



ARTICLE

## Tapeh Tyalineh: a proto-Elamite administrative institution on the Great Khorasan Road, Kermanshah, Western Iran

Shokouh Khosravi<sup>1\*</sup>, Sajjad Alibaigi<sup>2</sup>, Mostafa Doosti<sup>3</sup>, Holly Pittman<sup>4</sup>, Naser Aminikhah<sup>5</sup> and Ali Khayani<sup>6</sup> 

<sup>1</sup>Department of Archaeology, Tarbiat Modares University, Tehran, Iran, <sup>2</sup>Department of Archaeology, Razi University, Kermanshah, Iran, <sup>3</sup>Cultural Heritage, Handicraft and Tourism Office of Kermanshah, Iran, <sup>4</sup>History of Art Department, University of Pennsylvania, Pennsylvania, the United States of America, <sup>5</sup>Department of Archaeology, Razi University, Kermanshah, Iran and <sup>6</sup>Department of Archaeology, University of Tehran, Tehran, Iran

\*Corresponding author. Email: [shokouh.khosravi@gmail.com](mailto:shokouh.khosravi@gmail.com)

### Abstract

The Mahidasht region is a vital cultural sphere on the Great Khorasan Road that has provided substantial evidence for administrative activity, which is considered to be an indicator of economic and political complexity in late prehistoric societies. This article discusses a corpus of bureaucratic artefacts from the site of Tapeh Tyalineh in the Kouzaran plain in the north of Mahidasht, including 52 jar sealings and 12 door sealings. The artefacts were found during the recent surveys conducted by two of the authors at Tapeh Tyalineh after reports were received of illegal diggings at the site by villagers who had used its soil to plaster the roofs of their houses and to level and cultivate their farmland. Tyalineh seal impressions are studied here in terms of style and iconography in order to date the corpus of administrative artefacts. Furthermore, applying a functionalist approach, the artefacts are examined to answer questions regarding the nature and function of the site. The results suggest that the corpus dates to the proto-Elamite era. The significance of the door sealings, as the most important artefact type from Tyalineh, is that at least a part of the site was devoted to administrative affairs, which probably involved holding certain commodities in rather small closed-mouthed jars and then securing them behind locked doors. The administrative technology not only at Tyalineh but also at Chogha Maran and Dehsavar in Mahidasht and Godin VI:1 in Kangavar attest to well-established Early Bronze Age administrative and economic institutions along the Khorasan Road in the Central Zagros, which were involved in interregional commercial interactions.

**Keywords:** Mahidasht; Tapeh Tyalineh; seal impression; administrative function; proto-Elamite era

In the Central Zagros and the areas of the Great Khorasan High Road, in particular the Mahidasht region, there are many areas of considerable importance for reconstructing the history of the Early Village Period to the Late Sassanian Era. Surveying only a half of the target region of the ‘Mahidasht Project’ resulted in the identification of 550 ancient sites related to a long time span, from the Paleolithic to the Islamic periods, some of

which were large and important centres.<sup>1</sup> The Mahidasht region has rich agricultural lands and water resources and is one of the most vital and fertile agricultural plains in Iran. It is crossed by significant communication routes, especially the Great Khorasan High Road, the main trade route in the region. In contrast to all these advantages for human occupation, the amount of archaeological fieldwork undertaken in this region is quite limited and the results of these efforts have not yet been thoroughly published. Therefore, the Mahidasht region has remained largely unknown in terms of its administrative, economic, and political complexities. However, the discovery of large and small sites of the Late Prehistoric and Iron ages in the region, some of which would have covered an area of around 60 hectares,<sup>2</sup> demonstrates that settlement in the valley consisted of a hierarchy, ranging from villages and rural settlements of half a hectare to large towns, and from sedentary agricultural societies to mobile pastoralists. In his PhD dissertation, Steve Renette has referred to the formation of large sites and centres in the Mahidasht region in the fourth millennium BC with a wealth of cultural materials related to Mesopotamia, some of which might be similar to the Godin VI settlement.<sup>3</sup>

The environmental diversity of the Mahidasht region and its surrounding highlands sets the stage for diverse and complementary subsistence systems that are reflected in the size, location, and bulk of deposited strata, as well as in the material culture of the sites. Based on the results of archaeological fieldwork and in particular on the administrative artefacts such as seals and sealings, it can be deduced that there were vital sites and administrative centres involved in economic activities and trade relations in the Mahidasht region. Until recently, however, the significance of these sites was unknown, and it was not possible to demonstrate to what extent such sites had developed in terms of economic and political complexities or cultural and economic interactions. Recent examination and interpretations of the artefacts from earlier excavations indicate that some of these sites, such as Dehsavar, were engaged in interregional interactions with northern Mesopotamia;<sup>4</sup> additionally, judging from the sealings recovered there, Chogha Maran also had an administrative function.<sup>5</sup> The findings of Dehsavar belong to the Late Fifth and Early Fourth Millennium BC and Chogha Maran administrative artefacts are dated to the Late Fifth and Early Third Millennium BC.<sup>6</sup> Therefore, at least based on the

<sup>1</sup> L. D. Levine, 'Archaeological investigations in the Mahidasht, Western Iran-1975', *Paléorient* 2.2 (1974), pp. 487-490; L. D. Levine, 'Survey in the province of Kermanshah, 1975, Mahidasht in the prehistoric and early historic periods', in *Proceedings of the 4th Annual Symposium on Archaeological Research in Iran*, (ed.) F. Bagherzadeh (Tehran, 1976), p. 286; S. Manhoubi, 'The archaeology of the Mahidasht region' [in Persian], in *Eighty Years of Iranian Archaeology*, (eds) Y. Hassanzadeh and S. Miri (Tehran, 2012), p. 367.

<sup>2</sup> Levine, 'Survey in the province of Kermanshah', p. 290.

<sup>3</sup> Steve Renette, 'Along the Mountain Passes: Tracing Indigenous Developments of Social Complexity in the Zagros Region During the Early Bronze Age (ca. 3500-2000 BCE)', (unpublished PhD dissertation, University of Pennsylvania, 2018), pp. 135-136, 316-320.

<sup>4</sup> S. Pollock, R. Bernbeck and Ch. Kainert, 'Seal and sealings from Dehsavar', in *Pathway through Arslantepe. Essays in Honour of Marcella Frangipane*, (eds) F. Balossi Restelli, A. Cardarelli, G. M. Di Nocera, L. Manzanilla, L. Mori, G. Palumbi and H. Pittman (Roma, 2020), pp. 379-389.

<sup>5</sup> A. Khayani and K. Niknami, 'Early Bronze Age administrative organization at Chogha Maran, the Mahidasht: a hypothesis' [in Persian], *Journal of Archaeological Studies* 11.2 (2019), pp. 97-116; A. Khayani and K. Niknami, 'Early Bronze Age clay sealings from Chogha Maran, the West Central Zagros: a preliminary analysis', *Journal of Near Eastern Studies* 79.1 (2020), pp. 89-98; A. Khayani and K. Niknami, 'More Early Bronze Age seal impressions from Choga Maran, Western Central Zagros', *IRAN* (in press), doi: 10.1080/05786967.2020.1847000.

<sup>6</sup> Pollock et al., 'Seal and sealings', pp. 379-389; H. Pittman, 'Chogah Maran in the Central Zagros: the glyptic art of the Early Bronze', in *Proceedings of the 8th International Congress on the Archaeology of the Ancient Near East*, 30 April-4 May 2012. Vol. ii, *Excavation and Progress Reports Poster*, (eds) P. Bieliński, M. Gawlikowski, R. Koliński, D. Ławecka, A. Sołtysiak and Z. Wygnańska (Wiesbaden, 2014), pp. 367-382; Renette, 'Along the mountain passes'; Khayani and Niknami, 'Early Bronze Age'; S. Renette, A. Khayani and L. D. Levine, 'Chogha Maran: a local center of the Chalcolithic and Early Bronze Age in the central Zagros', *Iranica Antiqua* 56 (2021), pp. 1-169.

evidence of administrative technology, it can be suggested that there were political and economic institutions—or at least organised commercial exchange—in this region in the mentioned periods. However, it should not be forgotten that in the Bronze Age, and in particular during the Iron Age, we are dealing with some crucial sites in the region that, according to historical texts, represented various forms of political and economic control.<sup>7</sup> The discovery of a cuneiform tablet and numerous Bronze and Iron Age seals and sealings at Tapeh Kheibar,<sup>8</sup> as well as new findings unearthed at Quwakh Tapeh (Qubaq Tapeh) in the Kouzaran plain,<sup>9</sup> indicate the continuity of economic and political complexities in the Mahidasht region. Its role and importance will be more clearly elaborated through a careful examination of historical texts and complementary exploration of corresponding material culture and settlement patterns of the region.

Not only can the new proto-Elamite finds from Tapeh Tyalineh contribute to the significance and the role of the site in the Mahidasht settlement system, it has also presented a new corpus of administrative artefacts that helps to fill the gap of archaeological evidence related to the existence of political-economic institutions between the Early Fourth and Early Third Millennium BC at Dehsavar and Chogha Maran. Consequently, these new finds provided us with a better and more comprehensive understanding of the development of administrative institutions, and political and economic management in the Mahidasht region. The variety of new artefacts retrieved from Tapeh Tyalineh (Figure 1) provides us with an opportunity to study not only the late prehistoric administrative institutions in the region, but also its cultural connections and interregional interactions through an investigation of the style and iconography of the unearthed seal impressions.

### Administrative institutions from the Fifth to the Third Millennium BC in Iran

As early as the sixth millennium BC the societies of the Iranian Plateau approached the complexity and development of stratified societies. The existence of a socio-economic hierarchy is reflected in settlement patterns, temples, specialised pottery production, chipped-stone industries, and the production and exportation of metal objects and semi-precious stones, as evidenced in large part at the sites on the Iranian Central Plateau such as southern Sialk, Ghabristan, Hissar, Arisman, Ozbaki, and Tapeh Sofalin.<sup>10</sup> Socio-economic complexities reflected in seals and sealings are more conspicuous in southwestern Iran than the Northwest, the Central Plateau, and the Central Zagros. Except for Giyan<sup>11</sup> and Chogha

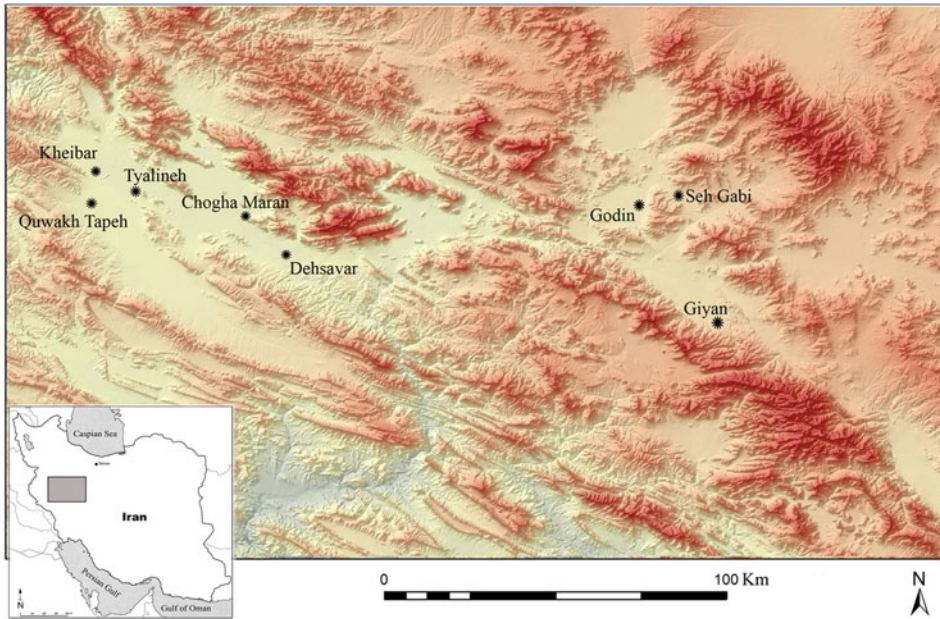
<sup>7</sup> For example, some of the Iron Age III rulers of the region were called 'bēl āli' or 'city lord'. See K. Radner, 'Assyria and the Medes', in *The Oxford Handbook of Ancient Iran*, (ed.) D. T. Potts (Oxford, 2013), pp. 442–456; H. Gopnik, 'The median citadel of Godin Tape period II', in *On The High Road: The History of Godin Tepe Iran. Bibliotheca Iranica, Archaeology Art and Architecture series 1*, (eds) H. Gopnik and M. S. Rothman (Costa Mesa, 2011), pp. 285–364.

