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Sébastien Gondet, Kourosch Mohammadkhani, Hilary Gopnik. The 2015-2016 survey campaigns at Pasargadae: results and observations on the Cyrus' capital layout and its latter évolutions. G. P. Basello, P. Callieri, A. V. Rossi. *Achaemenid Studies Today. Proceedings of the Mid-Term Conference of the Societas Iranologica Europaea held in Naples, 2017, December 11-13, N S 36, Scienze e Lettere*, pp.127-148, 2023, Serie Orientale Roma, 9788866872528. halshs-04651454

**HAL Id: halshs-04651454**

**<https://shs.hal.science/halshs-04651454>**

Submitted on 19 Jul 2024

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## The 2015-2016 Survey Campaigns at Pasargadae: Results and Observations on the Cyrus' Capital Layout and Its Latter Evolutions\*

### *Introduction*

After 2009 and a break of six years, in 2015 the joint Iranian-French project “Shiraz” resumed its fieldwork at Pasargadae and the surrounding territory located in Southern Iran’s Fars Province.<sup>1</sup> For the region under our scope, the Achaemenid period corresponds to a formative stage of human occupation starting with the foundation around 550 BCE of Pasargadae by Cyrus the Great, the first great Achaemenid king. Our objectives are to study the spatial organization of Pasargadae and to evaluate the impact of its foundation on the surrounding territory as well as the later evolution of the settlement pattern developed during

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<sup>1</sup> The current project is jointly managed by Kourosh Mohammadkhani and Sébastien Gondet. It was implemented under the agreement of the Iranian Cultural Heritage, Handicrafts & Tourism Organization (ICHTO) and its Research Institute for Cultural Heritage and Tourism (RICHT) headed by Seyyed Mohammad Beheshti. The project benefits of the help of the RICHT International and Legal Affairs Office headed by Monir Kholghi. The scientific program was built under the supervision and agreed by the Iranian Centre for Archaeological Research (ICAR), the archaeology department of the RICHT, headed by Hamideh Choubak. The fieldwork is supported by the Pasargadae World Heritage Site Office headed by Hamid Fadaei. The project takes place in the framework of a Memorandum of Understanding for academic and research collaborations signed by the RICHT and the University Lyon 2 in 2015. For the French part, the funding of the 2015-2016 campaigns was mainly provided by the Foreign Ministry Committee for International Archaeological Researches. The fieldwork was also supported by the French Research Institute in Iran (IFRI), by the Lyon 2 University/National Centre for Scientific Research (CNRS) Archéorient team, a lab part of the Maison de l’Orient et de la Méditerranée Research Centre, and the Emory University of Atlanta (USA). Laboratory analyses are supported by the IMBE lab of Aix/Marseille University (France) and the CITERES lab of Tours University (France). For the 2016 campaign, we relied upon the support of the Iconem Company (Paris) thanks to a collaboration agreement for UAV surveying.

the second half of the 1<sup>st</sup> millennium BCE. Based on the results after the 1999-2009 stage of the project, the current program develops a comprehensive, landscape-archaeology approach to the settlement dynamics at both site and regional scales. The chosen methodology is mainly based on complementary survey implemented at the scale of the Pasargadae site and surrounding plain. It combines complementary techniques (geophysics, pedestrian, topographical, drones, geoarchaeological/palaeoenvironmental surveys) and analyses (GIS, surface ceramics, soil samples studies) carried out by a team of specialists.

This article, following the lecture given at the occasion of the “Achaemenid Studies Today” conference in Naples, deals with a synthetic overview of the main results gathered after the two 2015-2016 campaigns.<sup>2</sup> The archaeological work on the Pasargadae region is ongoing and most of the analyses, especially absolute dating and palaeoenvironmental studies, are not yet completed. Given the preliminary character of the data, especially those of the regional survey, the following article focuses on the site of Pasargadae. The results of the six survey campaigns at Pasargadae implemented from 1999 to 2008<sup>3</sup> combined with the new archaeological work from 2015-2016, has produced a rich dataset concerning the layout of the site, allowing for more reliable conclusions. The new results allow us to complete and refine the reconstruction previously suggested. Questions raised after the first phase of the project also found some answers, and new directions emerged for studying and interpreting the evolution of the landscape of Pasargadae. The reconstruction of the layout of Pasargadae for the Achaemenid period and the evolution of the settlement pattern on the site are the two subjects of this article, particularly improved by current mapping and ceramic analysis work. For each of these topics, future prospects for completing and analyzing the still to be gathered data are also suggested.

