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**Tol-e Ājori, a new monumental building in**  
**Pārsa: Preliminary cross interpretations from**  
**recent surveys and excavations works around**  
**Persepolis (2005-2012)<sup>1</sup>**

**With an appendix by G.P. Basello (Research Assistant, University of**  
**Naples “L’Orientale”)**

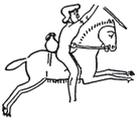
**Two joining fragments of an inscribed glazed brick**

## **1 Presentation of the Joint Iranian-Italian Mission in** **Persepolis**

The Joint Iranian-Italian Archaeological Mission in Fārs started its activities in 2005, within the framework of the Sivand Dam Archaeological Rescue Project organized jointly by the Iranian Center for Archaeological Research (ICAR) and the Parse-Pasargadae Research Foundation (PPRF). After three seasons of excavations at sites TB76 and TB77 of Tang-e Bolāghī (Askari Chaverdi & Callieri 2006, 2007a, 2009), the Joint Mission, led by Prof. Alireza Askari Chaverdi

<sup>1</sup> This article takes into account only the data gathered down to 2012. New data deriving from the recent 2013 fall mission, which has modified some hypotheses about the reconstruction, will be published in another article soon. We express our warmest thanks to the anonymous member of the Editorial Board of ARTA who accepted to revise the English text very carefully.

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and Prof. Pierfrancesco Callieri, searched for a reliable stratigraphic sequence continuing through the Achaemenid and Post-Achaemenid periods on the Toll-e Takht of Pasargadae, with the aim of providing sufficient material to define a ceramic sequence (Askari Chaverdi & Callieri 2007b, 2010).

In 2008<sup>2</sup> the Joint Mission started a multidisciplinary research programme on Persepolis, which focused not so much on the Achaemenid Terrace as, mainly, on the urban settlement which, according to textual sources, existed in its immediate surroundings (Askari & Callieri 2012).

The research was conducted along three main lines: documentation, studies on materials and conservation, archaeological excavation and survey.

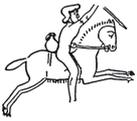
In order to handle the first aspect, two important tools were prepared in order to make the huge amount of information on Persepolis, old and new, easily accessible: a GIS based on open source software (Q-GIS) and an on-line database (BradyPUS) for recording information on the excavations and on the artefacts recovered.

For the second, a series of archaeometrical researches were carried out on several classes of artefacts from the excavations, particularly metal objects, pottery and bricks, in order to integrate the archaeological study with the essential contribution made by the exact sciences. Other diagnostic researches were dedicated to the monuments of the Achaemenid Terrace in order to determine the causes of stone decay and help future work on conservation (Guidi 2012): in this context, a two-week hands-on workshop on conservation was held in 2011.

As for the main part of the project, archaeology, the activities had a twofold aim, because the scientific aspects of the project were associated with the need to support the Parse-Pasargadae Research Foundation in its effort to protect the large area of the buffer protection zone “Harim 1”.

In this respect, surface investigations had been carried out between 2005 and 2008 around the Terrace by the PPRF (Talebian 2008) and by a joint Iranian-French team using a variety of complementary methodologies including an extensive use of geophysics (Boucharlat *et al.* 2012). On the basis of the results of the geophysical prospections carried out by Iranian and French colleagues in the Persepolis plain, the Iranian-Italian project envisaged a series of trial trenches in the areas where anomalies of particular interest had been detected, with the aim of ascertaining the nature, depth and date of these features. Two seasons were dedicated to this research at the site of Persepolis West in 2008 and 2009, which brought to light, among less important finds, an area for craft production and a garden surrounded by an enclosure wall not far from the Terrace (Askari & Callieri 2012).

<sup>2</sup> These activities have enjoyed the financial support of various institutions: the PPRF, the Italian Ministry of Foreign Affairs, the University of Bologna, and, in particular the Italian Ministry of University and Scientific Research through the national projects PRIN 2007 and PRIN 2009, both directed by Prof. A.V. Rossi.



In 2011 the investigations were extended westwards to the area of Bāgh-e Fīrūzi (fig. 1), where the first season of activity was concentrated on the sites of Fīrūzi 5 and, in particular, Tol-e Ājori (fig. 2). In 2012, collaboration with the Iranian-French mission, which was from the outset a feature of the field work in areas where both were engaged, starting with Tang-e Bolāghī, was enhanced by the inclusion of a French archaeologist, an expert in survey methods, in the Iranian-Italian team. An Intra-European Fellowship (IEF) Marie-Curie project was proposed by S. Gondet and finally approved in 2011 to be carried out at the University of Bologna, with the result that extensive surveys are now included in the project.

(A.A.C., P.C.)

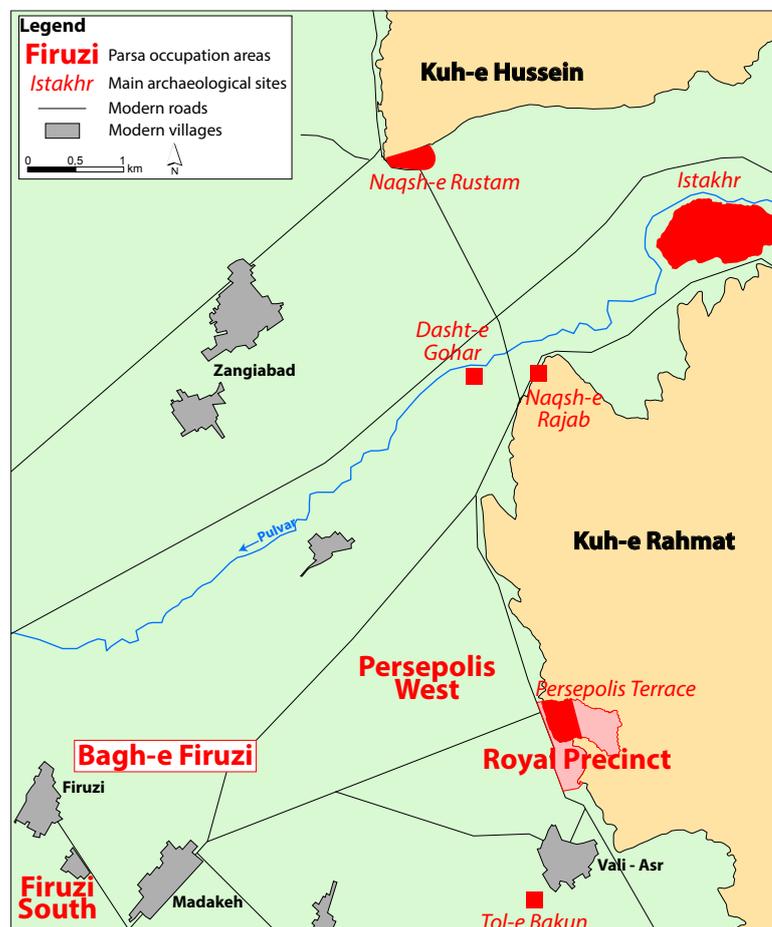


Fig. 1: The settled sectors of Achaemenid Pārsa  
(Computer-aided design - CAD: S. Gondet)

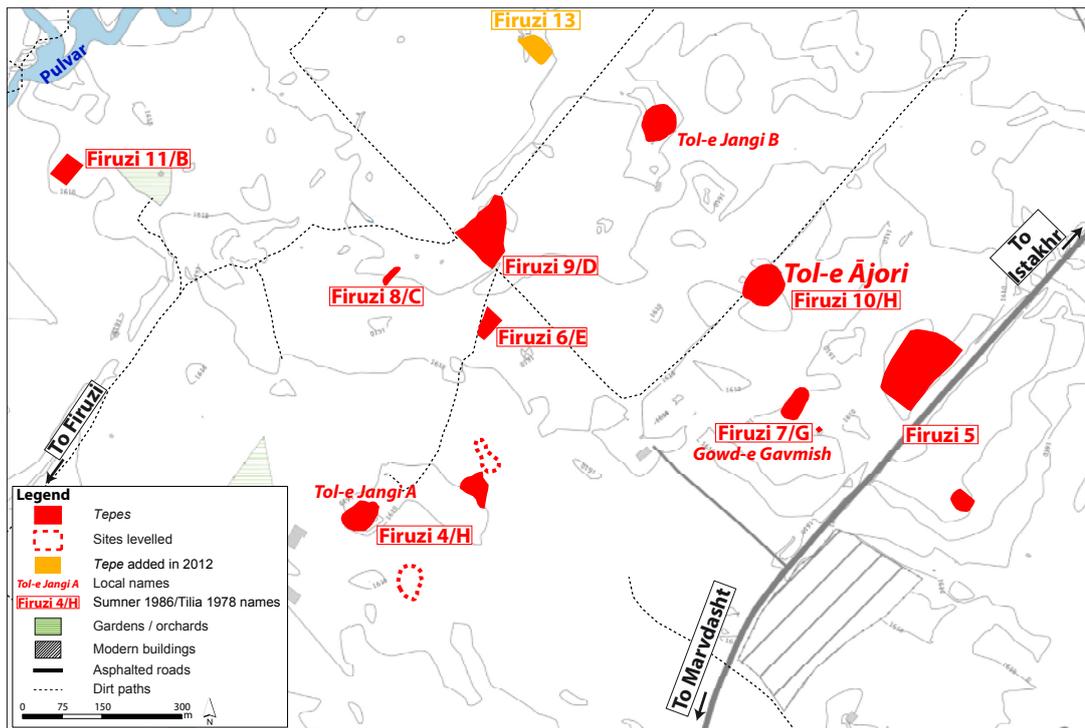
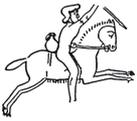


Fig. 2: Settlements map of Bāgh-e Firūzi  
(CAD: S. Gondet)

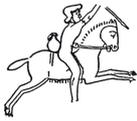
## 2 Tol-e Ājori within Pārsa, review of past fieldworks

### 2.1 Bāgh-e Firūzi interpreted as an elite residential area of Pārsa

Comprehensive study of Tol-e Ājori, located 3 km W of the Persepolis Terrace, must be approached by taking into account former research on Pārsa. Like various scholars before us, we think that the Bāgh-e Firūzi area should be seen as a part of the city linked to the royal residence of Persepolis. Remains of Achaemenid occupation near the village of Firūzi have gradually been brought to light by archaeologists surveying the vicinity of the Terrace in the attempt to place it within the perspective of wider town planning (for the location of sectors mentioned, see [fig. 1](#)). Overall the Terrace and its immediate vicinity<sup>3</sup> correspond to a single large 50 ha Royal area which formed only part of the city, while others await discovery.

E. Herzfeld was the first archaeologist to suggest the city extended not only S and N of the Terrace but also further to the W (Herzfeld 1929: 32). Subsequently, his archaeological interest focused mostly on the Terrace, and we will have to wait for publication of the first archaeological surveys of the plain to have mapped indications of sites within the extensive surface stretching between the Terrace and the village of Firūzi, 5 km W of the Terrace. On the archaeological

<sup>3</sup> As rendered, for example, by Kleiss 1992 or Mousavi 1992.



maps of the Persepolis plain published first by E.F. Schmidt (Schmidt 1939: fig. 94) and then by L. Vanden Berghe (Vanden Berghe 1954), some dotted undated sites were plotted between the Terrace and the village of Fīrūzi. P. Gotch (Gotch 1968, 1969) was the first to give chronological indications, and in the area NW of the Terrace he reported several sites dating from prehistoric to Islamic times. His chronology does not include an Achaemenid period, but the first mention of Fīrūzi as an ancient settlement area can be found on his map.<sup>4</sup>

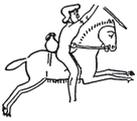
During the survey campaigns carried out in the late 1960's, W. Sumner made a semi-annual attempt to depict the occupation of the Persepolis plain from the Neolithic through the Achaemenid period. Some 14 years after his Ph.D. dissertation (Sumner 1972), he gathered data on the Achaemenid period in the plain in order to provide a sketch of the settlement system in the mid-1<sup>st</sup> millennium B.C. (Sumner 1986). This article was written on the basis of his former surveys as well as the discoveries made subsequently. Among these the most important for our present purpose are the excavation and survey work carried out by Iranian archaeologists E of Fīrūzi, the so-called *Bāgh-e Fīrūzi*, and published briefly by A. Tadjvidi (Tadjvidi 1976: 9-14) and with more details by A.B. and G. Tilia (Tilia 1978: 71-90). There, field activity casts light on a dozen monumental Achaemenid buildings, partly made of cut stone, and *tepes* spread over a large surface estimated at 600 ha. Tilia's interpretation of Fīrūzi was based on the appearance of buildings which must have belonged to members of the Persian elite. Basing their demonstration on architectural comparisons with Pasargadae, the Tilias suggested an early Achaemenid date for the foundation of these monuments. In his conspectus, W. Sumner placed these remains into a broad reconstruction of the Achaemenid occupation of the whole Persepolis plain while focussing on the city.<sup>5</sup> For him it was obvious that the city extended further W of the Terrace. He located the urban centre in the so-called *Persepolis West* area, a place with clusters of low *tepe* mounds at 1.5 km from the Terrace, and 1.5 km further W he presumed that Fīrūzi was an elite residential suburb area also accommodating some possible craft activities (Sumner 1986: 28). Since then this proposed reconstruction of the Persepolitan space has been discussed (for example, Boucharlat 2003, Talebian 2008) but never refuted.

## 2.2 Spatial organisation of the remains around Fīrūzi and location of Tol-e Ājori

On close examination, the publications by A.B. and G. Tilia and W. Sumner do not offer the same view of the spatial extent of this area.

<sup>4</sup> On the map published in Gotch 1968, the prehistoric site 18 is named *Firuz*. In Gotch 1969, it is dated back to the Kaftari and Shoga-Teimuran period. The site still exists although levelled and located on the S fringe of the modern village of Fīrūzi.

<sup>5</sup> For him this city was *Matezzish*, which meant that his definition of Pārsa/Persepolis was restricted to the Terrace and its immediate vicinity. This hypothesis has never been demonstrated and, as explained in the introduction to this article, we prefer to consider Pārsa as the whole area including the space between the Terrace and Naqsh-e Rostam.