<sup>8</sup> S. Alibaigi and N. Brisch, 'Report of the first season of excavation of Razi University and University of Copenhagen at Tapeh Kheibar of Rawansar, Kermanshah province', *The 17th Annual Symposium on Iranian Archaeology. The 2018's Short Articles* [in Persian], (eds) R. Shirazi and Sh. Hourshid (Tehran, 2019), pp. 924–930.

<sup>9</sup> S. Alibaigi, 'Report of the first season of archaeological research at Quwakh Tapeh (Qubaq Tapeh) of Kouzaran, Kermanshah Province', report prepared for Archive of the Iranian Center for Archaeological Research, unpublished, 2021; S. Alibaigi, J. McGinnis, N. Brisch, L. D. Levine, I. Rezaei and B. Ghanbari 'Sargon II in the Mahidasht: new evidence from Quwakh Tapeh, Kermanshah', *Zeitschrift für Assyriologie* 113.1 (2023). <https://doi.org/10.1515/za-2023-0004>.

<sup>10</sup> S. Alibaigi and Sh. Khosravi, 'Some socio-economic evidence from Iron Age societies of the Iranian Central Plateau', *IRAN* 42 (2014), pp. 53–64.

<sup>11</sup> E. Herzfeld, 'Aufsätze zur altorientalischen Archaologie', *Archaologische Mitteilungen aus Iran* 5 (1932/33), pp. 80–104; E. Herzfeld, *Iran in the Ancient East* (London and New York, 1941); J. Contenau and R. Ghirshman, *Fouilles du Tépé Giyan près de Néhavend 1931 et 1932* (Paris, 1935); M. Rashad, *Die entwicklung derv or-und Frühgeschichtlichen stampelsiegel in Iran*, *Archaologische Mitteilungen aus Iran, Ergänzungsände* 13 (Berlin, 1990).



**Figure 1.** The location of Tapeh Tyalineh and other sites of the Central Zagros. Source: Courtesy of Saman Heydari-Guran.

Maran,<sup>12</sup> with their substantial excavated bodies of seals and sealings, in other sites, such as Seh Gabi,<sup>13</sup> such administrative artefacts are rare in the Central Zagros. In fact, it has been impossible to study these complexities in the Central Zagros highlands due to the scarcity of the evidence. The focus of archaeological excavations in later deposits in these areas has only rarely brought to light evidence on and understanding of the development and dynamics of the highland societies in terms of commercial interactions, craft specialisations, and the complexities of socio-economic relations.

Beginning in the Late Fifth Millennium BC, the earliest administrative evidence appears in archaeological finds. It reflects the control of resources by an individual, or a group of individuals or their contacts, on the process of economic activities.<sup>14</sup> However, it must be acknowledged that there is rare and sparse evidence for formal political institutions before the development of archaic states in Iran. Among the archaeological evidence from Iranian sites, there is none that is comparable to the seals and sealings that provide proxy information for the procedures through which exchange was managed nor the role of individuals in control of mercantile activities. Among the administrative artefacts, door sealings provide vital records as they are dependable evidence of control mechanisms beyond simple reciprocation between individuals.<sup>15</sup> It has been argued that the authority

<sup>12</sup> Pittman, 'Chogah Maran'; Khayani and Niknami, 'Early Bronze Age'; Khayani and Niknami, 'More Early Bronze Age'; Renette *et al.*, 'Chogha Maran'.

<sup>13</sup> E. Henrickson, 'Chalcolithic seals and sealings from Seh Gabi, central western Iran', *Iranica Antiqua* 23 (1988), pp. 1–19.

<sup>14</sup> A. Alizadeh, *The Origins of State Organizations in the Prehistoric Highland Fars, Southern Iran Excavations at Tell-e Bakun*, (Chicago, 2004).

<sup>15</sup> See P. Charvát, 'The backs of some sealings from Nineveh 5', *Iraq* 67.1 (2005), pp. 391–397. For different opinions regarding the importance of door sealings over container sealings, see Khayani and Niknami, 'Early Bronze Age', pp. 96–97. Others have suggested that the door-sealing to container-sealing ratio is rooted in other factors,

and rules embedded within the society by the bureaucratic management would have guaranteed the safety of the contents of a storage unit, rather than the door sealing itself, which could have easily been broken if such an action would not result in serious consequences.<sup>16</sup> Therefore, these bureaucratic mechanisms were more complicated than control over personal property. They required individuals to be accountable for their actions, because it was the feasible guarantee of obedience to the authorities and the rules that made the safeguarding and management of these contents practical and meaningful in such an organisation.<sup>17</sup> It makes sense to assume that door sealings were applied by the management, who recorded the movement of certain special commodities kept in the storage facilities. Therefore, the appearance of door sealings in the archaeological record may be taken as proxy evidence for the development of administrative control as well as the management and monitoring of the procedures and rules of access to certain storage facilities by a group of individuals involved in economic relations and commercial interactions. Thus, it seems that the administrative artefacts found at Bakun, especially the door sealings, indicate that the economy had moved beyond simple exchange, and it may attest to the development of political/economic institutions before the formation of states in southwestern Iran. Although excavations at Bakun have yielded the earliest evidence for this activity, it is not the only attestation of record-keeping and management procedures. Door sealings and other types of sealing practices are also known at Susa,<sup>18</sup> Chogha Mish,<sup>19</sup> Qoli Darvish,<sup>20</sup> Tapeh Sofalin,<sup>21</sup> Shar-i Sukhta,<sup>22</sup> Chogha Maran,<sup>23</sup> and Dehsavar.<sup>24</sup> The evidence attests to organised economic exchange, as well as the development of certain spaces (storage facilities and administrative sectors) and structures for the management and control of transactions and receipts. Such facilities have been recognised in a few sites where clay sealings were baked, kept, and archived<sup>25</sup> in order to prevent unauthorised access to the contents of sealed store

---

for example, discarded elements, type and nature of the contents of the sealed objects, differences in administrative procedures, and accidents of discovery; see for example: C. Reichel, 'Seals and sealings at Tell Asmar: a new look at an Ur III to Isin/Larsa Palace', in *Seals and Seal Impressions. Proceedings of the XLVe Rencontre Assyriologique Internationale*, vol. ii, (eds) W. W. Hallo and I. J. Winter (Cambridge, MA, 2001), p. 109.

<sup>16</sup> A. Alizadeh, 'The convergence of oppositional and complementary subsistence strategies in prehistoric southwestern Iran' [in Persian], *Journal of Iranian Archaeology* 3 (2012), p. 66.

<sup>17</sup> *Ibid.*

<sup>18</sup> P. Amiet, *Glyptique Susienne (Mémoires de la Délégation archéologique en Iran 43)* (Paris, 1972).

<sup>19</sup> P. Delougaz and H. Kantor, *Chogha Mish: First Five Seasons of Excavation 1961-1971. Vol. I, Part 2: Plates*, (ed.) A. Alizadeh (Chicago, 1996).

<sup>20</sup> Sh. Aghili Niaki, 'Computational documents related to the economic administrative in Qoli Darvish II' [in Persian], in *The Archaeology and History of Qom*, (ed.) S. Sarlak (Qom, 2011) pp. 147-226; A. Alizadeh, S. Sarlak and S. Aghili, 'Highland-lowland interaction in the late 4th and early 3rd millennium BCE: the evidence from Qoli Darvish', *Archäologische Mitteilungen aus Iran und Turan* 45 (2013), pp. 149-168.

<sup>21</sup> M. Hessari and R. Yousefi Zoshk, 'The emergence of pre-governmental institution in Central Iranian Plateau: ruling lords in the proto-Elamite period at Pishva's Tepe Sofalin' [in Persian], *Journal of Archaeological Studies* 1.2 (2010), pp. 1-22.

<sup>22</sup> P. Ferioli, E. Fiandra and S. Tusa, 'Stamp seals and the functional analysis of their sealings at Shahr-i Sokhta II-III (2700-2200 B. C.)', in *South Asian Archaeology 1975*, (ed.) J. E. Lohuizen-de Leeuw (Leiden, 1979), pp. 7-26; M. Ameri, 'Who holds the keys? Identifying female administrators at Shahr-i Sokhta', *IRAN* 60.1 (2022), pp. 1-38; personal communication with Seyed Mansur Seyed Sajjadi.

<sup>23</sup> Khayani and Niknami, 'Early Bronze Age'; Renette et al. 'Chogha Maran'.

<sup>24</sup> Pollock et al., 'Seal and sealings'.

<sup>25</sup> P. Ferioli and E. Fiandra, 'Archive techniques and methods at Arslantepe', in *Archives before Writing*, (eds) P. Ferioli, E. Fiandra, G. G. Fissore and M. Frangipane (Roma, 1994), pp. 154-163; A. Alizadeh, 'Social and economic complexity and administrative technology in a late prehistoric context', in *Archives before Writing*, (eds) Ferioli et al., pp. 35-55; M. Frangipane (ed.), *Arslantepe Cretulae. An Early Centralised Administrative System before Writing (Missione Archeologica Italiana nell'Anatolia Orientale, Arslantepe V)* (Roma, 2007).



rooms and containers and to monitor and control imports and exports. One might expect that the sites in which those institutions were developed are the largest and the most evolved sites of their era in a settlement system, but this is not necessarily true. For instance, there were at least two sites larger than Bakun in the Marvdasht plain in the Late Fifth Millennium BC,<sup>26</sup> and despite the noticeable size and significance of Chogha Maran, the site is not the largest Early Bronze Age site in the Mahidasht region. Therefore, it is not unusual to find evidence of ancient economic and political complexities at smaller sites within a settlement system. In fact, the development of a site involved in organised economic interactions and elaborate management of the economy is probably rooted in other factors such as strategic location, access to certain resources, and some other unknown parameters.

