fourth group) in the region itself, while highlighting the importation of Champlevé/Garrus pottery. Considering the evidence of pottery kilns found in the area of Takht Suleiman and the discovery of a large number of Champlevé/Garrus -type pottery at Sheikh Tepe Urmia (which is located nearby in the southern part of the area), these two sites can be suggested as manufacturing centers for Champlevé/Garrus type pottery. Although some archaeologists have proposed the geographical area of Garrus for its production, these studies also showed that Agh Kand type pottery was a local product of this region, indicating that this area can be considered one of the workshop centers for the production of this type of pottery. Lastly, based on this study, a new type of sgraffito pottery has been added to the categories of Grobeh and Alan, called Aghcheh Rish. In terms of decoration technique, this pottery exhibits characteristics of both Garrus pottery and sprinkled glaze, and chronologically, it belongs to the 12th to 13th centuries. This type of pottery was found in the upper layers of the Aghcheh Rish area, alongside Agh Kand-type pottery, representing the final stage in the technical evolution of sgraffito-type pottery.

**Table 1: Comparative study of Aghcheh Rish potteries (Authors, 2025).**

| Typology | Aghcheh Rish | Compared with | Compared with |
|---|---|---|---|
| **Simple Sgraffito with green transparent glaze.** |  Simple sgraffito pottery with brown transparent glaze, Aghcheh Rish (Kazempour, 2020: 96). |  Simple sgraffito pottery with brown transparent glaze, Siraf, 9th century (Whitehouse, 1974: 40). |  Simple sgraffito pottery with brown transparent glaze, Han district, Chine, 9th century (Wood, 1999: 170). |
| **Simple Sgraffito with brown transparent glaze.** |  Simple sgraffito pottery with green transparent glaze, Aghcheh Rish (Kazempour, 2020: 98). |  Simple sgraffito pottery with green transparent glaze, 10th century, Sirjan (Allan & Roberts, 1987: 240. B15). |  Simple sgraffito pottery with green transparent glaze, 10th century, Nishapur, (Watson, 2020: 140, Fig. 73). |
| **Splashed Sgraffito** |  Pottery with incised under glaze and splashed glaze, Aghcheh Rish (Kazempour, 2020: 100). |  Pottery with incised under glaze and splashed glaze, 9-10th centuries, (Wilkinson, 1973). |  Pottery with incised under glaze and splashed glaze, Chine, (Tang dynasty, 825-50) (Ming-liang, 2011: 165, fig. 113). |
| **Champlevé (Garrus) type pottery** |  Champleve (Garuus) technique, with mysical creatures motifs, Aghcheh Rish (Kazempour, 2020: 125). |  Champleve (Garuus) technique, with mysical creatures motifs, 12th century, Garuus district, North West Iran (Grube, 1976: 119, fig.36). |  Champleve (Garuus) technique, with mysical creatures motifs, middle bysans, 12-13th centuries (Panagopoulou et al., 2021: 4475). |

| | | | |
|---|---|---|---|
| **Champlevé (Garrus) type pottery** |  Champleve (Garuus) technique, with floural motifs (palmet), Aghcheh Rish (Kazempour, 2020: 120) |  Champleve (Garuus) technique, with floural motifs (palmet), 11-12th centuries, Nishapur (Watson, 2020: 154. Fig. 77). |  Champleve (Garuus) technique, with floural motifs (palmet), 11-12th centuries, Anatolia (Meriç, 2023: 420). |
| **Polychrome Sgraffito (Agh Kand) type pottery** |  Polychrome Sgraffito (Agh Kand type) pottery at Aghcheh Rish (Kazempour, 2020: 103). |  Polychrome Sgraffito (Agh Kand type) pottery at Ghale Yel Soui, Ardabil (Tahmasebi et al., 2023: 23) |  Polychrome Sgraffito as Anatolian Seljuk pottery tradition (Ceramics History of Anatolia, n.d.). |

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**Authors' Contribution**

In this article, the first author was responsible for conducting the excavation, carrying out field surveys, and collecting and analyzing the data, while the second author contributed to the excavation and field surveys and was responsible for drafting and editing the manuscript.

**Conflict of Interest**

Authors declared no conflict of interest.

**Endnote**

1. Takht-e Soleymān (Throne of Solomon') or Adur Gushnasp, is an archaeological site in West Azerbaijan, Iran dating back to Sasanian Empire. The fortified site, which is located on a hill created by the outflow of a calcium-rich spring pond, was recognized as a World Heritage Site in July 2003. The citadel includes the remains of Adur Gushnasp, a Zoroastrianfire temple built during the Sassanid period and partially rebuilt (as a mosque) during the Ilkhanid period.

2. After the Mongol ruler Hulagu Khan (r. 1256–1265) had captured Baghdad in 1258, he established his residence in Maragheh. He also had an observatory built under the directorship of Nasir al-Din al-Tusi.

3. It was the center of production of Agh-Kand type pottery during the 10th to 14th centuries.

4. a new area that has recently been discovered and excavated is the city of Ujan, which has been selected and built as the summer capital of the Ilkhans due to its large meadows and also being located at the crossroads of Central Asia to Mesopotamia and northwest to the Central Plateau of Iran.

5. (e.g., Afrasiyab and Nishapur (Holakooei et al., 2019), Takht-e Soleyman (Kuntz, 2021), Ujan (Velayati et al., 2023), Aghcheh Rish (Waksman & Kazempour, 2025), Agh Kand (Kazempour, 2024), Yel Souyi (Tahmasebi et al., 2023), Siraf (Mason & Keall, 1991), Keresf Tappeh (Zifar et al., 2016) and etc.

6. Kinet Höyük (Burlot & Waksman, 2021; Blackman & Redford, 2005), Metropolis (Meriç, 2023), Aphrodisias (Öztaşkın, 2017), Sagalassos (Vionis et al., 2010), Gözlükule and Tarsūs (Bağcı, 2017), Ephesus and Çoban Kalesi (Vroom & van IJzendoorn, 2015), Istanbul (Böhlendorf-Arslan, 2013) and etc.

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# مـطالعات باسـتان‌شـناسی

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# مطالعات باستان‌شناختی کارگاه‌های تولید سفالینه‌های اسگرافیاتو در ایران (سده‌های ۱۰ تا ۱۴م.): شواهد حاصل از کاوش‌های باستان‌شناختی محوطهٔ آغچه‌ریش در شمال‌غرب ایران


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**چکیده**

طی سده‌های ۱۰ تا ۱۴م.، سفالینه‌های نوع اسگرافیاتو در گستره‌ای وسیع، شامل: ایران، قفقاز، آناتولی و اروپای شرقی به‌طور گسترده رواج و توزیع داشته‌اند. براساس مطالعات گونه‌شناختی گروبه و آلن، این سنت سفالگری به پنج گروه اصلی تقسیم می‌شود: اسگرافیاتوی ساده، اسگرافیاتوی لعاب‌پاشیده، چامپلِوه/گَرّوس، آق‌کند و آمل. باوجود این طبقه‌بندی تثبیت‌شده، آگاهی ما از بسترهای واقعی تولید این سفالینه‌ها، شامل کارگاه‌ها، کوره‌ها، ابزارها و فرایندهای فنی، همچنان در حد فرضیه باقی‌مانده و بیشتر بر گزارش‌های تأییدنشدهٔ دلالان و عتیقه‌فروشان متکی بوده است. همچنین پیش از این، هیچ‌گونه بررسی باستان‌شناختی نظام‌مند و جامعی دربارهٔ محوطه‌های تولید این سفالینه‌ها انجام نشده بود. بدین‌ترتیب، این پژوهش در زمرهٔ نخستین پروژهٔ باستان‌شناختی در ایران به‌شمار می‌آید که به‌طور اختصاصی با هدف شناسایی و کاوش کارگاه‌های تولید سفالینه‌های اسگرافیاتو انجام شده است؛ پرسش‌های مهم پژوهش عبارتنداز: ۱) فناوری سفالگری اسگرافیاتو در طول پنج سده چگونه تحول و تکامل یافته است؟ ۲) کدام سبک‌ها بازتاب‌دهندهٔ مراحل اولیه‌تر این تحول و کدام‌یک بیانگر جدیدترین نوآوری‌های فنی در تولید بوده‌اند؟ بررسی‌های میدانی نگارندگان در سال ۲۰۱۵/۱۳۹۳م. در بخش جنوبی شمال‌غرب ایران، منجر به شناسایی بیش از ۲۰ محوطهٔ باستانی شد که در آن‌ها بقایای قابل‌توجهی از سفالینه‌های اسگرافیاتو به‌دست آمد. درمیان این محوطه‌ها، آغچه‌ریش برای انجام کاوش انتخاب شد؛ بر این‌اساس، پژوهش حاضر مبتنی‌بر تحلیل یافته‌های سفالینه‌های اسگرافیاتو حاصل از کاوش‌ها و بررسی‌های باستان‌شناختی محوطهٔ آغچه‌ریش بوده است. یافته‌های کاوش شامل چندین کورهٔ سفالگری، مقادیر قابل‌توجهی سفالینه‌های گَرّوس و آق‌کند، ساختارهای مسکونی، بناهای کارگاهی، ابزارهای مورداستفاده در پشتیبانی و چیدمان سفال در کوره، ازجمله پایه‌های میله‌ای و سه‌پایه‌ها (سدهٔ ۱۰ تا ۱۴م.)، دستبندهای شیشه‌ای، سکه‌های متعلق به سدهٔ ۱۰م.، گورها و یک گورستان تاریخی بوده است. نتایج پژوهش نشان می‌دهد وجود هم‌زمان عناصر مسکونی و صنعتی در این محوطه، اطلاعات ارزشمندی دربارهٔ سازمان‌دهی تولید سفالینه‌های اسگرافیاتو و نیز زندگی روزمرهٔ سفالگران و صنعتگران فراهم می‌کند. نتایج تحلیلی گونه‌شناختی و تفصیلی مجموعهٔ سفالینه‌ها، حاکی از مدیریت و انسجام کارگاه‌های تولید سفالِ محوطهٔ آغچه‌ریش در قرون ۱۰ تا ۱۴م. داشته است.



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## Study of the Architecture of Manor Houses in Kohgiluyeh

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**Abstract**

One of the common types of late historical architecture in Iran is the manor house, most of which were built during the Qajar period and attracted the attention of the rulers of cities and villages. Most manor houses in the Kohgiluyeh region are a type of lowland castle constructed during the later Islamic centuries—from the early Qajar period to the First Pahlavi period—because of the weakness of the central government and the resulting disorder, as well as for the residence and settlement of local khans and their entourages. During a systematic survey conducted by the authors in Kohgiluyeh between 1402 and 1404, 34 manor houses were identified. One of the principal aims of this research, in addition to analyzing the collected data and drawing on published studies of defensive fortifications and castles, is to examine the architecture of these buildings. The results indicate that, in geographical and defensive terms, natural hills and elevated locations received particular attention because they commanded the surrounding areas and offered greater defensive capacity. In terms of layout, the castles generally have central courtyards and introverted plans with comparable spatial relationships. Stucco and brickwork decoration incorporating vegetal (arabesque) and geometric motifs constitute the dominant decorative features of this group of buildings.

