

Early Stamp Seal Traditions in the Central Zagros (5000–2500 BCE): Continuity or Discontinuity?

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Abstract

Stamp seals constitute one of the most enduring elements of administrative traditions in the Central Zagros of western Iran. However, the uneven archaeological record has generated ongoing debate regarding continuity and discontinuity in their use, particularly during the late fourth and early third millennia BCE, when securely stratified evidence remains limited. Drawing on newly published materials from Tepe Tyalineh, Godin Tepe, Chogha Maran, and Dehsavar, this study reassesses the evolution of stamp seal traditions between ca. 5000 and 2500 BCE within an updated regional chronological framework. By examining the style, iconography, and archaeological contexts of stamp seals and seal impressions from a comparative perspective, the article evaluates competing interpretations of the development of administrative practices in the Central Zagros. The evidence indicates that stamp seals and seal impressions were employed in the region from the Early Chalcolithic (5000–4600 BCE) through Late Chalcolithic phases 1–3 (4600–3700 BCE), during which they continued to develop locally while interacting with broader supra-regional networks. Although the archaeological record suggests an apparent gap during Late Chalcolithic phases 4–5 (3700–3100 BCE), stamp seal traditions persisted into the Early Bronze Age (3100–2500 BCE). While these traditions underwent significant transformation and were increasingly overshadowed by cylinder seals and supra-regional administrative systems during the later fourth millennium BCE, they nevertheless continued to play a role in local administrative practices in the Early Bronze Age. The analysis suggests that this apparent gap is more plausibly explained by biases in archaeological visibility, preservation, excavation coverage, and chronological resolution than by an actual interruption in the production and use of stamp seals. Overall, the study supports a model of relative continuity accompanied by stylistic, iconographic, and administrative transformation within the Central Zagros glyptic tradition. These findings underscore the active role of Central Zagros communities in the development of administrative practices and contribute to broader discussions of cultural continuity, interregional interaction, and the emergence of sociopolitical institutions in prehistoric Southwest Asia.

Keywords: Central Zagros, Chalcolithic, Early Bronze Age, Stamp Seal Tradition, Administrative Practices, Cultural Continuity, Interregional Interaction.



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Introduction

Since the Late Neolithic period, stamp seals have been used to impress lumps of clay attached to storeroom doors and containers in order to regulate access to stored commodities ([Akkermans, 2023](#)). Prehistoric seal designs likely referred to individuals, groups, institutions, or administrative roles associated with sealing practices ([Pittman, 1994: 1–16](#)). These sealing practices formed part of a broader administrative system through which economic resources were stored, monitored, and redistributed. Such administrative mechanisms enabled different groups to control, mobilize, and redistribute economic resources within complex sociopolitical structures (cf. [Frangipane, 2000; 2016; 2018](#)). Seal imagery and administrative systems may therefore be regarded as material manifestations of sociopolitical organization and expressions of cultural identity in prehistoric societies ([Pittman, 2001a](#)).

Within the Central Zagros, stamp seals and seal impressions constitute one of the longest-lasting administrative traditions attested in the archaeological record (see: Fig. 1). Assemblages of stamp seals and seal impressions have been recovered from sites such as Tepe Giyan, Seh Gabi, Chogha Maran, Dehsavar, Hakalan and Parchinah, Godin Tepe, and Tepe Tyalineh (see: Fig. 1). However, many of these administrative artifacts lack contextual or stratigraphic data, rendering them chronologically ambiguous ([Renette et al., 2021: 62](#)). Although comparable corpora from surrounding regions provide sufficient data to date these materials more confidently, relying exclusively on interregional comparisons risks overshadowing local developments and producing flawed reconstructions of indigenous cultural trajectories. In other words, cultural materials may follow distinct local trajectories and remain in circulation long after they disappear in other regions. This pattern is illustrated by the incorporation of beveled-rim bowls into local ceramic assemblages across the Iranian Plateau ([Potts, 2009: 12–14](#)), as well as by the persistence of Glazed Steatite Style elements in later indigenous contexts at Chogha Maran in the Central Zagros ([Renette et al., 2021: 32–33, pl. 39; Pittman, 1994: 213–229](#)).

While stratified stamp seals and seal impressions are known from the Early Chalcolithic, Late Chalcolithic phases 1–3, and the Early Bronze Age, securely stratified and dated stamp glyptic artifacts from the late fourth millennium BCE remain scarce in the Central Zagros. Together with the stylistic and iconographic similarities between earlier and later stamp seals and seal impressions, this scarcity has complicated interpretations of continuity and discontinuity in the regional stamp seal tradition. The relative scarcity of mid-fourth millennium BCE lowland glyptic innovations—such as cylinder seals and the Baggy Style—combined with the abundance of unstratified stamp seals in the Central Zagros, initially suggested continuity of earlier stamp seal traditions into the Late Chalcolithic 3–4, followed by their abandonment in the Late Chalcolithic 5 ([Pittman, 2001a: 414, 431](#)). However, the publication of early third millennium BCE stamp seal impressions from securely dated contexts at Chogha Maran led some scholars to propose a discontinuity in the regional stamp seal tradition during the late

fourth millennium BCE. According to this interpretation, earlier Chalcolithic seals had been uncovered and subsequently reused at the site in later contexts (Pittman, 2014, p. 51; Renette et al., 2021: 43).

Within the archaeological literature on the Chalcolithic and Early Bronze Age of western Iran, traditional narratives of settlement decline and the rise of mobile pastoralism in the Late Chalcolithic and Early Bronze Age (e.g., Mortensen, 1976; Henrickson, 1989: 288; Abdi, 2003: 431–432) have long underpinned interpretations of cultural discontinuity and sociopolitical transformation in the Central Zagros (Renette, 2018). More recent reassessments of excavation and survey data in the western Central Zagros, however, have challenged these perspectives, suggesting instead that settlement systems expanded and indigenous social complexity increased during the late fourth and early third millennia BCE (Renette et al., 2021: 63–64). These revised trajectories challenge earlier models that linked perceived archaeological gaps to demographic decline or systemic collapse. At the same time, an alternative explanation for the apparent scarcity of stamp seals during this period emphasizes the increasing concentration of administrative activity within supra-regional centers during the late fourth millennium BCE, where new administrative technologies from Susiana and Mesopotamia—such as cylinder seals and proto-cuneiform tablets—were employed (Weiss & Young, 1975; Henrickson, 1988; Rothman & Badler, 2011; Rothman, 2013; Matthews, 2013; Khayani & Matthews, in press). From this perspective, the perceived discontinuity of the Central Zagros stamp seal tradition may reflect patterns of archaeological visibility and recovery rather than an actual interruption in production or use. New data from Godin VI: 1 (Khayani & Matthews, in press), Chogha Maran (Renette et al., 2021), Dehsavar (Pollock et al., 2020), and Tyalineh (Khosravi et al., 2024; Khosravi, 2026) provide an opportunity to reconsider the problem of continuity versus discontinuity in the Central Zagros stamp seal tradition.

Theoretical Framework

Continuity, change, and discontinuity are central concepts through which archaeologists seek to understand cultural transformations in prehistory (Frangipane, 2021). These issues are particularly relevant to the study of stamp seal traditions in the Central Zagros, where reconstructing the long-term trajectories of glyptic traditions and administrative practices is complicated by the uneven nature of the archaeological record. Determining whether observed patterns reflect genuine cultural developments or limitations in the available evidence is inherently difficult, as archaeological assemblages represent only a partial and filtered record of past human activities, shaped by depositional, post-depositional, and recovery processes.

Several factors contribute to this challenge. First, archaeological excavations provide access only to limited segments of long-term historical processes and to relatively short chronological intervals within them. Second, settlement systems within a given period may have included sites with different functions that employed partially