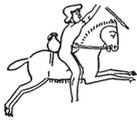
For the Tiliās, what they call the Bāgh-e Fīrūzi area comprises a group of five buildings with some identical stone architectural elements: platform, gates slabs or column bases (Tilia 1978: 74, fig. 1, sites B to F, see [fig. 2](#) for a location map of the sites cited). Altogether these remains form a sizeable group of buildings that, on the basis of certain architectural details, could have been erected within a short time span between the reigns of Cyrus and Darius the Great. Further E, two other sites, including Tol-e Ājori, were described separately by the Tiliās (Tilia 1978: 74, fig. 1, sites G and H). They stand apart from the other buildings and, on the evidence of the architectural features and surface artefacts, can be associated with the Achaemenid period, but not as part of the first group. The surface of Tol-e Ājori is described as covered with baked brick fragments, while on the other site (called Gowd-e Gāvmīsh in the local toponymy) stone blocks were probably reused to erect a building of enigmatic function.

W. Sumner offered a more detailed view of this area, which he called simply Fīrūzi. For him, Achaemenid Fīrūzi covers a larger area including all the sites described by Tilia E of the modern village but also large low mounds with Achaemenid sherds located to the S (Sumner 1986: 8-9, 8-III.4). In the course of his attempt to reconstruct the city of Persepolis he considered Fīrūzi as a whole. Bāgh-e Fīrūzi and the S sector of Fīrūzi were interpreted as a single prosperous suburb of the general Persepolis West city.

In the framework of our project we have decided to give our own view of the spatial organisation of Fīrūzi. We have also made some additions to the archaeological map, and some corrections. This allows us to consider Tol-e Ājori within the context of the remains of the contemporary landscape. Our perspective sits between that of the Tiliās and Sumner.

First it was decided to distinguish the area S of the village, named Fīrūzi South, from the one to the E, Bāgh-e Fīrūzi. Today the whole of Fīrūzi South has been levelled to a considerable depth and modern agricultural practices have left no archaeological evidence. This separation is thus based purely on W. Sumner's descriptions and study of old cartographic documents. The archaeological remains at Fīrūzi South seem to be very different in nature from those at Bāgh-e Fīrūzi. In the first case we have large *tepes* produced by the erosion of densely built mud-brick structures, while in the second we have large buildings partly made of stone that were built isolated from each other. Given only these few elements, the occupation at Bāgh-e Fīrūzi must have been of a different nature and organized following a scheme from that at Fīrūzi South.

Secondly, we assume that the boundaries of Bāgh-e Fīrūzi must have extended beyond those suggested by the Tiliās. In fact, they failed to take into account some sites subsequently revealed by extensive agricultural activity or partly excavated by the Joint Iranian-Italian Mission. As demonstrated in the present article, sites H (Tol-e Ājori) and G (Fīrūzi 5) can clearly be identified as large monumental buildings. In addition, a new site was added to the map in 2012, located 500 m NW of Tol-e Ājori: here fragments of column bases as well as Achaemenid ceramic sherds were found on the surface (Fīrūzi 13 on [fig. 2](#)). If we take into account the grandeur of the buildings as a factor to delineate the area of Fīrūzi, we have to include Tol-e Ājori as well as the Achaemenid sites around it. As defined here, the Bāgh-e Fīrūzi area spreads over 130 ha and



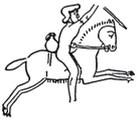
includes 10 known Achaemenid sites: seven with stone architectural elements, one with baked bricks on the surface, and two corresponding to 3 m-high rounded *tepes*.<sup>6</sup> Tol-e Ājori is located on the eastern fringe of Bāgh-e Fīrūzi, on a border defined by Fīrūzi 5 located 300 m to the SE and Tol-e Jangī B located 400 m to the NW.

### 2.3 Tol-e Ājori before recent works: description and hypothetical functions

Among the other sites of the Bāgh-e Fīrūzi area, Tol-e Ājori is marked out by the fact that its surface is covered with numerous baked brick fragments.<sup>7</sup> During their survey A.B. and G. Tilia saw several fragments of glazed baked bricks with elements of panels showing vegetal or zomorphic decoration (Tilia 1978: 84-85) and published some pictures of these bricks (Tilia 1978: pl. LII, fig. 36 and pl. LIII, fig. 37). In her article A.B. Tilia suggested a comparison with the well-known glazed-brick panels from Susa and offered two hypotheses for the function of Tol-e Ājori: a monumental building decorated with glazed brick panels; a workshop with a kiln for the production of baked bricks for the Persepolis Terrace. W. Sumner reproduced their description in his article, adding only information on the physical aspect of the tepe (Sumner 1986: 9);<sup>8</sup> he cited both the hypotheses proposed by the Tilias but inclined towards the one suggesting kiln remains.

(S.G.)

- <sup>6</sup> These two *tepes* were not included in either Sumner's or Tilia's descriptions. In the light of several visits on site, the *tepes* are quite barren but on the evidence of a small amount of ceramic sherds, we think that they can be dated to the Achaemenid period. To refer to them we use the vernacular names: Tol-e Jangī A for the westward *tepe* near to the village; Tol-e Jangī B for the eastward *tepe*. Concerning the latter, W. Sumner made a mistake on his published map of Fīrūzi, where he located Tol-e Ājori in the place of Tol-e Jangī B (respectively Fīrūzi 7 and 10 on Sumner 1986: 8-ill.4 while the description of Fīrūzi 10 in Sumner 1986: 9 is for Tol-e Ājori). Except for Tol-e Ājori, a name well-established in local usage, and for Tol-e Jangī B, due to the mistake made in locating it, we use the numbering of W. Sumner to name other sites of Bāgh-e Fīrūzi.
- <sup>7</sup> This assertion must be balanced by the fact that A.B. and G. Tilia (Tilia 1978: 82), followed by W. Sumner (Sumner 1986: 9), published a brief note concerning another *tepe* with baked brick fragments on the surface standing next to Fīrūzi 11 (site B for Tilia). Tilia discovered here at least one decorated fragment. Today this site has been levelled and no trace was found during our surveys.
- <sup>8</sup> With archaeological description under the name of Fīrūzi 10 and physical description under Fīrūzi 7 due to the location errors of Tol-e Ājori.



### 3 Results of archaeological and geophysical magnetic surveys at Tol-e Ājori (2005-2008): discovery of a single square monumental building

Within the framework of the reassessment of Achaemenid occupation in the Persepolis Plain the Iranian-French mission carried out surveys in the whole of the Pārsa area, also called the *Persepolis settled zone* (Boucharlat *et al.* 2012). In the Fīrūzi area the research goals were: first, to enhance the archaeological map of Achaemenid occupation; secondly to cast light on the existing links between known sites scattered over a large area; and finally to provide a more accurate plan of the buildings. These objectives were tackled through reconnaissance of surface artefacts and by using the magnetic survey method. The latter was carried out both on the site surface to detect buildings plans and on off-site fields. By extending the survey beyond the *tepes*, the goal was to identify traces of other buildings or of canals and roads in order to reveal an overall scheme of landscape organisation including all the Fīrūzi sites, as had been possible in Persepolis West (Boucharlat *et al.* 2012: 259-264). We will focus here on our results obtained at Tol-e Ājori and provide a broader overview of the scheme of organisation at Bāgh-e Fīrūzi in the general conclusions to this article.

#### 3.1 Preliminary surface surveys

Thanks to topographic studies carried out during the surveys we can provide a more accurate picture of the site as it was before the recent excavations. Tol-e Ājori is an ovoid mound 80 m long and 60 m wide with a NE/SW orientation (fig. 3) surrounded by cultivated fields (fig. 4). Its topography is quite regular except a small circular raised area 0.5 m high located on the N limit of the *tepe*.

Even today the surface of the site is still covered with a wide scatter of baked brick fragments, a few of which are decorated. Since the surveys of the 1960's and 1970's, Tol-e Ājori has survived well in comparison with other sites of the Bāgh-e Fīrūzi area and most of it is still untouched by farming. In the NW part of the site a 2 m-deep irrigation ditch has been dug across the mound, with a dirt path running alongside. Further N, to the other side of the ditch, modern cultivation has levelled some meters of the NW border of the site. In the S and SE part of Tol-e Ājori a narrow (0.4 m in width) and shallow concrete canal has been created all around the edge of the *tepe*.

The archaeological data gathered during these preliminary surface observations have allowed us to suggest, with a fair degree of certainty, that Tol-e Ājori corresponds to the remains of a building. Indeed, the sections of the large modern NW ditch showed a compact layer of baked bricks, some with bitumen mortar. In digging the ditch part of the foundation was probably destroyed. Bitumen mortar on bricks and lack of common dump material from kilns seems to exclude the workshop hypothesis. Furthermore, the presence of glazed bricks clearly indicates a wealthy building because, as far as we know, this type of material has only been found in royal residences (Boucharlat 2010: 430).

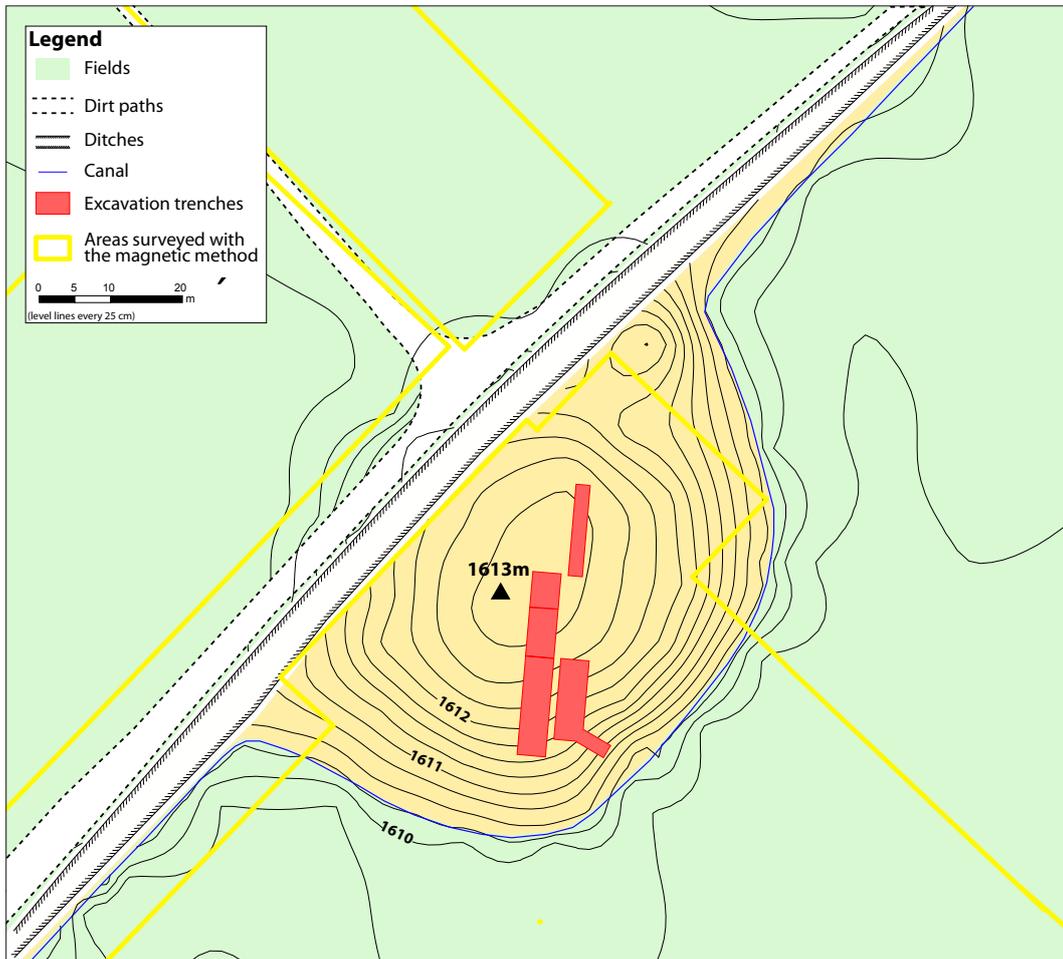
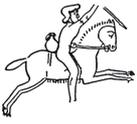
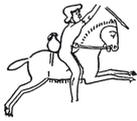


Fig. 3: Map of Tol-e Ājori (CAD: S. Gondet)



Fig. 4: General view of Tol-e Ājori from the S (kite aerial photography: B.N. Chagny, JIFMF)



### 3.2 Results of the magnetic survey carried out at Tol-e Ājori

The magnetic geophysical survey technique aims to map differences of magnetism properties amongst all the components of the subsoil layer near the surface. Nowadays it is a method routinely used to study ancient occupations and has been widely used during Iranian-French works in Fārs (for example in Pasargadae, see Benech *et al.* 2012).

Most of the *tepe* was surveyed in 2005 (fig. 5), i.e. the main part of the *tepe* to the SE of the large ditch as well as the smaller levelled part on the other side. Only a small area towards the N was not surveyed because of modern dumps. Given the depth and width of the ditch it was impossible to cross it; so the magnetic map is divided into two parts. In contrast, the concrete canal built around the S edge of the *tepe* is narrower and did not obstruct our survey of the S periphery of the site. Nevertheless, it generated marked anomalies and a metal sluice gate on its E stretch disturbed measurement, to the extent that detection of the pattern of remains on the periphery is more difficult. However, in terms of the entire surface surveyed these modern disturbances are limited.

The main outcome of this survey was to show that Tol-e Ājori is clearly the site of one single large building. When studying the map in 2005, we suggested a plan for reconstructing this building based on a tentative delineation of the large strips of marked magnetic anomalies (fig. 6; already published in Boucharlat *et al.* 2012: 265-266, fig. 14). The marked anomalies are associated with buried baked brick fragments, which constitute a particularly magnetic material. The scheme now emerging shows a square built area of nearly 45 m sides taking into account the outer limits of the anomalies. The width of the proposed external walls comes to between 7 and 9 m except for the SE wall, which appears to measure less than 5 m. In the middle of the delineated area several marked anomalies are encapsulated within a smaller, square structure of 10 m sides. Thus the suggested model for the Tol-e Ājori building is: a single square hall with, in the middle, some constructions whose very nature is difficult to interpret. In conclusion, we may add that the marked and sharp anomalies, usually produced by remains of kilns on magnetic maps and easily recognizable, are not found here.

However, this reconstruction took into account several observations regarding the exact nature of the anomalies detected. As stated before, the suggested plan of the building was a scheme proposed on the basis of the interpretation of the magnetic map, and it will of course be reconsidered in the light of excavation results. As can be seen on the raw map (fig. 5), the limits of the magnetic strips are not as straight as drawn. Also, the walls are considerably wider than those of the major Achaemenid buildings of the Persepolis area.<sup>9</sup> Both these observations are accounted for by the fact that we mapped not only the walls themselves but also the surrounding baked brick collapses. Another point is that each baked brick produces its own singular anomaly, which accounts for the fact that along the suggested wall paths the responses detected

<sup>9</sup> The evaluations must also take into account the difficulties in providing the exact dimensions of features detected through the magnetic method.