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## 1. Introduction

The manor castles of the Kohgiluyeh region were established by local khans in different parts of Kohgiluyeh County during the later centuries. Over time, this group of buildings became known as manor castles because local rulers resided in them. These castles were constructed according to predetermined plans and generally built in a single phase. In terms of their external form and appearance, they resemble other castles; however, their internal layouts have similarities to caravanserais.

Because of insecurity, the region's strategic and military significance, and its location along the communication route linking Isfahan, Fars, and Khuzestan, Kohgiluyeh possessed considerable potential for castles and defensive fortifications. These castles were constructed to accommodate local khans and their entourages. The construction of castles with strong towers and ramparts by powerful local rulers, together with the organization of strong military forces, helped establish security within territories under their control. It is also noteworthy that, during attacks by dominant states on different parts of the country, an important component of the country's central military forces was formed by the forces of these local rulers, who played a significant role in maintaining security and expelling invaders from the country's borders.

In the present study, the structural and artistic characteristics of the region's castles are identified, described, and analyzed for the first time. In general, the castles and defensive fortifications of the study area can be divided into two groups: (1) fortified manor houses and (2) mountain fortresses (Fig. 1). The present article focuses on the manor houses. The term "manor houses" refers to buildings belonging to local khans that are known by local inhabitants as "castles." All of these buildings functioned as residential and fortified places. The field survey identified 34 manor houses: Raisi Castle, Kalaye Castle, Tambi Castle, Zargham Abad Castle (Koshk Baraftab), Sarpari Castle, Kore Shahbazi Castle, Tal Babooneh Castle, Sanqarabad/ Changluva (Tal Kadkhodaei Castle and Mohammad Zaman Castle), Mir Mohammad Amin Castle in Boai Sofli village, Gio Castle (Gergio), Talwandi, Shotaver Castle, Lower Al-Qachin Castle, Dam Abbas Castle, Bani Castle, Dokhtar Castle, Central Moushmi Castle, Abol Village Castle, Jelav Castle, Koshk Tayyibi Castle, Olad Molla Sosan Castle, Al-Mor castles, Elgan, Grab, Kalat, Gul, Old Aidan Castle, Sokhta Castle, Kagenji Castle, Dishmok Castle, Landeh Castle, Shahrak Cheram Castle, Sardo, and Rak Mansion.

### 1-2. Manor Houses under Study

The Kohgiluyeh region, centered on the city of Dehdasht and covering approximately 4,850 km², lies in the southern Zagros and in the western and northwestern parts of Kohgiluyeh and Boyer-Ahmad Province (Fig. 1). Since the Sasanian period, when Shapur I founded a city in the area, the region became known as Baladshapur and remained an important region under this name until the Qajar period. Castles and military fortifications are among the most important material manifestations for understanding economic landscapes—including roads and communication routes—political-administrative boundaries, population centers, warfare, defense, and power. They were formed within geographical settings to ensure the political survival of states, defend

territorial sovereignty, and administer geographical regions (Mojtahedzadeh, 2013; Zaal, 2013). Given the mountainous character of Kohgiluyeh and its susceptibility to bandit activity, castles and defensive fortresses were essential to the administration of the region's geographical areas, and evidence of them is dispersed throughout present-day Kohgiluyeh. These castles, whether military or non-military fortifications, generally used the characteristics of the natural geography and were built at elevated locations to preserve security. They therefore constitute important manifestations of the former defensive system of settlements in Kohgiluyeh, displaying considerable diversity.

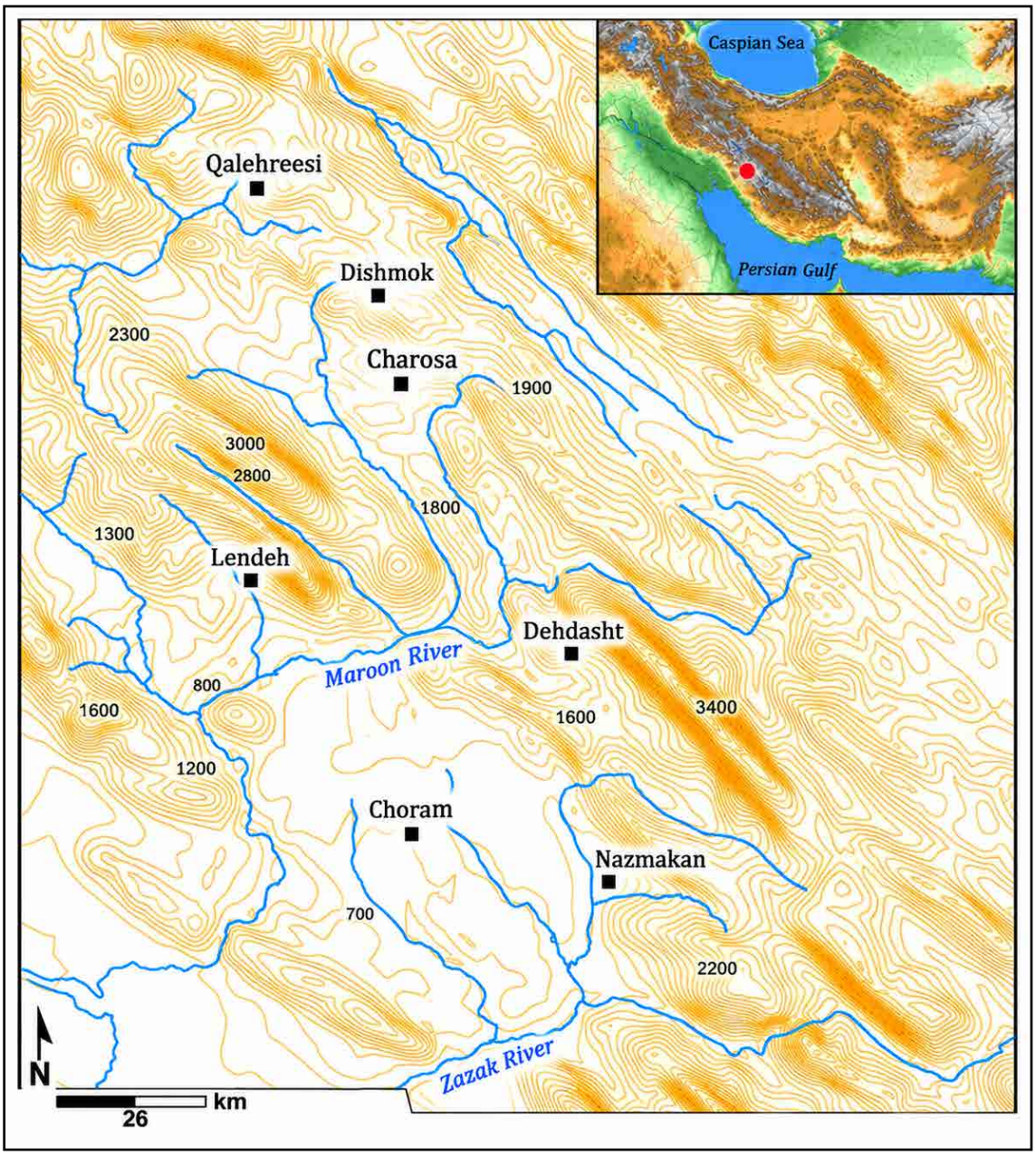



**Fig. 1: Location of the study area (Dehdasht, Cheram, Landeh, Qaleh-Raisi, and Dishmok) (Authors, 2023–2024).**

Following the Safavid period, the county became affected by internal unrest. In each locality, an individual who obtained a khan's appointment from the government constructed a castle at his place of residence (Fig. 2). Some of these castles were built over earlier historic structures. Across

Kohgiluyeh, towers can be observed on hills, elevated locations, and strategic sites. Most are now abandoned, although these towers remained in use until before 1342. In the region, watchtowers are more commonly known as "castles." They served as refuges for the nomadic groups of the surrounding area: wherever a watchtower was built, nomadic camps could be established without fear, livestock could graze safely, tribal trade could proceed, and political and local issues could be settled inside the castle in the presence of the khan and village headmen. Skilled and courageous riflemen took turns maintaining watch from the towers day and night and monitored the territory under their control (Safinejad, 1989: 593).

The towers or castles were usually constructed with two or three stories. Locally, the first floor was called zarin, meaning the lower or ground level, and the second was called balin, meaning the upper level. Each castle usually had a single door made by local carpenters from very thick oak wood. In cold regions, castles were generally built of mud brick in cylindrical forms and their interiors were coated with mud plaster. In warm regions, they were more often constructed of stone and gypsum. Niches were built inside the towers or castles, and each niche contained two types of openings: (1) close-range loopholes and (2) long-range loopholes. The close-range loopholes, also called rishah-zan, were placed at equal intervals around the castle, approximately one meter above the floor of the second story, and were shaped as inclined cylindrical openings. During group attacks, particularly raids, these openings were used for wall-to-wall firing. Their inclined form prevented attackers who reached the base of the castle wall from easily aiming the barrel of a rifle through the opening and shooting the defenders, thereby allowing the defenders to monitor the surroundings with greater security. The long-range openings were positioned approximately one meter above the close-range openings in a continuous row around the castle. They were not angled and were used for direct long-distance aiming, enabling the defenders to observe the surrounding area over considerable distances (Majidi, 1992: 179). The castles examined in this study include the following.

### 2-2. Dishmok Castle

Today, the remains of a castle survive in the southwestern part of Dishmok (Figs. 3–6). The structure is oriented east–west and covers more than 1,500 m². Its construction materials are stone, gypsum, and wood. The castle consists of an older and a newer section. Roman arches, pointed-arch niches, panj-o-haft vaults, rectangular windows, columnar and wall buttresses, niches, and geometric entrances (rectangular and square) are among the architectural features and techniques used in the building. Evidence of military construction—including towers at the northwestern corners—as well as a stable and an underground tunnel, is also visible.