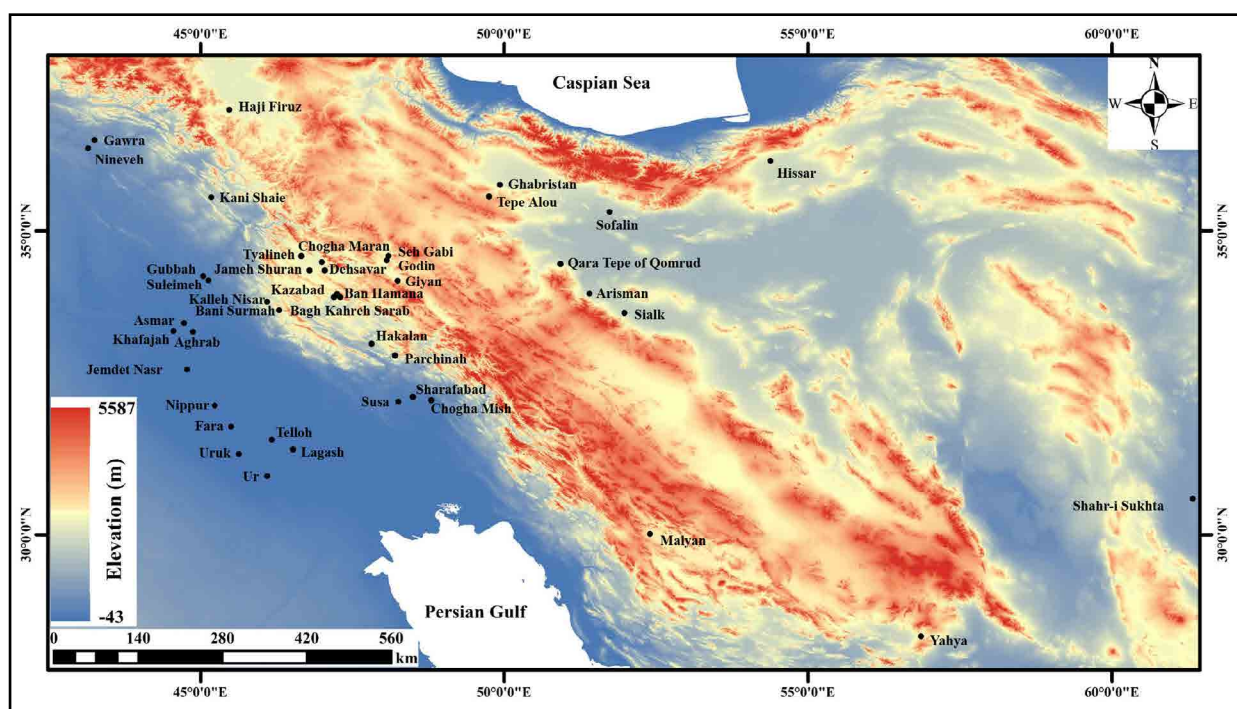


Fig. 1: Map showing sites discussed in the text (basemap by: Saham Mirzaei).

distinct categories of material culture, yet the available archaeological record does not necessarily capture the full extent of this variability. For example, although numerical and numero-ideographic tablets and cylinder seals were used at Godin Tepe as a supra-regional administrative and exchange center, there is no guarantee that comparable administrative tools were employed at contemporary settlements in the region, particularly at smaller rural communities.

Third, a substantial portion of archaeological deposits has been destroyed or displaced by post-depositional processes such as erosion, climatic factors, animal activity, and human intervention, rendering entire categories of evidence permanently inaccessible. Fourth, several important sites in the Central Zagros, including Tepe Giyan, were excavated without adequate stratigraphic control, resulting in the loss of significant contextual information (see: Herzfeld, 1933; Contenau & Ghirshman, 1935). This issue is particularly significant because the site contains the largest stamp seal assemblage in the region (Khayani, 2025, Table 2.1).

Finally, because archaeological excavation is inherently destructive and constrained by limitations of time and funding, only a small portion of any site can typically be investigated. Consequently, there is no assurance that excavated assemblages fully represent the range of artifacts once used by the inhabitants of a site and its surrounding region. As Frangipane (2021) has argued, archaeological sequences frequently preserve only selected moments within longer historical processes, making it difficult to distinguish genuine discontinuity from apparent gaps in the record. The developmental trajectory of stamp seals in the Central Zagros provides a clear example of a case in which these methodological and epistemological challenges must be carefully considered.

The present study therefore approaches apparent gaps in the archaeological record as problems requiring explanation rather than as self-evident indicators of discontinuity.

Methodology

This study first situates stamp seals and seal impressions recovered from archaeological sites in the Central Zagros—including recently published materials—within a coherent regional chronological framework in order to reconstruct the developmental trajectory of the regional stamp seal tradition. To achieve this goal, it adopts the revised chronological scheme originally developed for northern Mesopotamia and subsequently applied to western Iran (Rothman, ed., 2001; Renette & Mohammadi Ghasrian, 2020). According to this framework, the period spanning the fifth to the third millennia BCE is divided into the Early Chalcolithic (5000–4600 BCE), Late Chalcolithic 1 (4600–4200 BCE), Late Chalcolithic 2 (4200–4000 BCE), Late Chalcolithic 3 (4000–3700 BCE), Late Chalcolithic 4 (3700–3400 BCE), and Late Chalcolithic 5 (3400–3100 BCE). The subsequent period is classified as the Early Bronze Age and subdivided into Early Bronze Age I (3100–2800 BCE) and Early Bronze Age II (2800–2500 BCE).

Because many glyptic artifacts from the Central Zagros derive from poorly stratified or entirely unstratified contexts, chronological attribution cannot rely exclusively on excavation data. The study therefore combines contextual evidence from securely stratified assemblages with stylistic, iconographic, and comparative analyses of seal forms and motifs. Particular attention is given to continuities and transformations in seal imagery and administrative practices across successive chronological phases.

Comparative analysis with contemporaneous materials from Susiana, Mesopotamia, and adjacent regions is employed not as a simple diffusionist framework, but as a means of evaluating regional interaction, local adaptation, and divergent developmental trajectories. In this respect, similarities between assemblages are assessed alongside evidence for local persistence, hybridization, and divergence. At the same time, the study avoids assuming that the appearance or disappearance of specific glyptic traditions in neighboring regions necessarily corresponds to identical developmental sequences in the Central Zagros.

Given the uneven quality of the archaeological record, greater interpretive emphasis is placed on securely stratified materials, while unstratified artifacts are treated more cautiously and evaluated primarily through comparative and contextual analysis. Rather than assuming that the archaeological absence of stamp seals directly reflects their historical disappearance, the study examines the extent to which observed patterns may instead result from uneven excavation histories, depositional processes, preservation biases, and limitations in chronological resolution.

Research Background

Stamp seals and stamp seal impressions used to secure storerooms, vessels, sacks,

baskets, and other containers have been recovered from numerous archaeological sites across the Central Zagros. These include Tepe Giyan ([Contenau & Ghirshman, 1935](#)), Surkh Dum-i Luri in Kuhdasht ([Talai, 2013: 70](#); [Schmidt et al., 1989](#)), Seh Gabi in Kangavar ([Hamlin, 1973, 1974](#); [Henrickson, 1988](#)), Chogha Maran in Mahidasht ([Pittman, 2014](#); [Khayani & Niknami, 2020, 2023](#); [Renette et al., 2021](#)), the cemeteries of Hakalan and Parchinah in Pusht-i Kuh ([Haerinck & Overlaet, 1996](#)), Tepe Dehsavar in Kermanshah ([Pollock et al., 2020](#)), the sites of Kazabad, Bagh-e Sarab-e Kahreh, and Ban Hamaneh in Hulailan ([Mortensen, 1976](#)), Tepe Jameh Shuran in Mahidasht ([Khayani & Abdolahi, 2025](#)), Godin Tepe in Kangavar ([Young & Levine, 1974](#); [Weiss & Young, 1975](#); [Young, 2004](#); [Rothman & Badler, 2011](#)), Tepe Gheshlagh ([Sharifi & Motarjem, 2025](#)), Tepe Nad Ali Beig ([Bahranipoor, 2018](#)), Tepe Kalanan in Bijar ([Moucheshi et al., 2012](#)), Site 11 of the Talvar Dam Project ([Valipour et al., 2010](#)), and Tepe Tyalineh in Kuzaran ([Khosravi et al., 2024](#); [Khosravi, 2026](#)).

The contextual quality and chronological resolution of these assemblages vary considerably. Secure stratigraphic data are currently available primarily from Seh Gabi, Chogha Maran, Godin Tepe, Hakalan, and Parchinah, while Tepe Tyalineh has yielded securely dated administrative materials through ongoing excavations ([Khosravi, 2026](#)). Many other assemblages remain poorly stratified or derive from earlier excavations, requiring chronological attribution through comparative analysis with contemporaneous materials from western Iran and Mesopotamia.

Previous scholarship has generally examined Central Zagros glyptic materials within broader discussions of administrative development and interregional interaction across Southwest Asia. One of the earliest comprehensive studies was Mahmoud Rashad's doctoral dissertation, *The Development of Prehistoric and Protohistoric Stamp Seals in Iran*, published in 1990 as a supplement to the journal *AMI* ([Rashad, 1990](#)). Rashad analyzed stamp seals from across Iran—including those from the Central Zagros—using typological, technological, and iconographic approaches, situating them within broader chronological frameworks associated with the Ubaid, Uruk, and Jemdet Nasr periods through comparison with assemblages from Syria, Anatolia, and northern Mesopotamia.

Subsequent studies likewise emphasized supra-regional interaction and glyptic exchange. [Caldwell \(1976\)](#) explored connections linking Tepe Giyan, Tepe Gawra, and Susa during the Late Chalcolithic period, while [Teissier \(1987\)](#) examined wider glyptic interactions among Iran, Mesopotamia, Syria, Palestine, and Egypt during the fourth and third millennia BCE. [Henrickson \(1988\)](#) published the corpus of Early and Late Chalcolithic seals and seal impressions from Seh Gabi and interpreted the glyptic evidence of the Central Zagros within the broader socioeconomic and political networks of "Greater Mesopotamia". Similarly, [Pittman \(2001a\)](#) approached the glyptic traditions of the Central Zagros as part of wider interregional systems and suggested that varying degrees of stylistic similarity among assemblages may reflect differing forms and intensities of cultural interaction.

Although these studies made fundamental contributions to the study of Central Zagros glyptic traditions, they were necessarily shaped by the comparatively limited archaeological evidence then available and by broader interpretive models emphasizing supra-regional interaction. As a result, none of these studies directly addressed the long-term continuity of the Central Zagros stamp seal tradition. In recent years, newly recovered administrative materials (Pollock et al., 2020; Renette et al., 2021; Khosravi et al., 2024; Khosravi, 2026), together with ongoing reassessments of Chalcolithic and Early Bronze Age developments in western Iran (e.g., Renette, 2018; Renette et al., 2021), have substantially expanded the available evidence. These developments provide an opportunity to reconsider the continuity, transformation, and regional character of the Central Zagros stamp seal tradition from a broader and more critically contextualized perspective.

