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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

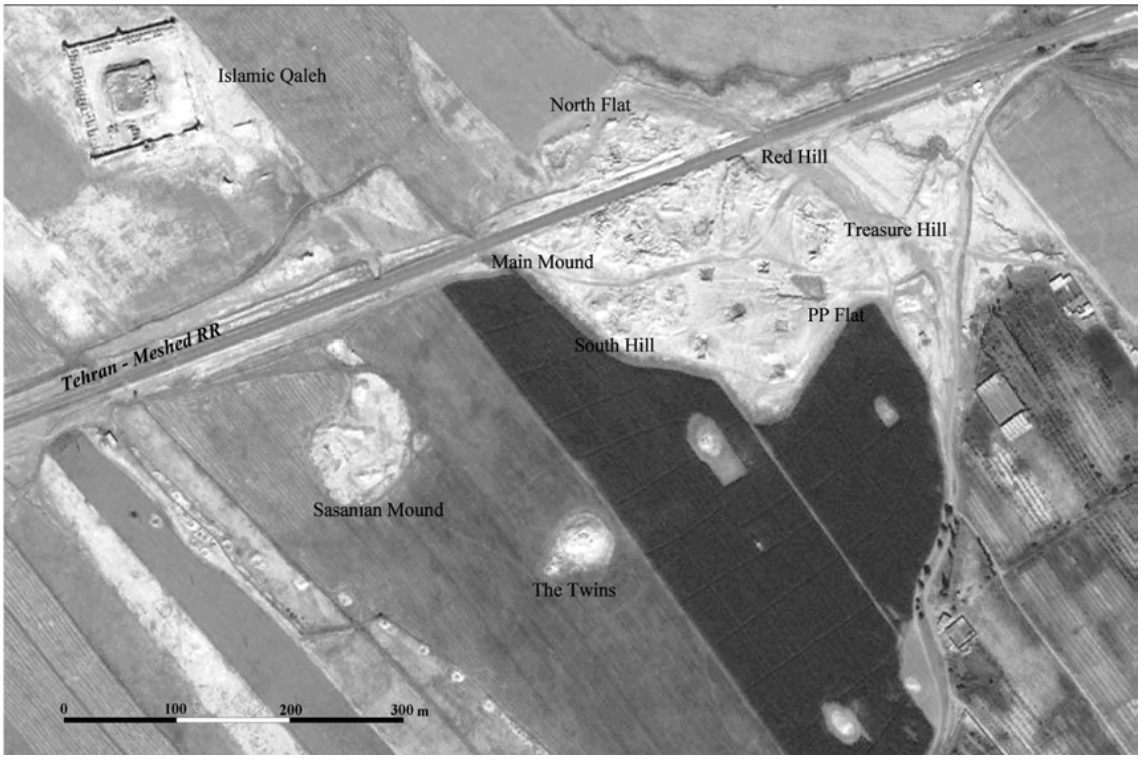


Fig. 1: Aerial view of Tepe Hissar, Damghan (Gürsan-Salzmann, 2016).

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) B (2)	Highest preserved stratum	2150-1885
Lev. bet. "2-1"	IIIB	IIIB/IIIA	C1 (3) C2 (4)	DG20 - 3 ovens similar to the one in the North Flat	2640-2390
Lev. "2"	IIIB/IIIA	IIB	D1 (5) D2 (6) D3 (7)	Building 3a Rm 11 Building 3a Rm 7 Area /2/ Kiln /3/ Kitchen /1/ Buildings 2, 3	3360-2995 3175-2920 3380-3160 3375-3150 3385-3165 3380-3155
Lev. "3"	IIA/IIB	IC/IIA	E1 (8) E2 (9) E3 (10)	DF09 Baulk 13	4590-4545
Lev. "4"	IC/IIA	IC/?	F1 (11) F2 (12) F3 (13)	DF09 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