### 2-3. Tal Babooneh Castle

This castle is located approximately 3 km south of Shirazi village and on the northern side of Tal Babooneh village in Cheram County. Its elevation is 705 m above sea level (Fig. 7). The castle has a square plan and measures approximately 10×25×25 m in length, width, and height. It is a two-story building consisting of a central courtyard and surrounding spaces. The construction

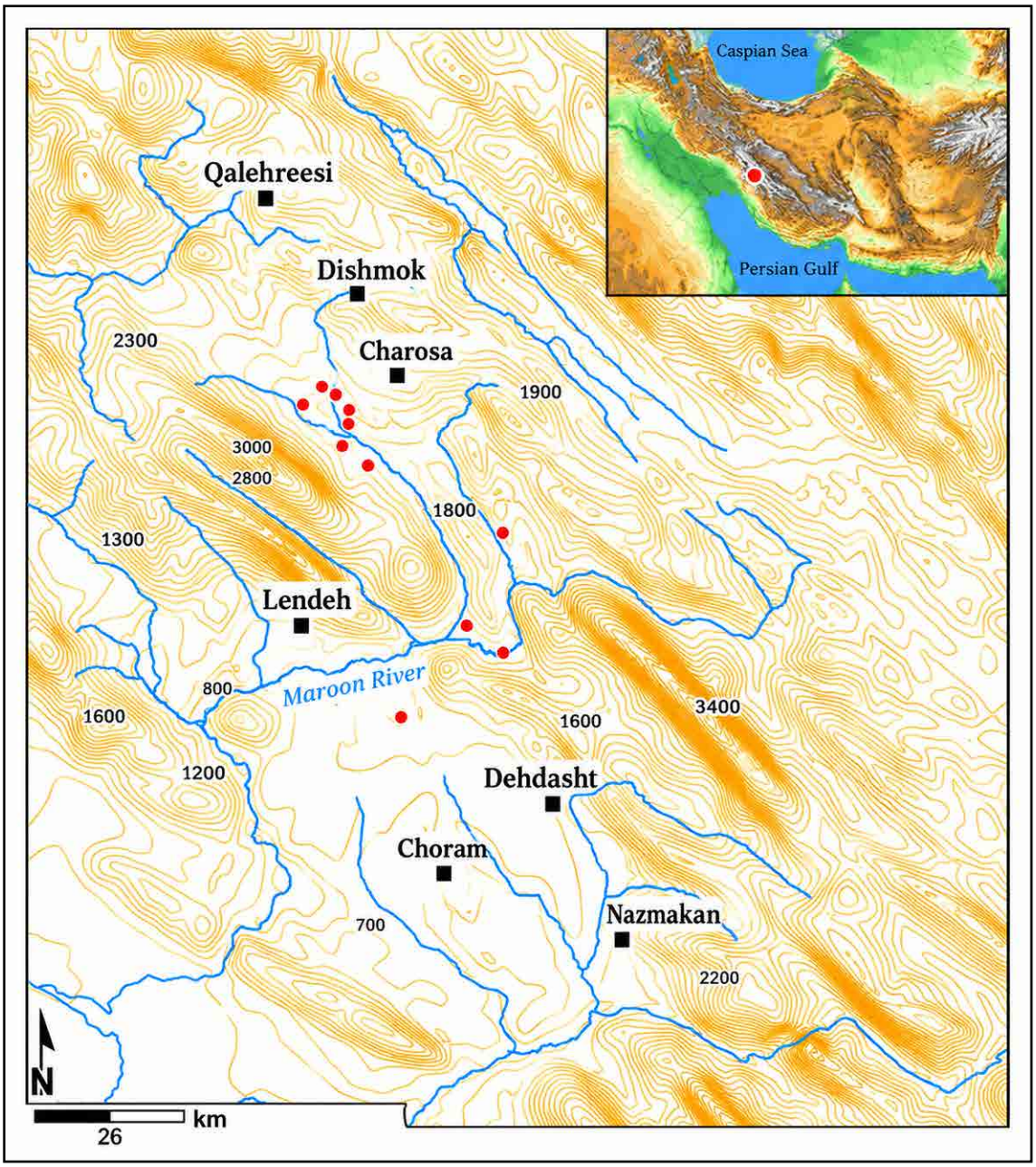



**Fig. 2: Distribution map of fortified manor houses in Kohgiluyeh (Authors, 2023).**

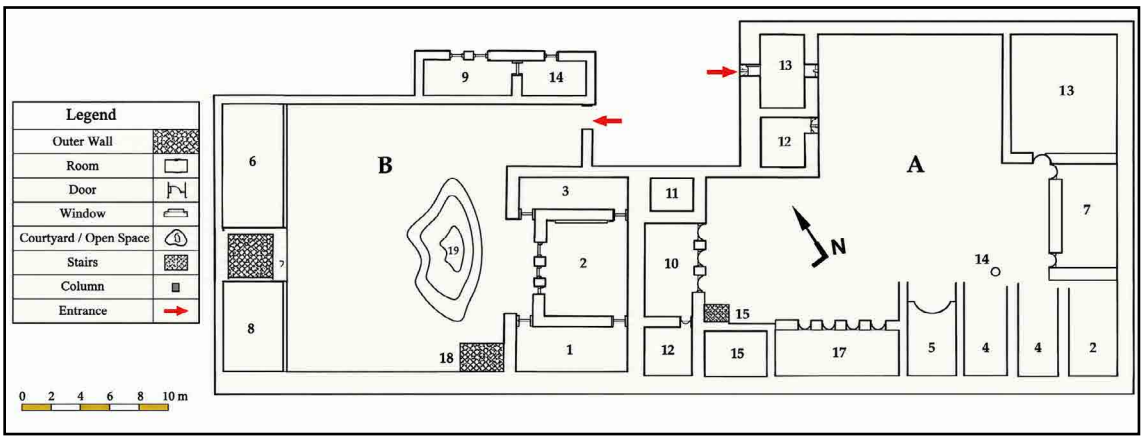



**Fig. 3: Plan of the Dishmook Castle complex (Authors, 2024).**

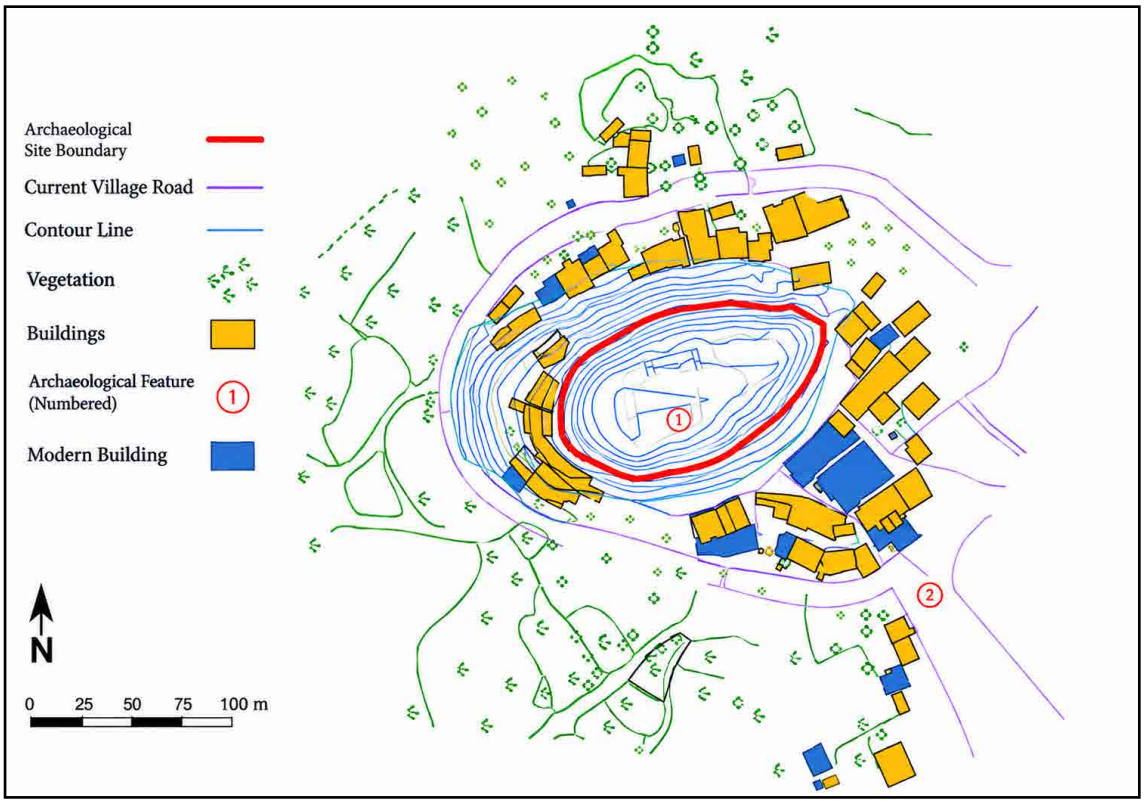



**Fig. 4: Topography of the hill and the castle of Dishmok (Authors, 2024).**

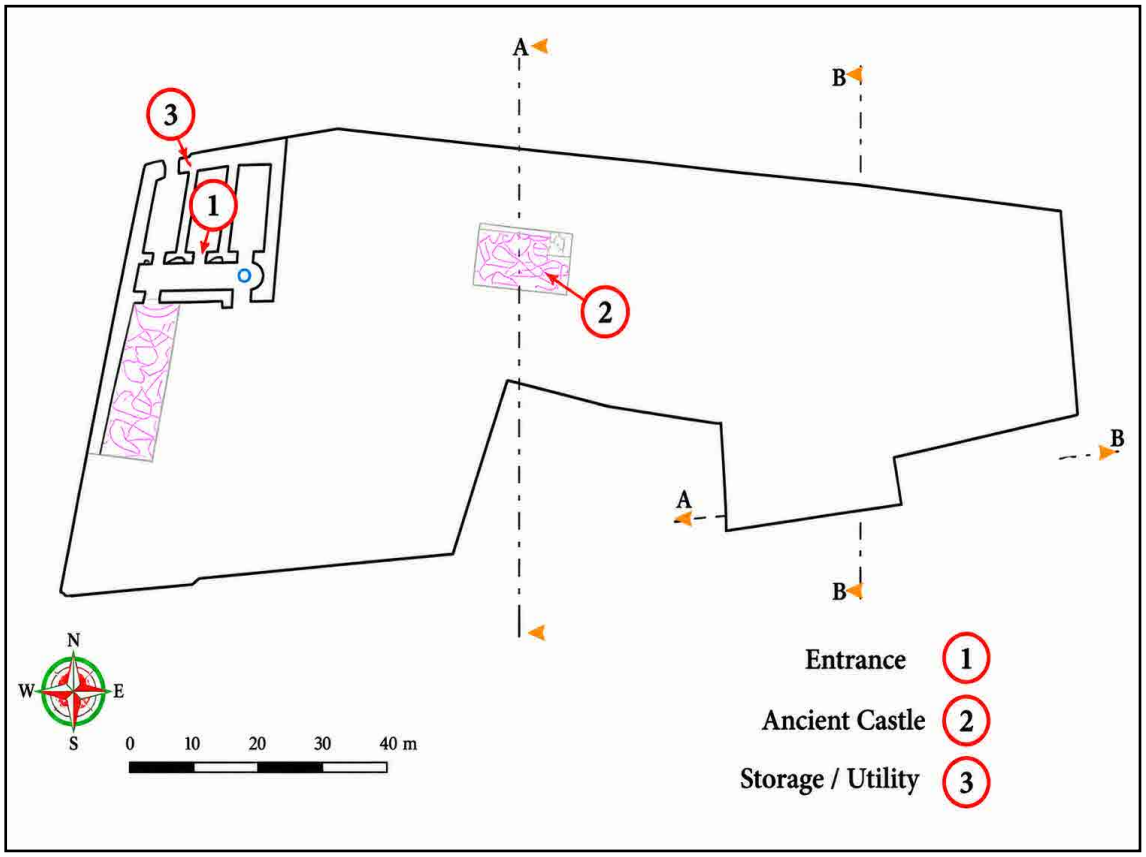



**Fig. 5: Dishmock Castle, stable plan (Authors, 2024).**

materials are small and large pieces of stone bonded with gypsum mortar, and both the interior and exterior surfaces are coated with a layer of gypsum plaster.