### *The Iranian-French Project at Pasargadae and Its Surrounding Territory: an Introduction*

#### The Puzzling Pasargadae Archaeological Case Study

The reasons and objectives for restarting archaeological works at Pasargadae in the early 2000's were detailed by R. Boucharlat in several articles (Boucharlat 2002; Boucharlat & Benech 2002: 3-8; Boucharlat 2014a: 38-43). Generally speaking, after several decades of excavation on the site from the 1900's to the early 1960's (Herzfeld 1929-1930; Sami 1954; Stronach 1978), the “capital”

<sup>2</sup> Gondet, Mohammadkhani et al. 2018 and Gondet, Mohammadkhani et al. 2019 are two field reports published in an Iranian journal, edited by the Shahid Beheshti University, dealing respectively with the 2015 and 2016 campaigns at Pasargadae and the surrounding territory. They introduce activities and main results obtained for each of the tasks of project for each year.

<sup>3</sup> Managed by Dr Rémy Boucharlat (UMR 5133 Archéorient, CNRS/Université Lyon 2) and, for the 2008 survey season, jointly with Kouros Mohammadkhani.

(Stronach 1978: 1), “spacious capital” (Stronach & Gopnik 2009) or “city” (Kuhrt 2007: 87) of Cyrus still remained poorly understood from an archaeological point of view.

The previous research programs mainly focused on the remains of the visible buildings. These buildings were partly made with stone architectural elements, distributed over an area of about 6 km<sup>2</sup>. After the seminal contributions of D. Stronach, a plan of Pasargadae was provided (Stronach 1978: fig. 3). Strikingly original characteristics appeared from Stronach’s plan when compared to other contemporary regional centers in the Ancient Near East. The most striking feature is that, considering the royal and palatial area, the several buildings are distributed around and within the approximately 4 ha Royal Garden. The layout of the garden became clear after the excavation of a network of stone water channels measuring more than 1 km in length. The Royal Garden took a central place in the royal symbolic landscape of Pasargadae (Stronach 1990) and this discovery demonstrated that the visible monuments were parts of a large-scale, planned landscaping project. However, the image of an empty site, a “nomad camp” made only of scattered buildings (Herzfeld 1935: 28), had long been transmitted and the apparent emptiness featured in the maps of Pasargadae published by Stronach did not seem to dispute this perception.

Pasargadae might not have been considered solely as a royal and symbolic center or the sacred resting place of Cyrus. It was also developed to host the capital of the first Great King in Persia. Even though Persepolis quickly supplanted Pasargadae as the main Persian provincial center, it is certain that Pasargadae remained an important symbolic and cultic place but also a unit in the Achaemenid administrative structure probably in charge of the management of its surrounding territory.<sup>4</sup> It is also important to acknowledge the fact that the building activities did not stop at Pasargadae after the end of Cyrus’ reign,<sup>5</sup> but that the area remained an active and certainly permanently populated place during the whole Achaemenid period. In addition, the work of Stronach on the monumental platform standing on the Tol-e Takht hill (Stronach 1978: 11-23, 146-159) indicates that the site was occupied long after the fall of the Achaemenid Empire, during the second half of the 1<sup>st</sup> century BCE and in the Early Islamic period. All this evidence suggests that the Pasargadae landscape was much more complex and varied than the

<sup>4</sup> On regular cultic activities in Pasargadae attested in the Persepolis Fortification Tablets (PFT) see Henkelman 2008: 427 ff.; Henkelman 2011 for *šip* feasts in Pasargadae and especially Henkelman 2011:109, fn. 56 for other cultic activities; Henkelman 2017: 312, fn. 64 provides an updated list of *akriš* rites occurring at Pasargadae. On Pasargadae as place for administrative units attested in the PFT see general considerations in Koch 1988; Briant 1996: 182; Kuhrt 2007: 88; Stronach & Gopnik 2009. See also above-mentioned Henkelman 2008: 427 ff. for an extensive discussion on the term of *partetaš* associated one time in PFT to Pasargadae, to be considered in the Persepolis administrative context as “a production and storage unit” (Henkelman 2008: 433), and often seen as the Elamite term for paradise. Boucharlat 2016 published synthetic comments on this topic from an archaeological point of view.