The administrative artefacts of Tyalineh are found in trash dumps, which lack any contextual data about the related administrative spaces.<sup>27</sup> Therefore, it is not possible to study the distribution of these artefacts in the architectural spaces in which administrative procedures were undertaken. However, seals and sealings, especially door sealings, are solid evidence for the development of organised institutions involved in these practices and for the existence of architectural spaces related to the administrative activities in the ancient sites containing them. According to the evidence at hand, such organisations were formed and developed in Iran from the Fifth Millennium BC. The earliest evidence in this regard in the Central Zagros has been recorded at Chogha Maran and Dehsavar from the Late Chalcolithic 1–4 and the Early Bronze Age.<sup>28</sup> In the following sections, the authors discuss a newly discovered corpus of administrative artefacts from Tapeh Tyalineh in the Central Zagros heartland. Studying the corpus may furnish us with clues regarding the management of an organised economy from the Late Fourth Millennium BC (proto-Elamite period) which is hitherto unknown in the region.

### Tapeh Tyalineh

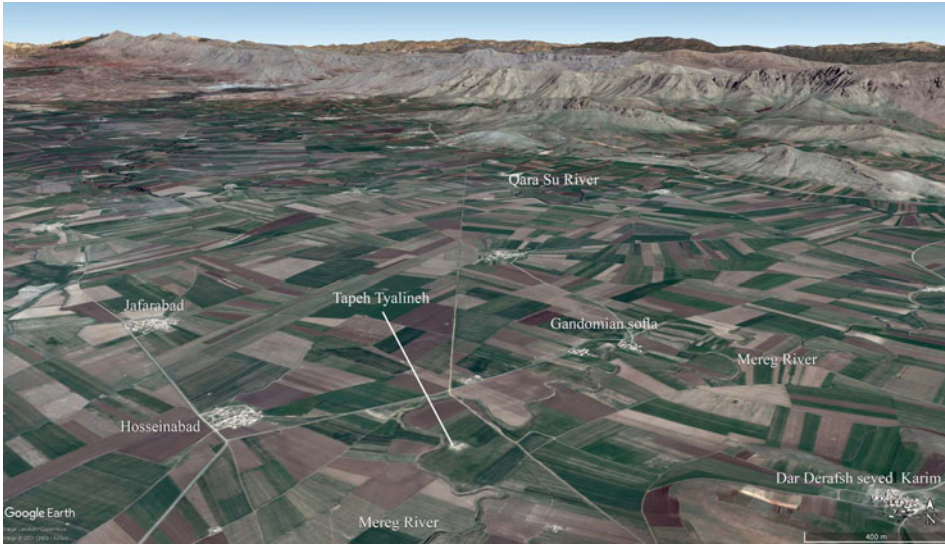
Following the illegal removal of soil at a site in Hosseinabad village in the Kouzaran plain, reported by one of the inhabitants in February 2021, Mostafa Doosti and Siyavash Shahbazi, as representatives of the Ministry of Cultural Heritage, Tourism and Handicrafts office of Kermanshah, visited the site and found 25 clay sealings and a figurine. Villagers had levelled a part of the site in order to use its soil as material for plastering the roofs of their houses and to level and cultivate their farmland. Further explorations of the site by officials of the office added two more sealings to the findings (Figures 2–4). Later, on 3 May, Mostafa Doosti and Sajjad Alibaigi surveyed the place in which those artefacts had been found. They discovered another 40 sealings on the surface of the site (Figure 5). This survey assured the authors of the findspot of these artefacts at the site and added more variety to the seal impressions that remained on the clay sealings.

Tapeh Tyalineh is located in the Kouzaran plain in the north of Mahidasht, 25 kilometres (km) west of Chogha Maran, 775 metres (m) east of Hosseinabad, 1.34 km north-west of Dar Derafsh Seyed Karim village, 990 m southwest of Gandomiyan Sofla village, 34° 31' 3" N and 46° 43' 45" E. The site is a rounded mound 100 m in diameter, with an area of roughly 1 hectare (ha), and an elevation of 1,323 m above sea level. The mound is 2.5 m

<sup>26</sup> J. Fraeser, 'An alternative view of complexity at Tall-e Bakun A', *IRAN* 46 (2008), pp. 1–19.

<sup>27</sup> For the nature of different types of contexts in which administrative artefacts are found in various sites, see Khayani and Niknami, 'Early Bronze Age', pp. 92–93.

<sup>28</sup> *Ibid.*; Khayani and Niknami, 'More Early Bronze Age', Renette *et al.*, 'Chogha Maran'; Pollock *et al.*, 'Seal and sealings'.



**Figure 2.** The satellite image of Tapeh Tyalineh in Kouzaran Plain. Source: Google Earth, 2021.

high and separated from the surrounding plain by a mild slope. The Mereg River runs alongside the west of the site. Tapeh Tyalineh is surrounded by fertile, flat agricultural lands and a series of natural low-height hills to the southwest. The mound's surface has been ploughed and cultivated by villagers. The illegal diggings had taken place in the southwestern corner of the site where the administrative artefacts were retrieved.

The site was not identified either in 1968 surveys by Ali Akbar Sarfaraz and his colleagues (Mohammad Rahim Sarraf and Esmail Yaqmaei)<sup>29</sup> nor in the 1975 surveys by Louis D. Levine. As the results of Levine's 1978 surveys have not yet been published, it is not known whether he visited the site during this season. However, the site was surveyed in 1998 by Abbas Motarjem who mentioned the presence of bichrome, Iron Age grey ware, and Parthian ceramics on the surface of the site.<sup>30</sup> Around 20 years ago, he reported some deep and extensive diggings at the site by villagers who had removed the mound's soil to plaster their houses.<sup>31</sup>

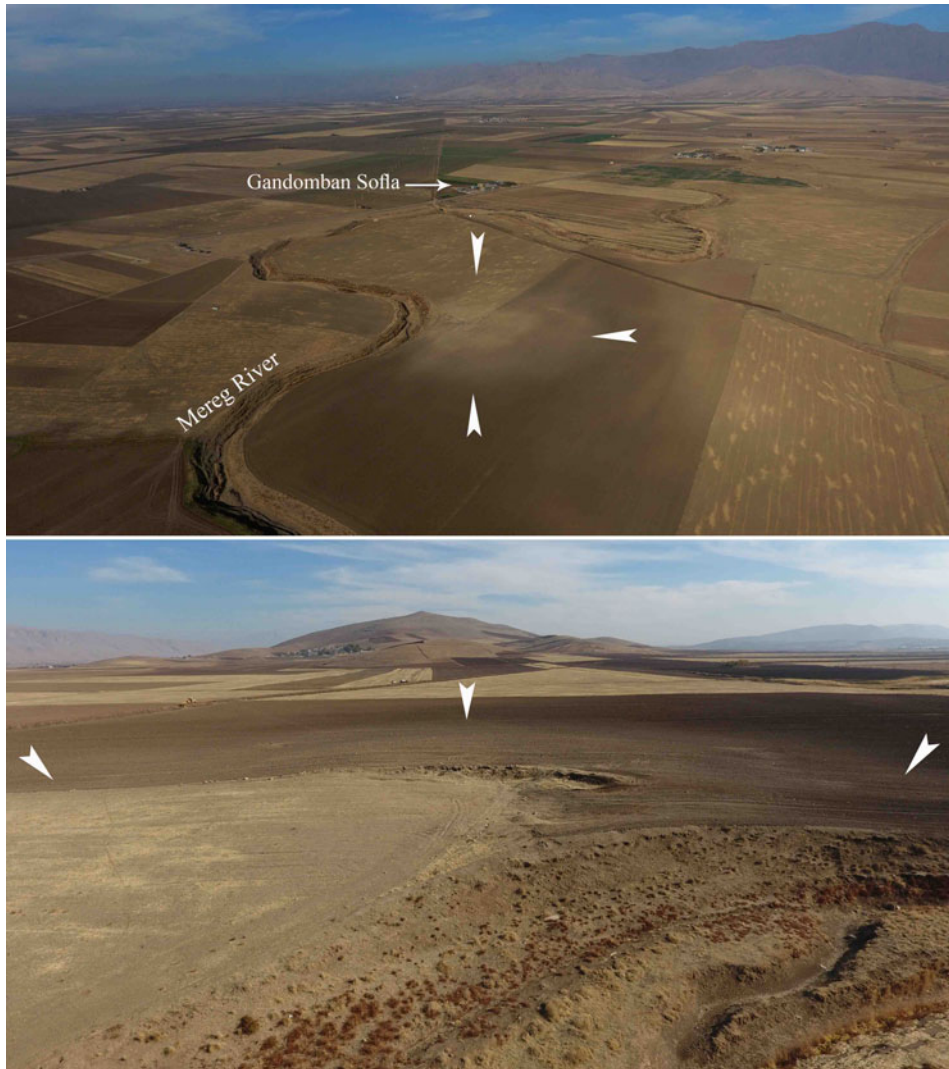
### Clay sealings

The administrative artefacts of Tapeh Tyalineh were found near the southwestern margins of the mound on the side of the Mereg River where about 200 m<sup>2</sup> had been illegally dug to a depth of 2 m. Although we did not excavate the site, the survey conducted by two of the authors suggests that the corpus belongs to this 2 m of deposits, because additional further sealings were found in a 5×5 m square around the area. The artefacts were found in an ashy context containing grey soil and ashes, suggesting that

<sup>29</sup> A. A. Sarfaraz, M. Sarraf and E. Yaqmaei, 'Archaeological surveys in Kermanshah Province', unpublished report in the Archive of the Ministry of Cultural Heritage, Handicraft and Tourism [in Persian], Tehran, 1968.

<sup>30</sup> A. Motarjem, 'Gozaresh-e Avalin Fasl-e Barresihay-e Bastanshenasi Dasht-e Kouzaran (Report of Archaeological Survey in the Kouzaran Plain' [in Persian], unpublished report in the Archive of the Cultural Heritage, Handicraft and Tourism office of Kermanshah Province (1998), pp. 70–73.

<sup>31</sup> *Ibid.*, p. 70.



**Figure 3.** General view of Taped Tyalineh. Source: Photographs by Reza Azizi.

they had been discarded in trash dumps; however, further excavation is needed to establish the nature of the context.

The clay sealings were made of soft clay, in some cases with chuff. They range from brownish dark buff to dark and light grey in colour. There are a few specimens in the corpus that lack any seal impression. Based on their material and colour, these objects can be considered to be unsealed fragments of the regular clay sealings with seal impressions. All of the sealings as well as the other artefact associated with them are fired.<sup>32</sup> The fact that

<sup>32</sup> Some researchers have stated that clay sealings were baked after they were broken off the objects they secured in order to maintain and archive them as a proof for later administrative and accounting procedures; see A. Alizadeh, *The Origins of the Elamite State, and the Cultural and Political Developments of Southwestern Iran from the Fifth to the First Millennium BC* [in Persian] (Tehran, 2020). The clay sealings from Bakun are controversial





**Figure 4.** Findspot of Tapeh Tyalineh sealings. Source: Photographs by Sajjad Alibaigi and Reza Azizi.

in this regard. While McCown reported that they were all baked, Alizadeh states that ‘close examination of the sealings indicated that some of them were not baked, but being produced from a washed pure clay had made them solid’; see A. Langsdorff, and D. E. McCown, *Tall-i Bakun: A Season of 1932* (Chicago, 1942), p. 66; Alizadeh, *The Origins of State Organizations*, p. 159, footnote 3. Door sealings of Tapeh Sofalin and Qoli Darvish clay sealings, except for a single one, were all unbaked, but those of Dehsavar were all baked. See Hessari and Zoshk, ‘The emergence’, p. 7; Aghili Niaki, ‘Computational documents’, p. 167; Pollock et al. ‘Seal and sealings’, p. 380. Alizadeh believes that the baking of these artefacts is crucial to the reconstruction of the related administrative technology as it attests to them being kept as proofs in certain archives for later accounting processes; see Alizadeh, *The Origins of State Organizations*, p. 159.