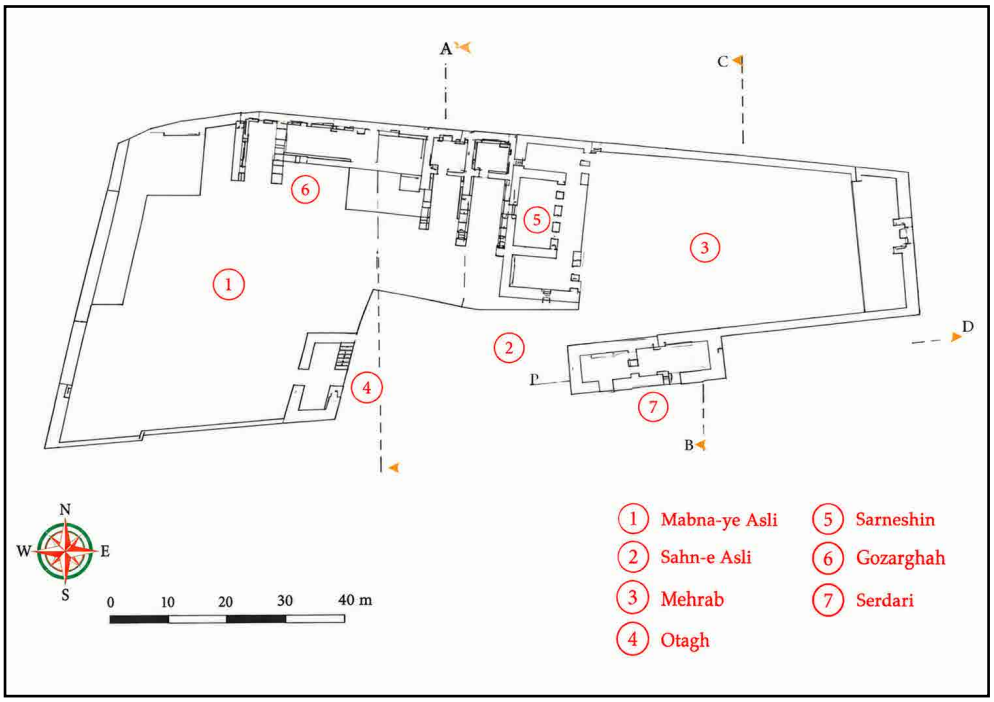



**Fig. 6: Dishmock Castle, stable plan (Authors, 2025).**

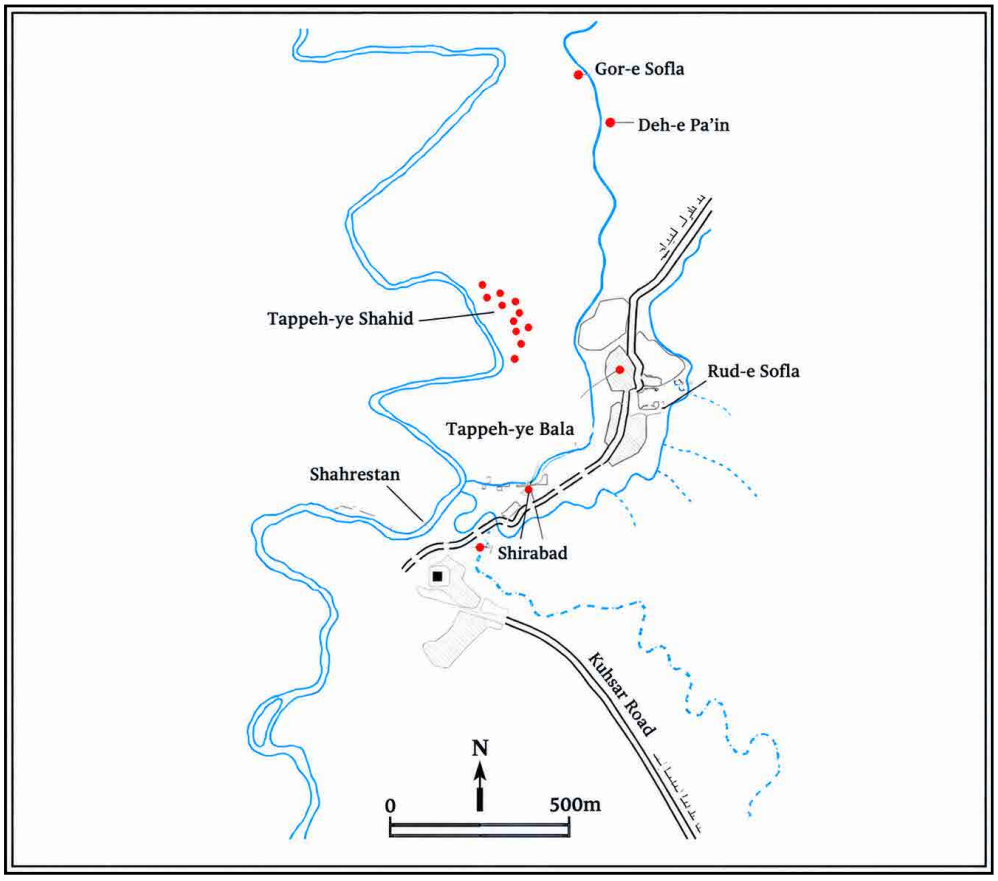



**Fig. 7: Location of Tal Babooneh Castle on the regional map (Authors, 2022–2025).**

### 2-4. Tal Kadkhodaei Castle, Changluva

This building stands on a hill overlooking Changluva village. It has two stories; the first story has been destroyed, and part of the ground floor, including its roof, has also collapsed. The building was constructed from small and large rubble stones with gypsum mortar. Its covering incorporates pointed arches and transverse arch ribs, which give the building a distinctive appearance.

### 2-5. Landeh Castle

The large castle built at Landeh was structurally and technically very strong for its time. A stable was constructed beneath the castle. The complex was circular and consisted of multiple towers, with the central "mother castle," or Hasan Ali Khan Castle, protected by the other towers. A mosque to the north outside the castle and a Hosseiniyeh to the east were associated with the complex. In addition to the four towers, another rampart was constructed opposite the central or mother castle; it was known as the Gate Tower. Trusted individuals, under the command of the khan's brother or son, lived there and protected the castle. Two water wells were located in the lower courtyard, providing drinking water for the inhabitants during enemy sieges (Majidi Karaei, 1992: 1393–1395).

### 2-6. Shambrakan Castle

This castle is located 45 km north of Gachsaran County, in Kohgiluyeh and Boyer-Ahmad Province, on the foothills of elevations and rolling hills (Fig. 8). It is a two-story structure built of gypsum and stone. The building stands on a hill beside the Shiraz–Gachsaran transit road, 20 km from Basht. According to existing studies, it functioned as a ruler's residence. It has a central courtyard; the first floor served as the living quarters of the attendants, while the second floor was occupied by the khan. This imposing Qajar-period building was restored once.

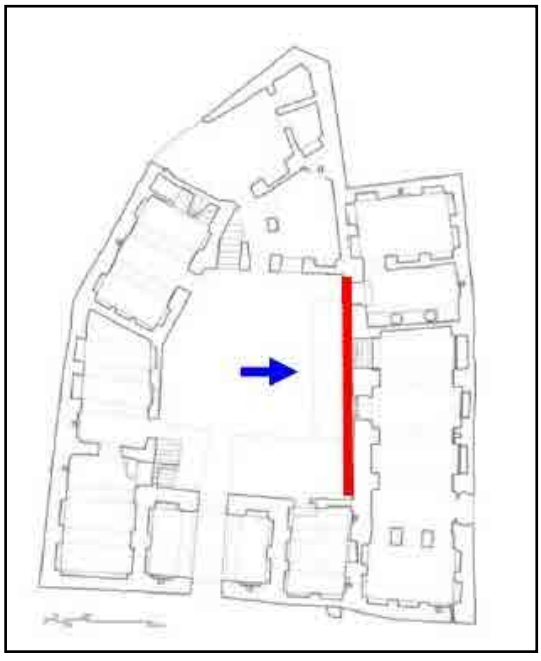


**Fig. 8: Shambrakan Castle (Authors, 2022–2025).**

**2-7. Sarpari Castle**

This castle is located 4 km from Dehdasht and 300 m northeast of Sarpari village (Figs. 9 and 10). The main structure is approximately square, apparently two stories high, with dimensions of about 200×200 m and a current height of approximately 10 m. It is built of stone and gypsum. Some sections are covered with pointed arches. The castle was built during the Qajar period on a hill overlooking the Sarpari plain. The structure was constructed in two phases: the first during the Qajar period and the second during the Pahlavi period. It has towers and ramparts, and loopholes are arranged around the castle so that it could be defended in times of danger.