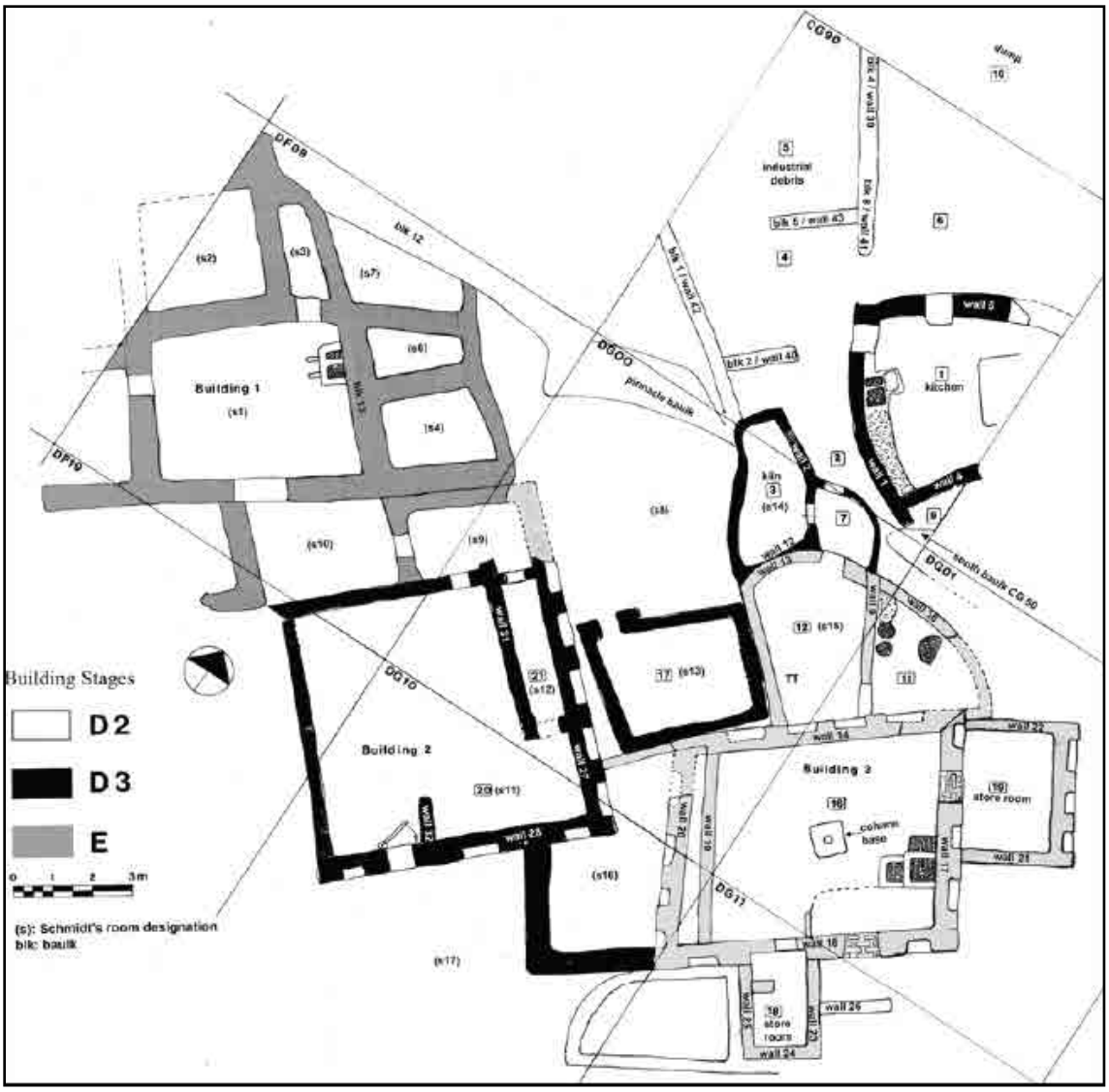


Fig. 2: Architectural plan of Hissar II, Buildings 1, 2, and 3 (3350–3100 BCE) (after: Gürsan-Salzmann, 2016).

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.