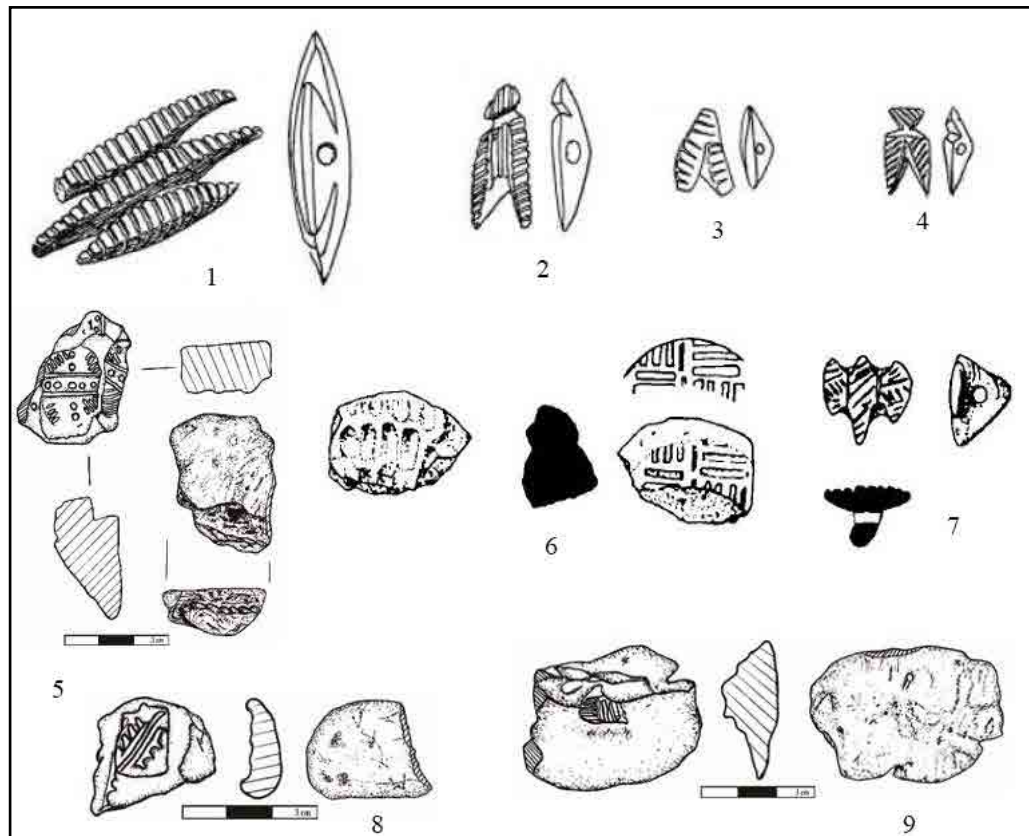


Fig. 2: Early Chalcolithic apotropaic pendants/stamp seals and seal impressions from Giyan (1–4; Herzfeld, 1933, fig. 13: EH TG 2686; 13: EH TG 2402; EH TG 2403; EH TG), Seh Gabi (6–7; Henrickson, 1988, table 1, fig. 2:SG 73–250; SG 73–100), and Chogha Maran (5, 8–9; Renette et al., 2021, pls. 28:1; 27:5; 27:7, drawing by Sahar Abdolahi).

Development of Stamp Seal Traditions in the Central Zagros Early Chalcolithic (5000–4600 BCE)

Stratigraphic and comparative evidence indicates that the earliest evidence for stamp seal production in the Central Zagros derives from Tepe Giyan, Seh Gabi, and Chogha Maran (see: Khayani, 2025, Tables 2–1, 2–2, and 2–7)¹. The available evidence includes

bird-shaped amuletic pendants (Fig. 2: 1–4, 7) as well as clay sealings bearing stamp seal impressions (Fig. 2: 5–6, 8–9). The glyptic assemblage from Seh Gabi includes both stamp seals and seal impressions (sealings), whereas Chogha Maran has yielded only seal impressions (see: Fig. 2). In contrast, the Giyan assemblage consists exclusively of stamp seals and/or amuletic seal-like objects, with no associated seal impressions.

It should be emphasized that, whereas the Seh Gabi and Chogha Maran materials derive from well-stratified contexts, the Giyan material published by Herzfeld is not securely stratified. Instead, it derives either from local acquisition or from limited sounding operations at the site, which complicates its contextual interpretation (Renette et al., 2021, pls. 27–28; Henrickson, 1988, fig. 2; Herzfeld, 1933, fig. 13).

These stamp seals and seal impressions, dating to the first half of the fifth millennium BCE, are associated with the Dalma cultural horizon, black-on-buff painted wares related to the Late Ubaid ceramic tradition of Mesopotamia, and the red-on-buff painted wares known as the Siahbid tradition (Renette & Mohammadi Ghasrian, 2020: 123–124). The impressions preserved on the clay sealings suggest the use of circular, oval, and rectangular stamp seals decorated with simple geometric motifs, including irregular hatching, crosses with quadrants filled by chevrons, parallel vertical, horizontal, or diagonal hatchings, and symmetrical zigzag patterns.

Comparison with seals from Susa, Bakun, Sialk, Hissar, Tepe Gawra, Tell Helawa, and Hamoukar demonstrates the existence of broad stylistic parallels linking the Central Zagros with neighboring regions during the Early Chalcolithic (Khayani, 2025, Tables 2–1 to 2–4 and 2–7; Renette, 2022: 146).

Late Chalcolithic 1–3 (4600–3700 BCE)

The assignment of stamp seals and seal impressions to the Late Chalcolithic 1–3 (4600–3700 BCE) is based on a combination of stratigraphic evidence from key Central Zagros sites, including Seh Gabi and Chogha Maran (Henrickson, 1988; Renette et al., 2021); associated ceramic assemblages from Dehsavar, Hakalan, and Parchinah (Pollock et al., 2020; Haerinck & Overlaet, 1996); and typological parallels in glyptic material from well-dated sequences across the Iranian Plateau and adjacent regions. These comparative sequences include Sialk, Hissar, Bakun, Susa, Jaffarabad, Tepe Gawra, Tell Helawa, and Hamoukar (Khayani, 2025, Tables 2–1, 2–2, 2–3, 2–4, and 2–7). Geometric motifs already attested in the Early Chalcolithic continue throughout this phase and become increasingly widespread (Fig. 3).

In addition to geometric imagery, anthropomorphic and zoomorphic motifs also became common during this period (Figs. 4–5). Such imagery appears at Giyan, Dehsavar, Hakalan, and Parchinah in the Central Zagros, as well as at Hajji Firuz, Qara Tepe of Qomrud, Susa, Tepe Gawra, Tell Asmar, and Tellul eth Thalathat (Voigt, 1989; Kaboli, ed., 2005; Amiet, 1972; Tobler, 1950; Rothman, 2002; Frankfort, 1935; Fukai et al., 1974). By contrast, assemblages from Sialk, Ghabristan, Hissar, and Bakun are