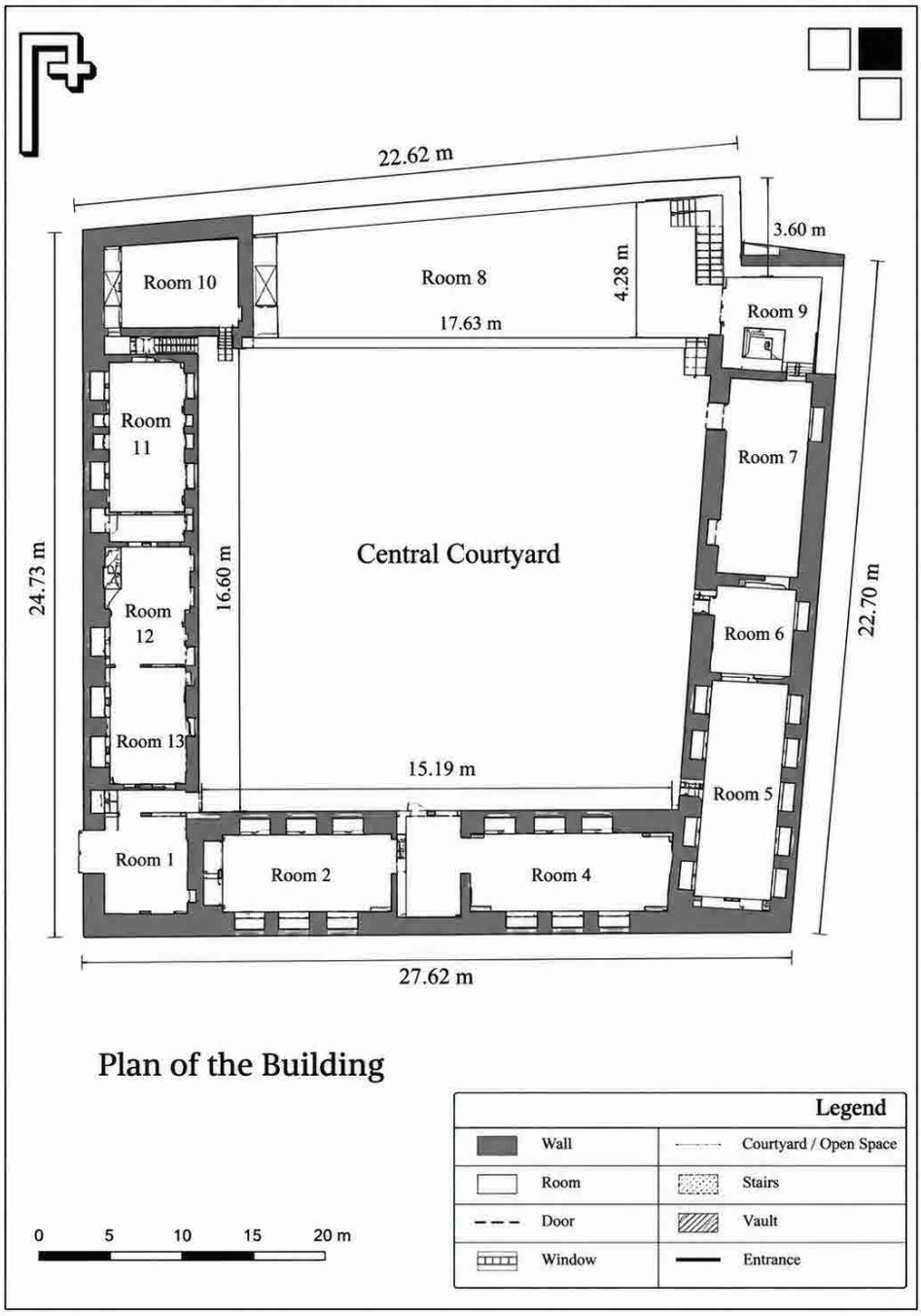



**Fig. 9: Plan of Sarpari Castle (Authors, 2022–2025).**

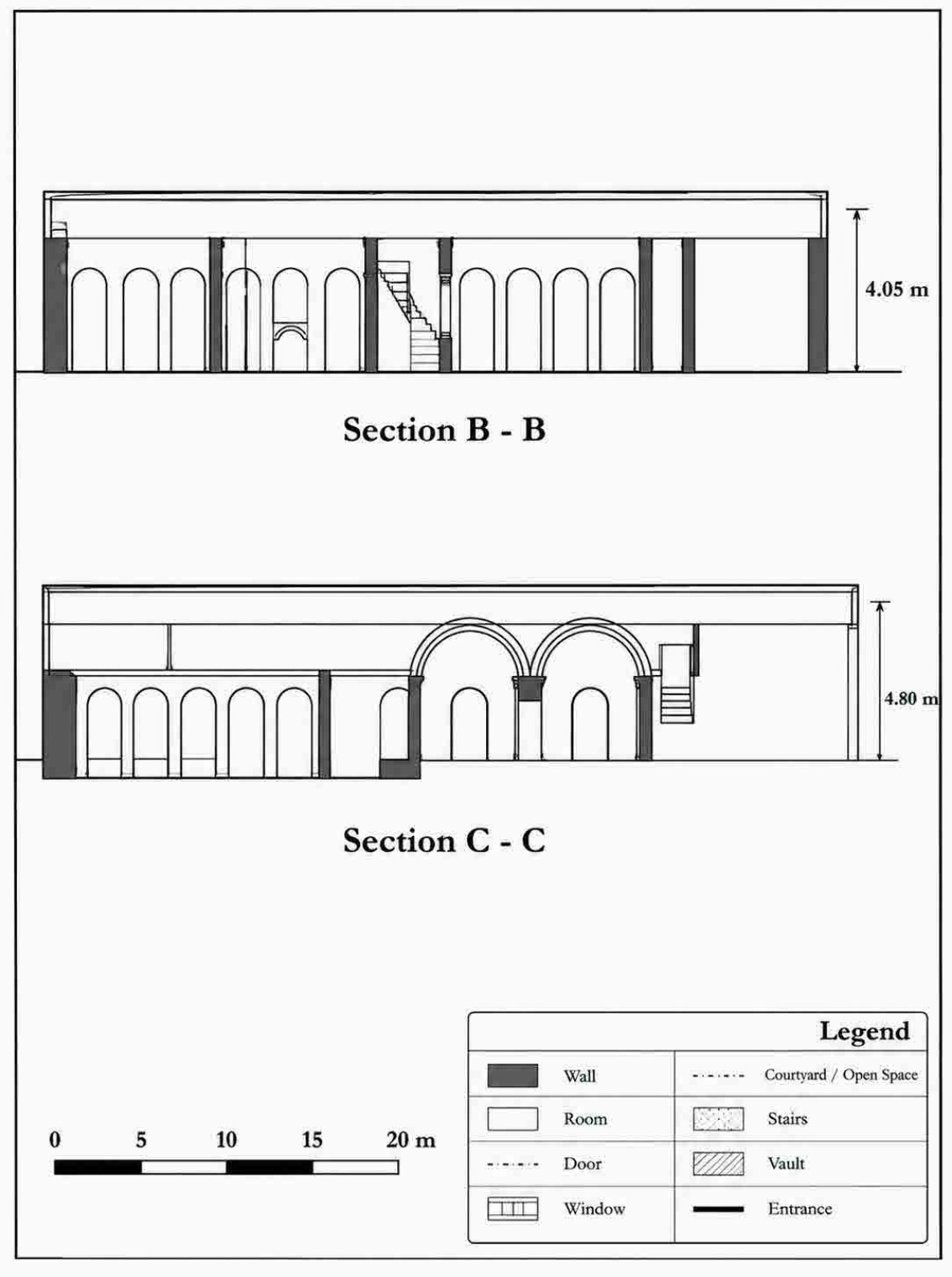



**Fig. 10: Sarpari Castle, elevation and section (Authors, 2022–2025).**

### 2-8. Kore Shahbazi Castle

The site is located approximately 2.5 km south of Cheram and 300 m south of Shirazi village (Figs. 11–14), at an elevation of 718 m above sea level. The castle measures approximately 10×10×15 m and has a rectangular plan. It contains various spaces connected by entrances with semicircular

arches, measuring approximately 12.50×1.50 m. The main building is two stories high and is enclosed by an almost square perimeter wall. The surviving wall is approximately 2 m high, and loopholes are incorporated into various sections of the castle walls. Different parts of the castle are covered by semicircular and pointed arches. The construction materials consist of small and large stone fragments bonded with gypsum mortar. The entire interior and exterior surfaces are coated with a layer of gypsum plaster. Based on the architectural structure of the site, a date in the later Islamic centuries, particularly the mid-Qajar period, is proposed.