**Figure 5.** A sample of sealings from Tapeh Tyalineh. Source: Photograph by Sajjad Alibaigi.

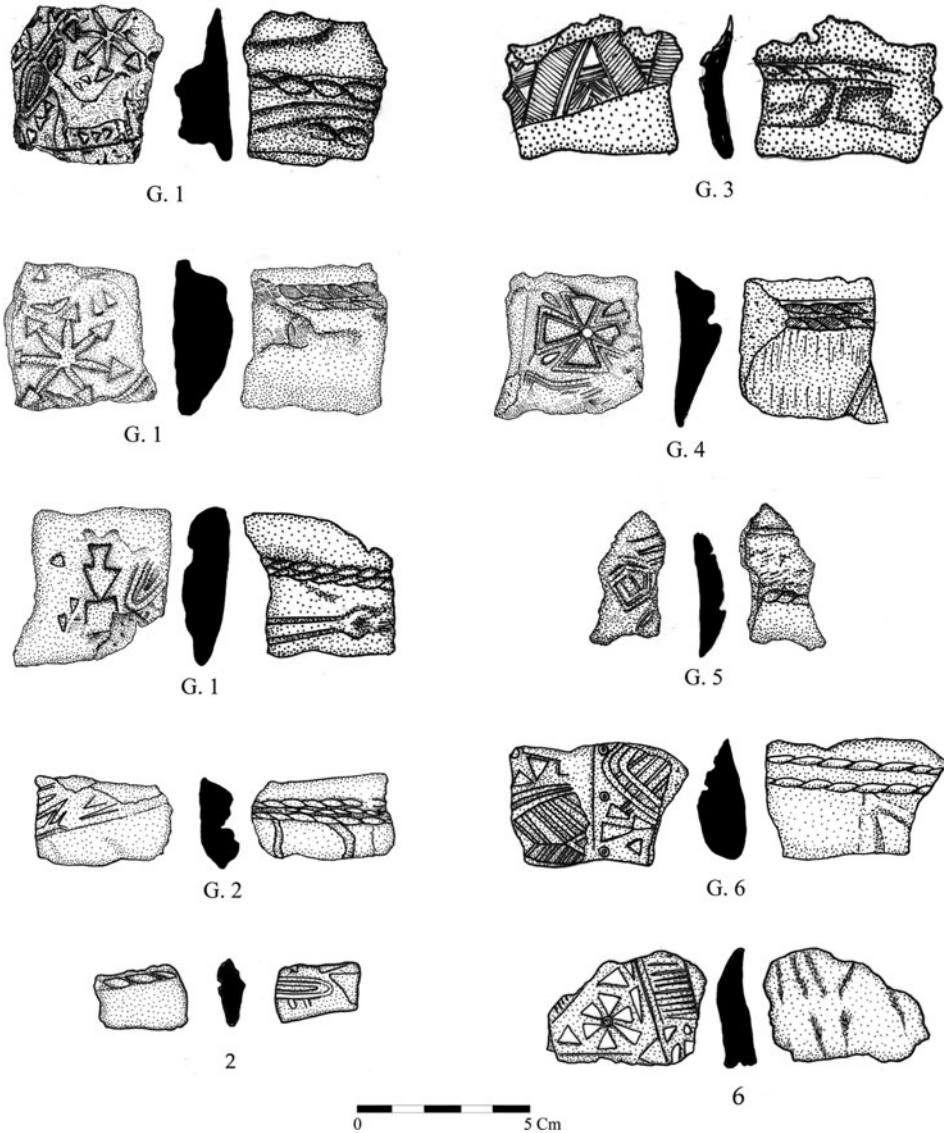
other clay objects such as plain and unsealed fragments of sealings and clay lumps are also fired as well as the ashy context of the artefacts suggest that they have been exposed to fire in trash dumps. The corpus consists of 52 moveable container sealings which are mostly jar sealings, 12 door sealings, and three oblong bullae (Figures 6–13). The clay sealings are mostly sealed with cylinder seals, while stamp seals are very infrequently used as well. In the following, the clay sealings are categorised and studied based on function and seal design. Each type of the sealed objects is examined in terms of function and their seals. The mobile container sealings are sealed with 19 unique seals and the door sealings are sealed with seven or eight unique seals. Except for a cylinder seal, which probably sealed Group 2 of container sealings as well as Group II of door sealings, container sealings and door sealings are sealed with different unique seals, probably suggesting highly specialised sealing practices.

### *Moveable container sealings*

#### *Group I*

The 12 clay sealings of this group share impressions of a unique cylinder seal. Based on the measurements of these sealings, the impression of the seal is 4.5 centimetres (cm) in height and 6.6 cm in length, and the seal is about 2.2 cm in diameter. It shows a gazelle in profile, looking left with a large head, a thin neck, a wide-open eye, and a short tail, walking smoothly towards a star with seven points shaped like spearheads, and a three-stepped façade with geometric designs around it (Figure 6: G. 1, Figure 7). Above the animal's head there are concentric lozenges and its body is surrounded with filling geometric designs such as triangles. The seven-pointed star is also attested on a proto-Elamite seal impression from Operation ABC at Malyan.<sup>33</sup>

<sup>33</sup> W. M. Sumner, 'Excavations at Tall-i Malyan (Anshan) 1974', *IRAN* 14 (1976), p. 108; H. Pittman, 'Proto Elamite art from Operation ABC', in *Early Urban Life in the Land of Anshan: Excavations at Tal-e Malyan in the Highlands of Iran*, (ed.) W. M. Sumner (Philadelphia, 2003), fig. 44h.



**Figure 6.** Jar sealings from Tapeh Tyalineh, Groups 1–6. Source: Drawing by Naser Aminikah and Sara Mozaffari.

On the reverse of these sealings, there are negative imprints of the rim of pottery vessels and cord impressions 3–5 millimetres (mm) in diameter wrapped around them two to four times. These are identified as jar sealings that once sealed closed vessels with various rim diameters, the largest of which is estimated to be about 8 cm and probably contained liquids such as oil and wine. According to the shape, size, and thickness of the sealings, the cord imprints on their back side, and the variety of rim diameters, it seems that they secured the contents of 11 various shipments to the site.

### Group 2

The five clay sealings of this group share impressions of a unique cylinder seal with simple geometric eye designs (Figure 6: G. 2). Some of these sealings seem to have multiple





**Figure 7.** Jar sealing from Tapeh Tyalineh, a sample from Group I. Source: Photograph by Sajjad Alibaigi.

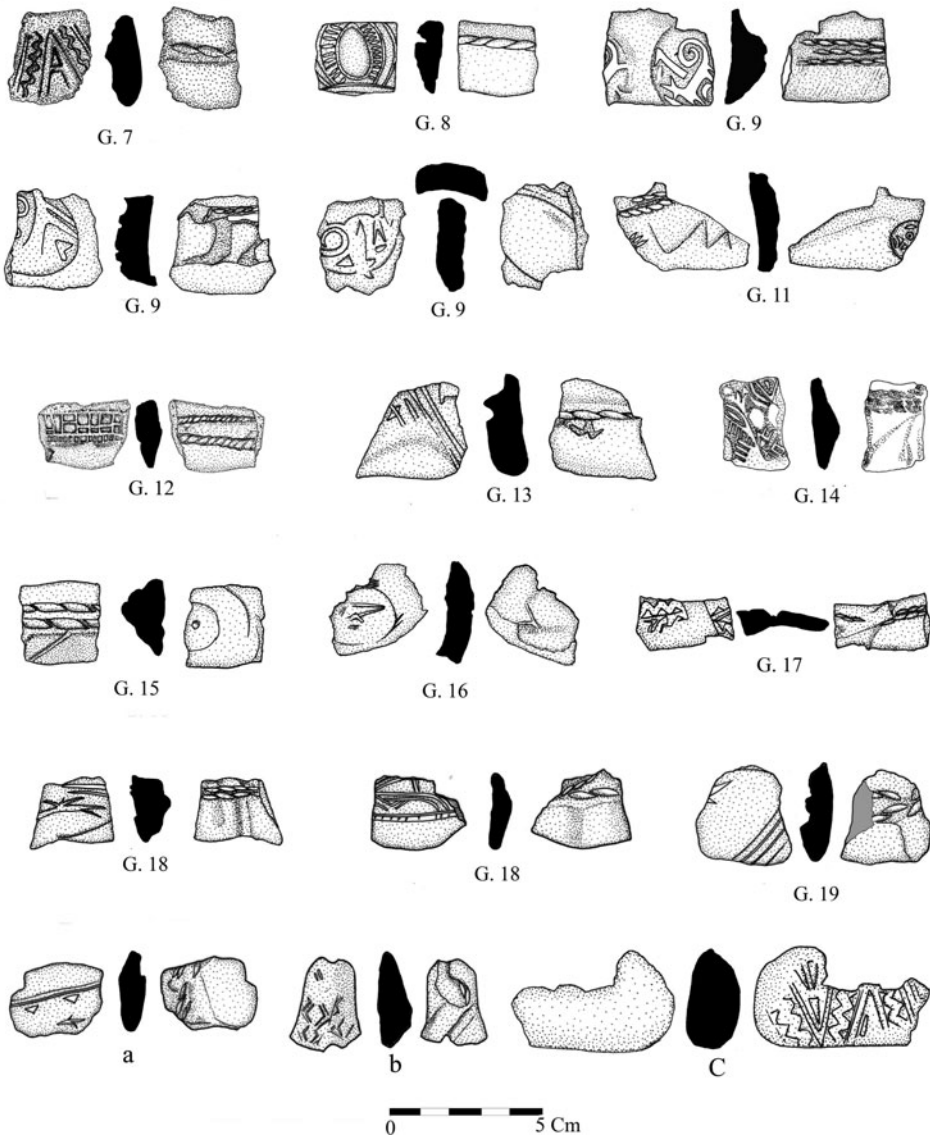


**Figure 8.** Jar sealing from Tapeh Tyalineh, a sample from Group 4. Source: Photograph by Sajjad Alibaigi.

impressions of the same seal. Similar eye motifs are depicted on the seal impressions of the proto-Elamite period from Susa and Tapeh Yahya, and on the seals and seal impressions of the proto-Elamite period from Sialk IV.<sup>34</sup>

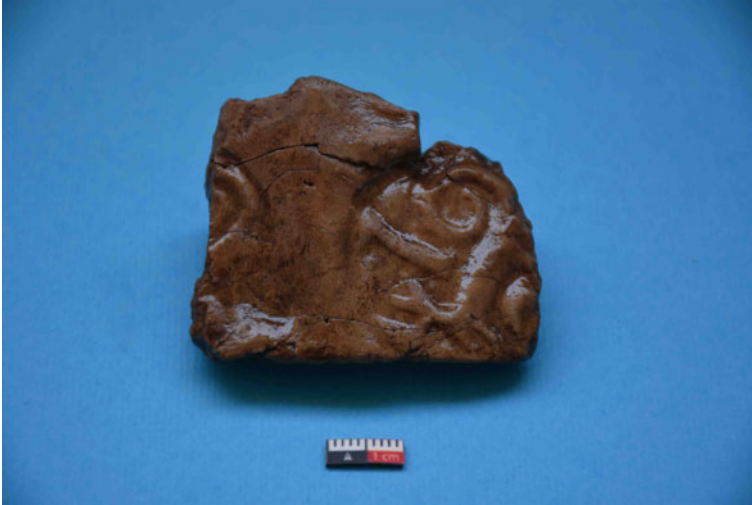
<sup>34</sup> Amiet, *Glyptique Susienne*, pl. 93: 795, 812; H. Pittman, 'Glyptic art of Period IV', in *Excavations at Tepe Yahya, Iran 1976-1975*, (eds) C. C. Lamberg-Karlovsky and D. T. Potts (Cambridge, 2001), p. 249: 10.12; R. Ghirshman, *Fouilles de Sialk près de Kashan 1933, 1934, 1937* (Paris, 1938), s. 506 and s. 42.