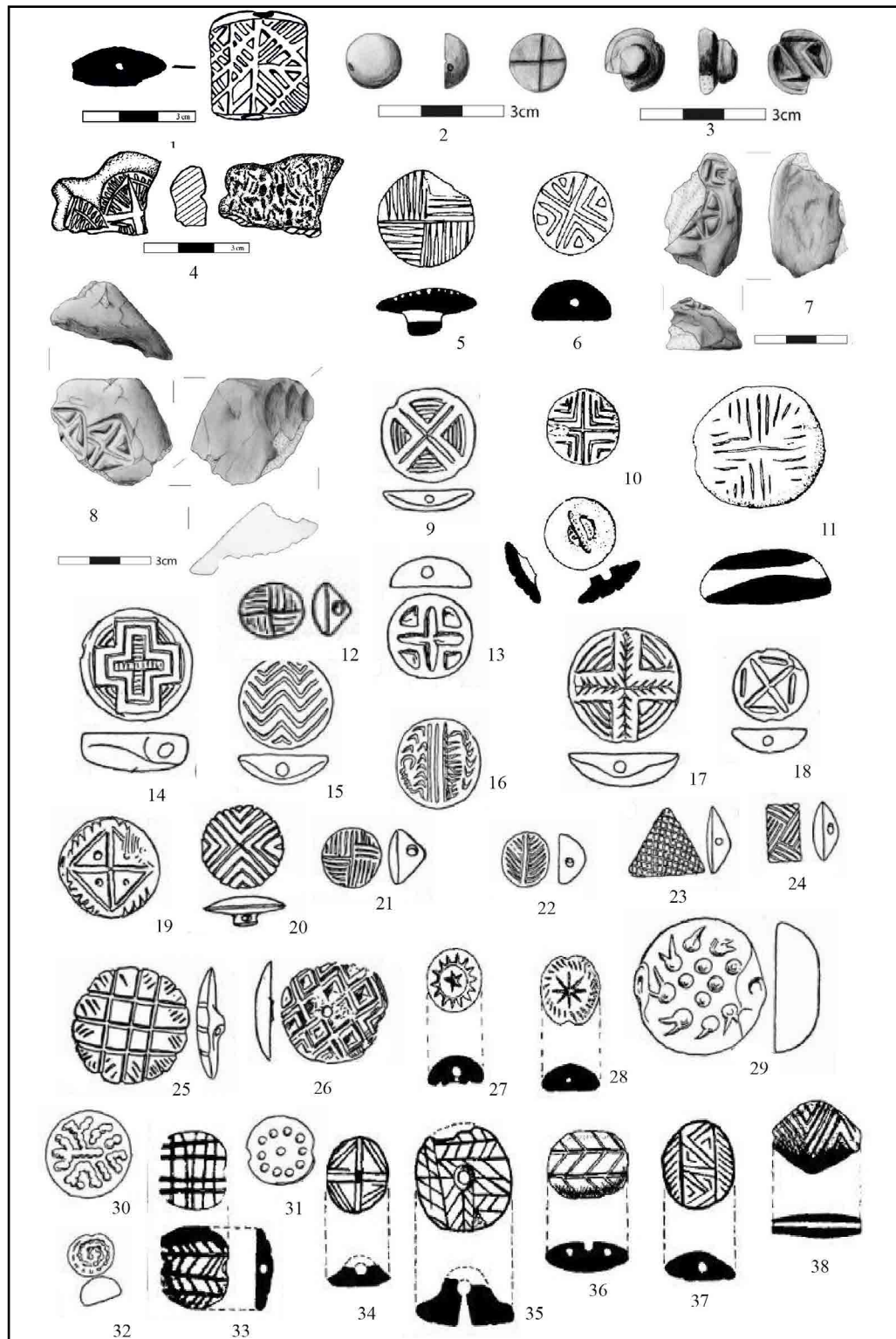


Fig. 3: Late Chalcolithic 1-3 stamp seals and seal impressions with geometric motifs from Chogha Maran (1, 4; Renette et al., 2021, pls. 26:3, 27: 3, drawing by Sahar Abdolahi), Dehsavar (2-3, 7-8; Pollock et al., 2020, figs. 4c:Ds-9; 4d:Ds-10; 2c:Ds-2; 2b: Ds-1), Seh Gabi (5-6, 10-11; Henrickson, 1988, figs. 2:SG 73-209; 3:SG 73-54; SG 73-180, SG 73-18), Giyan (9, 12-26, 29-32; Herzfeld, 1933, 16: EH TG 2359; 13: EH TG (IV 5 5. n); 16: EH TG 2684; 16:EH TG 2682; 18: TG 2679; 18: EH TG 2510; 16:EH TG 2683; 16:EH TG 2345; 15: EH TG 236i; 14:EH TG 2384; 13:EH TG 2387; 18: EH TG 2390; 13:EH TG 2392; 13:EH TG 2395; 14:EH TG 2381; 14:EH TG 2382; 28: EH TG 2347; 29: EH TG 2509; 27: EH TG2358; 29: EH TG 237i), and Hakalan and Parchinah (27-28, 33-38; Haerincx and Overlaet, 1996, figs. 56:5-6; 56:2; 85:3; 85:7; 56:3; 85:4; 56:1).

dominated primarily by geometric motifs (Ghirshman, 1938; Schmidt, 1937; Langsdorff & McCown, 1942; Alizadeh, 2006; Madjidzadeh, 2008).

Anthropomorphic motifs are particularly well represented at Tepe Giyan and include figures with elongated horned heads and claw like hands depicted in scenes of leaping, dancing, embracing, or interacting with animals (Fig. 4: 1–16). In some cases, the figures appear to hold staffs, daggers, or mace like objects. Similar motifs have previously been interpreted as representations of ritual specialists or shamanic figures within the broader Late Ubaid and Susa I glyptic traditions (Barnett, 1966; Porada, 2010: 67; Pittman, 2001a: 412–418; Hole, 1982; 2010).

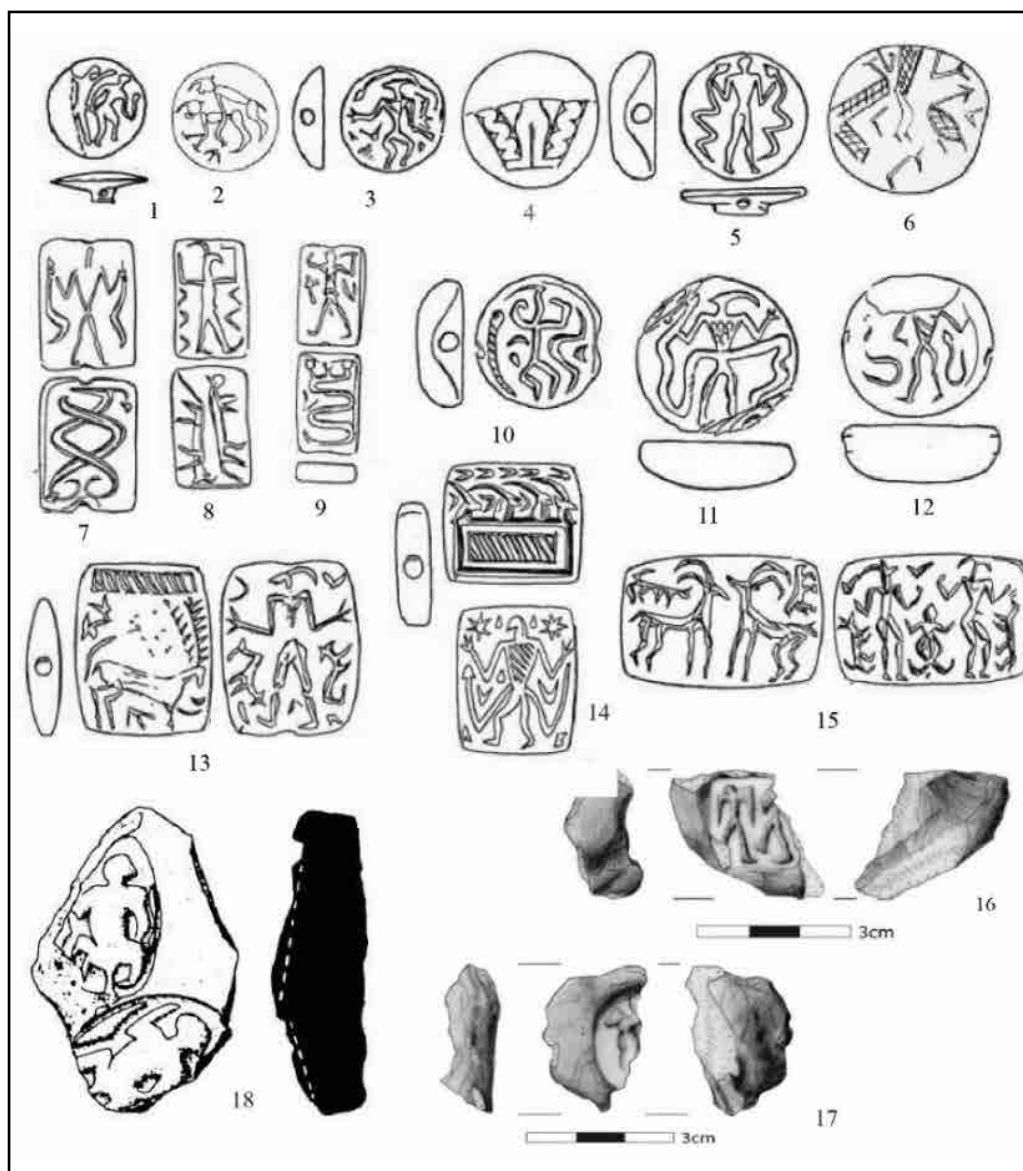


Fig. 4: Late Chalcolithic 1–3 stamp seals and seal impressions with anthropomorphic motifs from Giyan (1–15, Herzfeld, 1933, fig. 14:EH TG 2362; Contenau and Ghirshman, 1935, pl. 38:24; Herzfeld 1933, figs. 24:EH TG 2335; EH TG s. n; 14:EH TG 2352; Contenau and Ghirshman, 1935, pl. 38:36; Herzfeld 1933, fig. 25:EH TG 2340; EH TG 2375; EH TG 2377; 24:EH TG 2333; EH TG 233i; EH TG 2349; 25:EH TG 2506; EH TG 2505; EH TG 2373), Dehsavar (16–17, Pollock et al., 2020, fig. 4a:Ds–6; 4b: Ds–5), and Seh Gabi (18, Henrickson, 1988, fig. 1:SG 73–150).

Zoomorphic imagery recorded at Giyan, Seh Gabi, Hakalan, and Parchinah includes ibexes, cattle, snakes, lions, scorpions, leopards, birds, and fish arranged in both circular and linear compositions (Fig. 5; [Khayani, 2025, Table 1: 90–120, 133–144; Table 2: 4; Table 3: 5–9](#)). Several seals from Giyan depict scenes involving predatory animals, intertwined serpents, fenced animals, or combinations of geometric and animal motifs. Comparable imagery is particularly well attested at Susa I and Tepe Gawra XII–XI within the broader Late Ubaid and Susa I glyptic traditions ([Amiet, 1972; Tobler, 1950; Rothman, 2002](#)).