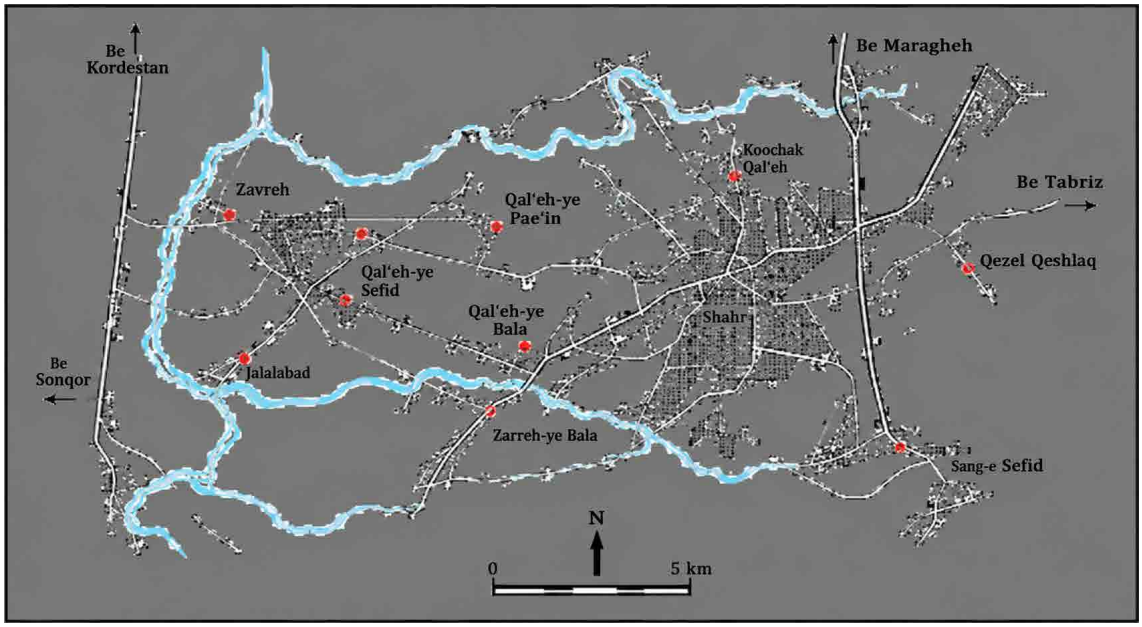



**Fig. 11: Location of Kare Shahbazi Castle on the map of the region (Authors, 2025- 2022).**

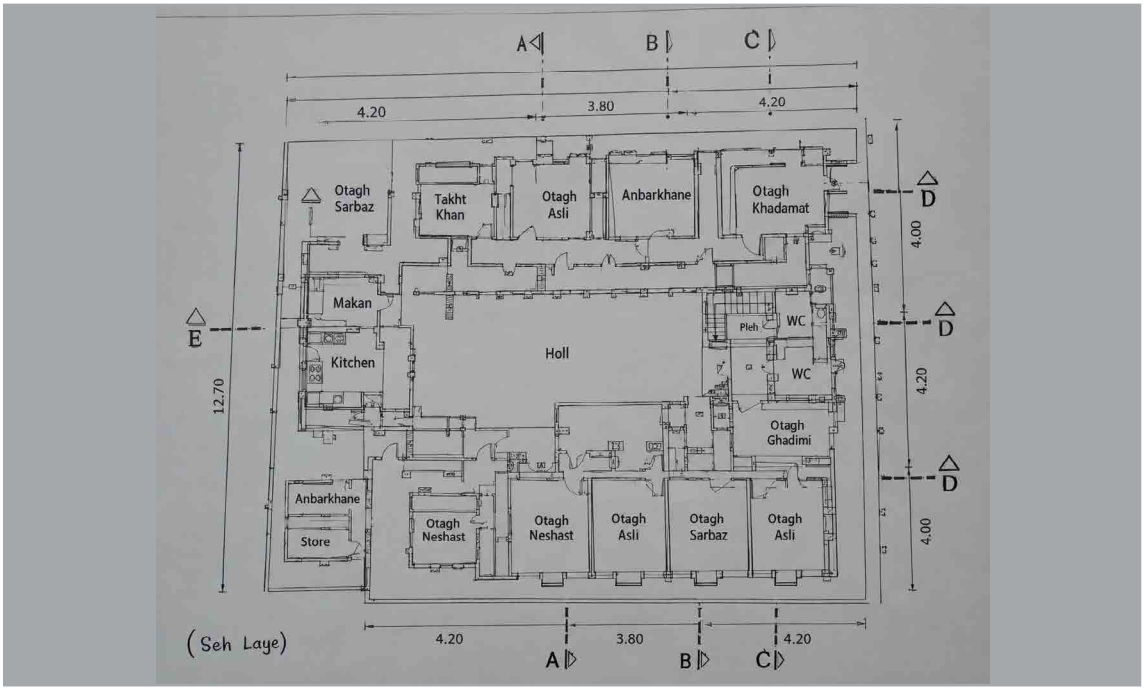



**Fig. 12: Floor plan of Kore Shahbazi Castle (Authors, 2025- 2022).**

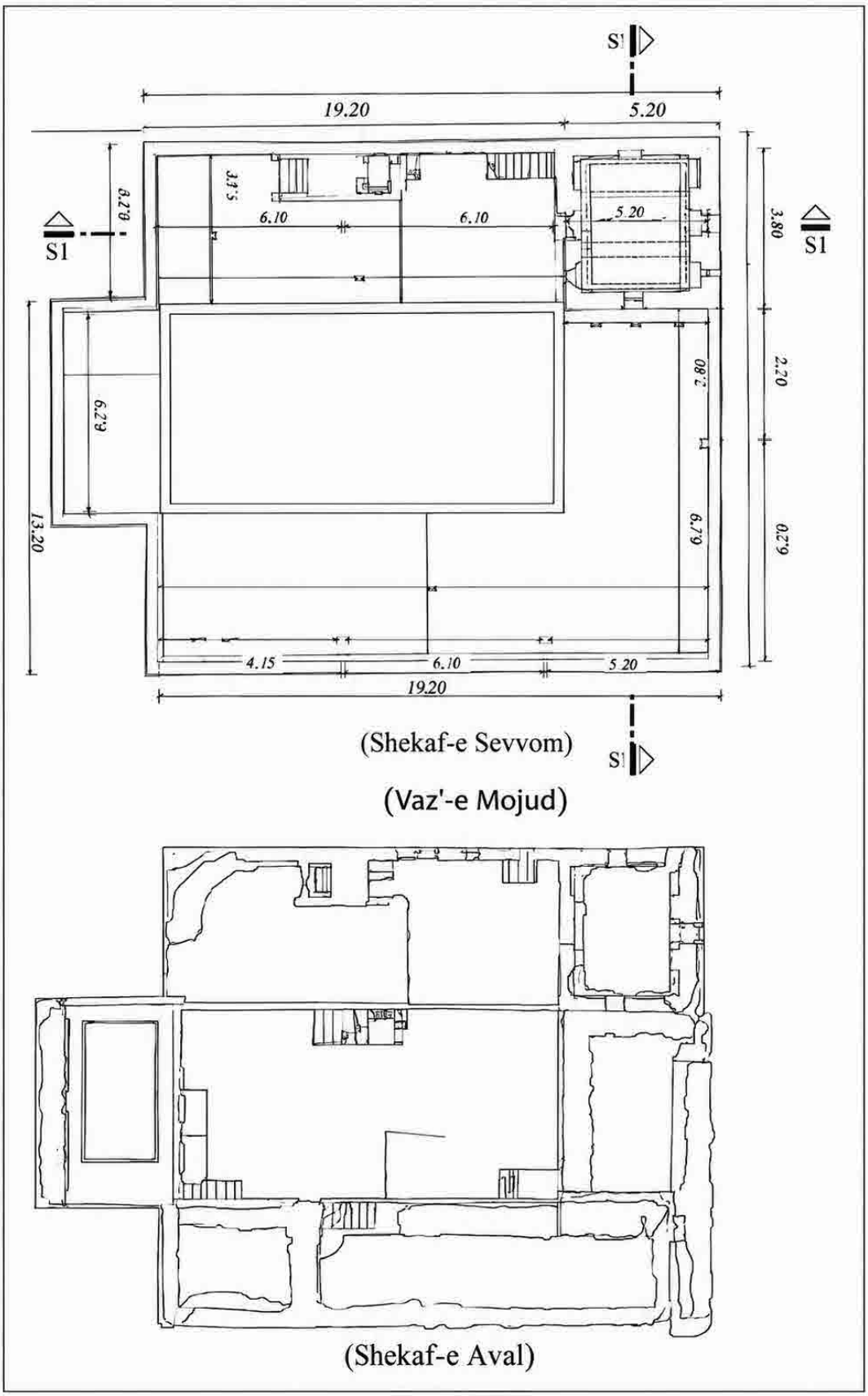



**Fig. 13: Shahbazi Castle (Authors, 2025- 2022).**



**Fig. 14: Kore Shahbazi Castle: top) partial view of the almost square fence, bottom) stables (Authors, 2025-2022).**

## 2-9. Rak Castle

The castle is rural in character and was constructed using a technique described in the source as a combination of reduced masonry and earthen construction. Its principal function was defensive, and it is currently in ruins. The construction materials are small and large stone fragments with gypsum mortar. The surviving section of Rak Castle is approximately square, measuring about 6×20×22 m, with its main entrance on the southeast side. The castle has two stories, and all interior and exterior surfaces are coated with a layer of gypsum. Some sections contain stucco decoration in the form of arches with semicircular profiles. The building was constructed on two levels using hand-tamped gypsum and appears to have undergone several repairs after the Qajar period.

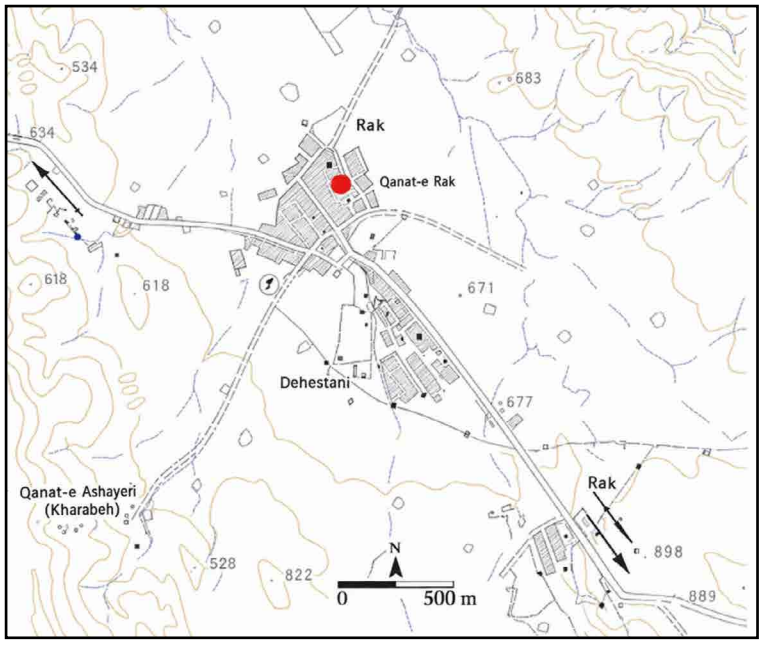



**Fig. 15: Location of Rak Castle on the village map (Authors, 2022–2025).**

**2-10. Raisi Castle**

This building was constructed during the Qajar period on the western side of Qaleh-Raisi, 70 km from Dehdasht. It appears to have served both defensive and residential functions, with an additional section added during the Pahlavi period. The four sides of the castle were built around a central courtyard as a two-story structure. The lower floor accommodated servants, fodder and grain storage, and the stable, while the upper floor contained the ruler's quarters, the family quarters, and spaces for guards and sentries.

**2-11. Al-Mor Castle**

This castle is located approximately 8 km south of Qaleh-Raisi, along the road from Qaleh-Raisi to Dehdasht, within Al-Mor village. Its overall form is approximately rectangular, measuring about 80 m in length, 50 m in width, and 7 m in height. The castle has two stories, with the main entrance on the southeast side. Remains of rooms and corridors, rectangular and square in plan, survive on both floors. The entrances to the rooms and corridors are covered by semicircular arches, and decorative elements in the form of shallow arches with semicircular profiles, functioning as niches, can be observed inside. Access to the second floor is provided by stairways constructed of stone and gypsum. Almost the entire interior and exterior surfaces are coated with a layer of gypsum plaster.

**2-12. Zargham Abad (Pali) Castle**

This monument is located northwest of Dehdasht in Zargham Abad village. It consists of a courtyard and adjoining rooms. The rooms occupy the north, east, and south sides of the building and are connected by corridors. The building is two stories high, and two stairways on the north and south sides provide access to the roof. The entrance portal was covered, and a guardroom was located in front of the castle. The building was constructed in the late Qajar period. It has a central courtyard around which the castle rooms were arranged. The castle served both military (governmental) and residential functions. The building materials consist of small and large stones with gypsum mortar, while the roofs are flat or covered by pointed arches.

**2-13. Dam Abbas Castle**

This castle (Fig. 16) is rural in character and its construction is described as a combined technique. Its principal function was defensive, and it is currently in ruins. The construction materials consist of small and large stone fragments with gypsum mortar. The surviving sections measure approximately 32×14 m. The principal surviving part is a square space approximately 14×14 m and about 5 m high, built on two floors; the covering of the first floor has disappeared. A rectangular space to the south has arches with pointed-arch coverings. Remains of loopholes are present in various parts of the main space. The building was constructed on two floors using hand-tamped gypsum. During its period of use, its sections were separated from one another, while niches, towers, and ramparts enhanced its appearance. No repairs have been carried out, and the castle flourished during the Pahlavi period. It dates to the late Qajar and early Pahlavi periods.

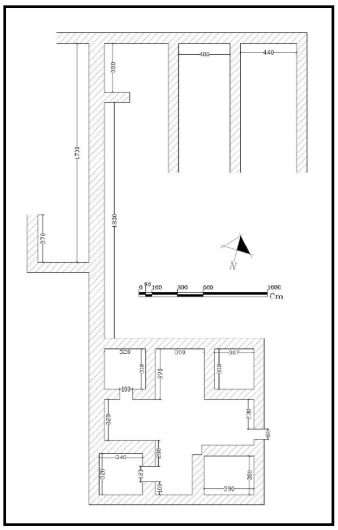


**Fig. 16: Plan of Dam Abbas Castle (Authors, 2022–2025).**

## 2-14. Gul Castle

A castle is located approximately 32 km southeast of Qaleh-Raisi and 18 km northeast of Dehdasht, within Qaleh-Gol village, which is itself named after the castle (Fig. 17). Its overall form is rectangular, and it has a similarly shaped perimeter wall with the remains of several circular towers. The exterior sections are decorated with arched niches and rectangular motifs. The towers around the perimeter, positioned at the corners, are circular and two stories high. The principal construction material is stone bonded with gypsum mortar. A hidden tunnel from inside the castle led to a spring or river and was used in emergencies.