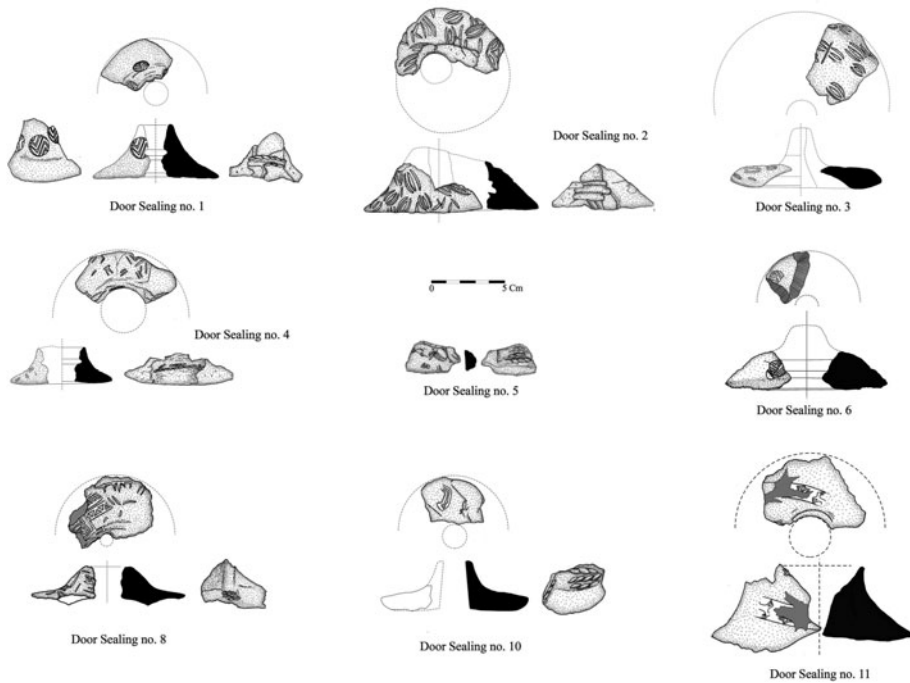


**Figure 9.** Jar sealings from Tapeh Tyalineh, Groups 7–9, 11–19, and a few small clay objects with cylinder seal impressions (a–c). Source: Drawing by Naser Aminikhah.

Of the five clay sealings of this group, the function of four sealings can be identified. There are cord imprints, 3 mm in diameter, on the reverse side of these four sealings which have been wrapped around the sealed object two to four times; in two cases twice, in one case three times, and one case (the last one) four times. Based on this difference and the various thickness of these sealings, it makes sense to suggest that they once sealed three separate consignments sent to the site. The largest fragment of these four sealings, with four strings of cord on the back, would probably have sealed a jar with a rim about 14 cm in diameter. The diameter of another jar’s rim may be measured at about 12 cm. The other two sealings are small fragments and the diameter of the jars



**Figure 10.** Jar sealing from Tapeh Tyalineh, a sample from Group 9. Source: Photograph by Sajjad Alibaigi.



**Figure 11.** Door sealings from Tapeh Tyalineh. Source: Drawing by Naser Aminikhah.

cannot be estimated; however, due to the fact that they bear the imprints of two strings of cord and they are thin, they probably sealed smaller jars. The sealings secured the contents of closed vessels such as small jars 12–14 mm in diameter, suitable for containing liquids.



**Figure 12.** Door sealing from Tapeh Tyalineh, Group I. Source: Photograph by Sajjad Alibaigi.



**Figure 13.** Door sealings from Tapeh Tyalineh, Group II. Source: Photograph by Sajjad Alibaigi.

### Group 3

The three clay sealings of this group share impressions of a unique cylinder seal 1.7 cm in width that depicts a distinctive glazed steatite motif, consisting of hatched triangles which contain geometric elements (Figure 6: G. 3). Similar seal designs are known from several sites, including Susa, Arisman, and Tell Gubba in the Hamrin basin.<sup>35</sup> One of these sealings is 6 mm thick, 37 mm wide, and 47 mm long. Its reverse bears imprints of two strings of

<sup>35</sup> Amiet, *Glyptique Susienne*, pl. 26: 1196; B. Helwing, 'The rise and fall of Bronze Age centers around the Central Iranian Desert. A comparison of Tappe Hesār II and Arismān', *Archäologische Mitteilungen aus Iran und Turan* 38 (2006), fig. 8; H. Ii, 'Seals and seal impressions from Tell Gubba' [in Japanese], *Al Rafidan* 9 (1988), fig. 10: 60–70.

cord 4 mm in diameter. It probably sealed the opening of a jar, roughly 12 cm in diameter. Another fragment is 1×2 cm and its reverse lacks any object impression, but the shape of its edge and its thickness (that is, 8 mm) suggests that it probably served as a jar sealing. The last fragment is 28×18×9 mm and its shape suggests that this example is also a jar sealing. These three sealings are made of different clays and their thicknesses are distinct, suggesting that they sealed three distinctive containers.

#### Group 4

The only clay sealing of this group bears the impression of a unique cylinder seal showing two concentric crosses with drop-shaped filling elements between the arms of the cross (Figures 6: G. 4, 8: G.4). The motif resembles glazed steatite seals from proto-Elamite Susa and Early Bronze Age seal impressions from Konar Sandal and Tapeh Varamin in south-eastern Iran and Jemdet Nasr in Mesopotamia.<sup>36</sup> The sealing is 33×33 mm and the diameter of the seal could be estimated at about 1 cm. The reverse side of the sealing bears imprints of three strings of cord 4 mm in diameter. Its shape suggests that it sealed the opening of a vessel 12 cm in diameter. The sealing is fired.

#### Group 5

The four small clay sealings of this group share impressions of a unique seal indicating illegible geometric designs containing lozenges (Figure 6: G. 5).<sup>37</sup> It is not possible to identify the seal type confidently, because it lacks the deep edges one might expect from stamp seal impressions. Three of these sealings bear imprints of two strings of cord which have been wrapped around the neck of a pottery vessel. Given the small size and thinness of these sealings, they probably sealed narrow-mouthed vessels.

#### Group 6

The eight clay sealings of this group share impressions of a unique cylinder seal depicting a combination of geometric and floral motifs comprising oval hatched shapes, patterned triangles (probably indicating a flower), and a few dots (Figure 6: G. 6). The design is comparable to glazed steatite seals from proto-Elamite Susa, a seal impression on a door sealing from Tapeh Sofalin, and those reported by Herzfeld.<sup>38</sup> One of the sealings seems to bear multiple impressions of the same seal. The seal measures 23 mm in height and 12 mm in diameter. Six of these sealings bear imprints of two or three strings of cord 3 mm in diameter, which have been wrapped around the rim of a vessel. The largest fragment bears two impressions of the same seal on the obverse and two strings of cord on the reverse, either 7 mm in diameter or simply consisting of two tightly overlapped strings of cord 3 mm in diameter. The sealing was extended to the lug or spout of the container and probably sealed a vessel with a rim 14 cm in diameter.

<sup>36</sup> Amiet, *Glyptique Susienne*, pl. 26: 1135; pl. 113: 1064; pl. 115: 1090, 1096; H. Pittman, *The Glazed Steatite Glyptic Style: The Structure and Function of an Image System in the Administration of Proto literate Mesopotamia* (Berlin, 1994), fig. 4, 18.10 and fig. 16; H. Pittman, 'Art of Bronze Age in Iran: new chapter from Konar Sandal', in *Sepehr Majd: Essays on the Archaeology of Iranian World and Beyond in Honor of Dr. Youssef Madjidzadeh*, (eds) S. Alibaigi, M. Miri and H. Pittman (Tehran, 2021), p. 103, fig. 39. N. Eskandari, 'The result of the archaeological investigations at the site of Varamin: early phase of Jiroft civilization' [in Persian], *Parseh Journal of Archaeological Studies* 4.13 (2020), p. 40, fig. 13; P. Collins, *Mountain and Lowlands: Ancient Mesopotamia and Iran* (Oxford, 2016), fig. 29.

<sup>37</sup> Amiet, *Glyptique Susienne*, pl. 121: 1213.

<sup>38</sup> *Ibid.* pl. 64, pl. 117: 1125; pl. 118: 1152; P. Amiet, *La Glyptique mesopotamienne archaïque* (Paris, 1980), p. 495; M. Hessari, 'New evidence of the emergence of complex societies discovered on the Central Iranian Plateau' [in Persian], *Iranian Journal of Archaeological Studies* 1 (2011), pl. 17: 4; H. Pittman, 'The administrative function of glyptic art in Proto-Elamite Iran: a survey of the evidence', *Res Orientales* 10 (1997), p. 147, fig. 5a.; Herzfeld, *Iran in the Ancient East*, pl. 17.



**Group 7**

This group consists of one clay sealing with a seal impression depicting triangle bands filled with interlocking rows of triangles (Figure 9: G. 7). The reverse side bears a string of cord 6 mm in diameter, but the function cannot be determined.

**Group 8**

This group consists of one clay sealing with a seal impression depicting concentric hatched ovals comparable to a seal impression from Susa.<sup>39</sup> The sealing is 32×28 mm and is fragmentary. The seal type is not known for certain, but it lacks the deep edges one might expect from stamp seal impressions (Figure 9: G. 8). The reverse side of the sealing bears imprints of a string of cord 4 mm in diameter. It sealed a vessel with a rim 12 cm in diameter.