<sup>5</sup> Overview on attested building activities during the first decades of the Darius reign in Pasargadae see Stronach & Gopnik 2009; Boucharlat 2014a: 40-41.



handful of Achaemenid buildings visible on the site in the modern era. Pasargadae might have also hosted public, cultic and administrative buildings, and residential and craft sectors, which remain largely unknown in the present visible landscape.

### Contributions of the 1999-2008 Survey for Understanding the Pasargadae Space

When the fieldwork at Pasargadae resumed in the early 2000's with a joint Iranian-French project, it was decided to focus the main part of the efforts on the study of the spatial organization of the site.<sup>6</sup> The virtually "empty" spaces in between and beyond the known and excavated monuments had to be investigated more thoroughly. Given the size of the space, several hundreds of hectares, to be covered, the chosen methodology combined several complementary mapping techniques (geophysics, topography, and aerial photography) for building a multidisciplinary survey-oriented program. This mapping project was also implemented to support the inclusion of Pasargadae on the Unesco World Heritage list, agreed in 2004,<sup>7</sup> by better defining the area to be protected as well as its archaeological potential. The main results were obtained thanks to the extensive use of geophysics, particularly of the magnetic methods,<sup>8</sup> that give good results for mapping the buried remains and infrastructures over Pasargadae. The targeted areas were defined considering the available archaeological landmarks: the Royal Area and its surroundings, encompassing the Royal Garden, the two palaces, the two pavilions, the Gate R, and the Zendan-e Soleiman tower; 1.5 km to the northwest, the so-called "Sacred Precinct;"<sup>9</sup> 1 km to the northeast, the Outer Fortification/North Fortified Area beyond the Tol-e Takht hill.<sup>10</sup>

The material gathered during the first 1999-2008 phase of survey at Pasargadae was presented and commented upon in several publications (Boucharlat 2002; 2003; 2009; 2011; 2014a and b; 2016; Boucharlat & Benech 2002; Benech, Boucharlat & Gondet 2012). The surveys, especially geophysical ones, provided us with critical data for better reconstructing the past Pasargadae landscape (Fig. 1).

<sup>6</sup> Important tasks of the project also focused on the Pasargadae Plain, cf. Gondet et al. 2016. The present article focuses on Pasargadae and work at the regional scale will not be detailed here.

<sup>7</sup> See the webpage dedicated to Pasargadae on the Unesco on-line database: <https://whc.unesco.org/en/list/1106>.

<sup>8</sup> For a presentation of the magnetic method see Gaffney & Gater 2003: 61-72.

<sup>9</sup> See Stronach 1978: 138-145 for an overview of the excavation results; see the more recent statements and hypothesis of Boucharlat & Benech 2002: 30-32 and Amiet 2013. Led by Dr Ali Mousavi, since 2016 ICAR has resumed excavation on this area as well as near the Zendan-e Soleiman tower.

<sup>10</sup> This area was revealed thanks to aerial survey of Schmidt 1940: 18-19, pl. 15 and briefly investigated by Stronach (1978: 159). In the frame of our current program, we prefer to use the name "North Fortified Area" than "Outer Fortification" introduced by Stronach (1978). While "outer" may suggest that the area is outside Pasargadae, data show that it has to be considered as a part of the site.

The understanding of two aspects of this past landscape was particularly improved: the layout of the Achaemenid occupation in the plain south of the Tol-e Takht hill and the localization and characterization of new settled areas. In the plain, the southeastern limit of the Royal Garden corresponds to a large, almost 1.5 ha, elongated trapezoidal basin crossed by the bridge next to Palace S (Benech, Boucharlat & Gondet 2012: 13-19). Already indicated by the stone channels, the importance of water as a main element of the decorative and symbolic function of the Royal Garden is obviously strengthened by the pond. Northeast of the Royal Garden, a drainage system, probably made of a grid of ditches, was identified. It encompasses the Zendan-e Soleiman tower which survey revealed was part of a larger architectural complex and linked to a large, rectangular building standing to the southeast (Boucharlat 2003; Benech, Boucharlat & Gondet 2012: 20-23). These ditches followed the same orientation as the stone water channels in the Royal Garden and might have been connected in which case they would date to the same Achaemenid period. This result proved that the plain was landscaped far beyond the Royal Garden and led us to suggest the existence of a large park, i.e. the “paradise” *partetaš* of Pasargadae, in which all the known monuments in the plain were distributed during the Achaemenid period (Boucharlat 2009; 2011; 2014b; 2016; Henkelman 2008: 427 ff.). Survey results also demonstrated that Pasargadae extended far beyond this central area and previously unknown, settled areas were revealed. Within the North Fortified Area, behind the Tol-e Takht hill, a complex of buildings was partly mapped (Benech, Boucharlat & Gondet 2012: 23-26). A second settled sector was revealed east of the large trapezoidal pond located southeast of the Royal Garden (Benech, Boucharlat & Gondet 2012: 13-19). The nature and the chronology of these settled sectors remain under discussion. When combined, the buildings, complexes and settled sectors, distributed over at least 300 ha, reveal the original layout of the capital envisioned by Cyrus. It was an open and diffuse cityscape developed over a large scale without the well-defined, densely-built urban core found elsewhere.