A number of seals from Giyan are engraved on both faces. One example depicts, on one side, a figure controlling snakes and animals and, on the reverse, domesticated animals enclosed within fenced compounds (Fig. 4: 13–14). Another seal shows anthropomorphic figures flanking a smaller hybrid figure on one face, while the reverse depicts pursuing animals (Fig. 4: 15). Such compositions suggest the emergence of increasingly complex symbolic and narrative imagery within regional glyptic traditions. The appearance of anthropomorphic, zoomorphic, and potentially narrative scenes represents a significant development from the predominantly geometric repertoire of earlier periods and demonstrates the growing diversity of visual expression within Central Zagros traditions.

Late Chalcolithic 4 (3700–3400 BCE)

Securely stratified Late Chalcolithic 4 stamp seals remain absent in the Central Zagros. This apparent absence should not necessarily be interpreted as evidence for a decline in the production and use of stamp seals but may instead reflect the limited availability of securely stratified contexts in the region. However, contemporaneous local stamp seal traditions characterized by simple geometric designs continued elsewhere on the Central Iranian Plateau, including at Sialk III: 6–7 and Tepe Alou ([Rashad, 1990, fig. 9: 398–399; fig. 10: 400–401, 404; Moghimi & Davoudi, 2020](#)).

Major transformations also occurred in Mesopotamian and Susiana glyptic traditions during the mid-fourth millennium BCE, which appear to have been only selectively incorporated into local Central Zagros administrative systems. These developments include the emergence of cylinder seals; zoomorphic and geometric stamp seals; increased use of drill carving; and the development of the so-called Baggy Style, characterized by thick and robust motifs ([Pittman, 2001a: 419–421](#)). Evidence for these developments in the Central Zagros remains comparatively limited. With the exception of a single unstratified cylinder seal from Tepe Giyan comparable to examples from Susa II and Middle Uruk contexts ([Amiet, 1971, fig. 43: 10; Amiet, 1972, pl. 20: 768; Pittman, 2001a, pl. 11.8: e](#)), unequivocal evidence for cylinder seal use in the Central Zagros first appears during the Late Chalcolithic 5 at Godin Tepe VI: 1 ([Weiss & Young, 1975](#)).



Fig. 5: Late Chalcolithic 1-3 stamp seals and seal impressions with animal motifs from Giyan (1-14, Herzfeld, 1933, figs. 22: EH TG 2330; EH TG 235i; EH TG 2339; EH TG 2504; EH TG 2677; EH TG 2332; 24:EH TG 2350; 22:EH TG 2503; EH TG 2612; 18:EH TG 2353; 24:EH TG 2678; 25: EH TG 2378; EH TG 2376; EH TG 2507), Dehsavar (16, 20, Pollock et al., figs. 3a: Ds-3, 3b: Ds-8), and Hakalan and Parchinah (15, 17-19, Haerinck and Overlaet, 1996, figs. 56:7, 8; 85:6, 8).

Two zoomorphic glyptic artifacts have been reported from the Central Zagros: a zoomorphic stamp seal from the Farash site of the Seymareh Dam and a zoomorphic stamp seal impression from Tepe Jameh Shuran in the Mahidasht (Khayani & Abdolahi, 2025; Niakan, 2015: 46). The Farash seal, although dated by Niakan to the late fourth and early third millennia BCE, finds close parallels among Late Chalcolithic 3-4 seals from Yorgan Tepe (Nuzi) in the Upper Tigris region and Tell Brak in the Khabur (Pittman, 2001, fig. 11.11b; fig. 11.20c). The Jameh Shuran seal impression has been dated to the Late Chalcolithic 3-4 based on parallels from Mesopotamia and Susiana.

Several drill-carved stamp seals and seal impressions from Giyan and Dehsavar find parallels in Late Chalcolithic 3–4 glyptic assemblages (Fig. 3: 29–30; Fig. 4: 17; [Khayani, 2025, Tables 2.1: 88–89; 2.3: 10](#)). These include dotted geometric designs and schematic anthropomorphic and zoomorphic motifs comparable to stamp seals from Susa ([Le Breton, 1957, fig. 18: 5–6, 8; Amiet, 1972, pls. 53–55](#)).

Three Baggy Style stamp seal impressions are currently known from Giyan, Seh Gabi, and Dehsavar. One example from Giyan preserves impressions from three different stamp seals on a single jar stopper (Fig. 5: 9). Comparable impressions occur at Susa, Hamoukar, and Tepe Gawra Level VIII ([Pittman, 2001a, fig. 11.9: d–e; Reichel, 2002, figs. 11, 16; Rothman, 2002, pl. 60: 2918, 2947, 2953](#)). Another example from Seh Gabi depicts a human figure beside a bow-like object (Fig. 4: 18), comparable to examples from Susa II and Sharafabad ([Amiet, 1972, pl. 3: 239; Wright et al., 1980, fig. 6: 2; Pittman, 2001a, figs. 11.9–11.10](#)). A third example from Dehsavar depicts vertically arranged large-bodied animals in the Baggy Style tradition (Fig. 5: 16), comparable to material from Sharafabad ([Wright et al., 1980, fig. 6: 3, 4, 7](#)). Nevertheless, in the absence of secure contextual data, the Giyan and Dehsavar examples can only be broadly assigned to the Late Chalcolithic 3–4 period. These examples suggest a limited and selective adoption of mid-fourth millennium BCE glyptic innovations in the Central Zagros.

Overall, while no securely stratified assemblages are currently available for the Late Chalcolithic 4, broader regional evidence suggests that local production cannot be ruled out. At the same time, the apparent scarcity of certain Late Chalcolithic 3–4 innovations—particularly cylinder seals—may partly reflect the current state of archaeological research rather than their actual absence. Evidence from Kani Shaie in the western Zagros foothills, where a numerical tablet bearing a cylinder seal impression has been recovered from a Late Chalcolithic 4 context ([Renette, 2024: 180, fig. 2](#)), indicates that cylinder seals had already reached parts of the Zagros Mountains during this period. Future investigations at both major regional centers and smaller contemporary settlements may therefore clarify the extent to which such administrative technologies were adopted and how they interacted with local traditions.

Late Chalcolithic 5 (3400–3100 BCE)

Evidence for glyptic production during the Late Chalcolithic 5 derives primarily from Godin Tepe and Tepe Giyan ([Khayani, 2025: Tables 2–1 & 2–5](#)). Apart from a single possible stamp seal from Godin VI:1 (Figs. 6: 1 & 7: 1), cylinder seals dominate the glyptic assemblages documented for this period, a pattern consistent with contemporary evidence from Susiana ([Khayani & Matthews, in press](#)). However, recently published evidence from Abu Fanduweh in Khuzeestan ([Alizadeh, 2026: 100, pl. 79: A & I](#)), including two Late Susa II bone stamp seals decorated with geometric motifs resembling those from Dehsavar and Tyalineh (see: Figs. 3: 8, 7: 6), suggests that stamp seals were also present during this period, although apparently in much smaller numbers than cylinder

seals. This pattern reflects the broader administrative transformation associated with Late Uruk and Late Susa II interaction networks, within which cylinder seals emerged as the dominant administrative technology.

Early Bronze Age I (3100–2800 BCE)

The Tepe Tyalineh assemblage provides the most significant evidence for stamp seal use during the Early Bronze Age I. The initial Tyalineh assemblage included 76 sealings collected from the site's surface (Khayani, 2025, Table 2–6; Khosravi et al., 2024). Both glyptic and ceramic comparisons date the Tyalineh assemblage broadly to 3100–2800 BCE (Khosravi, 2026; Khosravi & Khayani, in press).

The Tyalineh sealings encompass multiple glyptic traditions, including glazed steatite style, Proto-Elamite classic style, wheel-cut style, incised style, Proto-Elamite stamp seals, Arslantepe-style stamp seals, and stamp seals closely resembling earlier Chalcolithic traditions (Fig. 6: 2–8). Of the 65 legible sealings, 30 belong to the glazed steatite style, 13 to the wheel-cut style, 12 to the Proto-Elamite classic style, 3 to the incised style, 5 to Proto-Elamite and Chalcolithic-related stamp seal traditions, and 2 to the Arslantepe VIA style (Frangipane & Pittman, 2007: 94–96). Although indigenous stamp seal traditions represent only a minority of the Tyalineh assemblage, they are proportionally more common than at several contemporary Proto-Elamite centers, including Susa, Tall-i Malyan, Tepe Yahya, and Shahr-i Sokhta (Khayani, 2025, Table 3–3; compare Pittman, 1997), suggesting the persistence and continued importance of stamp seal traditions within Central Zagros administrative practices. Subsequent excavations at Tyalineh yielded more than 7,000 clay sealings, including numerous additional stamp seal impressions, confirming that the initial surface assemblage represented only a fraction of the site's administrative record (Khosravi, 2026).