**Group 9**

The three clay sealings of this group share impressions of a unique rounded stamp seal 3 cm in diameter depicting a fox looking left with pointed upright triangular ears and a twisted long tail, surrounded by a few illegible elements (Figure 9: G. 9, Figure 10). The first sealing of this group is 34×32×14 mm. On the reverse of this sealing is the imprint of a string of cord 4–5 mm in diameter. Its shape and the cord strings suggest that it sealed the opening of a rather small vessel. Another sealing of this group measures 45×39×15 mm. On its reverse there are three strings of cord 3 mm in diameter which sealed the opening of a vessel 12 mm in diameter. The last sealing is 31×25×15 mm. Imprints of two cord strings are recognisable on its reverse. In light of its edges and vertical direction of the cords, it did not secure a container as the cord itself could not close the opening of a vessel.

**Group 10**

This group consists of one fragmentary, rather illegible clay sealing with a cylinder seal impression depicting a hatched leaf and an eye motif comparable to seals from Tapeh Yahya, Qoli Darvish, and Susa.<sup>40</sup>

**Group 11**

This group consists of one fragmentary, rather illegible clay sealing with a rounded stamp seal impression 13 mm in diameter depicting a geometric design (Figure 9: G. 11). The reverse side of the sealing bears imprints of two or three strings of cord 4 mm in diameter which, along with its shape, suggest that it sealed the opening of a wide-mouthed jar.

**Group 12**

The only clay sealing of this group bears a cylinder seal impression depicting hatched bands comparable to seal impressions from Chogha Maran and seal impressed jars from Tell Gubba in the Hamrin (Figure 9: G. 12).<sup>41</sup> On the reverse side, there are imprints of four strings of cord which have been wrapped around the rim of a small jar, the opening of which was probably covered by a piece of cloth or leather.

<sup>39</sup> Amiet, *Glyptique Susienne*, pl. 26: 1221.

<sup>40</sup> Pittman, 'Glyptic art of Period IV', p. 252: 10.22; Aghili Niaki, 'Computational documents', p. 219, pl. 27; Amiet, *Glyptique Susienne*, pl. 26: 1200, pl. 118: 1156, pl. 119: 1171.

<sup>41</sup> Renette et al., 'Chogha Maran', pl 39: 1–8; ii, 'Seals and seal impressions', fig. 11: 87, 89.

**Group 13**

The two fragmentary and rather illegible clay sealings of this group share impressions of a unique cylinder seal depicting simple geometric designs consisting of parallel lines (Figure 9: G. 13). One of the fragments is 30×22×11 mm and its reverse side bears imprints of a string of cord 5 mm in diameter. It sealed the opening of a vessel 8 cm in diameter. The other sealing is 35×29×10 mm and its function is not clear.

**Group 14**

This group consists of a fragmentary clay sealing, 30×20×8 mm, with a cylinder seal impression depicting eye motifs and hatched elements (Figure 9: G. 14). On the reverse of the sealing, there are impressions of three strings of cord 3 mm in diameter, which have been wrapped around the rim of a vessel, the opening of which was probably covered by a piece of cloth or leather. It sealed the opening of a small jar.

**Group 15**

This group consists of one clay sealing with either a rounded stamp seal impression depicting a hollow rounded shape or imprint of a cylinder seal's butt end (Figure 9: G. 15). The latter practice is attested elsewhere, especially at SIS Ur.<sup>42</sup> The rounded impression is 14 mm in diameter, which is roughly consistent with some of the stamp seals and also the estimated diameter of some cylinder seals. The sealing is 28×28×14 mm and its reverse side bears two strings of cord 4–5 mm in diameter. Based on the shape and the horizontal direction of cords, it sealed the opening of a jar.

**Group 16**

This group consists of a fragmentary and rather illegible clay sealing (30×20×8 mm) with an oval stamp seal impression, 14 mm in diameter, that depicts a geometric design consisting of simple lines (Figure 9: G. 16). The reverse side of the sealing is irregular and the function cannot be determined.

**Group 17**

The only clay sealing of this group (31×16×10 mm) bears two impressions of a cylinder seal depicting interlocking lines of triangles comparable to seal impressions from Susa and Chogha Maran (Figure 9: G. 17).<sup>43</sup> It also resembles another seal impression from Tyalineh on a spindle-shaped slab of clay (oblong bulla). On the reverse of the sealing, there are imprints of two strings of cord. According to the shape of this sealing and the cord impressions, it sealed the opening of a jar roughly 8 cm in diameter.

**Group 18**

The three fragmentary and rather illegible clay sealings (36×33×13, 33×27×12, and 40×25×9 mm) of this group share impressions of a unique cylinder seal depicting a design consisting of a few parallel straight and curvy lines (Figure 9: G. 18). On the reverse of the first one of them is the imprint of a horizontal string of cord. The reverse side of the second sealing bears a string of cord 3 mm in diameter, which was used to fasten the closed opening of a jar that was covered by a piece of cloth, leather, or a lid. The third

<sup>42</sup> R. J. Matthews, *Cities, Sealings and Writing: Archaic Seal Impressions from Jamdet Nasr and Ur* (Berlin, 1993), pp. 43, 46.

<sup>43</sup> The seal impression does not cover the whole length of the sealing. It might suggest that the impression belongs to a stamp seal. On the other hand, the edges of the impression are not as deep as most stamp impressions, and the parallel impressions are attributed to cylinder seals: see Pittman, 'Chogha Maran', fig. 6; Renette *et al.*, 'Chogha Maran', pl. 37: 4, pl. 38: 2–4, 6. Also see Amiet, *Glyptique Susienne*, pl. 124, 1282.

one lacks any cord impression or imprint of a pottery rim, but its shape suggests that it is a jar sealing. Given the thinness of this sealing, it would have sealed a small jar.

### Group 19

The two clay sealings of this group share impressions of a unique cylinder seal depicting a design consisting of three parallel lines (Figure 9: G. 19). On the reverse of one of these are the imprints of two horizontal strings of cord 4–5 mm in diameter, suggesting that it must have sealed the opening of a jar. The other one, which is 35×27×6 mm, is roughly a flat slab of clay. Therefore, it may not be considered as a jar sealing.

### Door sealings

These are usually semi-conical objects with the reverse consisting of two faces: a semi-cylindrical hollow imprint of a door peg with impressions of cord fastened around it and a roughly flat base where the sealing was pressed (around the door peg) against the wall. These sealings were used to protect the contents of store rooms. There are 12 door sealings in the corpus which are classified here in eight groups (I–VIII) based on the design and shape of their seal impression (Figure 11). Three door sealings of Group II are sealed by either the same or a similar seal to the one that sealed Group 2 of the container sealings. The rest of the seal impressions on door sealings are completely distinctive from those of container sealings. The homogeneity of the seals that were used to seal mobile containers and doors have led some researchers to infer certain types of storage systems, for example, at Sabi Abyad and Chogha Maran.<sup>44</sup>

Except for the first sealing of the Group V, which might have been sealed by two different seals, all the rest of the door sealings were marked by a single seal, suggesting that the store rooms were not communal—or at least that they were each controlled by a single individual for a particular time span. If more than one person was in charge of a store room or it was used as a communal storage space, the door pegs may have been sealed by more than one seal. The existence of such sealings with more than one seal design at Bakun supports such hypotheses.

Finding all of these sealings in the same context might suggest that they all belonged to a single store house or an array of store rooms that had different door locks, each of which was controlled by a single person. If so, why did all of the people who were in charge of controlling the store house not impress their seals on a sealing simultaneously?

Another hypothesis considers the possibility of different people using a store room separately at different times. If true, one might expect to see the imprint of a single door peg on the back of the sealings, but the door pegs of the corpus are quite varied in terms of shape, size, and diameter. In a single space at Qoli Darvish, door sealings were sealed by different seals.<sup>45</sup> This is more complicated and the evidence at hand makes its interpretation difficult. However, the presence of door sealings at Tyalineh indicates the development of an accounting system, administrative management, and a control mechanism at the site.

### Group I (Door sealing no. 1)

The only clay sealing of this group (47×38×14 mm) bears the impression of a rounded stamp seal 14 mm in diameter that depicts a chevron pattern (Figure 11: 1 and Figure 12) comparable to seal designs from Late Chalcolithic levels (3750–3500 BC) at

<sup>44</sup> P. M. Akkermans and K. Duistermaat, 'Of storage and nomads. The sealings from late Neolithic Sabi Abyad, Syria', *Paléorient* 22.2 (1996), pp. 17–44; Khayani and Niknami, 'Early Bronze Age'.

<sup>45</sup> Aghili Niaki, 'Computational documents', p. 166.

the prehistoric site of Taq-e Bustan and Tapeh Hissar IC.<sup>46</sup> The clay sealing is well-fired and completely baked. On the reverse side of this sealing there are imprints of a door peg 19 mm in diameter and the two strings of cord that were wrapped around it.

#### **Group II (Door sealings nos. 2–4)**

The three clay sealings of this group share impressions of a unique cylinder seal, 18 mm in height, which depicts eye motifs resembling some seal designs from the proto-Elamite levels of Sialk.<sup>47</sup> The first sealing of this group bears multiple impressions of the same seal (Figure 11: 2–4 and Figure 13). The base of this sealing was probably 70 mm in diameter, half of which is preserved. It sealed a door peg about 21 mm in diameter. The second sealing of this group is 55×42 mm and, despite the fact that it lacks any door peg or cord impressions, according to its shape and its extended base, it may be identified as a door sealing. The last sealing of this group is 18 mm in length with only 30 mm of its diameter preserved. The sealing is too fragmentary and the door peg's diameter is not measurable. It is not clear if these three sealings were used to lock a single store room or different storage rooms.

#### **Group III (Door sealings nos. 5–6)**

The two clay sealings of this group share impressions of a 22×16 mm rectangular stamp seal depicting a simple geometric design, probably a cross (Figure 11: 5–6). The first sealing of this group is 75 mm in diameter, 21 mm in length, and bears multiple impressions of the same seal. On the reverse side, there are smooth imprints of a door peg and a few strings of cord 4–6 mm in diameter that have been wrapped around it. The diameter of the door peg may be measured at around 28 mm. There are imprints of a door peg and three strings of cord on the reverse side of the second sealing of this group. The size and shape of this door peg are different from those of Groups I and II.

#### **Group IV (Door sealing no. 7)**

This group consists of one fragmentary and rather illegible clay sealing with the impression of a unique rounded stamp seal 13–14 mm in diameter that depicts a geometric design consisting of a few simple lines. Although the reverse side of this sealing lacks any door pegs or cord impressions, based on its conical shape and its inclined, extended base, it may be identified as a door sealing.

#### **Group V (Door sealings nos. 8–9)**

The two clay sealings of this group share impressions of a unique cylinder seal depicting a geometric design consisting of hatched bands and interlocking triangles comparable to seal designs from Susa and Qoli Darvish (Figure 11: 8).<sup>48</sup> The first sealing of this group is 34 mm in length and its radius may be measured at 53 mm. It was probably used to seal a door peg 1 cm in diameter. The motifs on this seal impression might belong to two different seals. If correct, it means that either two people were responsible for a store room or the authority in charge of this store room had two different but very similar seals. The second sealing of this group is fragmentary and rather illegible. Therefore, the size and diameter of the peg to which it had once been attached were not identified.

<sup>46</sup> S. Alibaigi, 'Delimiting and Rescue Excavation in Taq-e-Bustan', report prepared for the Archive of the Iranian Center for Archaeological Research [in Persian], unpublished, 2015; E. F. Schmidt, *Excavation at Tepe Hissar Damghan, with an Additional Chapter on the Sasanian Building at Tepe Hissar* by Fiske Kimball (Philadelphia, 1937), fig. 15: H. 3365, fig. 28a: H. 4414

<sup>47</sup> Ghirshman, *Fouilles de Sialk*, s. 506 and s. 42, s. 1609.