### Objectives and Methods for the Ongoing Project at Pasargadae

Resumed in 2015, the ongoing project is based on the prospects of the first 1999-2008 phase of fieldwork at Pasargadae (Boucharlat, Benech & Gondet 2012: 28-35; Boucharlat 2014a). Since 2015, the implemented fieldwork aims to provide a comprehensive reconstruction of the ancient landscape of Pasargadae. New directions are investigated for improving this reconstruction beyond mapping techniques. The current program also takes place in the framework of the present policies for conservation and preservation of the site and its surrounding buffer area (Talebian 2014). For Pasargadae, the three main objectives are the following:

– *Mapping Pasargadae*. After six campaigns of geophysical survey at Pasargadae, between 1999 and 2008, 45 ha of the approximately 300 ha site were mapped. We

aim to extend the mapping by continuing to carry out the effective magnetic method previously used so successfully. At the same time, we are testing new geophysical electromagnetic instruments, measuring both the magnetic and electrical properties of soils, which are able to provide us with complementary data on the occupation. Being in a test phase, the results from this method will not be discussed in this article. The geophysical survey is combined with a systematic topographical survey of the site with the objective of accurately documenting and mapping all the archaeological features visible on the surface. This topographical survey is consistent with the ongoing task led by the Pasargadae World Heritage Office to produce an accurate archaeological map of the Pasargadae protected area.<sup>11</sup> During the 2015 and 2016 campaigns, we focused on the northwest part of the site, from the Royal Garden to the North Fortified Area. In 2016, we collaborated with the Iconem Company (Paris), which specializes in photogrammetry works for Heritage studies. We achieved complete coverage of the site by combining images from drones with a photographic campaign of the monuments on the ground.

– *Chronological dynamics.* During the previous work, the chronological aspects of the development of Pasargadae were only touched on, mainly through spatial analysis of the features on the geophysical maps. The non-nucleated aspect of the Pasargadae settlement pattern led us to a more intense study of this topic to determine whether the different settled sectors developed contemporaneously or not. Both relative and absolute dating of the occupation was examined. Pedestrian survey for collecting surface pottery sherds and further typological analysis of the ceramics allow us to draw comparisons between the collected assemblages. We also produced sherd density maps that suggest long-lasting occupation as well as the extent of occupation. In 2016 we started a sampling campaign for palaeoenvironmental studies. Although still in progress, absolute dating of samples serves to characterize sediment deposit phases as well as archaeological features filled by sampled sediments.

– *Palaeoenvironmental studies.* Results from palaeoenvironmental studies are not detailed in this article. Fieldwork in this area was started in 2016. Mainly based on soil sample analysis and absolute dating, by radiocarbon or OSL methods, of sediment deposit, most of the work is still being processed in several labs. However, we introduced this level of research because it is critical for our goal of comprehensively reconstructing the Pasargadae landscape. The study of past environmental settings combined geoarchaeological and paleobotanical approaches. In 2016, we focused sampling from the pond which is a potential reservoir of sediment archives for reconstructing the environmental history of the site and the

<sup>11</sup> The new base level map used for locating all our results was produced by the Pasargadae Office in 2014-2015. Since 2015, we have also worked to extend and complement the topographic contour map.

human impact on the natural landscape. A sounding was opened and samples taken in the section. The samples were analyzed using sedimentology (grain size, rate of carbonated components etc.) to determine hydrological changes. At the same time, pollen analysis provides data on vegetation history linked to environmental change and to human occupation. The pond being next to the Royal Garden, we also aim to find remains of species cultivated in the Pasargadae park.