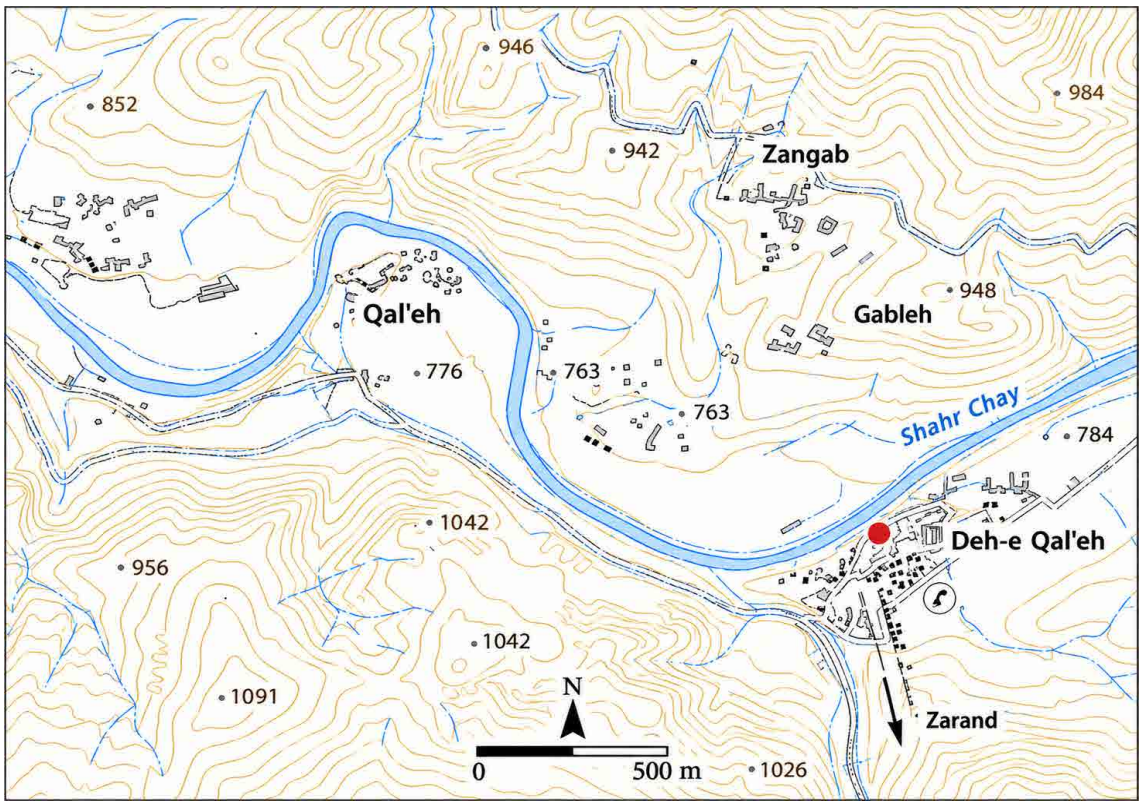



**Fig. 17: Location of Gul Castle (Authors, 2022–2025).**

### 2-15. Dokhtar Castle

The available evidence suggests that this castle has a Qajar architectural style with a relatively European character and probably dates to the late Qajar period. The vaulting technique, semi-broken stairways connecting to the guard towers, and flat roofs are reminiscent of European castle architecture. Numerous rooms, underground corridors, and the lavand-house section are features also observed in many castles in the region. The building has taken on a hall-like character through six arcaded bays on its northern façade, a feature that appears relatively unique. A front porch of the lavand-house faces these bays, with private interior rooms and living quarters for the castle's inhabitants behind the porch. The castle has a square-rectangular plan and appears to have been constructed in response to the needs of its residents. During a later period, probably the Second Pahlavi period, rooms in a modern style and with new materials (stone, cement, and steel beams) were built behind the northern façade's arcade. Overall, however, these additions did not substantially alter the building's general appearance and do not create a noticeable visual contradiction with the original structure.

**Table 1: Characteristics of Kohgiluyeh manor houses (Authors, 2024).**

| No. | Castle Name | Location | Construction Date | Function | Plan | Materials | Construction / Architectural Features |
|---|---|---|---|---|---|---|---|
| 1 | Dashtak Castle | Southeast of Dehdasht | Qajar | Khan's residence | Square | Small and large stones, with plaster mortar | Two-way bonding technique; floral windows were used to connect and secure the walls with wooden elements. The northern and southern stone walls have decorative features. Corridors and pointed arches, pointed arches in the rooms, rectangular and circular coverings, openings arranged along the walls, and doors and windows are visible in the decorative spaces of the rooms. The roof was flat, and access to the upper floor was provided by small stone stairs. All interior and exterior surfaces were covered with a layer of plaster. |
| 2 | Paloonah Castle | 7.5 km northwest of Cheram | Qajar | Khan's residence | Rectangular | Small and large stones with plaster mortar | Built on two floors, comprising a central courtyard and surrounding spaces. The interior and exterior surfaces were plastered. Pointed arches, rectangular and square vaults, and semicircular arches are present. The entire interior and exterior surfaces were finished with a layer of plaster. |
| 3 | Tel Castle | 28.5 km south of Cheram, 200 m south of Shirazi village | Late Qajar | Khan's residence | Rectangular | Small stones | Pointed and semicircular arches and a two-story arrangement are present. The walls and all interior and exterior surfaces were finished with a layer of plaster. |
| 4 | Rak Castle | Rak village | Qajar | Primary non-residential function | Square | Small and large stones with mortar | Built on two floors using rammed plaster construction; all interior and exterior surfaces were finished with a layer of plaster. Plaster decoration includes full and semicircular arches. The castle served as the seat of the ruler, his family, and guards. |
| 5 | Lor Castle | 8 km south of Qaleh-Ronisi district, on the Qaleh-Ronisi-Dehdasht road | Qajar | Khan's residence | Rectangular | Stone and plaster; two floors | Rooms and corridors are rectangular and square in plan. Semicircular arches are used as small vaults and arch coverings. The upper floor is accessed by stairs constructed with stone and plaster. Almost all interior and exterior surfaces of the castle were finished with a layer of plaster. |
| 6 | Zargham Castle | 7.5 km northeast of Cheram | Late Qajar | Khan's residence | Square | Small and large stones with plaster mortar | The castle has a central courtyard. The defensive spaces on the ground floor use pointed vaults, pointed arches, semicircular and rectangular small vaults, and other vaulted elements. |
| 7 | Sefid Castle | 4 km from Dehdasht | Qajar and Pahlavi | Khan's residence | Square | Stone and plaster | Two-story structure with pointed arches, a tower, and defensive walls with loopholes. |
| 8 | Kord Shahni Castle | Approximately 2 km southeast of Shirazi | Late Qajar | Khan's residence | Rectangular-squ | Small and large stones with plaster mortar | Semicircular and pointed arches; rectangular small vaults; interior and exterior surfaces finished with a layer of plaster. |
| 9 | Rak Castle | Rak village | Qajar | Primary defensive shelter | Square | Small and large stones with plaster mortar | Built on two floors with rammed plaster construction; all interior and exterior surfaces were finished with a layer of plaster. Plaster decoration includes arch motifs in the form of small vaults and semicircular arches. |
| 10 | Zeysi Castle | Western part of Qaleh-Ronisi and 70 km from Dehdasht | Late Qajar and Pahlavi | Defensive and residential castle | — | Stone and plaster | A central courtyard arranged over two floors. The lower floor served as accommodation for servants and storage, while the upper floor was occupied by the khan and his family and also included spaces for guards and watchmen. |
| 11 | Amour Castle | 28 km south of Qaleh-Ronisi district, on the Qaleh-Ronisi-Dehdasht road | Qajar | Khan's residence | Rectangular-squ | Stone and plaster | Two-story structure with rooms and corridors arranged in rectangular and square forms. Semicircular arches occur on the first floor, while small vaults and arch coverings occur on the second floor. |
| 12 | Zorfaam Castle | Northeast of Dehdasht | Late Qajar | Military (governmental) and residential | — | Small and large stones with plaster mortar | Comprises a central courtyard and adjoining spaces. Two floors and two staircases are located on the northern and southern sides. They are connected by a passage behind the roof. The entrance corridor was covered and a guard post was located in front of the castle. On the northern side is the kitchen, consisting of two rooms connected by an interior door. On the western side are the residential rooms and the khan's living quarters, comprising five rooms. The roof coverings are rectangular and pointed-vaulted. |
| 13 | Kol Castle | — | Qajar | Primary defensive function | Square | Small and large stones with plaster mortar | — |
| 14 | Gol Castle | 2 km northeast of Cheram and 18 km northeast of Dehdasht | Qajar | Khan's residence | Rectangular | All interior and exterior surfaces were plastered | The castle has circular defensive towers. Its architectural complex consists of two main sections, including a judicial section and a central courtyard. The northern and southern sections are each built on two floors. Pointed arches, pointed curved arches, semicircular arches, and rectangular forms carved in plaster and constructed beneath semicircular vaults are present. |
| 15 | Dokhtar Castle | Dokhtar village | Late Qajar–Pahlavi | — | Rectangular | Stone and plaster | Numerous rooms, underground corridors, and a bathhouse are present. The northern façade has a stepped/sloping character. The vaulting method and the use of half-turn stairways to connect with the guard towers and rectangular spaces recall the architectural style of the castle. |

### 2-16. Comparative Analysis / Typology

Geographical distribution: Kohgiluyeh: 14 examples (Dam Abbas, Dokhtar Castle, Gul, Sarpari [Qaleh-ye Kī Mansur Hayounfar], Mohammad Amin, Mohammad Zaman, Qalandar, Zargham Abad [Pali / Agha Qeydar Qayd-e Givi Tower], Rak, Qaleh-Raisi, Al-Mor, Elgan, Shotaver, and

Tal Kadkhodaei); Landeh: 4 examples (Landeh Castle, Old Castle, Kagenji, and New Castle); Cheram: 4 examples (Al-Qachin, Tal Babooneh [Babineh/Bavineh/Qaleh-ye Ki Farajollah Azizi], Kore Shahbazi [Shahrak Castle/Tal Gard Castle/Khan Castle/Historic Cheram Castle], and Tambi); Bahmaei: 3 examples (Dishmok Castle, Sardo Mansion, and Masjedi Castle); and Gachsaran: 1 example (Shambrakan).