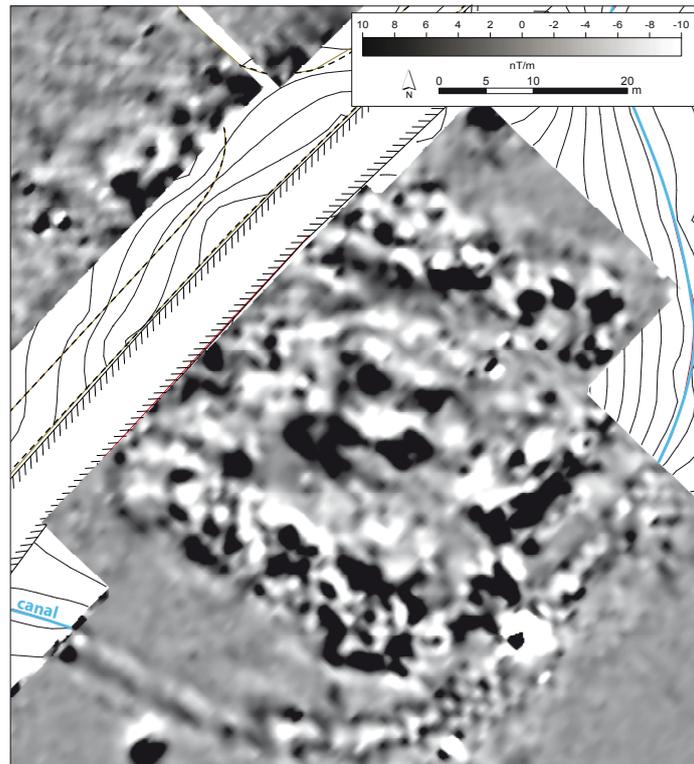
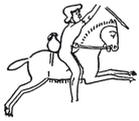


Fig. 5: Magnetic map of Tol-e Ājori  
(survey & CAD: S. Gondet, JIFMF)

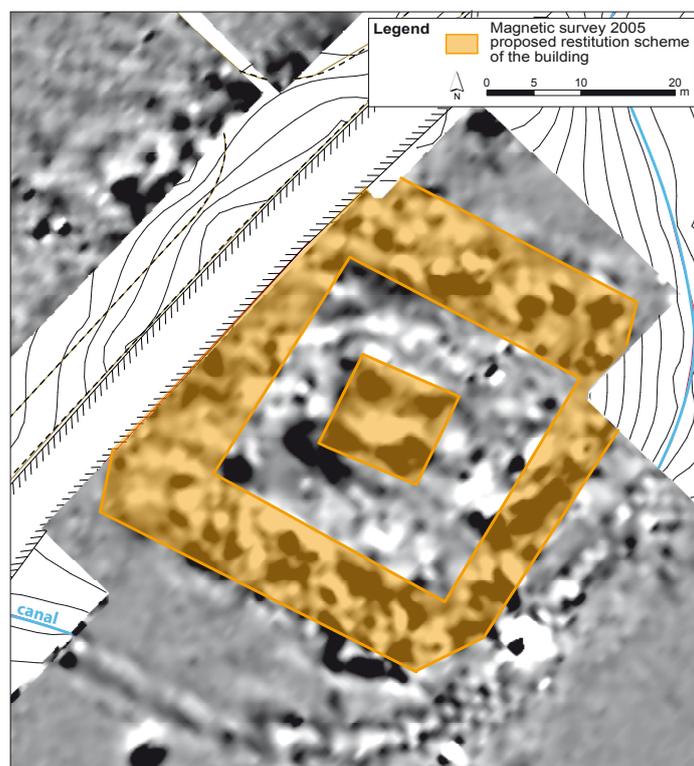
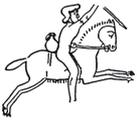


Fig. 6: Interpretation of the 2005 magnetic survey, proposed restitution scheme of remains of Tol-e Ājori (CAD: S. Gondet, JIFMF)



are not uniform but formed by multiple single anomalies. A heap of mixed baked bricks usually yields such vaguely delimited anomalies. Nevertheless, at the end of this phase of surface work we can make the following observations: Tol-e Ājori was home to a square building, built largely of baked bricks; surface surveys and magnetic surveys exclude the presence of kilns on this site.

(S.G.)

## 4 First excavations results (2011-2012): the square building brought to light

### 4.1 Excavation progress and strategy 2011-2012

The promising results of the Iranian-French surface surveys suggested in 2011 that the Iranian-Italian Joint Mission select Tol-e Ājori as one of the sites to investigate in the area of Bāgh-e Fīrūzi, along with the other imposing building at site Fīrūzi 5.

For the first trial excavation, aimed at ascertaining the actual nature of the site and its stratigraphy, a trench (Tr. 1, location on [fig. 7](#)) of  $14 \times 4$  m, with an approximately N-S main axis was dug across the area which should correspond to the S side of the outer limit of the square built area revealed by the magnetic survey. A second  $5 \times 4$  m trench (Tr. 2) was then opened on Tol-e Ājori, in the central area of the *tepe*, 7 m to the N of Tr. 1.

The main result of the 2011 excavation at Tol-e Ājori was the discovery of parts of a monumental building, at the time interpreted as a possible platform, with a core in mud-brick, lining in baked bricks and facing in glazed bricks, belonging to the Achaemenid period.

Given the importance of the discovery of the first campaign, it was decided in 2012 to extend the excavation across the mound and three new trenches were then excavated (overview of 2012 trenches on [fig. 8](#)). The first trench (Tr. 3), measuring  $11.50 \times 4$  m, was dug in the area immediately to the E of Tr. 1 from 2011, which should correspond approximately to the S end of the SW side of the apparent square structure revealed by the magnetic survey. The main aim of this trench was to locate the S corner of the building in order to better define its plan: when it appeared that the corner was not within the limits of the initial trench frame, the trench was extended to the SE corner by  $3.50 \times 2$  m. A second trench (Tr. 4) was opened in the central area of the *tepe*, connecting Tr. 1 with Tr. 2, measuring  $7 \times 2$  m, which uncovered the N face of the SW wall. The third  $13 \times 2$  m trench (Tr. 5) was opened to the N of Tr. 2 across the presumed NE side of the square structure.

In this way the cross section of the whole *tepe* from N to S was obtained and the NE wall of the building was also brought to light, parallel to the SW wall. The S corner of the building has also been located.

At the end of the second 2012 season, it was thus possible to ascertain the existence of at least two of the four sides of a perimeter wall forming a square around a central space, so that the hypothesis of a massive platform had to be rejected.

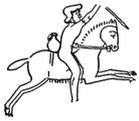


Fig. 7: Map of trenches opened on Tol-e Ājori  
(topography & CAD: S. Tilia)

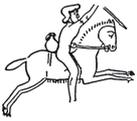


Fig. 8: General view of the trenches from SW  
(autumn 2012)

#### 4.2 A general description of the monument

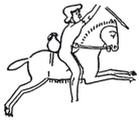
On the basis of the preliminary and fragmentary information obtained from the 2011 and 2012 excavations, we can suggest a general reconstruction of the building (fig. 9). Only parts of the SW and NE walls were brought to light, along with the S corner. Since the structure of both excavated walls is similar, we propose to extend the information to the whole building.

The building appears to have an orientation from NW to SE, with a 20° shift from the E-W axis. It is square in shape, 30 m long on each side,<sup>10</sup> and is formed by a massive wall of about 10 m in width, which encloses an inner space of 100 m<sup>2</sup>.

Two of the four sides of the perimeter wall turned out to be characterized by a symmetrical structure, with only minor differences between Tr. 1 and Tr. 3: a mud-brick core 5 m in width encased on its two faces by two sections, each of 2.5 m in width, made of baked bricks: the facing of the outer and inner baked brick sections is of glazed bricks. The base of these facing walls is constituted by projecting feet in unglazed baked bricks. To facilitate description, we split the wall up into five structural blocks (fig. 9, see also the picture of the N section of Tr. 1 and interpretation scheme on fig. 10 and W section of the same trench on fig. 11):

- Block A – outer (i.e. facing the outside) projecting foot in baked bricks.
- Block B – outer section in baked bricks with facing of glazed bricks;

<sup>10</sup> The 2013 excavations have shown that the building is rectangular in plan, measuring 30 × at least 35.5 m: its N corner could not be located within the preserved area of the *tepe* and the NW wall is likely to have been in the area now destroyed by the ditch cutting into the side of the *tepe*.



- Block C – the core of the wall in mud-brick with odd baked bricks;
- Block D – the inner (i.e. facing the inner room) section in baked bricks with facing of glazed bricks;
- Block E – the inner projecting foot in baked bricks.

As for confirmation of the plan on the basis of the archaeological evidence, the S corner of the building was located in the SW extension of Tr. 3, even though that area had been severely looted, leaving only one part of the corner brick *in situ* (fig. 12).

Thanks to the results of the geophysical surveys, we can also suggest that an access (indicated as “gate” in the plan) was opened in the SE wall, i.e. in the eastern face, as was usual in the architecture of the Ancient Near East.<sup>11</sup>

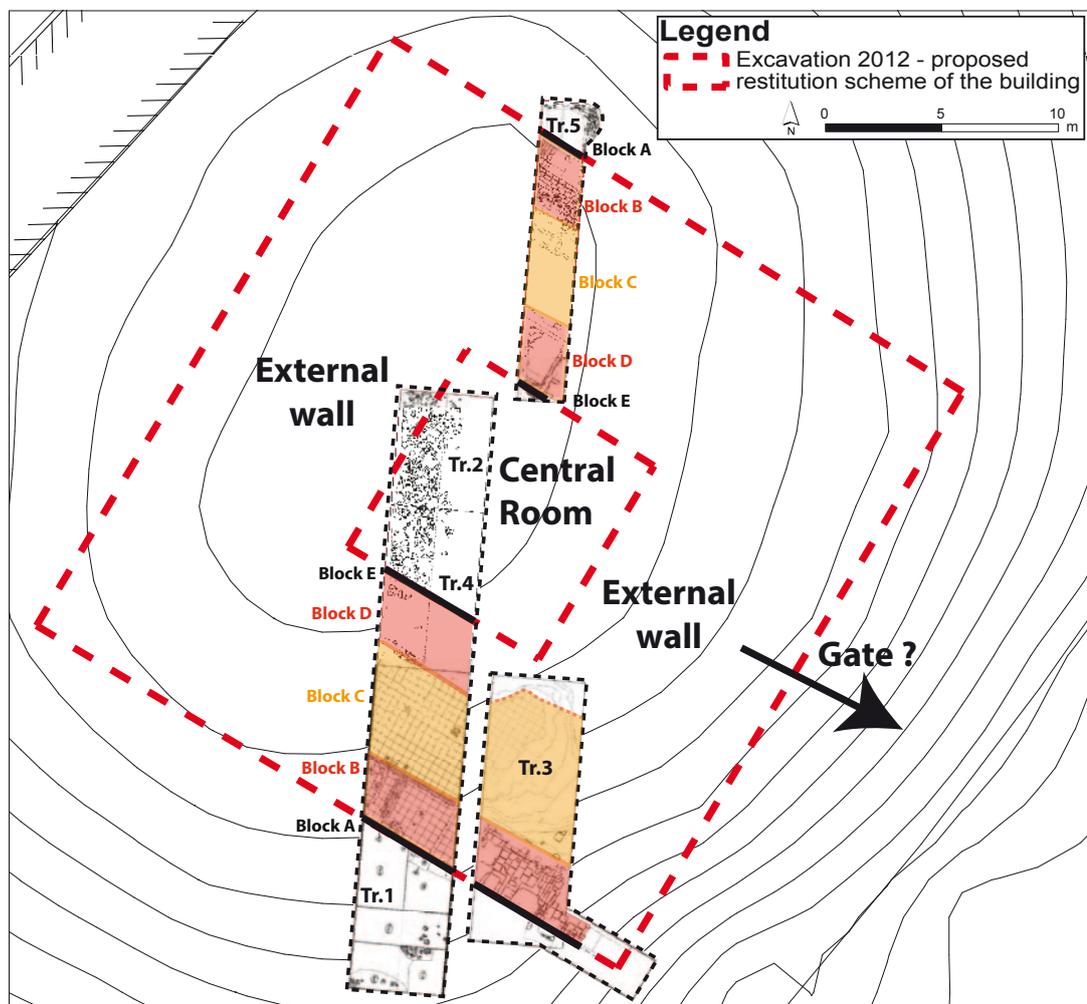


Fig. 9: General sketch map of the structural architectural part of Tol-e Ājori (CAD: P. Callieri & S. Gondet)

<sup>11</sup> The 2013 excavations have confirmed the existence of a gate through the SE wall.