In addition to Proto-Elamite stamp seal impressions closely comparable to examples from Tepe Sofalin, Tall-i Malyan, and Tepe Yahya (compare Fig. 6: 3, 5–6 with: Hessari & Yusefi Zoshk, 2010, fig. 3; Sumner, 1976, fig. 5c; Pittman, 2001b, fig. 10.4), several seal impressions from Tyalineh find close parallels with earlier stamp seal traditions from the Central Zagros and the Central Iranian Plateau (Fig. 7: 2–7). These include geometric motifs such as chevrons, rayed circles, and abstract animal imagery comparable to examples from Giyan, Susa I, Hissar, Sialk III, Tepe Yahya, and Chogha Maran (cf. Herzfeld, 1933, fig. 18: TG 2679; Amiet, 1972, pl. 3: 238; Schmidt, 1937, pls. XV, XXVIII; Pittman, 2001a, fig. 10.4; Renette et al., 2021, pl. 35: 4–7). The Tyalineh assemblage therefore demonstrates the coexistence of Proto-Elamite administrative practices and stamp seal imagery rooted in earlier regional traditions, suggesting continuity rather than abrupt replacement in Central Zagros glyptic traditions.

Early Bronze Age II (2800–2500 BCE)

Chogha Maran has yielded the most extensive Early Bronze Age II administrative

assemblage currently known from the Central Zagros. Both glyptic and ceramic comparisons date the assemblage to ca. 2800–2500 BCE (Renette et al., 2021). The assemblage comprises 149 sealings, including 12 stamp seals and stamp seal impressions and 137 cylinder seal impressions (Renette et al., 2021, Tables 18–19). Of the Chogha Maran stamp seal impressions, four examples can be securely attributed to the Early Bronze Age II (Fig. 6: 9–12). Unlike many of the Proto-Elamite stamp seal impressions from Tyalineh, the Chogha Maran stamp seal impressions display stronger affinities with earlier Late Chalcolithic 1–3 stamp seal traditions. The motifs include geometric

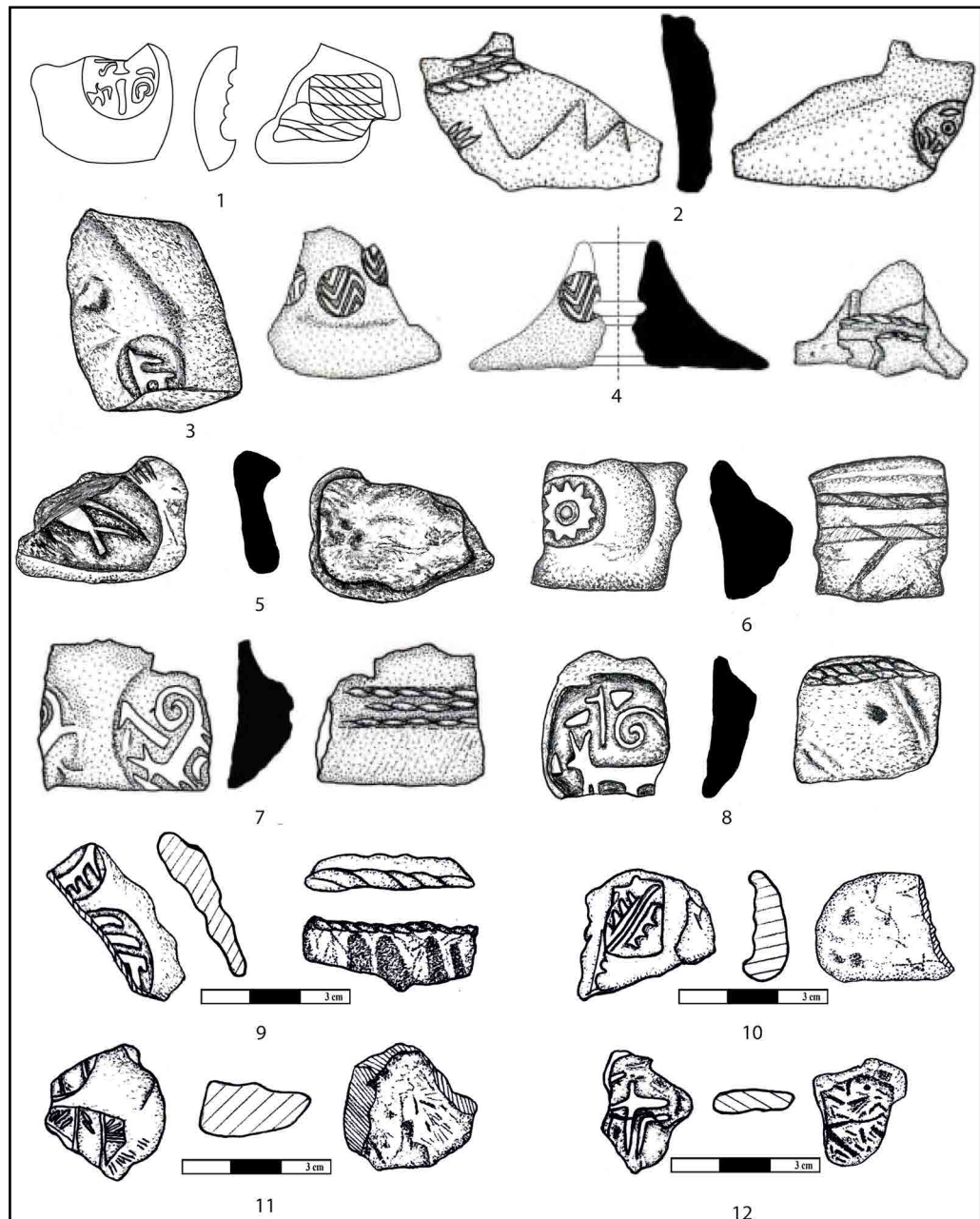


Fig. 6: Late Chalcolithic 5(?) and Early Bronze Age I–II stamp seal impressions from Godin Tepe (1 (?), Khayani and Matthews, in press, fig. 48:S327?, drawing by Ali Khayani), Tepe Tyalineh (2–8; Khosravi and Khayani, in press, table 1:37, 40, 45, 64, 20, 33–34, drawing by Sahar Abdolahi), and Chogha Maran (9–12, Renette et al., 2021, pls. 28:3, 27:5–4, 2) (drawing by Sahar Abdolahi).

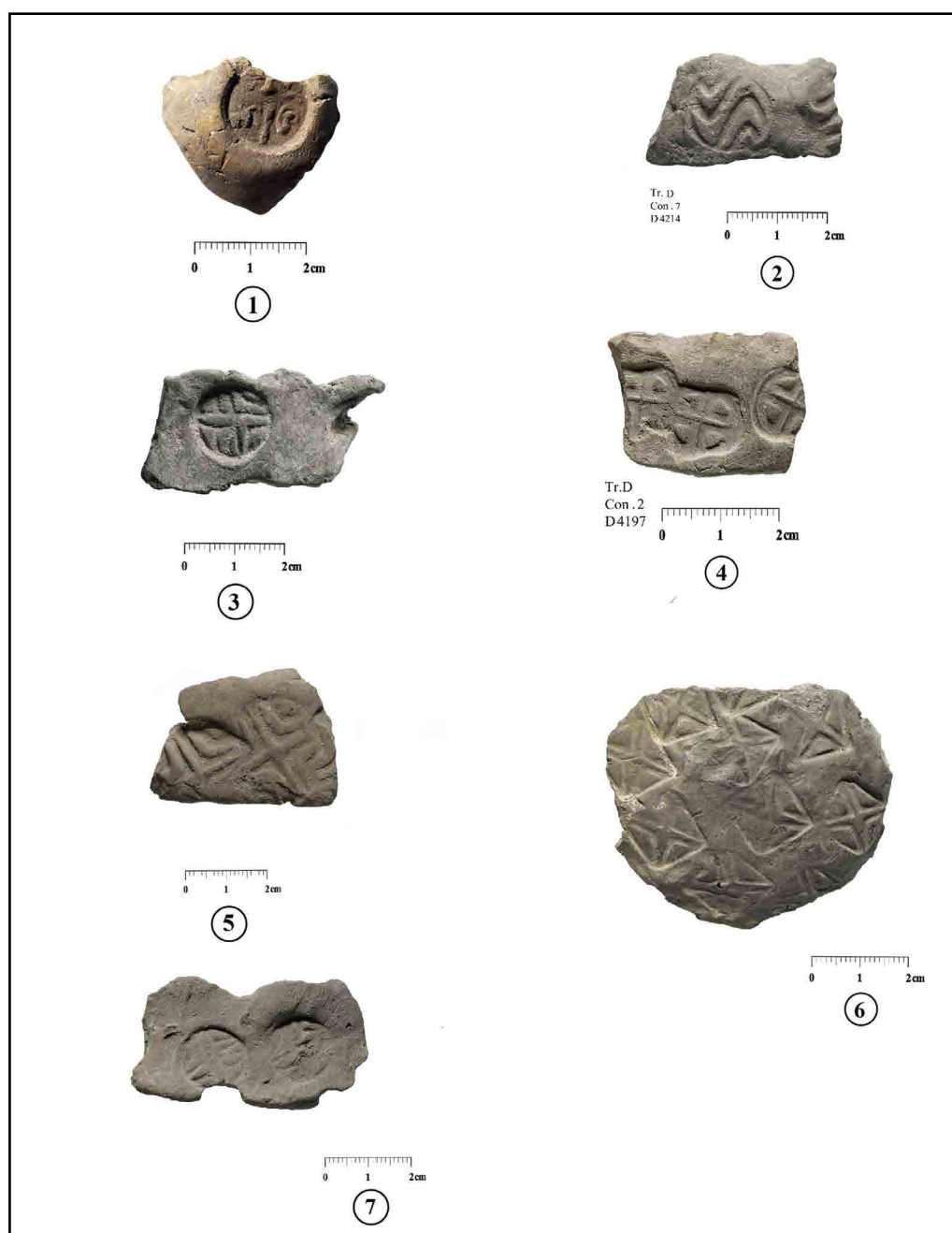


Fig. 7: Late Chalcolithic 5 (?) and Early Bronze Age I stamp seal impressions from Godin Tepe (1) and Tepe Tyalineh (2–7) (Photos by: Ludovica Lucentini (1) and Sara Fereidouni (2–7)).

crosses, zigzag designs, hatched quadrants, and schematic ibex imagery (compare Fig. 8: 1, 5, 6–7 with Figs. 3 and 5). These examples suggest that localized stamp seal traditions continued to circulate alongside cylinder seal administrative practices in the Central Zagros during the Early Bronze Age.