### *Layout of the Pasargadae Park and Evidence for Locating a Part of the Town*

#### Park Layout towards the Tol-e Takht Hill, northeast of the Royal Garden

The 2015-2016 survey campaigns allowed us to complete the geophysical mapping of the space located between the Royal Garden and the Tol-e Takht hill (Fig. 2). As in the previously surveyed areas around the Zendan-e Soleiman tower, the visible features on the magnetic map mainly consist of long lines running in the plain. Most of these lines are the result of modern ploughing done before the protection and the closing of a large part of the site. The visible traces of recent farming, such as canals, are mapped during the topography survey and the plough lines are distinctly visible on the low-altitude aerial pictures of the site made with drones. The overlaying of these complementary datasets allows us to select linear features probably linked to the antique landscaping of the site (green lines on Fig. 2). They are all in the same orientation as the network of stone water channels in the Royal Garden and the grid of ditches revealed southwest of the Zendan-e Soleiman tower. Given that the geophysical and topographic surveys revealed neither building nor ceramic concentrations, all areas in this space were probably planted. These results may provide evidence that the whole plain northeast of the Royal Garden was landscaped, and that the park extended as far as the Tol-e Takht hillslope, its layout following the same rectangular plan indicated by the stone channels in the Royal Garden discovered by the previous survey campaigns.

Several issues need to be addressed when considering the shape and nature of the linear designs that are a feature of the park's layout. First, the grid appears less dense in the newly surveyed area than between the tower and the Royal Garden. This may be the result of taphonomic processes and not evidence for a change in the park layout. In fact, outside the space southwest of the tower, on both the magnetic map and aerial photo, the plough lines are denser and more visible; more intensive ploughing would have destroyed more remains of the ditches. This is especially clear when looking towards the northeast of the tower where no linear features are visible on magnetic map, and the fields particularly bear the marks of modern and probably deep ploughing.

The second issue concerns the extension of the linear features towards the southeast of the Zendan-e Soleiman tower. Most of the northwest/southeast oriented linear features, mapped after the previous survey, extend towards the

southeast. We assume they withstood the effects of modern farming better since they are more or less in the same orientation as the plough lines, while the southwest/northeast oriented features, being perpendicular to ploughing, were destroyed. This extension of the linear features may therefore demonstrate the extent of the grid layout better preserved and mapped southwest of the tower. Southwest of the tower and building complex, we originally suggested a connected courtyard or garden was part of this complex (Boucharlat 2003; Benech, Boucharlat & Gondet 2012: 20-23). It appears on the new maps that all the linear features outlining this space extend far beyond. This would mean that the tower complex was fully connected and an element of the park's landscaping project. Considering these linear features as a remains of the park drainage system, we suggest that the space southeast of the tower building complex was watered and a green area.

This discussion on the nature of the linear features leads us to the final issue concerning the layout of the park. Two of the linear features considered as part of the park layout match with perpendicular stone alignments mapped in the field during the topographic survey (dashed green lines on Fig. 2).<sup>12</sup> One crosses the plain from southeast to northwest around 200 m northeast from the tower complex. It appears in the field as a continuous and low line of piled stones. The southwest/northeast alignment running from the area of the tower complex as far as the other alignment consists of a series of heaps of uncarved stones. The geophysical mapping revealed that this second line extends farther beyond the visible series of heaps and considering the shape of the magnetic anomalies is very similar to other linear features considered to be ditches. Moreover, east of the tower complex, a second line, visible on the geophysical map, runs parallel to the line of stone heaps. These observations raise the question of the nature of these long and linear features that cross the area northeast of the Royal Garden. Considering the fact that for the southwest/northeast oriented alignment the linear feature appears to extend further on the magnetic map, the overlaying line of stone heaps may result from the cleaning of stones from the fields when there were farmed, some time after the abandonment of the site, and their storage in preexisting ditches. Targeted test soundings across these lines, at the same time as across other features considered as parts of the park layout, would give more accurate data on their dating and nature.<sup>13</sup>

<sup>12</sup> Such stone alignments around the royal area were also mapped by Herzfeld (1929-1930: Karte). For Herzfeld (1929-1930: 7), they were remains of a fence surrounding the garden. Further cartographic work is needed to compare Herzfeld's map with our documents more accurately. Most of the stone lines he mapped have disappeared, but those running in the plain northeast of the tower might correspond with alignments we recorded during 2015-2016 topographic survey.