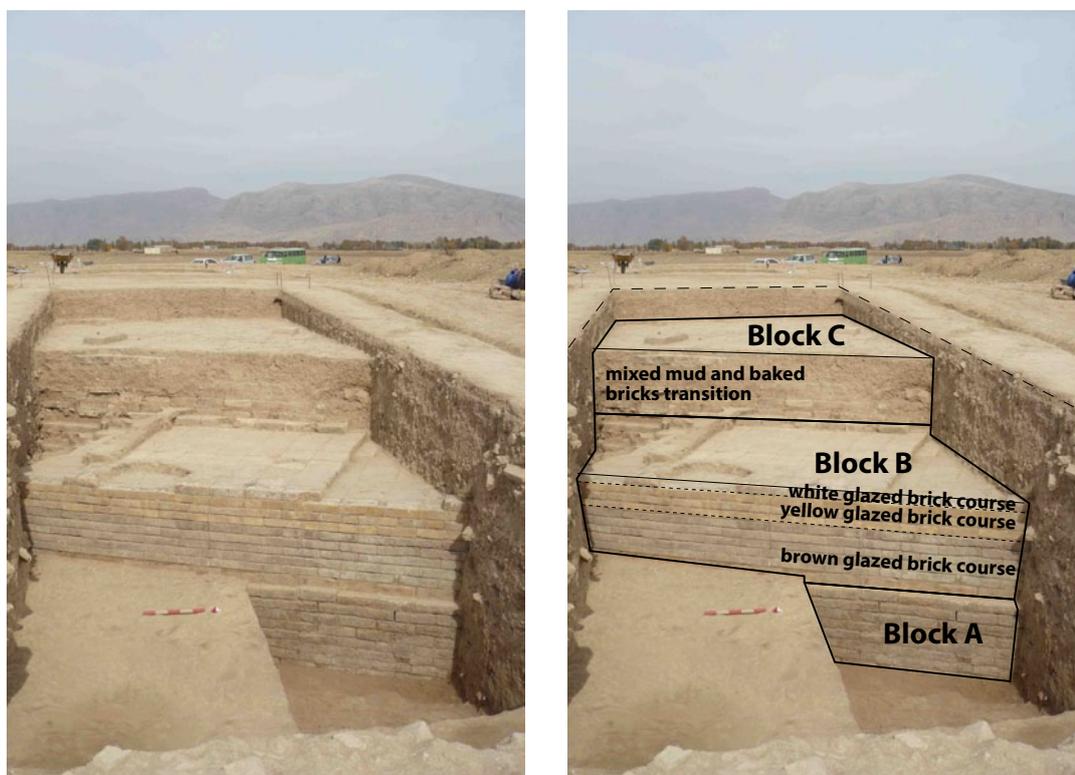


Fig. 10: Tr. 1, general view from S (on left) and scheme of the various architectural blocks (on right)

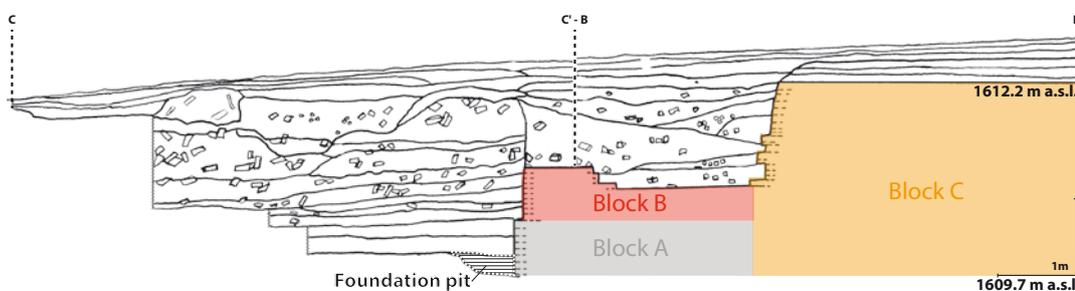


Fig. 11: West section of Tr. 1 showing Block A to C and the complex stratigraphy of the destruction layers and spoliations trenches (drawing: A. Mercuriali, CAD: S. Gondet)

The information collected in the excavated trenches opens the possibility that the whole area of the building was prepared with an artificial levelling which created a sort of under-base-ment in levelled and pressed clay: this layer was exposed more extensively in an area of Tr. 3, where all the baked bricks of the building had been pillaged (fig. 12). Unfortunately, investigation of the deeper layers was not possible due to lack of time. It will obviously be necessary to integrate the study of the stratigraphy concerning the life of the monument with close study of the layers beneath the monument, in order to verify whether the building rests on virgin soil or if there was an earlier occupation of the area.

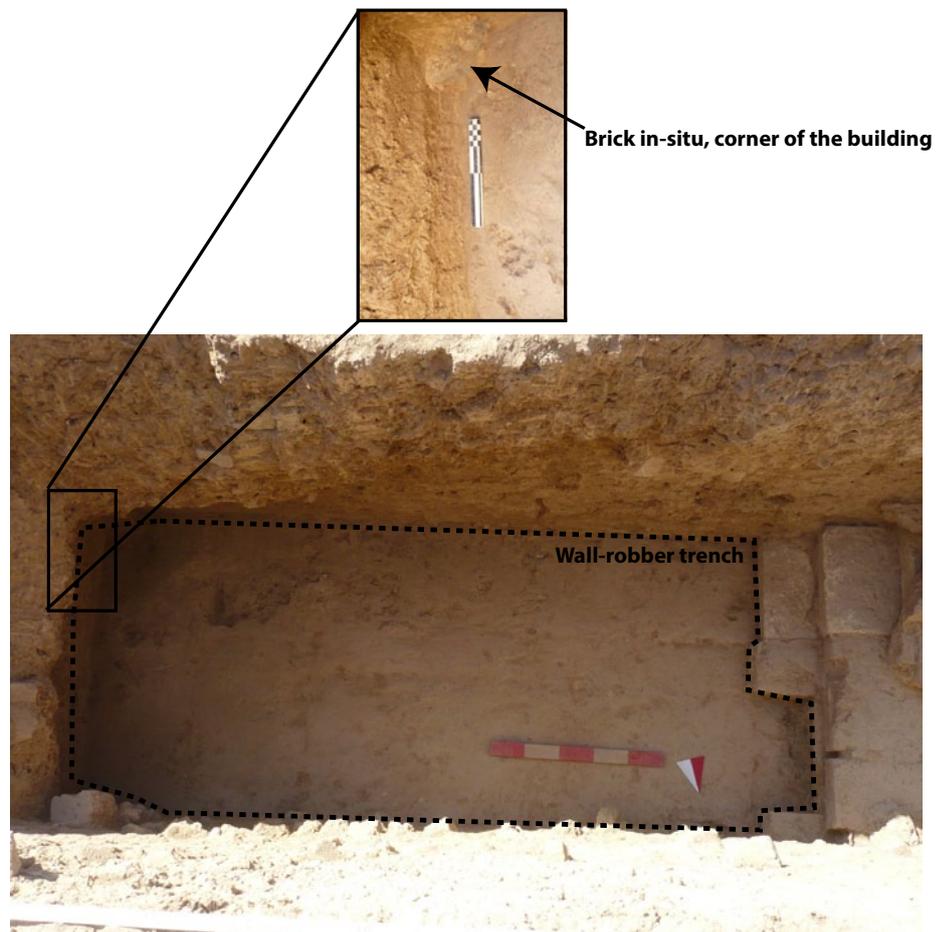
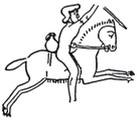


Fig. 12: Tr. 3, SE extension, S corner of the building and detail of the only fragment of brick in situ

### 4.3 Foundation of the building

The foundation of the platform was laid in a shallow foundation pit, between 50 and 80 cm in width. Dug in very hard soil, the pit was filled with a layer of compressed sediment (fig. 13). The soil in which the pit was dug could not be tested but has characteristics similar to those of the natural soil brought to light elsewhere in the area and particularly in the trenches opened at Persepolis West in 2008 and 2009. Nevertheless, the alternative hypothesis of an artificial under-basement of compacted clay must also be considered.

Above it, the first course<sup>12</sup> of bricks was laid over a 10 cm thick layer of hard mortar, which seems to have been produced by mixing clay with lime plaster.<sup>13</sup> This layer was exposed only along small sections where all the baked bricks had been pillaged, and definition of it remains to be confirmed. It is probably composed of the same clay as the layer in which the foundation pit was dug, albeit levelled and compressed with the consequence that it is extremely compact.

<sup>12</sup> In the description of the structure, the term “course” is assigned to horizontal level of bricks, and that of “row” to each of the brick lines forming the course from the outer face towards the core.

<sup>13</sup> No analysis has as yet been carried out on the samples collected.

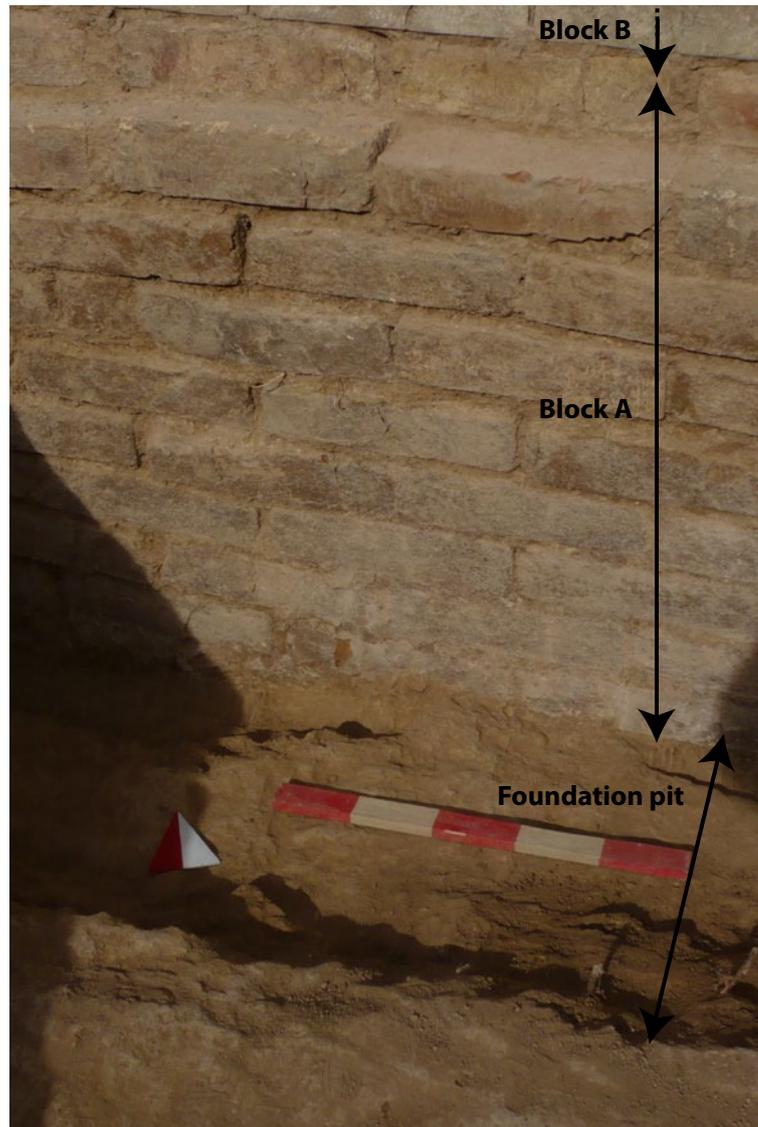
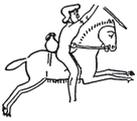
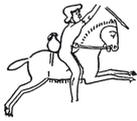


Fig. 13: Tr. 1, foundation pit and Block A of the SW wall

#### 4.4 The perimeter wall

**The projecting foot (Block A and E)** – Above the foundation layers are 9 courses of baked bricks of  $32\text{--}32.5 \times 32\text{--}32.5 \times 8\text{--}8.5$  cm, unglazed, forming the projecting foot of the facing wall (Block A and E of the structure, [fig. 12](#)). The bricks are set in a clay and lime plaster mortar similar to that of the under-basement, 1–3.5 cm thick. The brick masonry was built with position shifted laterally by a half-brick measure course by course and row by row. The last brick course of this section is recessed by 10 cm in the facing and represents the base for the proper elevation of Block B and C.

Examination of the lower courses of the baked bricks of Block A in the NE wall suggests on their N face the possible addition of a section which was not joined to the body of the wall ([fig. 14](#)). This portion is in turn composed of two adjacent rows, not joined together, preserved



for a maximum elevation of 6 bricks measuring  $32 - 33 \times 32 - 33 \times 8 - 9$  cm: their bottom course lies slightly below the surface of the first course of Block A. Against this N face are two layers of deperated compact clay which seem to be filling layers and will be understood better when excavated further N. This addition is being considered for now as a separate phase.

**The outer and inner baked brick sections (Block B and C)** – In Tr. 1, where it is better preserved, Block B shows 9 courses of baked bricks of  $32 - 33 \times 32 - 33 \times 8 - 9$  cm with the outer row, i.e. the facing, of glazed baked bricks of  $32 - 32.5 \times 32 - 32.5 \times 7 - 7.5$  cm (figs. 15, 16). The thickness of these baked bricks is not perfectly regular, and a few bricks of larger size ( $36 \times 36$  cm) are also included. The outer row of the lowest 5 courses is in brown (?) glaze (fig. 17), the 3 courses rising above being in yellow glaze and, finally, the last preserved course is white glazed. The decoration of the Block D facing has yet to be identified due to the spoliation in the central area.

The bricks of the baked-brick blocks are set in laterally shifted positions course by course and the outer rows of bricks are alternately square and rectangular. As revealed by the topmost courses of bricks, the two or three outer rows of bricks of each course are set in a bitumen mortar about 1 cm thick, with the probable function of preventing moisture penetrating the core of the platform from outside (fig. 18).

An extremely interesting element of the two exposed topmost courses of glazed bricks, yellow and white in colour, is the fact that the upper surface of each brick bears three fitters' marks made in white paint with a brush along their outer edges: one on each of the lateral sides and one in the middle of the face side. Their function is evident thanks to the original position of these bricks: the central mark indicated to the mason the course level to which each brick belonged, differing in the two visible superimposed courses, while the two side marks indicated the adjoining bricks on the same course to the left and right respectively, where two similar marks were respectively painted side by side (fig. 19). Marks of this type are to be seen on the upper surfaces of all the glazed bricks found in the collapse layers, and prove that glazed bricks, even non-figurative ones, were laid according to a scheme prearranged in the brick workshop. The marks are based on the association of straight and curved strokes, and are exactly the same as those recorded in the Palace of Darius I at Susa (Daucé 2010; Maras 2010), as well as to marks on Mesopotamian glazed bricks (Rossi 2010). They must be distinguished from the masons' marks known to us in Iran on the bricks of Susa (Daucé 2010: 332-33) as well as masonry in stone blocks from the Achaemenid to the Sasanian period (e.g. Pasargadae, Persepolis, Firuzabad, Kangavar).<sup>14</sup> An interesting point is that the brown (?) glaze bricks, which occupy the lower courses, bear no fitters' marks.

<sup>14</sup> A detailed study of the glazed bricks from Tol-e Ājori is in progress as part of a master thesis work by E. Matin, a member of the field mission and student at the University of Bologna. His study comprises the creation of a dedicated database as well as comparison with bricks from Susa stored in the Louvre Museum.