Discussion

The evidence reviewed above demonstrates that stamp seal production and use in the Central Zagros were attested from the Early Chalcolithic through the Early Bronze Age

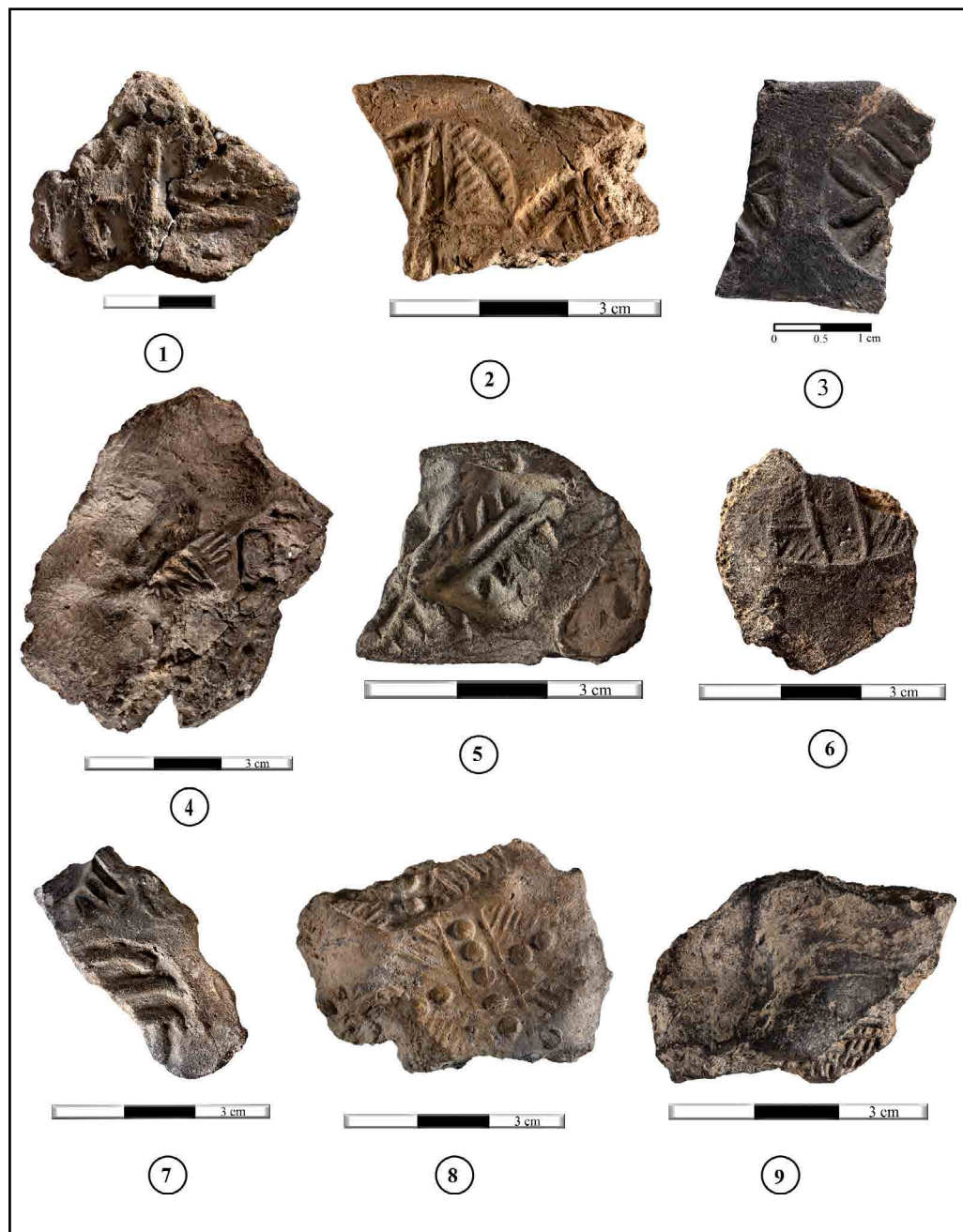


Fig. 8: Early Chalcolithic (4, 8–9), Late Chalcolithic (2), Early Bronze Age II (1, 5 (?), 6–7), and Iron Age (3) stamp seal impressions from Chogha Maran (photos by: Sara Fereidouni).

II. Until the publication of the Tepe Tyalineh assemblage, together with new material from Godin Tepe, Chogha Maran, and Dehsavar (Pollock et al., 2020; Renette et al., 2021; Khosravi et al., 2024; Khayani, 2025), securely stratified stamp seals in the region were limited to Seh Gabi, where Early Chalcolithic and Late Chalcolithic 1–3 stamp seals and seal impressions were recovered (Henrickson, 1988). A small number of stamp seal impressions had also been reported from Chogha Maran, although their archaeological contexts were not fully documented (Pittman, 2014, fig. 4). As a result, a chronological gap of roughly nine centuries appeared to separate the latest Chalcolithic stamp seals from the earliest Bronze Age examples (Pittman, 2014: 51).

This apparent hiatus led Pittman to propose that the Bronze Age stamp seals from Chogha Maran represented earlier Chalcolithic objects redeposited into later contexts through site formation processes and secondary reuse (Pittman, 2014: 51). The subsequent publication of excavation data from Chogha Maran supported this interpretation by demonstrating extensive truncation, leveling, and reworking of earlier deposits—conditions that could have facilitated the intrusion of earlier materials into later contexts (Renette et al., 2021: 43–44, pls. 17–19).

However, the accumulation of new evidence substantially alters this picture. The publication of stratified materials from Godin Tepe and, especially, Tepe Tyalineh, together with newly published glyptic evidence from Dehsavar, significantly reduces the proposed chronological gap between Chalcolithic and Early Bronze Age stamp seals (Pollock et al., 2020; Khosravi et al., 2024; Khosravi, 2026; Khayani & Matthews, *in press*). Several Early Bronze Age stamp seals display close typological and iconographic affinities with Late Chalcolithic 1–3 traditions, a pattern consistent with longer trajectories of local continuity than previously assumed.

The Tyalineh materials provide evidence for the use of stamp seals rooted in earlier Central Zagros traditions, predating the Early Bronze Age II evidence from Chogha Maran by several centuries (see: Khosravi, 2026; Renette et al., 2021). Significantly, a proportion of stamp seal impressions from Tyalineh—found together with Proto-Elamite cylinder and stamp seal impressions (Fig. 6: 3, 5–6)—resemble Late Chalcolithic seal impressions from the Central Zagros (compare Figs. 3 and 6–8), although the site lacks earlier Chalcolithic strata from which such materials could have been redeposited (Khosravi, 2026). Even though the Dehsavar materials derive from excavation contexts, the absence of a fully published stratigraphic report limits precise contextual evaluation of the seals and sealings. Nevertheless, the Dehsavar assemblage includes several Late Chalcolithic 1–3-type seals and seal impressions (cf. Fig. 4: 16), along with examples resembling stamp seal impressions from Tyalineh (compare Fig. 3: 2–3, 6–7 and Fig. 7: 2–7).

Additional evidence for the continued production and use of local stamp seals in the Central Zagros during the Early Bronze Age may be provided by the Surkh Dum-i Luri assemblage, where several stamp seals from the Iron Age sanctuary exhibit archaic stylistic characteristics (Talai, 2013: 70; Schmidt et al., 1989). Although there is currently no stratigraphic basis for assigning these seals to the Chalcolithic period, the sanctuary at Surkh Dum-i Luri is situated adjacent to a Bronze Age settlement (Rashidi Arzandeh, 2019), raising the possibility that some of these seals may derive from later prehistoric phases rather than Chalcolithic contexts.

On the basis of the available evidence, four explanatory models may be evaluated regarding the developmental trajectory of stamp seals in the Central Zagros:

1. reuse and redeposition of earlier seals,
2. discontinuity followed by reintroduction,

3. replacement by external glyptic traditions, and
4. relative continuity accompanied by transformation.

Reuse and Redeposition

Although redeposition clearly occurred at Chogha Maran, recent discoveries from Godin Tepe and Tepe Tyalineh weaken the argument that all Bronze Age stamp seals represent reused Chalcolithic artifacts. Particularly significant is the absence of clearly earlier Chalcolithic deposits at Tepe Tyalineh (Khosravi, 2026), which makes systematic reuse of much older objects less likely. Overall, while redeposition may explain part of the evidence, it cannot account for the full range of securely contextualized materials.