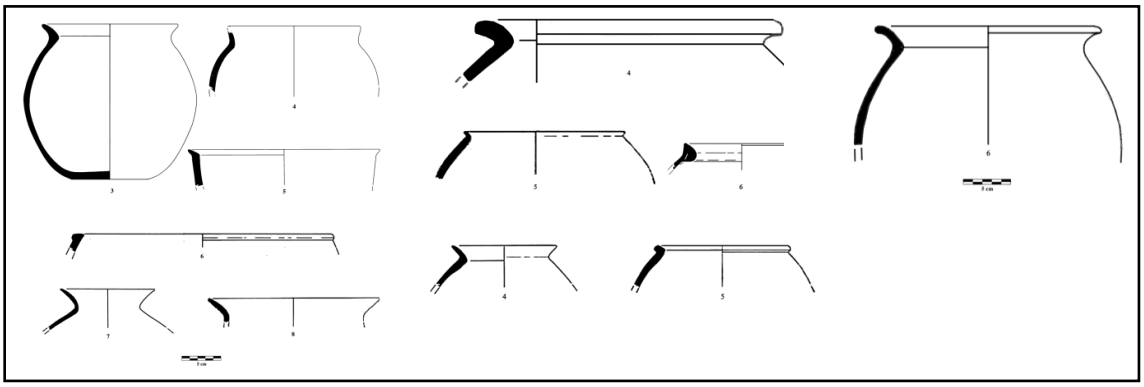


Fig. 3: Shapes of Plain and Burnished Grey Ware from Tepe Hissar II (Gürsan-Salzmann, 2016).