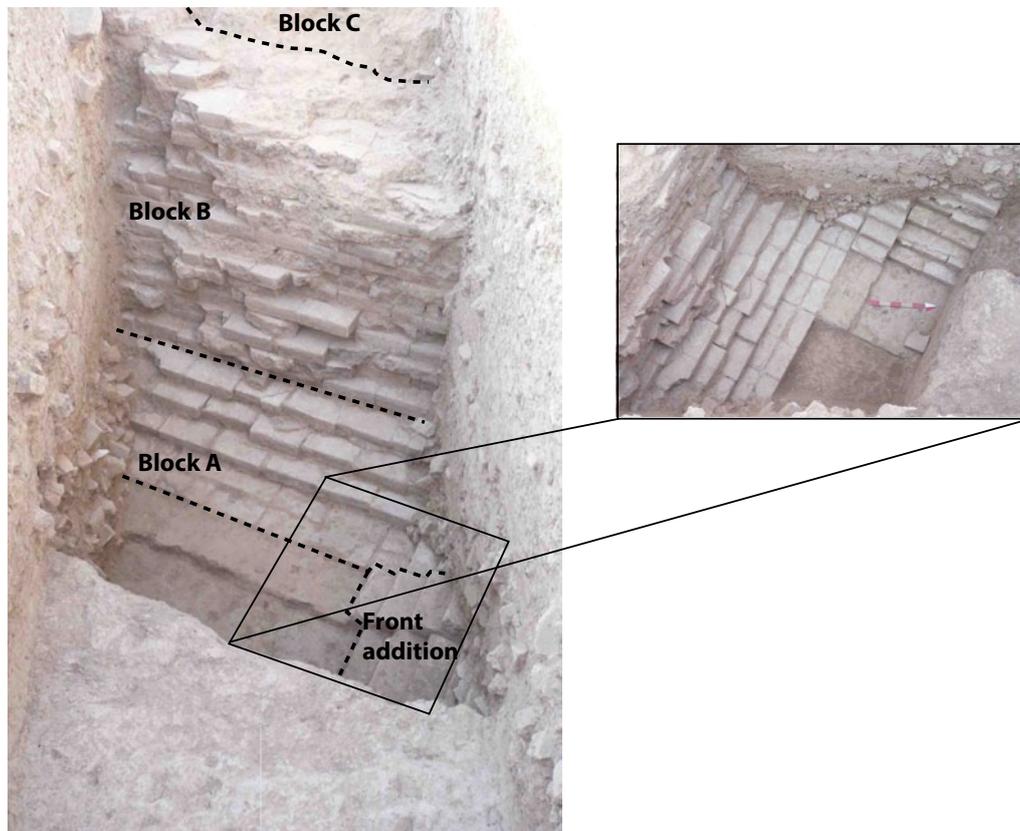
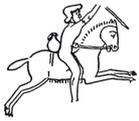


Fig. 14: Tr. 5, Blocks C, B and A, seen in the wall-robbing trench in their N face and detail of possible additions in front of the Block A



Fig. 15: Tr. 1, Block B of the SW wall, in baked bricks

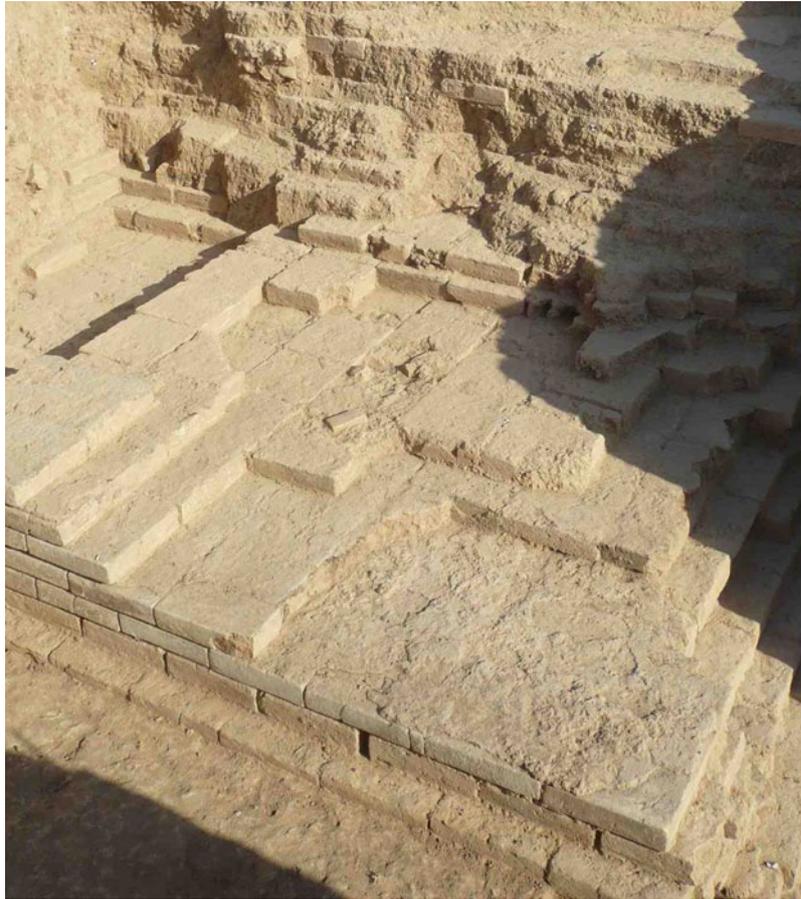
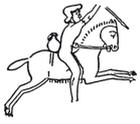


Fig. 16: Tr. 3, Block B of the SW wall, in baked bricks



Fig. 17: Tr. 1, S facing of the SW wall, in coloured glazed bricks

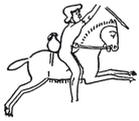
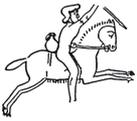


Fig. 18: Tr. 1, bitumen mortar on the outer rows of baked bricks of Block B



Fig. 19: Tr. 1, fitters' marks on glazed bricks of Block B



**The mud-brick core (Block C)** – The inner core of the wall, Block C, is built in mud bricks measuring  $32 \times 32 \times 8$  cm, as shown by the courses exposed by the spoliation of the outer sections in fired bricks (fig. 20). The transition between the baked bricks and the mud-brick block is not sharp, and throughout the structure we noticed an alternation of the two materials so that there is no clear-cut division between the two blocks, i.e. of mud-brick and baked bricks. Even in the topmost mud-brick courses a few baked bricks were inserted in the wall texture, probably to function as benchmarks. As indicated above, in Tr. 3 the apparent width of the mud-brick core is larger than in Tr. 1: the reason why may be revealed with excavation of the area to the N of Tr. 3.

An interesting observation was made in Tr. 1. Here the two uppermost preserved courses of mud-brick, despite showing the same proportions as the underlying courses, have a different texture, and could represent a different construction phase or a later repair. A more detailed description cannot be attempted on account of damage due to spoliation.

#### 4.5 The central room

On coming to the centre we had insufficient time left for investigation and could not reach the foundation of the walls. This is mainly due to the difficulties encountered in excavating this section and the large-scale spoliations in the centre of the building. Nevertheless, the excavation yielded some data on the inner sections of the perimeter walls and the central room.

Block D had been spoliated to a considerable depth, so that the mud-brick core was exposed when the wall-robber trenches were cut (Block C), with a few odd fired bricks (fig. 21). Nevertheless, some of the baked bricks of Block D belonging to the last courses of the inner rows, i.e. the facing of the central room, were left in both the SW and the NE walls, offering evidence to prove the existence of the central room and suggest its present delineation.

In the area of what must be the central room, the stratigraphy of filling material is quite complex. It begins at the base with a very thick layer of depurated clay detected in part of the sections of the wall-robber trenches. The compact upper interface of this layer is likely to represent the floor level of the inner room, since no other floor level was evidenced during excavation below the collapse. This floor has a simple appearance, consisting only of beaten earth.

The first collapse over this floor is formed by a layer of baked bricks, covering the whole exposed part of the central room, and including several regularly superimposed bricks which confirm the fact that it is an original collapse and not an accumulation of plundered bricks (fig. 22). Above the baked brick collapse is a series of accumulations of clay layers probably deriving from the partial collapse of the mud-brick part of the SW wall.

Above are stratigraphic features evidencing the digging of pillage trenches in the area of Block D. No trace of secondary occupation subsequent to pillage was recovered. The pillage trenches were then covered by layers resulting from the gradual erosion of the mud-brick core. As is the case with the entire surface of the site, the ploughed soil under the soft topsoil represents the uppermost part of the stratigraphy.

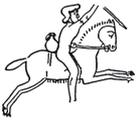


Fig. 20: Tr. 1, general view of the Block C of the SW wall, in mud-brick, from N

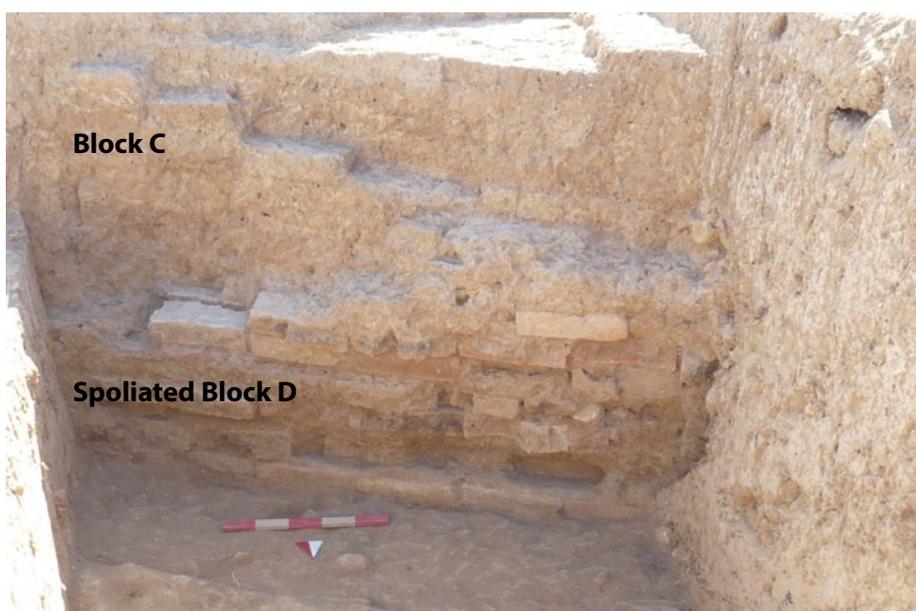


Fig. 21: Tr. 4, Block C of the SW wall in mud-brick, N limit along the wall-robber trench of Block D

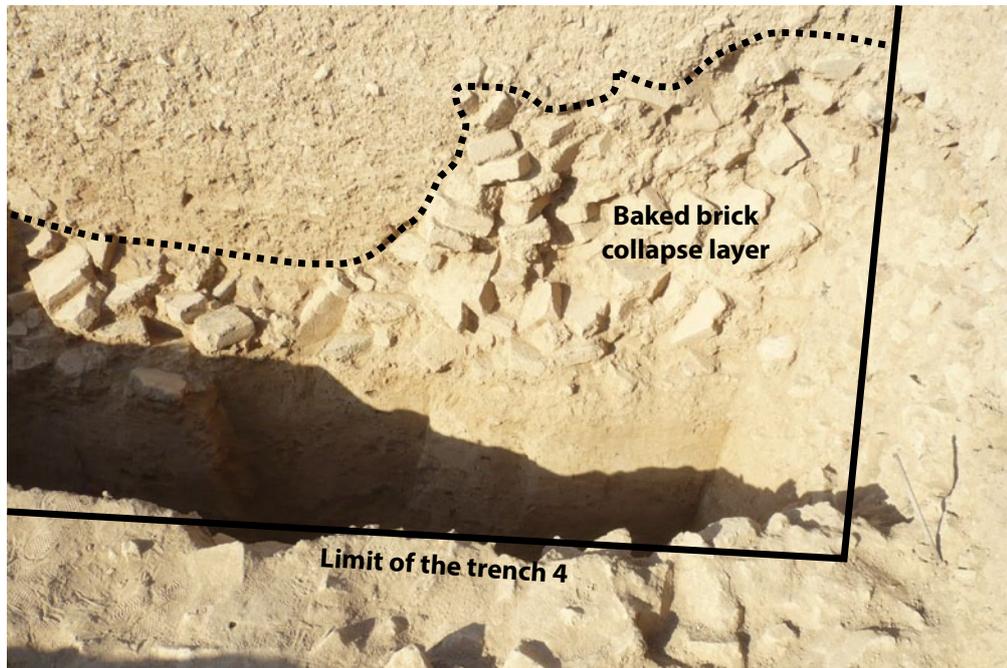
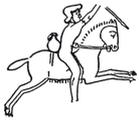


Fig. 22: Tr. 4, the baked bricks collapse in the central room

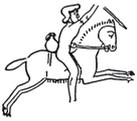
#### 4.6 The outer deposits

At the outer foot of the outer facing of the perimeter wall, above the surface of the uppermost layer of the construction phase, representing the first occupation surface, a series of deposits has gradually raised the level of the area. Here the occupation surface with clearer evidence of human presence constitutes a level in which several fragments of large jars were found lying flat on the floor, along with two thick blocks of bitumen. It should also be mentioned that there is another layer below this, only attested in Tr. 1, which contains a small pit filled with a heap of ashes containing some animal bones.

This phase represents the life of the structure: the relatively small quantity of potsherds, particularly in the lower layers, confirms the non-residential function of the structure.

Above the last occupation level, a series of layers of collapse with a substantial number of brick fragments mark the end of the life of the structure and the process of its destruction. In this collapse, besides the plain baked bricks, fragmented glazed bricks decorated in relief were also found: the destruction of the building's decorative facing should also be assigned to that phase.

Subsequently, stratigraphic investigation has revealed the same succession of collapse layers and pillage episodes seen in the centre: a striking feature is a large trench cut in order to plunder a considerable part of the baked bricks of Block B in the SW wall, the negative interface of which came to light on the very line of the outer face of the wall, which was preserved at the bottom of the pit. Despite this, the excavation in Tr. 1 has brought to light an interesting feature. At the bottom of a large pillage trench, the upper surface of the baked bricks saved from the pillage



was used as an occupation level on which a simple small wall in mud-brick was built (fig. 23). Chronological attribution of this short-lived occupation is problematic given the lack of pottery or other dating material.

Here, as well as in the other pillage trenches, we recorded a filling with clay layers rich in fragments of collapsed baked bricks, and the subsequent accumulation of similar layers on the whole outer area ending with a few recent episodes of pillage.