<sup>48</sup> Amiet, *Glyptique Susienne*, pl. 128. 1357; Aghili Niaki, 'Computational documents', p. 212, pl. 13.



Although the clay of these two sealings is of different colours, the variety of the clay components and the extent to which it has been kneaded suggest that these were broken parts of a single door sealing or, alternatively, were two sealings applied to the same door by the same individual, suggesting sealing over time.

#### Group VI (Door sealing no. 10)

The only clay sealing of this group bears the impression of a unique cylinder seal 20 mm high, depicting either a geometric pattern or a tarantula (or spider), comparable to seal designs from Susa and Sin II–IV at Khafajah (Figure 11: 10).<sup>49</sup> On the reverse of this sealing are four strings of cord and a peg, the diameter of which is not measurable.

#### Group VII (Door sealing no. 11)

This group consists of one clay sealing with two impressions of a unique cylinder seal, 13 mm high, which represents a goat and a part of a rosette comparable to seals from Susa, Malyan, and Umm al-Nar (Figure 11: 11).<sup>50</sup> Due partly to the impurity of the clay sealing, one of the impressions is illegible. This is the largest door sealing in the corpus, 61 mm in length; the radius may be measured at 81 mm. The diameter of the door peg could be estimated at 25 mm, which is different from the previous door pegs, hence it probably locked a different store room. There is a bone in the paste of the sealing as a result of an impurity which has been burnt after being exposed to fire in the corpus. Since it seems that the sealings were contemporaneous with the earliest settlement of the site, the bone can be examined in future studies in order to provide an absolute dating for the corpus.

#### Group VIII (Door sealing no. 12)

This group consists of one clay sealing (30×21×9 mm) with an illegible seal impression. The sealing is the middle part of an originally semi-conical door sealing and lacks its base. On the reverse side of the sealing are imprints of a door peg 30 mm in diameter and two strings of cord that have been wrapped around it. Again, the size of the door peg is different from the previous ones, suggesting that it probably locked a different store room.

### Counting objects

Among the administrative artefacts of Tapeh Tyalineh are a few clay tokens. One of these objects is a truncated cone, 14 mm in height and 23 mm in diameter. Another artefact of this type is a broken fragment of a sphere roughly 22 mm in diameter. Similar objects have been found at many sites in Iran and Mesopotamia.<sup>51</sup> Furthermore, there is a small animal figurine in the corpus 24 mm in height, 34 mm in length, and 14 mm in width (Figure 14). It is a sheep or ram. It seems that this object was used as a token to keep account of herds of animals. These three clay objects are well-fired and quite baked.

Animal figurines associated with administrative artefacts such as mobile container sealings and door sealings have been found in similar contexts at Tapeh Sofalin and

<sup>49</sup> Amiet, *Glyptique Susienne*, pl. 93, 804; H. Frankfort, *Stratified Cylinder Seals from the Diyala Region* (Chicago, 1955), pl. 4: 16, pl. 8: 44, pl. 18: 181.

<sup>50</sup> Amiet, *Glyptique Susienne*, pl. 21, 926; H. Pittman, 'Proto Elamite Art', pl. 44a; P. Amiet, 'A cylinder seal impression found at Umm an-Nar', *East and West* 25 (1975), fig. 1.

<sup>51</sup> For example, see Hessari and Yousefi Zoshk, 'The emergence', p. 20, fig. 12; H. Fazeli Nashli and H. Azizi Kharanaghi, 'Description of especial finds', in *Socioeconomic Transformation of the Qazvin Plain: Excavation of Tepe Ghabristan. Report 2006, Season Three* [in Persian], (ed.) H. Fazeli Nashli (Tehran, 2006), p. 119, figs. 3–28; Renette et al., 'Chogha Maran', pl. 51: 8–11.



**Figure 14.** Animal figurine from Tapeh Tyalineh. Source: Photograph by Sajjad Alibaigi.

Chogha Maran.<sup>52</sup> If our interpretation of these objects as clay tokens is correct, herded animals were one of the commodities that were exchanged in these sites. The fact that many of the Tyalineh sealings sealed the opening of closed vessels usually used to maintain dairy products, oil, and the like fits well with the previous interpretation. However, other functions for the figurines are possible and a myriad of these objects have been found at numerous prehistoric sites.<sup>53</sup>

There is a small slab of clay (31×25×14 mm) with a cylinder seal impression in the corpus whose reverse is flat and smooth and lacks any imprints of an object, but there are impressions of two strings of cord 2 mm in diameter on its broken edge (Figure 9: a). It seems that the cords have been crossed through the sealing. This may be interpreted either as an oblong bulla, a clay tag, or a label accompanying certain information and objects (for example, a string of perforated tokens) and/or commodities.<sup>54</sup> The seal impression depicts triangle bands filled with lines of interlocking triangles.

Another artefact of this type is a fragment of a cylindrical clay object with the impression of a string of cord 3 mm in diameter on one edge and a stamp seal impression with a geometric design on the obverse (Figure 9: b). The seal finds some parallels at Susa, Qoli Darvish, and Tapeh Sofalin.<sup>55</sup> This object might be considered as a clay ball which was probably used to accompany commodities. Its parallels are found at Susa.<sup>56</sup>

The last object of this type is a fragment of a pillow-shaped clay tablet 4.6 mm in length, 2.8 mm in width, and 1.6 mm thick. The original tablet would have been roughly

<sup>52</sup> Hessari and Yousefi Zoshk, 'The emergence', p. 6; Hessari, 'New evidence', p. 42, fig. 13; Renette et al., 'Chogha Maran', p. 55, pl. 53.

<sup>53</sup> Fazeli Nashli and Azizi Kharanaghi, 'Description of especial finds', pp. 106–108.

<sup>54</sup> D. Schmandt-Besserat, 'An ancient token system: the precursor to numerals and writing', *Archaeology* 39.6 (1986), p. 34.

<sup>55</sup> Amiet, *Glyptique Susienne*, pl. 20. 830; pl. 92: 770; Aghili Niaki, 'Computational documents', p. 212, pl. 12; M. Hessari and H. Akbari, 'Preliminary report of excavation at ancient site of Pishva's Tapeh Sofalin', in *Archaeological Reports* 7. On the occasion of the 9th Annual Symposium on Iranian Archaeology (2nd vol.) [in Persian], (ed.) H. Fazeli Nashli (Tehran, 2007), p. 192, fig. 6; Hessari and Yousefi Zoshk, 'The emergence', p. 16, fig. 3.

<sup>56</sup> Amiet, *Glyptique Susienne*, pl. 9: 556; pl. 93. 810.



**Figure 15.** Clay lumps from Tapeh Tyalineh. Source: Photograph by Sajjad Alibaigi.

5 cm long. The tablet bears a cylinder seal impression on the obverse and its reverse lacks any seal or object impression. The seal rolled on the tablet was probably 2.5 cm high, 4.5 cm long, and 1.4 cm in diameter (Figure 9: c). The design resembles that of the above oblong bulla and Group 7 of the container sealings. It is unknown if the missing fragment of the tablet had epigraphic or numerical signs or if we are dealing with another oblong bulla.<sup>57</sup>

### Clay lumps and plain (unsealed) sealing fragments

In the same context, and associated with the Tyalineh administrative artefacts, were several fired, and in some cases unfired, lumps of clay (Figure 15). These are clay balls 4 mm in diameter or slabs of clay 6–7 cm in length and 3–4 cm thick. In two cases, there are fingerprints on these objects of the people who kneaded the clay. These artefacts would have been used for sealing practices and parallel objects have already been found in many sites, including Arslantepe, Shahr-i Sukhta, Mari, Tell al-Der, and Susa.<sup>58</sup>

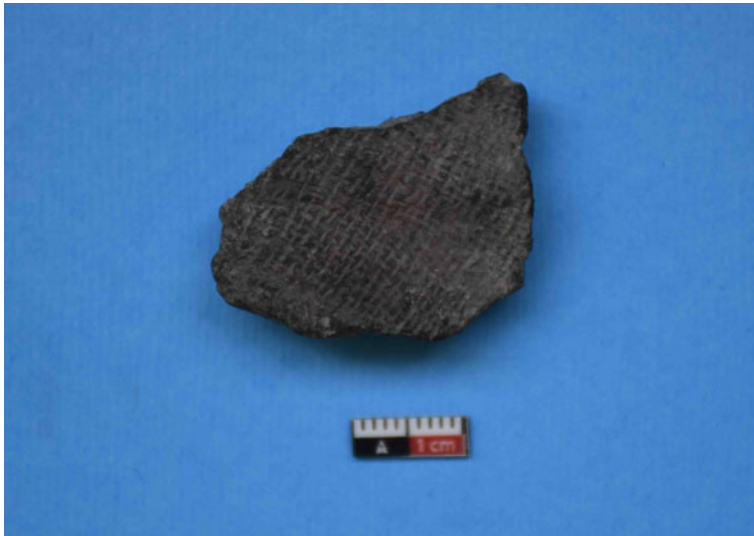
There are also a few fired clay objects whose functions are not clear due to their fragmentary condition. These are not imprinted by seals, but their material and their association with the clay sealings suggest that they were probably related to sealing

<sup>57</sup> M. Hessari, *The Formation and Development of Proto-Writing in Iran (from Pre-Writing to Proto-Elamite)* (Tehran, 2013), p. 134, fig. 20.

<sup>58</sup> L. De Meyer, H. Gasch and R. Paepe, *Tell ed-Der I* (Leuven, 1977), p. 34, pl. 24; P. Ferioli and E. Fiandra 'Sealed objects, closing and sealing practices reconstructed from the Cretule. The two main corpora of administrative materials: an initial and final stage in the procedures', in *Arslantepe Cretule*, (ed.) Frangipane, p. 71, fig. II.4, c1399; H. Pittman, 'The glyptic art from Arsalatepe period VI A: a consideration of interregional relations as seen through style and iconography', in *Arslantepe Cretule*, (ed.) Frangipane, pl. XVI: 97a.