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

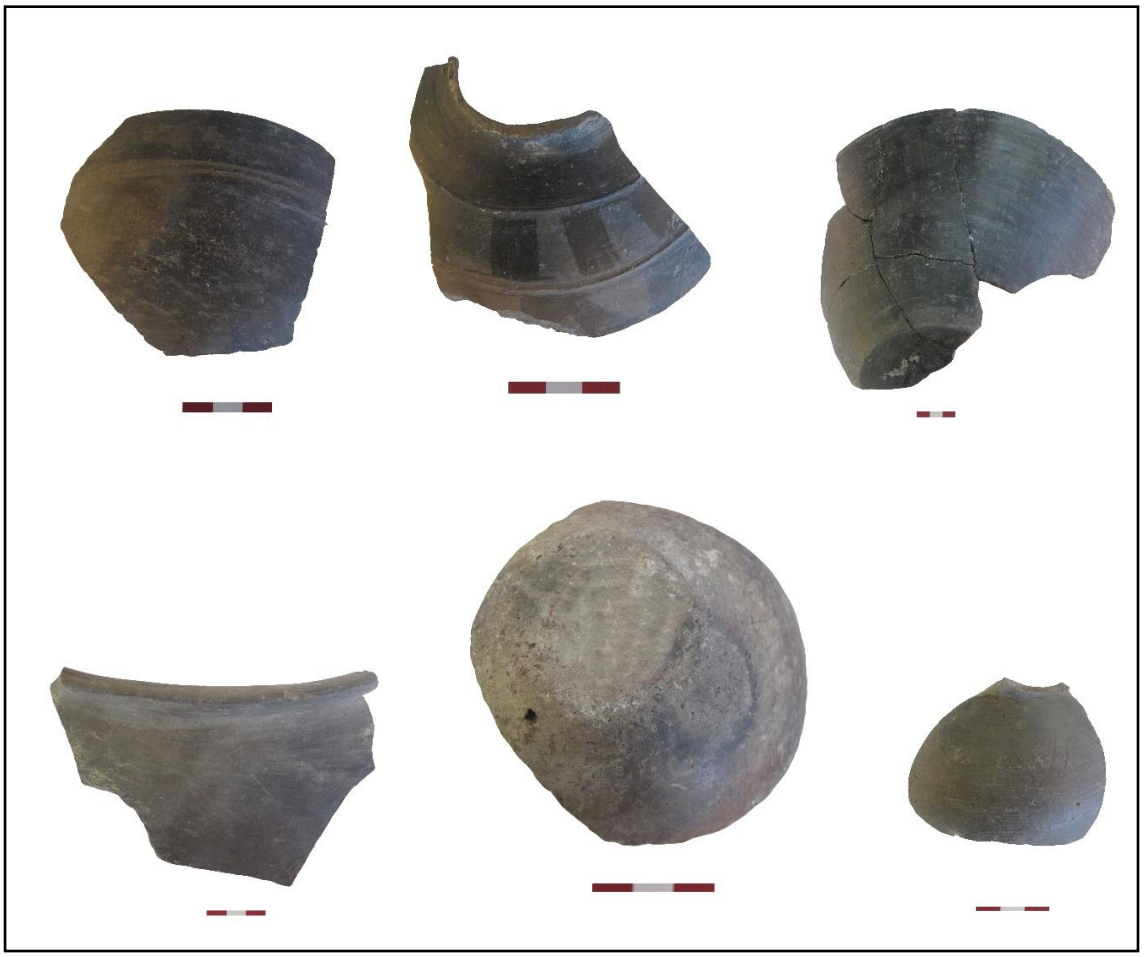


Fig. 4: Samples of Grey Wares from Tepe Sofalin (Yousefi Zoshk, 2010).

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

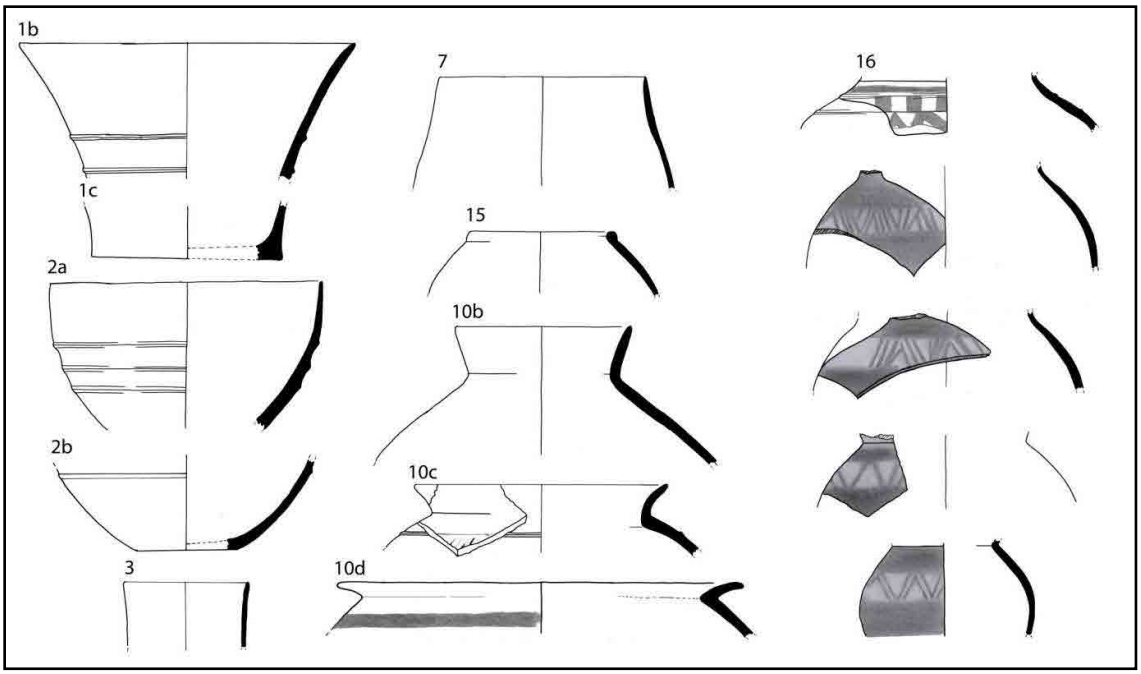


Fig. 5: Burnished Grey Ware with vegetable temper, Tepe Sofalin (Yousefi Zoshk, 2010).

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).