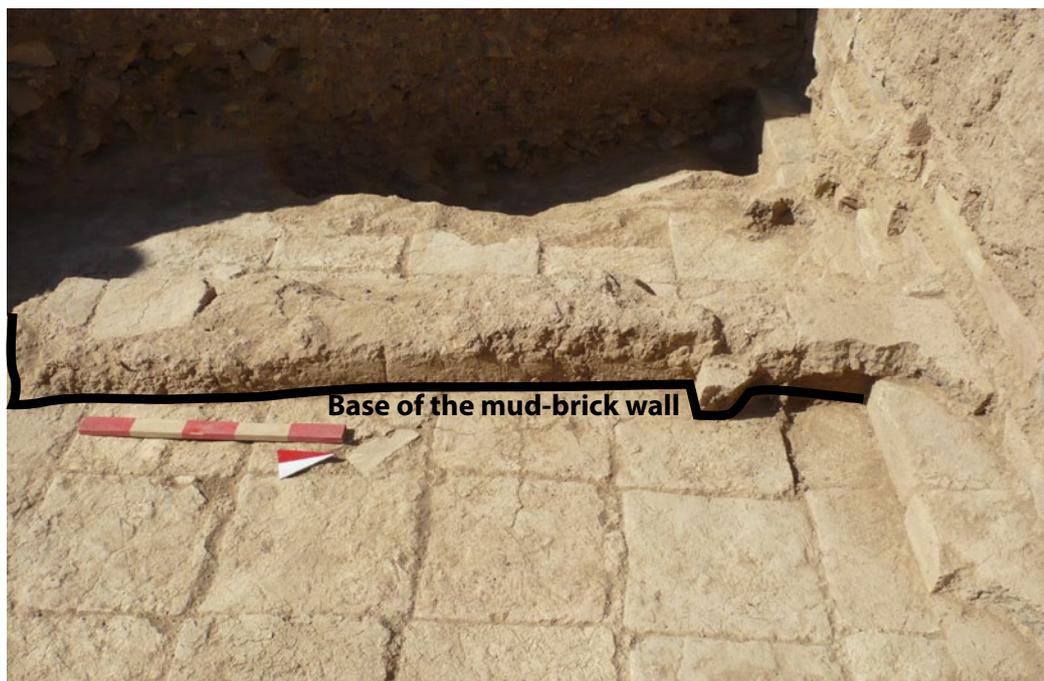
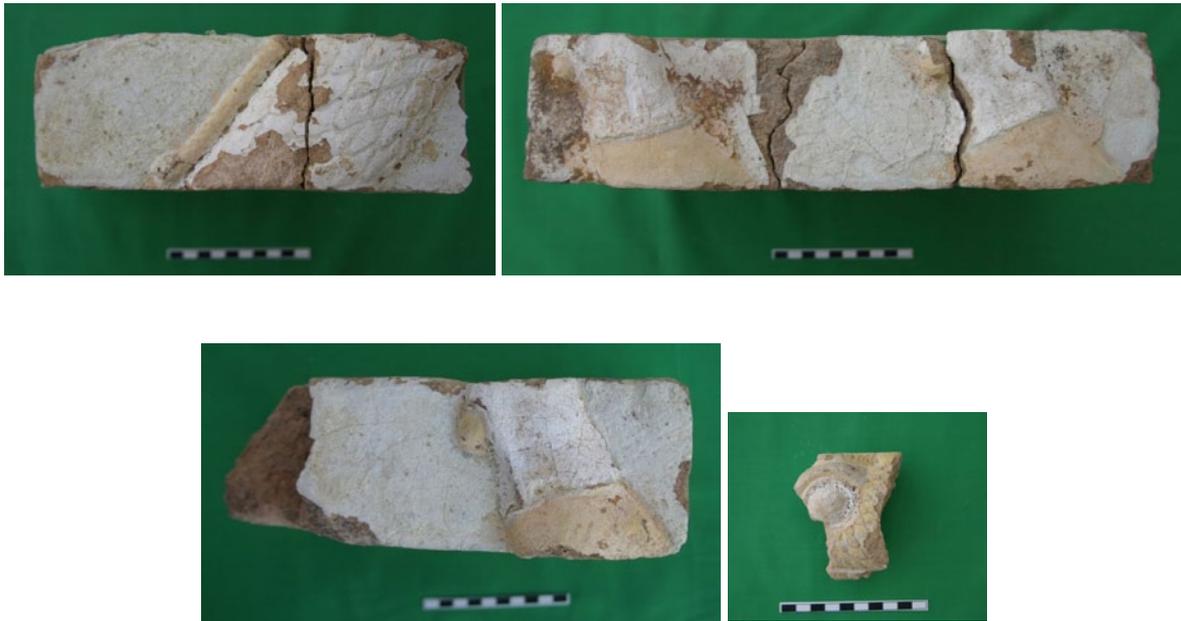
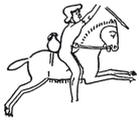


Fig. 23: Tr. 1, mud-brick wall of secondary occupation on the remaining baked bricks layer of Block B

#### 4.7 Finds

In the two excavation campaigns, finds consisted mainly of fragments of bricks with relief glazed decoration, discovered in the original collapse layers and the filling of the spoliation pits (figs. 24-27). Most of the bricks are much eroded, and have lost the glaze layer: what remains is therefore often the coloured underglaze layer.

Other significant items are two fragments of black limestone sculpture found above the uppermost layer of the structure's life in the area to the SW of the SW wall, respectively in Tr. 1 and Tr. 3, representing a lion's lower jaw and paw in profile to right, and a bronze three-flanged arrow head. Noteworthy, too, is the brick fragment originally belonging to a larger panel bearing one cuneiform sign painted in white glaze on a cream background: Dr G.P. Basello suggests that this could be the Babylonian sign SAR/ŠAR, possibly belonging to the word *šarru*, "king" (see Appendix).



*Figs. 24-27: Fragments of bricks with relief glazed decoration*

#### **4.8 Chronology**

The only reliable information for dating the monument comes from the stylistic and iconographic similarity between its decorated and glazed bricks and the bricks found at other sites in Mesopotamia and Elam. With respect to the Palace of Darius I in Susa, from the published report we know of the existence of glazed bricks in two materials, siliceous paste and clay (Daucé 2010). The bricks of Tol-e Ājori would seem to be similar to the second class, which is less abundant and less known in Susa. However, preliminary studies (Matin, in preparation) point to iconographical similarities with panels from the Neo-Babylonian buildings in Babylon (Rossi 2010), particularly the figural imagery of fantastic animals. Although study of the decorated bricks from Tol-e Ājori is still in progress, more than one instance of precise matching between elements composing the figures at the two sites has already come to light.

Given the lack of ceramic or analytic evidence it is therefore proposed that the building at Tol-e Ājori should date to the same phase as the Palace of Darius I at Susa or even earlier, bearing in mind the dramatic change in the landscape of the area created by the construction of Persepolis Terrace around 518 BC. In view of the absence of information about the Persepolis plain prior to the construction of the Terrace, the monument at Tol-e Ājori could well fit here.

#### **4.9 State of preservation of excavated remains**

As discussed, the monument was heavily damaged by pillaging subsequent to collapse and decay (examples [fig. 28](#) for Tr. 1 and [fig. 29](#) for Tr. 5). These episodes of pillaging were followed by further collapse and erosion.



Fig. 28: Tr. 1, wall-robbing trench in the Block B

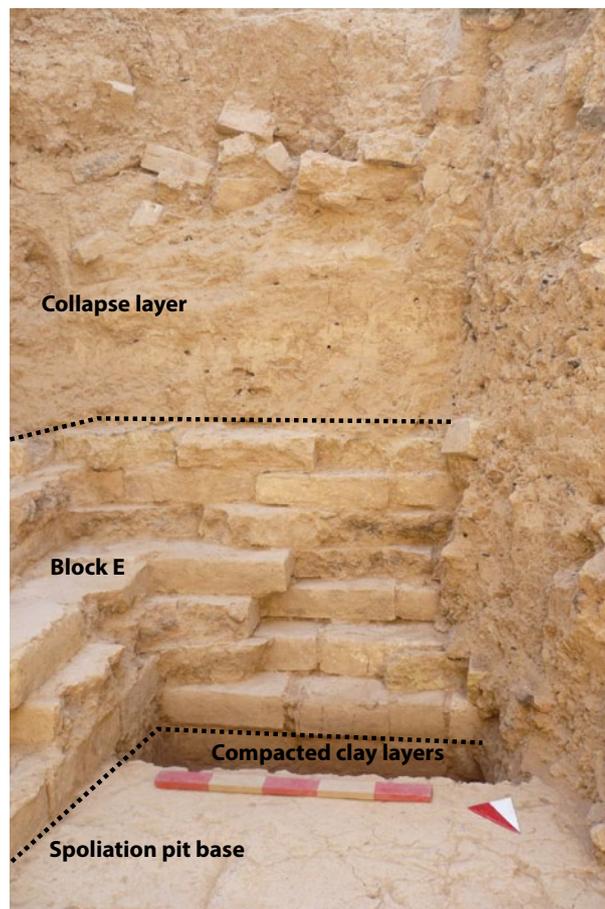


Fig. 29: Tr. 5, the last preserved courses of Block E of the NE wall at the bottom of a wall-robbing trench



With reference to the various blocks forming the structure, for the parts below the foundation, we were able to bring to light:

- Block A in the S part of Tr. 1 and Tr. 3 and in the N part of Tr. 5 and Block E in the S part of Tr. 5. The projecting foot was relatively well preserved.
- Block B was partly preserved only in the S part of Tr. 1 and Tr. 3
- Block D was detected only in the S part of Tr. 5, for the NE wall. In Tr. 4 only the boundary between Block C and Block D of the SW wall was brought to light, due to the fact that the bottom of the wall-robbet trench was not reached. Due to the numerous wall-robbet trenches these sections are in a poor state of preservation.
- Block C in mud-brick was attested in Tr. 1, Tr. 3, Tr. 4 and Tr. 5. The mud-brick, after the pillage of the baked bricks blocks encasing it, was heavily exposed to erosion.

None of the relief glazed bricks were found *in situ*, because the courses of baked bricks which represented the outer section of the structure were in ancient times largely spoliated by the wall-robbet trenches cut in a phase subsequent to collapse and abandonment.

(A.A.C., P.C.)

## 5 Questions on the plan: cross-comparison between excavation and surveys

### 5.1 Comparison between excavation and magnetic survey

Although we were able to arrive at the general form of the building as well as the main distinctive features of its plan thanks to geophysical investigations, when comparing the two reconstructions of the building proposed both on the basis of magnetic survey and excavation data (fig. 30), we observe differences. However, excavation has shown that with the magnetic survey we have in fact mapped the collapsed baked bricks accumulated outside and inside the perimeter wall. What we suggested to be built structures, the external walls and the central installation, are respectively the heap of outer bricks and the inner filling of the central room. The mud-brick core of the structure is not visible on the magnetic map because its response is too weak compared to that of the baked bricks encasing it.

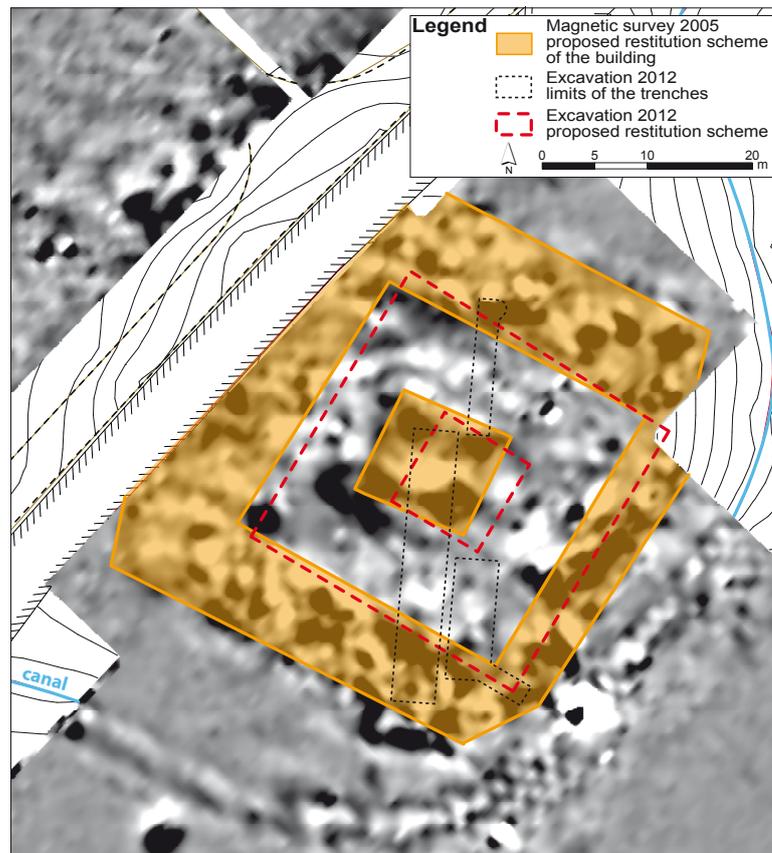
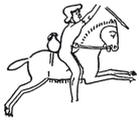


Fig. 30: Overlay and comparison between excavation and results and interpretation of magnetic survey (CAD: S. Gondet)

While on the sole evidence of the magnetic map we suggested the existence of a square perimeter of about 45 m for each side, we now see that the outer limits of the building must be reduced in order to correspond to the inner boundary of the thick anomaly. On the magnetic map we can observe that the inner limits of the collapses are straighter than the outer ones. Here there is a lining effect against the wall of the baked bricks and the inner limits of the collapses fit quite well with the outer limits of the plan reconstructed on the basis of excavation. This constitutes further evidence in support of the reconstruction of the monument. With regard to the difficulties in delineating the anomalies clearly, the small shift of orientation and of localisation between both reconstructions is negligible.

The lining effect of the inner limits of the collapses is particularly visible along both NE and SW sides of the monument, implying that these building limits are probably better preserved than the others. This observation is also borne out by the excavation results, especially for the SW wall, less looted and corresponding to the straighter limit on the magnetic map. Similarly the presence of pits brought to light during excavation could account for the irregularity of some section of the inner alignments of the collapses, particularly along the NW and SE limits.

In contrast to this, the differences of place and orientation between both reconstructions for the central 100 m<sup>2</sup> square space are probably due to the widespread and profound spoliations



perpetrated not only outside but also towards the centre. These differences between the two reconstructions suggest that the central room may also have been affected to a considerable degree by the episodes of collapses and spoliation, as the excavation shows in the limited space of the central trenches.

## 5.2 New resistivity survey (2012): principles and goals

While the magnetic survey yielded evidence for reconstructing the general form of the building and advance hypotheses on its preservation, examination of the magnetic results cannot provide us with an accurate plan of the whole monument. The baked bricks produce the same marked anomalies whatever the material density variations and offer no chance of detecting anything of the inner organisation.