Discontinuity and External Reintroduction

A second possibility is that stamp seal traditions disappeared during the Late Chalcolithic and were subsequently reintroduced from neighboring regions. Evidence from the Central Iranian Plateau demonstrates continuity of Chalcolithic-style stamp seals into later periods (Rashad, 1990; Moghimi & Davoudi, 2020; Nokandeh & Hosseinzadeh Sadati, 2024). However, the strong cultural and ceramic connections between the Central Plateau and the Central Zagros during the Late Chalcolithic make a complete regional disappearance in the Zagros comparatively difficult to sustain (cf. Rothman & Badler, 2011; Alizadeh et al., 2013: 149–150; Roustaei & Azadi, 2017). Moreover, Early Bronze Age II assemblages from Chogha Maran suggest increasing regional localization associated with Trans-Tigridian corridor networks rather than renewed intensive interregional transmission (Renette et al., 2021: 41). The available evidence therefore does not strongly support a complete regional discontinuity followed by external reintroduction of the stamp seal tradition.

Replacement by Supra-regional Traditions

The Early Bronze Age witnessed the expansion of several supra-regional glyptic traditions, including Proto-Elamite and Arslantepe-related styles. These traditions are clearly represented within the Tyalineh assemblage. Nevertheless, local stamp seal traditions continued alongside them (see: Fig. 7: 2–7). The coexistence of multiple glyptic repertoires suggests selective adoption and administrative diversification rather than complete replacement of earlier local practices, indicating the persistence of local visual repertoires within emerging supra-regional administrative networks.

Relative Continuity Accompanied by Transformation

Recent evidence increasingly supports the continuity of stamp seal traditions in the Central Zagros from the Early Chalcolithic through the Early Bronze Age. However, this continuity did not involve the uniform survival of all components of the Chalcolithic glyptic repertoire. The earliest stamp seal traditions of the Central Zagros were

dominated by geometric motifs, whereas Late Chalcolithic 1–3 assemblages witnessed the appearance of increasingly elaborate anthropomorphic and zoomorphic imagery, including figures commonly interpreted as ritual specialists or shaman-like beings, predatory and horned animals, and other potentially narrative or symbolic compositions. Many of these motifs emerged within broader interaction networks linking the Central Zagros with Late Ubaid and Susa I-related traditions and declined with the contraction of these interregional networks.

By contrast, the stamp seal impressions currently known from the Early Bronze Age I–II are dominated by geometric designs that find their closest morphological and iconographic parallels among earlier geometric stamp seal traditions (see: Figs. 7–8). This pattern supports sustained local transmission rather than isolated revival. It is particularly visible at Tepe Tyalineh and Chogha Maran, where localized stamp seal traditions coexisted with broader Proto-Elamite glyptic traditions. Comparable continuity in stamp seal traditions on the Central Iranian Plateau further strengthens this interpretation ([Rashad, 1990](#); [Moghimi & Davoudi, 2020](#); [Nokandeh & Hosseinzadeh Sadati, 2024](#)).

At the same time, the scarcity of securely stratified Late Chalcolithic 4–5 stamp seal assemblages in the Central Zagros ([Khayani, 2025, Table 1–3](#)) suggests that part of the perceived discontinuity may derive from archaeological visibility and uneven recovery rather than genuine cultural interruption. Securely stratified materials remain exceptionally rare for the Late Chalcolithic 4, and as a center integrated into supra-regional administrative networks, the Godin VI: 1 glyptic assemblage should not automatically be regarded as representative of the full range of administrative practices across the Central Zagros as a whole. Smaller contemporary settlements may have maintained locally embedded administrative traditions that are either poorly documented or absent from the currently available archaeological record. Nevertheless, the uneven distribution of securely stratified glyptic assemblages, particularly for the Late Chalcolithic 4–5, means that future excavations may substantially refine the chronology and developmental trajectory proposed here.

Overall, the developmental trajectory of stamp seals in the Central Zagros suggests that neither a complete rupture in the Late Chalcolithic nor a simple model of external replacement adequately accounts for the available evidence. Conversely, a model of uninterrupted and uniform continuity is also difficult to sustain given observable shifts in style, imagery, and administrative associations over time. The accumulated evidence instead supports a model of relative continuity, in which stamp seal traditions persisted in locally embedded forms while undergoing stylistic, iconographic, and functional transformations within changing administrative networks.

The apparent decline of stamp seals and seal impressions in the Central Zagros, particularly during the Late Chalcolithic 4–5 (3700–3100 BCE), is therefore more plausibly explained by uneven archaeological sampling, shortcomings of earlier

excavations, incomplete publication of archaeological data, and chronological uncertainties than by a genuine cessation of the tradition. As a further implication of this interpretation, some of the currently unstratified stamp seals and seal impressions from sites such as Giyan and Dehsavar may require chronological reassessment. Given their typological similarities to securely dated assemblages from Tyalineh and Chogha Maran, a Late Chalcolithic 4–5 or Early Bronze Age I–II attribution for at least part of these materials cannot be ruled out.

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Author Contribution

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

Conflict of Interest

In accordance with ethical publication standards, the authors declare that they have no conflicts of interest, either personal or financial, that could have influenced the content or conclusions presented in this research.

Endnote

1. The earliest stratified stamp seal impression currently known from Iran comes from Tepe Khaleseh in northwestern Iran, and dates to ca. 6000 BCE (Valipour et al., 2013, figs. 11.39–11.40).

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سنت مهرهای استامپی اولیه در زاگرس مرکزی (۲۵۰۰-۵۰۰۰ پ.م.): گسست یا تداوم؟

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چکیده

مهرهای استامپی از پایدارترین اجزای سنت‌های اداری زاگرس مرکزی به‌شمار می‌روند. با این حال، ناهمگونی داده‌های باستان‌شناسی و کمبود شواهد دارای لایه‌نگاری مطمئن، به‌ویژه برای اواخر هزاره چهارم و اوایل هزاره سوم پیش‌ازمیلاد به بحث‌های جالب توجهی درباره تداوم یا گسست این سنت‌ها دامن زده است. این پژوهش با بهره‌گیری از داده‌های تازه منتشر شده از: تپه تیلینه، گودین تپه، چغاماران و تپه دهسوار، سیر تحول سنت مهرهای استامپی در زاگرس مرکزی در فاصله حدود ۵۰۰۰ تا ۲۵۰۰ پ.م. را در چارچوب یک گاهنگاری منطقه‌ای به‌روز بازنگری می‌کند. پژوهش از طریق بررسی تطبیقی سبک، نگاره‌شناسی و بافت باستان‌شناسی مهرها و اثرمهرهای استامپی، تفسیرهای مختلف درباره تحول سنت‌های اداری در این منطقه را ارزیابی می‌کند. شواهد نشان می‌دهد که سنت مهرهای استامپی از دوره مس‌وسنگ قدیم (۵۰۰۰-۴۶۰۰ پ.م.) تا مس‌وسنگ جدید ۱-۳ (۴۶۰۰-۳۷۰۰ پ.م.) در زاگرس مرکزی رواج داشته و ضمن تحولات بومی، با شبکه‌های فرمانطقه‌ای نیز در تعامل بوده است؛ هم‌چنین پس از یک شکاف ظاهری در شواهد مربوط به مس‌وسنگ جدید ۴-۵ (۳۷۰۰-۳۱۰۰ پ.م.)، این سنت در عصر مفرغ قدیم (۳۱۰۰-۲۵۰۰ پ.م.) نیز تداوم یافته است؛ بنابراین، هرچند ساخت و استفاده از مهرهای استامپی در اواخر هزاره چهارم پیش‌ازمیلاد تحت الشعاع مهرهای استوانه‌ای و فناوری‌های اداری فرمانطقه‌ای قرار گرفت، سنت مهرهای استامپی زاگرس مرکزی در عصر مفرغ قدیم هم‌چنان به حیات خود ادامه داد. تحلیل مدارک موجود نشان می‌دهد که این شکاف ظاهری بیش از آن‌که ناشی از وقفه‌ای واقعی در تولید و استفاده از مهرهای استامپی باشد، نتیجه رویت‌پذیری و شرایط بقای مواد فرهنگی و دامنه و دقت محدود کاوش‌های باستان‌شناسی در محوطه‌های کلیدی منطقه است. نتایج این پژوهش از الگویی مبتنی بر تداوم نسبی همراه با تحول سبکی، نگاره‌شناسی و اداری در سنت مهرهای استامپی زاگرس مرکزی حمایت می‌کند. این یافته‌ها نقش فعال جوامع زاگرس مرکزی در شکل‌گیری و تحول شیوه‌های اداری را برجسته می‌سازد و در بحث‌های گسترده‌تر درباره تداوم فرهنگی، برهم‌کنش‌های فرمانطقه‌ای و توسعه نهادهای اداری و سیاسی در جنوب غرب آسیا در دوران پیش‌ازتاریخ سهیم می‌شود.

کلیدواژگان: زاگرس مرکزی، مس‌وسنگ، مفرغ قدیم، سنت مهرهای استامپی، فنون مدیریت، تداوم فرهنگی، برهم‌کنش‌های فرمانطقه‌ای.

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