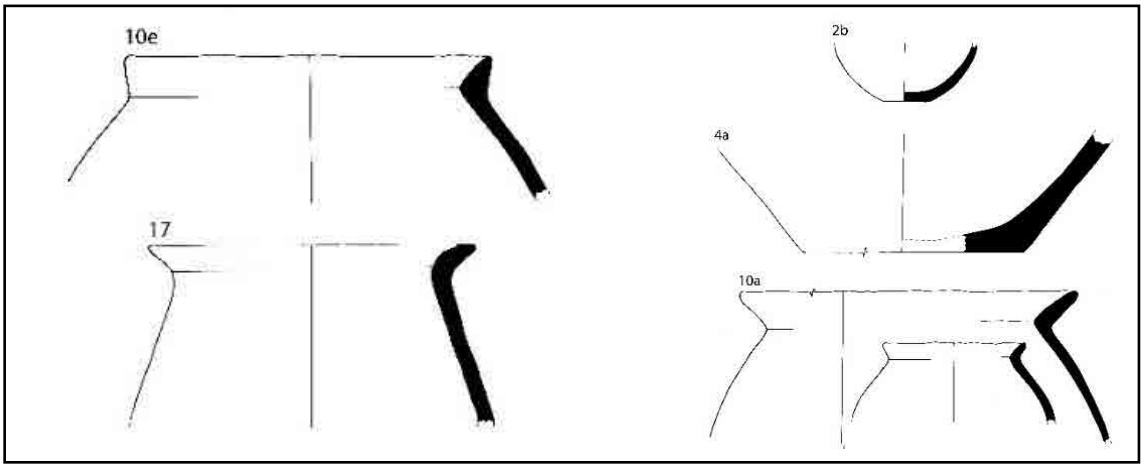


Fig. 6: Plain Grey Ware with mineral temper, Tepe Sofalin (Yousefi Zoshk, 2010).