This is why in 2012 we tested the resistivity method on the NE part of the *tepe* in order to map the archaeological structure more accurately. The result of a resistivity survey depends largely on variation in soil porosity. For Tol-e Ājori, and in contrast to the magnetic method, this means that each baked brick fragment fails to produce a single strong anomaly, and change in the resistivity value is caused only by variations in their density. Thus the resistivity survey may allow us to delineate the bricks heaps more accurately.

The principle of the resistivity method is to create an electric field in the subsoil layer through two injection electrodes and to measure the apparent soil resistance values with two other electrodes (in Ohm.m). Numerous arrays can be chosen for placing the four electrodes. At Tol-e Ājori we chose simple linear geometries where the gap between each stake comes to 1 m; this implies that the survey depth also comes to about 1 m. Two different types of geometries have been chosen: Wenner where the couple of measuring electrodes are between the injection ones; dipole-dipole where measuring and injection electrodes couples are side by side.<sup>15</sup> The Wenner geometry offers better resolution for the detection of vertical heterogeneities (i.e. stratigraphy) and dipole-dipole for sharp lateral ones (i.e. archaeological architectural remains). Thus in archaeology we often choose to interpret the results obtained with a dipole-dipole geometry. In the present article we have decided to show both maps in order to base our analyses on two documents (fig. 31), because in Tol-e Ājori the Wenner (fig. 31a) seems to map the flat-lying bricks heaps better.

<sup>15</sup> More accurate information on geophysical survey methods can be obtained, for example, in Gaffney & Gater 2003.

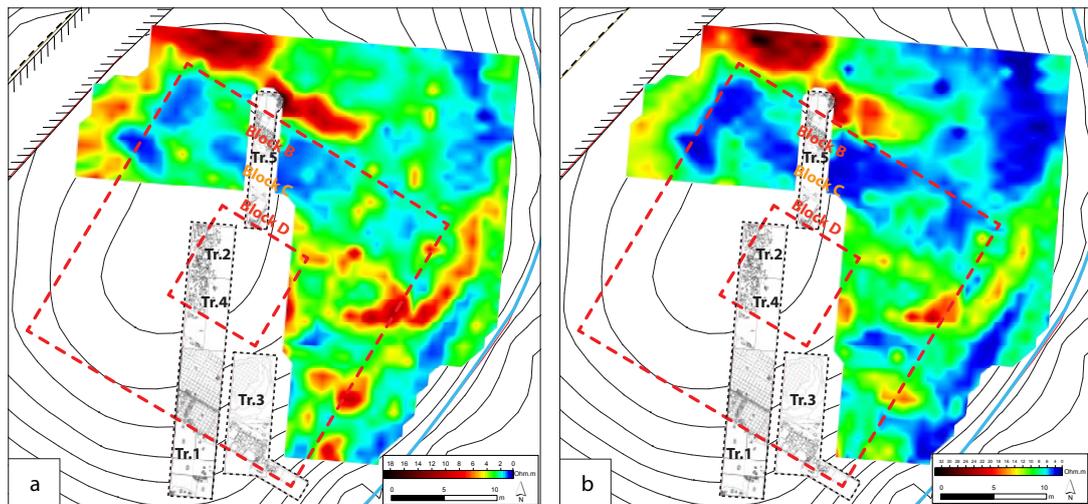
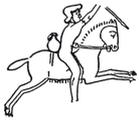


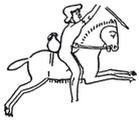
Fig. 31: Apparent resistivity maps of Tol-e Ājori obtained with (a) Wenner and (b) Dipole-dipole electrodes geometry (survey: the Iranian-Italian team & S. Gondet; CAD: S. Gondet)

### 5.3 Interpretation of the resistivity anomalies

On the whole, the results obtained by resistivity survey show a clear zoning. Three kinds of anomalies can be characterized regarding their resistivity values: the first correspond to a range of low resistivity values and appear as blue surfaces on maps, while the second are fairly resistant and appear green, and the third show the highest resistivity values, showing a colour range between yellow and red. With the help of the excavation results, particularly those of Tr. 5, these three types of anomalies can be linked to buried features:

- The heap of baked bricks partly unearthed in the NE corner of Trench 5 is surrounded by the highest resistivity values. Thus most of the yellow/red anomalies should correspond to dense concentrations of fallen bricks in the collapses.
- Towards S, the wall-robber pits in baked brick blocks B and D are surrounded by medium values in green. Thus this value range probably corresponds to the continuation of these pits. The values for this type of feature vary from mid to high resistance depending on the concentration of baked brick in the filling.
- The mud-brick core of Block C is surrounded by low resistance values in blue. Given the penetration depth of the electrode array chosen, the low values should correspond to the fine clay-like sediment deriving from the erosion of mud-brick and accumulated on top of the preserved remains of the core wall. Outside the limits of the building, the areas showing low resistance may also be regarded as eroded clay-like sediments.

With these tentative identifications in mind, we are able to suggest some hypotheses on the plan and state of conservation of the building.



#### 5.4 Cross conclusions concerning the plan and state of conservation of the site

**NE Wall** – First, with cross-comparison between the excavation and survey results we can describe the state of conservation of the NE part of the building as non-uniform.

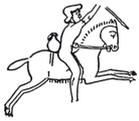
In the case of the NW two thirds of the wall we can observe on both resistivity maps a regular continuity of the strongest anomalies interpreted as collapses, in red, along the wall. They seem more extensive around the N angle of the building. Turning to the SE, and last third of the NE wall, the situation seems different. The highest resistivity values linked to heaped baked bricks disappear and are replaced by less resistant shapeless anomalies. This mid-resistant area extends over Block C, particularly on the map obtained with Wenner geometry (fig. 31a). We would conjecture for this part of the NE wall large spoliation pits dug from the inner mud-brick core to the baked brick collapses.

We can now consider the data yielded by resistivity survey on the wall-robber trench N of Tr. 5, also known from the excavation. The anomalies associated with it, in green/light yellow, continue along Block B towards the NW as far as the N corner of the building. Towards SE of Tr. 5 they seem to stop, as we see an area with lower resistance values that extends from the inner Block C up to the limit of the building. These low values could have to do with the fact that the upper clay-like layer remains undisturbed here. A further interpretation could be that a section of the NE wall of almost 5 m in length had not been spoliated here. An alternative conclusion would be that the wall-robber trench continues but that its filling is more clayish and homogeneous. But taking into account the nature of the filling of most of the wall-robber trenches excavated on the site, this latter option seems less probable.

In conclusion: Block C seems well preserved along the whole NW two thirds. The less resistant linear anomaly (in blue) corresponding to the upper fine clay-like layer deriving from eroded mud-brick is clearly visible, particularly on the dipole-dipole map (fig. 31b).

**SE wall** – With regard to the SE wall of the building, the maps are more difficult to interpret. General observation leads to the conclusion that the average resistivity values for the SE wall of the building are higher than for the NE one, which suggests it was probably more looted. Within the SE wall we measured mixed high- and mid-resistance shapeless anomalies, with no organisation scheme clearly emerging on either resistivity map. Returning to the magnetic maps, we also observed that the limits of the marked magnetic anomalies are more irregular to the SE than for the other walls. This confused situation on the geophysical maps could have to do with an overlapping serial of pits more or less filled with baked bricks.

Yet, the resistivity maps can provide some evidence of the building plan if we take into account only the highest resistance anomalies (i.e. the dense baked-brick collapse in red). We can focus our observations on the map obtained with the Wenner geometry (fig. 31a). On this map, the collapse outlines are better defined than with the dipole-dipole geometry, probably because of their flat-lying geometry. Thus we can observe a resistant strip of 2 m in width from the E



outer corner of the building to the middle point of the SE wall. At this point the collapse turns at a right-angle towards NW, 4 m across the wall. Further SW, after a lower resistance section 6 m in width, we observe relatively symmetrical anomalies, indicative of collapses across the wall and their continuity along the wall facing towards the SW. The less resistant strip, in blue, across the central part of the SE wall could correspond to the access to the central room and the surrounding high-resistance anomalies could correspond to the collapse of the facings of the corridor. However, this interpretation must take into account the probable disturbed situation along the SE wall and the hypothesis of a gate towards the SE remains to be confirmed by future excavations.

### 5.5 Summary of the conservation and plan of the monument

The main contribution of the new examination of the magnetic results and of the resistivity surveys concerns the state of conservation of the building. The better preservation of the SW wall suggested by the geophysical survey has been confirmed by the excavations. Despite the damage brought about by the large ditch dug in this side of the tepe, the NW wall may also be fairly well preserved.<sup>16</sup> By contrast, the NE and SE ones seem much disturbed. However, along the NE wall, we can distinguish on the maps variations in the state of conservation, a point already evidenced in stratigraphy during the excavations where preserved parts of the wall were discovered. The central room, as revealed by the trenches, was probably extensively pillaged and destroyed.

With regard to the plan of the monument, both the magnetic and resistivity results offer support to the reconstruction of the plan proposed after excavation. The main addition is the probable existence of a gate through the SE wall, which excavation has yet to confirm.<sup>17</sup>

(S.G.)

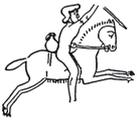
## 6 Concluding remarks: new evidence for a broader perspective on Pārsa

### 6.1 Tol-e Ājori in its landscape

Thanks to the excavation and survey works carried out on Tol-e Ājori we are beginning to get a better idea of the nature of this site. We had decided to focus our article on the results obtained on Tol-e Ājori, but our work includes a complete reassessment of the whole area. We had already surveyed extensive surfaces between sites of the E fringe of Bāgh-e Fīrūzi with the magnetic method. These surveys also included systematic surface reconnaissance in order to map artefacts. Also in 2011 the Joint Iranian-Italian Mission opened a series of sondages on the

<sup>16</sup> See fn. 10.

<sup>17</sup> See fn. 11.



Firūzi 5 site aiming at better definition of the plan of the monumental building evidenced by surface surveys. On the evidence of these preliminary findings we can embark upon discussion of Sumner's former hypothesis, considering Bāgh-e Firūzi as an aristocratic sector of Persepolis. In his tentative reconstruction of Persepolis, Sumner (1986: 27) suggests that the several buildings distributed over the entire Bāgh-e Firūzi area were probably each surrounded by their own gardens, which would account for the wide gaps between them.

Our new surveys in the area as well as the excavation results lead us to doubt the residential nature of the buildings. Of course, some – albeit not many – building remains show stone architectural elements or baked brick ornamentation, attesting to prestigious constructions. Nevertheless none of them could safely be qualified as residences. First, the lack of detailed plans cautions against such an interpretation. We can observe the presence of hypostyle buildings or stone platforms, i.e. remains that could be associated with pavilions or gates (Tilia 1978), as seen in other contexts in Pasargadae and the Persepolis Royal Precinct. It would be difficult to assign a residential function to these buildings and it seems more likely to consider them as sumptuous constructions ordered by the King or nobles with various possible functions (audience hall, ceremonial buildings, reception place,...). The preliminary results obtained at Tol-e Ājori illuminate the matter. Limiting ourselves to the results obtained during the excavations of Firūzi 5, no elements related to a possible residential function have been unearthed there. Thus, at this stage, any residential function for these buildings has yet to be proved.

Another point broached by W. Sumner is that these buildings as a whole constitute a particular sector in the Bāgh-e Firūzi area, but further evidence is needed to bear this out. In fact, the results of the magnetic surveys carried out between Tol-e Ājori and Firūzi 5 (fig. 32) brought to light several long lines. It is difficult to interpret them firmly as related to the Achaemenid occupation but they cross the modern field pattern with a different orientation and are surely related to an ancient organisation of the landscape. The general orientation of these anomalies is on average 45° towards E with a N/S direction, while the modern agricultural pattern orientation is 60°. These long lines could correspond to roads, ditches or even enclosure walls, but such interpretations are difficult to confirm on the basis of our present, partial data. However their orientation is parallel to that of Tol-e Ājori and perpendicular to the stone platform alignments in Firūzi 5. Thus we would suggest that these lines testify to a contemporaneous plan for organisation of the landscape. This organisation could have been specific to that in the Persepolis Royal Precinct and its immediate vicinity as the constructions and field delineation there are oriented with a common angle of 70° towards E (Boucharlat *et al.* 2012). Again, these results tend to prove that the space between the sites was not empty and that there were installations in between, possibly infrastructures, but there may also have been other buildings, as yet undetected.