**Strategic location:** (1) on hills overlooking villages: 19 examples (Fig. 18); (2) on plains/level ground: 7 examples (Fig. 19).



**Fig. 18: Top: right, Dishmok Castle; center, Tal Babooneh Castle; left, Tal Kadkhodaei; middle: right, Sarpari Castle; center, Kore Shahbazi; left, Rak Castle; bottom: right, Zargham Abad; center, Dokhtar Castle; left, Malaqalandar Castle (Authors, 2022–2025).**

**Materials:** The materials used in the construction of these buildings are primarily stone and gypsum, with saruj mortar also used in some cases. At Dishmok Castle, substantial oak, poplar, and plane-tree timbers were used to tie and reinforce the walls. Wood was also used in the roof of Kore Shahbazi Castle (Fig. 20).

**Function:** The buildings had military/defensive (governmental) and residential functions. Most were constructed as two-story buildings (Dishmok, Babooneh, Tal Kadkhodaei, Landeh, Shambrakan, Sarpari, Kore Shahbazi, Rak, Qaleh-Raisi, Al-Mor, Shotaver, Elgan, Zargham Abad, Tambi, Mohammad Amin, New Castle, Dam Abbas, Gul, and Dokhtar). In these castles, the first floor served as accommodation for attendants and service functions, including the kitchen,



**Fig. 19: Top: right, Landeh Castle; center, Raissi Castle; left, Al-Mor Castle; middle: right, Gul Castle; center, Elgan; left, Shotaver; bottom, Al-Qachin Castle (Authors, 2022–2025).**



**Fig. 20: Right: Dishmok Castle, wood used in the roof; left: Kore Shahbazi Castle, wood used in the roof (Authors, 2022–2025).**

fodder and grain storage, stable, and sanitary facilities, while the second floor served as the ruler's quarters, including the family's accommodation and spaces for sentries and guards.

Decorative features and techniques: Loopholes, known as sarzan or tir-kesh, were used to prevent surprise attacks or the capture of the castle; crenellations were provided for observation

(Fig. 21); other features include towers (Fig. 22), ramparts, perimeter walls, fireplaces and wall heaters (Fig. 23), rectangular windows (Fig. 24), columnar and wall buttresses (Fig. 25), gates, stucco decoration (Fig. 26), vaults and niches (Fig. 27), and arches (Fig. 28).



**Fig. 21: Right) Dishmok, triple windows or crossbars in the entrance building, left) Sarpari Castle, observation posts (Authors, 2022- 2025).**



**Fig. 22: Watchtower: right) Qale-e-Gol, middle) Al-Qachin, right) Qale-e-Dokhtar (Authors, 2022- 2025).**




**Fig. 23: Dishmock Castle, a room with two wall heaters and an air vent (Authors, 2022- 2025).**



**Fig. 24: Rectangular windows: right) Cheram Castle, middle) Tambi, left) Zargham Abad (Authors, 2022- 2025).**




**Fig. 25: Dishmook Castle: right) Column supports, Left) Gate (Authors, 2022- 2025).**



**Fig. 26: Stucco decorations: top, right) Dishmook Castle, entrance arch, meandering plaster veins between two layers of arch, middle) Dishmook Castle, inscriptions on the front of the building to support geometric entrances in the western courtyard, left) Rak Castle, stucco decorations, arches with crescent arches, bottom, right) Gol Castle, left) Cheram Castle (Authors, 2022- 2025).**



**Fig. 27: Top: Right) Dishmook Castle, niches, Middle) Cheram Castle, niche, Left, Zargham Abad, Middle: Right) Courtyard and Roman and pedimented arches, Middle) Dishmook Castle, entrance arch of the eastern part of the castle, Left) Zargham Abad, southwest side, view of the arches of the castle, Bottom: Right) Raissi Castle, arches of the castle, Middle) Shotavar, arches, Left) Grab, arch (Authors, 2022- 2025).**

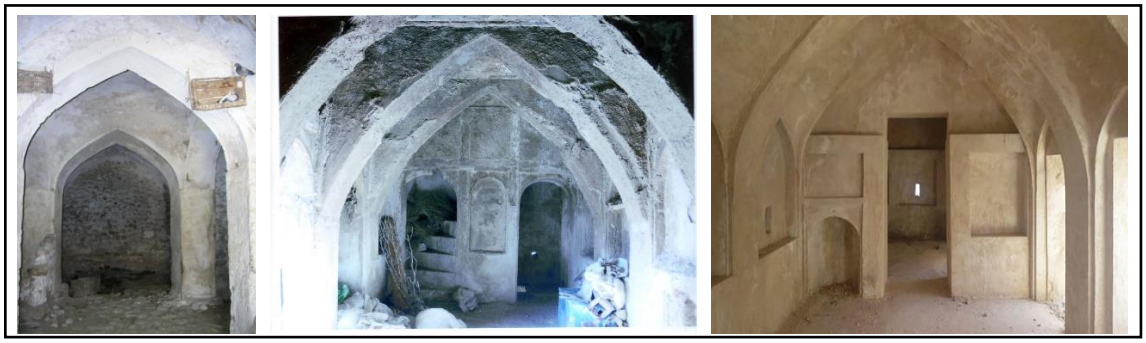


**Fig. 28: Right) Cheram Castle (Shahbazi Palace), goat horn arches, middle) Elgan, left) Gul. (Authors, 2022- 2025).**

## 3. Conclusion

Because of insecurity, the strategic and military significance of the Kohgiluyeh region, and its position on the communication route linking Isfahan, Fars, and Khuzestan, the region possessed

considerable potential for castles and defensive fortifications. These castles were built to accommodate local khans and their entourages. The construction of castles with strong towers and ramparts by powerful local rulers, together with the organization of strong military forces, provided an effective basis for security in the territories under their rule. It is noteworthy that, during attacks by dominant states on different parts of the country, an important component of the central military forces consisted of the armies of these local rulers, who played an important role in maintaining national security and expelling invaders from the country's borders.

The historical castles of late-period Kohgiluyeh can be regarded as manor structures in rural areas that were subject to central-government oversight for controlling local feudal authorities and exploiting agricultural and natural resources to meet the needs of the court. They also functioned as local ruler residences administered under the authority of the region's khans and were used as seasonal settlements for nomadic groups during spring and summer. As indicated by the functions of these rural complexes, one of their roles was also to collect dues and control movement between the plains and mountains by tribal and nomadic groups. The construction of such buildings from the Safavid period onward, particularly during the Qajar period, can be observed in different parts of Iran, with both similarities and differences.

It appears that the construction of such local and rural complexes in different parts of Iran received particular attention from the central government after the 1341 land reforms and the nationalization of water and land resources, as well as the relatively extensive growth of villages among the peasantry, with increased emphasis on governmental dominance, supervision, and control. Based on examination and analysis of the architectural, design, and physical characteristics of the castles under study and comparison among them, the results indicate that, in geographical and defensive terms, natural hills and elevated locations were given particular attention because they commanded the surrounding areas and offered greater defensive capability.

The principal reasons for the construction of these manor castles in different parts of the country during the later Islamic periods, especially the Qajar era, can be associated with weaknesses in the central governmental structure, repeated attacks by foreign occupying forces, and the increasing power of local rulers. As rulers gained power, they used existing circumstances to construct a castle, to the extent of their means, for themselves and the populations under their control. The scale and grandeur of a castle's structure were directly related to the power of the regional ruler; consequently, larger castles were constructed by powerful and influential lords with access to the country's ruling authorities. During the Qajar period, some of these castles became bases and refuges for rebels and dissidents because of insecurity in the region.

The castles incorporated measures intended to stop or at least slow attackers outside the castle, at the perimeter wall, and within the compound. One of the most important security measures was therefore the construction of high and thick perimeter walls, towers, and ramparts. Some powerful local rulers played an important role in maintaining security within their territories by establishing fortified castles and strong military forces. In terms of layout, these castles generally had central courtyards, introverted plans, and similar spatial relationships. The construction materials were

locally sourced, and the use of different materials displays a degree of consistency attributable to the prevalence of a common architectural tradition. Although the quantity of decorative elements varies according to the location and circumstances of each building, stucco and brickwork decoration featuring vegetal (arabesque) and geometric motifs appears to be dominant in this category of buildings.

The entrances to these buildings generally contain similar components, including a pishtaq, platform, doorway, and vestibule (hashti). Entry into the buildings through these spaces was indirect, resembling traditional Iranian architectural practice, in which spatial hierarchy, privacy, and separation between exterior and interior were taken into consideration. The precise histories of the castles are not known. Some were repaired and reused several times over the course of time; nevertheless, in terms of construction and repair dates, they generally span a period from the early Safavid era to the First Pahlavi period. In some cases, occupation continued until the late Second Pahlavi period, and in others it continues to the present day.

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This research is derived from the first author's doctoral dissertation. The primary data collection, encompassing all observational and analytical components, was conducted by the first author under the direct supervision and mentorship of the second author.

**Conflict of Interest**
The Authors declare that they have no conflict of interest regarding the Authorship or publication of this article.

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**چکیده**

از گونه‌های رایج معماری متأخر تاریخی ایران، خانه‌های اربابی هستند که بیشتر آن‌ها در دورهٔ قاجار ساخته شده و موردتوجه حاکمان شهرها و روستاهای این دوره قرار داشتند. بیشتر خانه‌های اربابی منطقهٔ کهگیلویه، نوعی قلعه‌های دشتی محسوب می‌گردند که طی سده‌های متأخر اسلامی (از اوایل دورهٔ قاجاریه تا پهلوی اول) به‌دلیل ضعف حکومت مرکزی و هرج و مرج‌های ناشی از آن و نیز با هدف اقامت و سکونت خان‌های محلی و اطرافیانشان، احداث شده‌اند. طی بررسی روشمندی که در منطقهٔ کهگیلویه طی سال‌های ۱۴۰۲ الی ۱۴۰۴ توسط نگارندگان انجام گرفت، ۳۴ خانهٔ اربابی شناسایی گردید. از مهم‌ترین اهداف این پژوهش، در کنار تجزیه و تحلیل داده‌های حاصل از آن و بهره‌گیری از نتایج انتشارات صورت‌گرفته درمورد استحکامات تدافعی و قلاع، مطالعهٔ معماری بناهای مذکور می‌باشد. نتایج حاصل‌شده نشان‌گر آن است که در این بناها، به‌لحاظ جغرافیایی و تدافعی تپه‌های طبیعی و بلندی‌ها به جهت اشراف به مناطق پیرامون و توان دفاعی بهتر موردتوجه خاص بوده است. به‌لحاظ طرح، این قلعه‌ها دارای نقشه‌هایی با حیاط مرکزی و به‌صورت درونگرا و با ارتباط فضایی مشابه ساخته شده‌اند. تزئینات گچبری و آجرکاری با نقوش اسلیمی و هندسی از تزئینات غالب در این دسته از بناهاست.



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