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

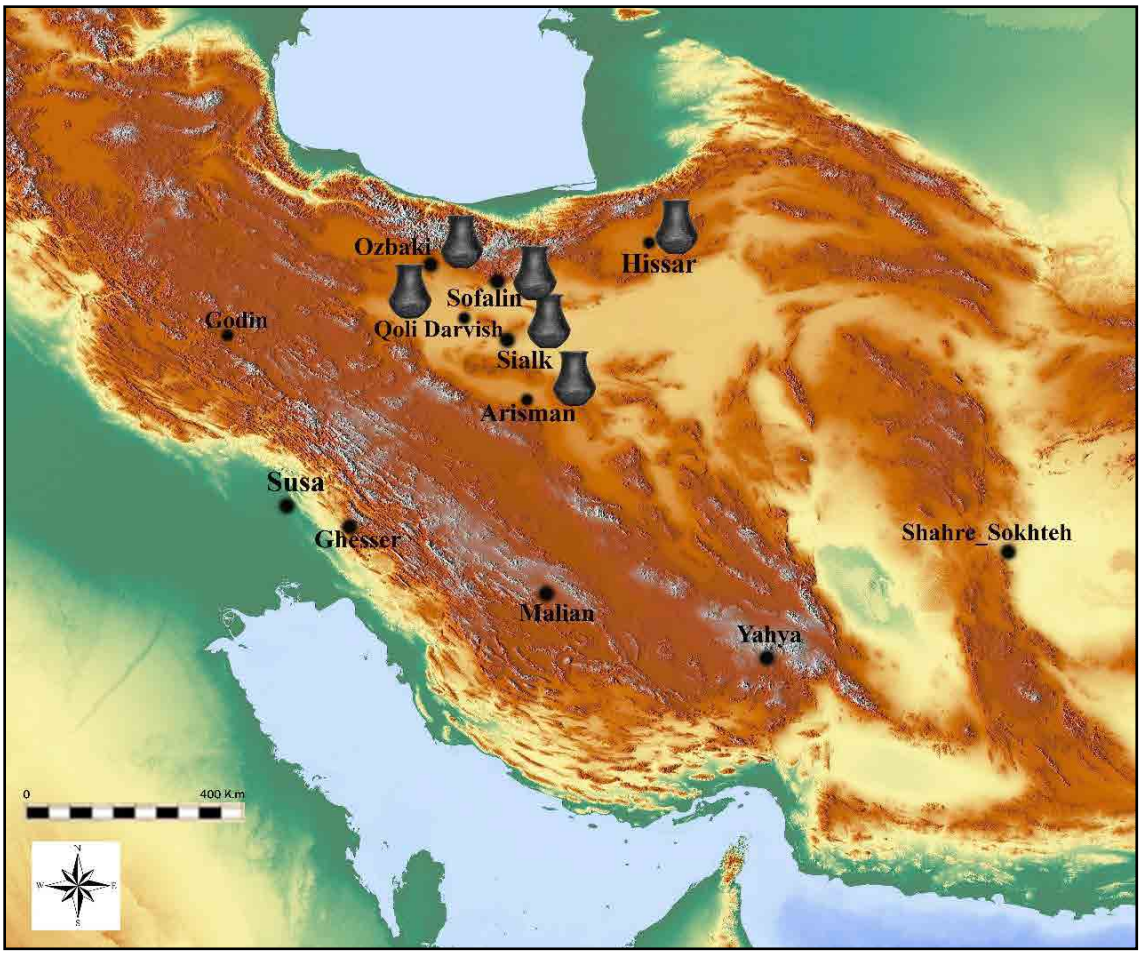


Fig. 7: Distribution map of Grey Ware in classic Proto-Elamite sites, based on the Grey Ware classes of Tepe Hissar II (Authors, 2025).

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.

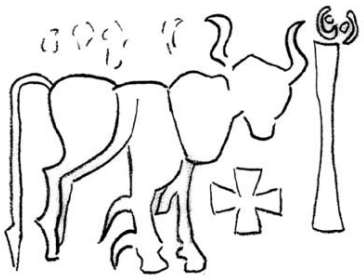
Provenance	Drawing	Image
Hissar		
Refferences	Schmidt 1937: 198, fig. H 116; Frankfort 1939a: 228, fig. 70	

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).

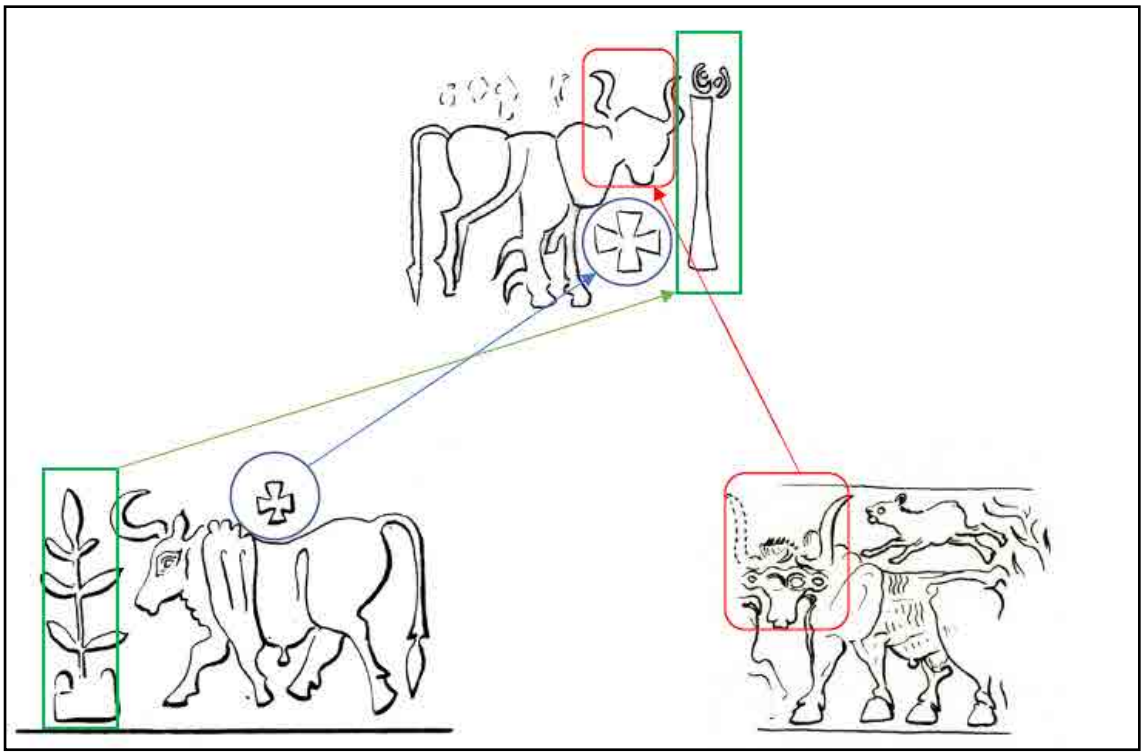


Fig. 9: Comparative analysis of cylinder seal motifs: Tepe Hissar vs. classic Proto-Elamite specimens.

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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Author Contribution

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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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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