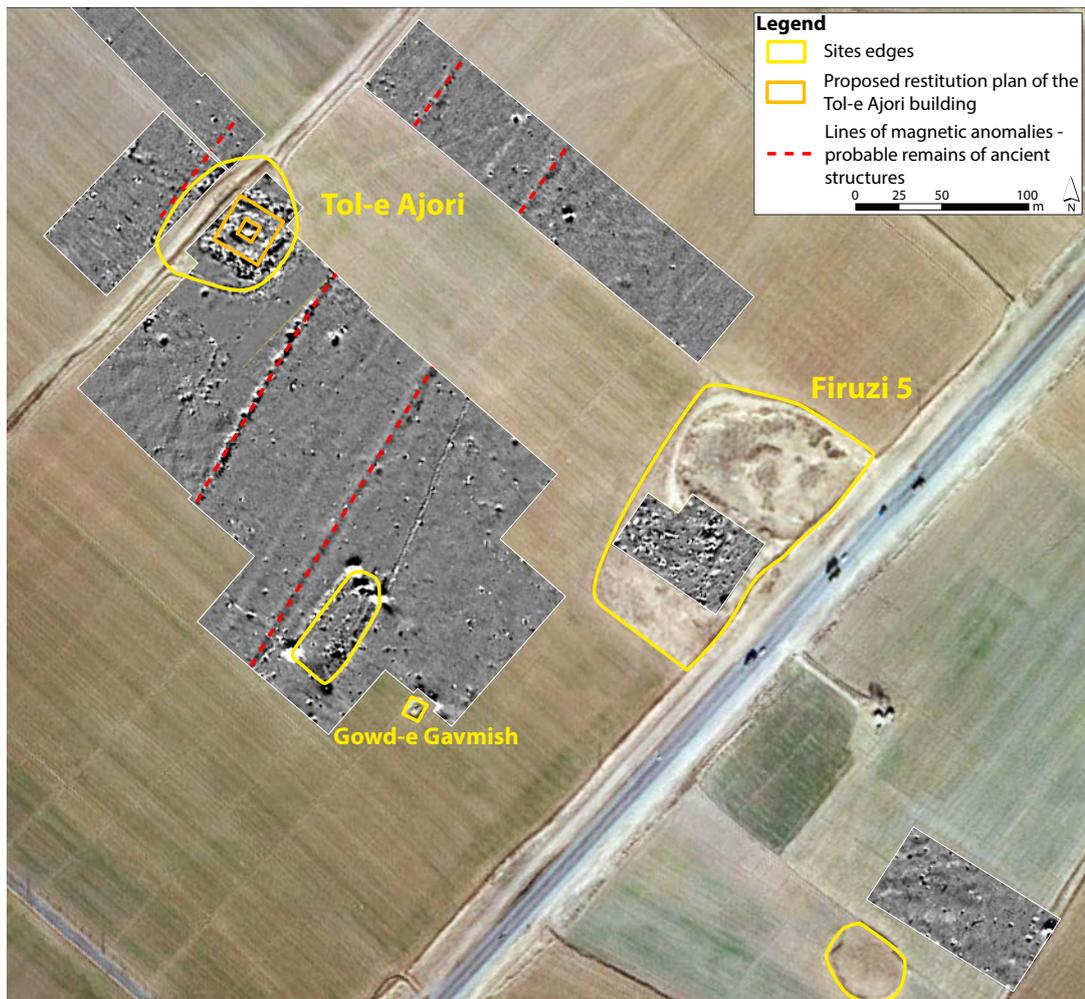
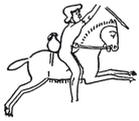


Fig. 32: General aerial view of the SE part of Bāgh-e Fīrūzi, including Tol-e Ājori and Fīrūzi 5, overlaid by the magnetic maps obtained in this sector since 2005 (Survey: S. Gondet & K. Mohammadkhani, CAD: S. Gondet, JIFMF)

## 6.2 The singular building of Tol-e Ājori

The monument at Tol-e Ājori, even at this preliminary stage of its excavation, appears completely different from other architectural evidence in Achaemenid Fārs, both in plan and in building and decoration technique. The plan suggests a generic comparison with the two “tower” buildings of Zendan-e Solayman and Ka’be-ye Zardosht, albeit using a different building technique and of different size and proportions, the main difference being the level of the inner room. In view of the proportions and building technique, the Urartian temples, built in mud-brick above a well-dressed stone foundation, which D. Stronach has identified as predecessors of the Achaemenid “towers” (Stronach 1967), provide a more apt comparison.

The main difference with Tol-e Ājori regards the size, since all the Urartian temples, while larger than Zendan and Ka’be, are approximately half the size of the building at Tol-e Ājori: as an example, at Altintepe the temple measures  $13.80 \times 13.80$  and the central cella measures  $5.20 \times 5.20$ : we have approximately a proportion of 2:1 in favour of Tol-e Ājori. Nevertheless, the plan of



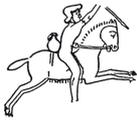
these Urartian monuments supports reconstruction of the Tol-e Ājori building as a tower, with a considerable elevation which explains the remarkable thickness of the walls.

On the other hand, the use in the same building of both mud-brick and baked bricks, of bitumen mortar and of glazed bricks for decoration is typical of the Mesopotamian and Elamite traditions, and the system of fitters' marks echoes the signs recorded at the Palace of Darius I at Susa and at various Mesopotamian sites. The analytical studies on the bricks and glaze, still in progress (Matin, in preparation), will also allow for technical comparison between the two and show whether, and to what degree, they may be considered identical. It is interesting to note the existence, among the Elamite terms used for religious buildings, the word *kukkunum/kukunum*, translated as "high temple", distinct from the "temple" (*siyan*) and the *ziqqurat (zagratume)* (Potts 2010: 56-57): while previously interpreted as the temple on top of the *ziqqurat*, it could be simply a different structure, which Zadok (1984: 23) translates as "temple tower". Could this be a possible clue for the functional interpretation of the building, for which it is very difficult to propose anything other than a ritual one?

When studying this monumental building in the context of Pārsa, it should be noted that the construction of a monument in the Mesopotamian and Elamite traditions at a distance of 3.5 km from the Royal Precinct, not using the stone-cutting techniques which characterize the latter, points to a pre-Persepolitan date. Tol-e Ājori might thus help to fill the blank in our information on Pārsa before the construction of the Terrace by Darius I. As for the chronological relationship with the iconographical comparative evidence from Babylonia and Susa, the fact that the imagery has an evident Babylonian origin allows us to date Tol-e Ājori before Susa. In this respect, the comparison between the analytical data on the glazed bricks from the three sites, still in progress, will play a significant role.

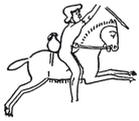
In addition to these hypotheses, some dynastic attribution of the building seems to be indicated on the basis of our interpretation of the fragment of the beginning of a Babylonian (?) cuneiform inscription painted in the glaze of a brick, which has been read as part of the word *šarru*, "king".

(A.A.C., P.C., S.G.)



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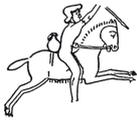
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## Appendix Two joining fragments of an inscribed glazed brick

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The two joining fragments of an inscribed glazed brick (TAJ Inv. 45, **fig. 1**) found during the 2012 campaign at Tol-e Ājori represent very scant epigraphic evidence indeed; however, it is possible to offer the following tentative remarks on the text to which they may have belonged.<sup>18</sup>

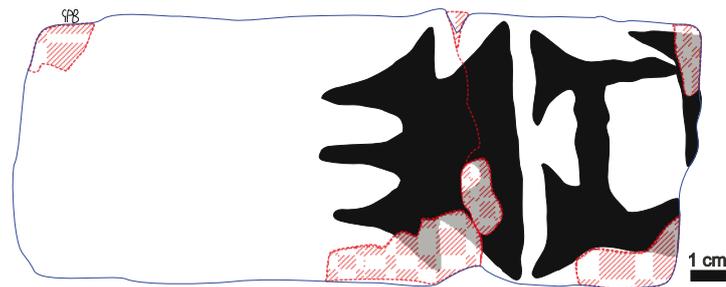


Fig. 1: Drawing of the brick fragments after a photograph:  
black fill = white glaze; diagonal pattern = effaced surfaces (CAD: G.P. Basello)

The extant traces of white glaze clearly resemble the left part of a sign SAR/ŠAR. The sign SAR is attested in the Babylonian epigraphic tradition, in this form, from the Old Babylonian to the Neo-Babylonian period.<sup>19</sup> The same form is attested in Middle Elamite royal inscriptions (especially of Shutruk-Nahunte, 1190-1150 BC in the ultra-low chronology)<sup>20</sup> and Achaemenid royal inscriptions in Babylonian. SAR is not attested in the Achaemenid royal inscriptions in Elamite, while it is known with a different form in a few Persepolis Fortification tablets.<sup>21</sup> Since the archaeological context is Achaemenid, there can be little doubt that the brick text is written in Babylonian.

Given the blank space on the left, the sign SAR seems to be the first of a line. Words are not usually divided at the end of a line in Babylonian, which suggests that the sign would also be the first sign of a word. However, in the Achaemenid Babylonian inscriptions the signs are usually more spaced than in the Elamite and Old Persian ones, relatively few signs being required to write the same inscription in Babylonian while the epigraphic fields are usually of the same size. Thus I prefer to consider the blank space on the left as a spacing between signs.<sup>22</sup>

<sup>18</sup> I would like to thank Alireza Askari Chaverdi and Pierfrancesco Callieri for giving me the opportunity to comment on this find, which it is hoped will be the first of several more epigraphic discoveries at Tol-e Ājori.

<sup>19</sup> Borger 2004, no. 541.

<sup>20</sup> Steve 1992, no. 331e.

<sup>21</sup> PF 1974:7-8,14, PF 1975:10, PF 1976:7-8 in šar-ráš, šar-ráš-tá and šar-ra-iš-tá (PF tablets are published in Hallock 1969). The form of the sign in the Persepolis Fortification tablets is given in Hallock 1969: 85, s.v. SAR.

<sup>22</sup> See, for example, the wide spacing between the signs of line 13 of XPC/LB/3 (the Babylonian panel inscription on the southern stairway facade of the so-called Palace of Darius).



The size of the inscribed surface seems to be comparable to that of the glazed bricks composing the 14-line inscription XPg from Persepolis (attested in at least two exemplars), which measures ca. 37 or 18 (width) × 9 (height) cm.<sup>23</sup> All these bricks show a ruled line along the upper edge of the inscribed surface.<sup>24</sup> This was used to separate the lines of text and is also attested on several unpublished inscribed glazed bricks in the storerooms of the Persepolis Museum and the National Museum of Iran (Tehran), which, too, came from multiple-line inscriptions.<sup>25</sup> The Tol-e Ājori brick has not the ruled line and thus may have been part of a one-line inscription, possibly encircling the building and running along its facades. Inscribed glazed bricks were also found in Susa.<sup>26</sup>

In the Achaemenid Babylonian inscriptions from Persepolis, the sign SAR is attested in DPC/LB (the short text written on the window or niche frames in the so-called Palace of Darius) and XPh/LB (the so-called Daiva Inscription, a long and structured text written on a stone slab).<sup>27</sup>

In XPh/LB the sign SAR is attested twice in lines 29 and 32 in the clause *ašar mahrû* (a-šar IGI-ú) *ana lemnu isinnu ippušû* 'where (*ašar*) they formerly (*mahrû*) made feast(s) for the evil (gods) (= the *daivas*)'. If the sign on the Tol-e Ājori brick were the first of a line, this would not fit since šar does not begin a word.

In DPC/LB the sign SAR is attested in the word šar-ri 'of the king':

(1) ku-bu-ur-ri-e<sup>na</sup> ga-la-la i-na bi-it<sup>m</sup> da-a-ri-ia-a-muš šar-ri ip-šu-u'<sup>28</sup>

Polished stone<sup>29</sup> reinforcement frame<sup>30</sup> made in the (Royal) House of King Darius.

**23** Measurements taken from Schmidt 1953: 98, fig. 42; the height is confirmed in Schweiger 1998, vol. 2: 88.

**24** See also the drawings of inscribed bricks from Persepolis in Herzfeld 1938: 40, fig. 14.

**25** These bricks have been read and photographed in the framework of the DARIOSH Project (with fundings PRIN 2005105580 and 2007ZKPPSM) directed by Adriano V. Rossi ("L'Orientale" University, Naples) and with the collaboration of the Pārsa-Pasargadae Research Foundation and the National Museum of Iran. I would like to thank these institutions and their directors for the invaluable help offered during my researches.

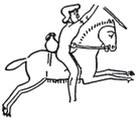
**26** Scheil 1929: 53-56; see also Curtis & Tallis 2005: 91, nos. 63-65.

**27** The siglum LB stands for 'Late Babylonian'. See Schmitt 2009: 7-32 for a catalogue of the Achaemenid inscriptions with further references.

**28** The text has been checked on the 18 epigraphic exemplars of the inscription in the framework of the DARIOSH Project with the collaboration of the Pārsa-Pasargadae Research Foundation. The best preserved exemplars of DPC/LB are the ones in the Southern portico of the so-called Palace of Darius (Building I according to Schmidt 1953, fig. 21), Northern side, 2nd and 3rd window frame from the West (i.e. the two central windows) = DPC/LB/15-16 in the new catalogue compiled within the framework of the DARIOSH Project.

**29** CAD G: 11, s.v. *galālu*, provides an example where *galālu* is filtered out in a canal; it thus indicates small water-smoothed stones found in riverbeds. In other contexts like DPC/LB, *galālu* represents 'a stone treated in a specific way' (CAD) to create a polished and shiny surface, like a pebble (cf. also Aramaic *gll*).

**30** According to CAD K: 489, s.v., *kuburrû* can mean either 'thickness' or suggest 'an architectural feature of a wall'. In the latter meaning, it designates 'a niche or an angle formed by a protruding part of a wall' (CAD), probably having



As DPc/LB is shorter and related to an architectural feature its textual structure is particularly appropriate for a brick inscription. DPc represents the typical ownership inscription (called ‘Zugehörigkeits-Inschrift’ by Herzfeld).<sup>31</sup>

From the palaeographical point of view, the sign SAR on the Tol-e Ājori brick is closer to the one on XPh/LB than DPc/LB (fig. II), but this could be meaningful only for the dating of the inscription, not for evaluating its contents.

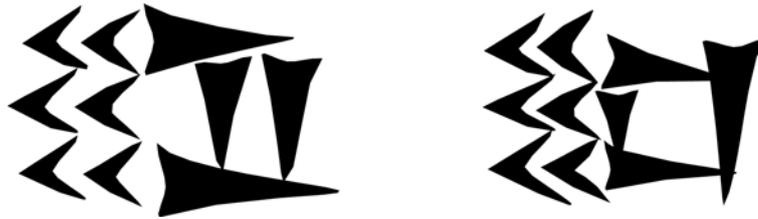


Fig. II: Drawings of the sign SAR in DPc/LB (left, after the exemplar DPc/LB/15) and XPh/LB (right, from line 29), not in scale (CAD: G.P. Basello)

The sign SAR can be used as part of the Babylonian word *šarru* ‘king’ in many other contexts, even though ‘king’ is usually written logographically (with the sign LUGAL) in the Babylonian Achaemenid inscriptions (e.g. DPi/LB, which has the same structure as DPc/LB).<sup>32</sup>

### Inventory record (Iranian-Italian Joint Archaeological Mission)

TAJ Inv. 45

- Brick fragment with glazed decoration bearing one cuneiform (Babylonian?) syllable of 10 strokes. On upper surface white drips, on lower surface traces of white underglaze.
- Pink terracotta; cream and white glaze.
- Context: TAJ Tr. 5, SU517
- Th. 7.8, max. w. 21.2, max. l. 13 cm
- Broken on three sides and in two pieces, not rejoined; corroded and scratched; patches of white underglaze, cream and white glaze preserved. On upper surface traces of bitumen mortar. No fitters’ marks.

the function of reinforcement of the brickwork; in my opinion, it was not necessarily a doorframe but any structural device inserted into a wall.

<sup>31</sup> Herzfeld 1938: 24. Cf. the Assyrian ‘label’ inscriptions (Grayson 1981: 39) or the Neo-Babylonian ‘nomination inscriptions’ (Da Riva 2008: 108).

<sup>32</sup> See Basello 2012: 40 for the text of DPi/LB.



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ISSN 2110-6118

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