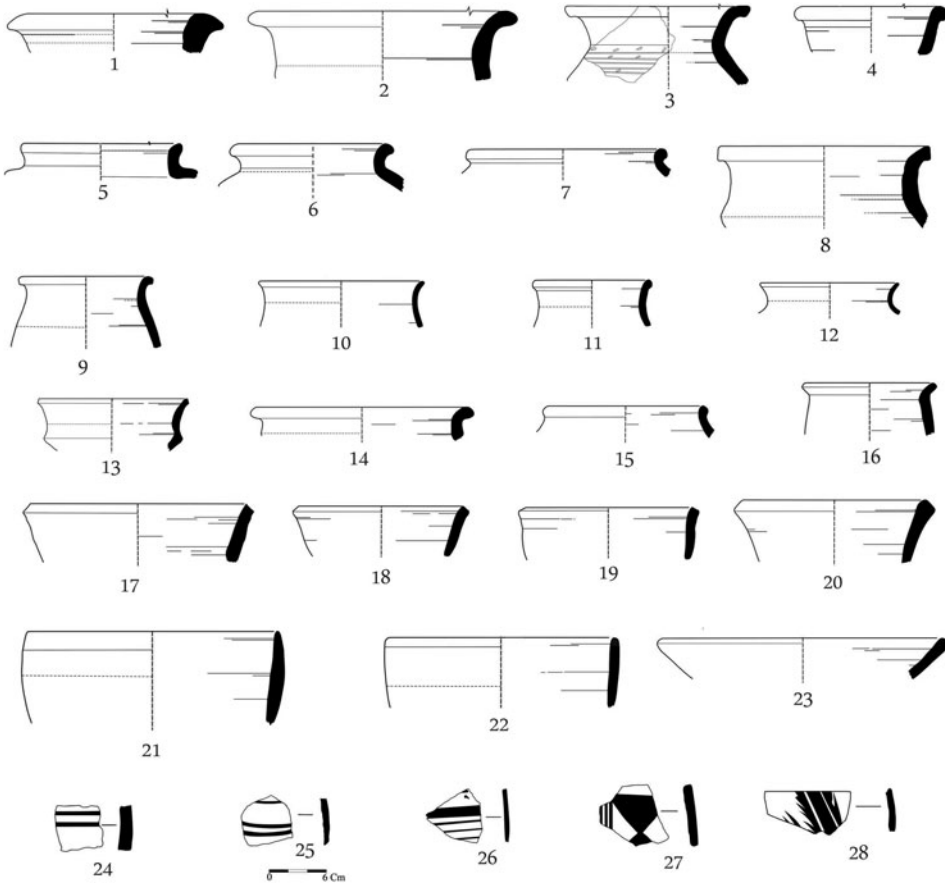
**Figure 16.** Disk-shaped clay objects from Tapeh Tyalineh. Source: Photograph by Sajjad Alibaigi.



**Figure 17.** An unsealed clay object with neat textile impressions waved one-up-one-down. Source: Photograph by Sajjad Alibaigi.

practices. Furthermore, some disk-shaped clay objects with a convex surface should be mentioned. The best-preserved example of these objects is 37 mm in diameter and 7 mm thick (Figure 16). There are neat textile impressions waved one-up-one-down on





**Figure 18.** Drawing of late Chalcolithic sherds from Tāpeh Tyalineh. Source: Drawing by Saina Aminikhah.

the surface of one of the unsealed fragments (Figure 17). A similar object was found at Malyan.<sup>59</sup>

### Jar stopper

Associated with the administrative artefacts (in the same findspot in which they were found) was a mushroom-shaped jar stopper. It is a handmade baked object with a brown fabric and grit and sparse chaff temper. Its upper and lower parts are 33 and 25 mm in diameter respectively, while only 16 mm of its height is preserved. It was probably used to close the opening or spout of small jars. Such jar stoppers are found at many sites, such as Sialk, Godin, Sofalin, and Arslantepe.<sup>60</sup> There are also

<sup>59</sup> Pittman, 'Proto Elamite', pl. 22c.

<sup>60</sup> Ghirshman, *Fouilles de Sialk*, s. 506; M. Rothman and V. R. Badler, 'Contact and development in Godin Period VI', in *On the High Road: The History of Godin Tepe, Iran*, (eds) H. Gopnik and M. Rothman (Costa Mesa, 2011), fig. 4.42: 252–273; Hessari and Yousefi Zoshk, 'The emergence', pp. 6 and 17, fig. 6; Ferioli and Fiandra, 'Sealed objects', p. 110, fig. 11.35 and pl. XVI; A. Laorito, 'Cretulae and sealed objects from minor dumping areas in the 4th millennium palace at Arslantepe', in *Arslantepe Cretule*, (ed.) Frangipane, p. 130, II.46: a4.

jar stoppers marked with seals from Chogha Mish,<sup>61</sup> but the Tyalineh jar stopper lacks any seal impression.

## Pottery

Abbas Motarjem attributed ceramics found on Tapeh Tyalineh to the Iron Age II and the Parthian period.<sup>62</sup> He also referred to bichrome painted potsherds on the surface of the site. Our survey brought about the discovery of the remains of three periods: the late Fourth Millennium BC, the Iron Age III, and the Parthian. In the following, we will focus on the Late Fourth Millennium BC pottery related to the administrative artefacts we have studied in this article (Figure 18). The earliest samples of the corpus are chaff- and grit-tempered painted vessels with fabric colours ranging from orange to red. Sherds of this type of pottery have bichrome black-and-red or black-and-white paint and sometimes a white wash surface treatment. These sherds are from both hand-made and wheel-made vessels, but they are not well-fired and their fabric is dark grey. The most commonly used motifs are butterfly-shaped, especially horizontal bands.

In addition, sherds of bevelled rim bowls, neckless jars, so-called club rim vessels, and globular everted rim jars were collected on the surface of the site. These are handmade, adequately fired vessels with a buff to brown fabric, and chaff and grit temper. They often lack any slip, but there are rare vessels in the corpus with a red wash on the outer surface. Although the bevelled rim bowls are coarse and handmade, they are well-fired and adequately baked. These potteries are contemporaneous with Godin VI:2-1 and the Late Chalcolithic in the Fourth Millennium BC.<sup>63</sup> However, similar assemblages are also reported from the proto-Elamite sites of Iran, such as Susa, Geser (Ghazir), Yahya, Sialk, Qoli Darvish, and Sofalin. Considering the bichrome painted vessels, bevelled rim bowls, neckless jars, globular jars, and club rim vessels in the corpus, it seems that the administrative artefacts were associated with the very settlement that produced these pottery types.

## Conclusion

The surface pottery of Tapeh Tyalineh indicates that the site was a roughly one-hectare settlement in the Late Fourth Millennium BC (the proto-Elamite period), which was established on the banks of the Mereg River in the north of the Mahidasht region. The corpus of clay sealings and counting objects discovered at the site shows that Tyalineh was a crucial site of this period; several other examples have also been identified among the sites of the Fourth Millennium BC in western Iran. Based on the comparisons made with the sites such as Susa, Malyan, Sialk, Yahya, Qoli Darvish, and Tapeh Sofalin, the seal impressions of Tapeh Tyalineh may well be contextualised in the proto-Elamite horizon. These findings are significant in the analysis and dating of the Godin Tapeh administrative artefacts as well. This discovery at Tyalineh may shed light on the attribution of the Godin VI:1 to either the Late Uruk or the proto-Elamite periods. Previously, in light of the appearance of the so-called Mesopotamian-related material culture of the Late Uruk and earlier periods in the Central Zagros, it had seemed reasonable to consider the existence of Late Uruk sites in this region. On the other hand, the presence of the proto-Elamites in the Central Zagros was not taken very seriously. However, the discovery of Tapeh Tyalineh

<sup>61</sup> Delougaz and Kantor, *Chogha Mish*.

<sup>62</sup> Motarjem, 'Gozaresh-e Avalin Fas'l-e Barresihay-e Bastanshenasi Dasht-e Kouzaran'.

<sup>63</sup> Rothman and Badler, 'Contact and development'.

artefacts with prominent features of the proto-Elamite culture demonstrates that although the presence of the Late Uruk culture in the Central Zagros may not be completely ruled out, the presence and spread of the proto-Elamite culture in the region is considerable. Apart from the architectural remains of this period at Godin Tapeh,<sup>64</sup> the newly discovered evidence provides us with the opportunity to investigate clear connections between the Central Zagros region and the proto-Elamite culture through an examination of administrative artefacts such as seals and seal impressions. Currently, one may consider Tapeh Tyalineh as the westernmost known proto-Elamite site in western Iran. Thus, the site is located in a region that might have connected the proto-Elamite cultural sphere and that of the Trans-Tigridian corridor east of the Tigris and west of western Central Zagros. This is of great importance in terms of the interactions between these two cultural zones in the Late Fourth and Early Third Millennium BC, as they both shared the piedmont/glazed steatite glyptic style, yet remained mainly distinct spheres.<sup>65</sup>

Functional analysis of Tyalineh clay sealings indicates that almost all the mobile container sealings were used to seal the openings of pottery jars; significantly, sealings associated with other containers such as baskets, batches, bags, boxes, and so on are absent in the corpus. The jars were usually closed vessels with a rim diameter ranging from 7 to 14 cms, suggesting that the contents imported to the site were transported within such closed vessels. Given the location of the site in the middle of the plain, it is not unlikely that this place was involved in exchanges with groups that transported their dairy products, such as fats, or with communities that produced and exchanged certain beverages, such as beer and wine. The discovery of a diverse corpus of seal impressions on the container sealings, which are classified into 19 different groups, shows the diversity of the individuals and sites whose products were imported to the site. Although there are similarities between Tyalineh seal impressions and glyptic evidence from Susa, Malyan, Yahya, Sialk, and Tapeh Sofalin, these similarities are probably more a reflection of the contemporaneity of these findings than necessarily a direct link between them. The discovery of door sealings at Tyalineh suggests that there were administrative sectors at the site where the entry and exit of storage locations were controlled and monitored by some members of the community. Unfortunately, due to lack of excavation, we are not aware of any facts about the dimensions and size of these bureaucratic spaces and their position (spatial distribution) at the site. However, door sealings sealed with different seals and applied to door pegs of different sizes probably attest to various spaces that were involved in organised exchange and economic activities. The administrative artefacts of Tapeh Tyalineh were associated with potsherds and other findings, and were retrieved from an ashy context on the outskirts of the settlement. It can be suggested, therefore, that this area of the settlement was used to discard trash. Consequently, we are not able to examine the distribution patterns of these findings in different architectural spaces, access to them, and organisation of the spaces within the settlement. Finally, it should be noted that administrative institutions and economic centres of the Central Zagros were not limited to Godin Tapeh, Dehsavar, and Chogha Maran, and that the evidence of administrative technology is not exclusively related to large sites of several hectares. Further studies and research projects will offer us an opportunity to attain a more accurate historical and archaeological perspective in this regard.

**Acknowledgements.** We express our sincere thanks to Farhad Kavikhavi from Hosseinabad village for reporting the extensive illegal soil removal at the site of Tyalineh; to Siavash Shahbazi from the Kermanshah office of the Ministry of Cultural Heritage, Tourism and Handicrafts for accompanying us in visiting the site; and to

<sup>64</sup> F. Desset, 'An architectural pattern in late fourth-millennium BC Western Iran: a new link between Susa, Malyan and Godin Tepe', *IRAN* 52 (2014), pp. 1–18.

<sup>65</sup> Pittman, *The Glazed Steatite Glyptic Style*.

Colonel Mohammadreza Imanpour, Heydar Nowrouzi, and Hamed Baveysi of the protection unit of the abovementioned office for their endeavours in locating the findspot of the artefacts at the site. We would also like to express our thanks to Sara Mozaffari for drawing some of the sealings.

**Conflicts of interest.** None.

---

**Cite this article:** Khosravi S, Alibaigi S, Doosti M, Pittman H, Aminikhah N, Khayani A (2024). Tapeh Tyalineh: a proto-Elamite administrative institution on the Great Khorasan Road, Kermanshah, Western Iran. *Journal of the Royal Asiatic Society* **34**, 233–260. <https://doi.org/10.1017/S1356186322000803>