<sup>13</sup> The same strategy was successfully implemented west of Persepolis for better characterizing the network of ditches revealed after geophysical surveys in the area, see Askari Chaverdi & Callieri, eds., 2017.

## Inhabited Sector southeast of the Royal Garden

Amongst results obtained after the 1999-2008 survey at Pasargadae, analysis of the geophysical map (Fig. 3) suggested that a settled sector sprawled on the south and east side of the large pond southeast of the Royal Garden (Benech, Boucharlat & Gondet 2012: 18, highlighted as “zone construite”: p. 19, fig. 9).

On the one hand, the map is hard to interpret because of destruction by modern ploughing appearing all over the area as long linear and parallel traces oriented southwest/northeast. However, remains of the ancient occupation south and east of the pond are clearly visible with two kinds of features on the magnetic map that was extended towards the northeast during the 2015 campaign. First, long linear features, oriented southeast/northwest for the most part, run across the area and may represent ancient drainage and/or field systems that date to an earlier period than the plough marks. As hypothesized after the first phase of the magnetic survey, they delineate three successive, almost rectangular, plots along the southeastern edge of the pond. Other linear features with similar characteristics can be seen all over the area but do not create a comparable rectangular pattern. Maybe they were elements of a network of which large parts have been destroyed. However, since they appear disconnected one to another on the magnetic map, it is impossible to demonstrate that they were contemporaneous. The second type of evidence revealed by geophysics corresponds to distributed clusters of magnetic features and, more broadly speaking, to a general enhancement of the soil magnetism. We suggested that this result would have been caused by the presence of settlement and past human activities in the area. The accurate layout of this at least 4 ha sector is hard to determine. Shallow remains, probably made of mud-brick structures, were certainly heavily destroyed by deep ploughing. Concerning the extent of this sector, it seemed that spaces northwest of Gate R, as far as 80 m, as well as along the southeast bank of the pond, corresponding to the place of the above-described plots, were left free. These “empty” spaces might have consisted of green areas and an extension of the park to the other side of the basin.

After 2008, our attempt at reconstructing the landscape southeast of the pond was based only on geophysical results, with uncertainties due to recent destruction. During the 2015 campaign, we mapped and collected surface pottery sherds, and their typological analysis was implemented in 2016. By means of this complementary approach, we aimed to ascertain the presence of settled and unsettled spaces, with the ceramic analysis providing us with data on relative dating of the occupation. A line of 35 squares ( $20 \times 20$  m) was staked out along the southeastern edge of the pond. All the surface pottery sherds were collected within grid squares with collection following 1 m spaced transects. The sherd density map (Fig. 3) confirms the reconstruction suggested by the geophysical results. In the 10 southwestern most squares, from the bridge as far as the line of sluiceways upstream of the pond, the sherds are virtually absent. This result strengthens the suggestion that there was an open, maybe planted, area divided into three distinct plots along the southeastern edge of the pond. Further northeast, the sherd density

suddenly increases up to 0.7 sherds/m<sup>2</sup> and the values steadily grow in the subsequent squares of that sector. The squares with the highest concentrations perfectly overlay the settled area as mapped with geophysics. Since concentrations of sherds can be considered a relevant marker of permanent occupation, the combined results of ceramic collection and geophysics firmly demonstrate on the one hand that there was an area of settlement east of the pond, and on the other hand that it was fringed by open, maybe green, spaces to the southwest.<sup>14</sup>

In order to evaluate the chronological span of the occupation, we undertook a typological classification and analysis of the collected diagnostic sherds. We employed a multivariate typology<sup>15</sup> in order to determine depositional processes as well as chronological and functional patterns of distribution. Form-type descriptions are based on the form and orientation of the rim, the length of the neck, body shape when present, and any consistent decorative features. Ware (fabric colour and inclusions) and surface finishing (slip, burnish, and glaze) were recorded independently. It was possible to create 53 form types and 49 ware types. In order to standardize the identification of colours among different analysts (which the standard Munsell system is notoriously poor at), 18 standardized colour sample swatches were created to match ceramic fabric colours found at Pasargadae. This ceramic classification system allowed us to draw critical conclusions about relative chronology, function, and depositional processes by comparing ceramic assemblages between collection sectors. However, given the nature of this un-stratified surface material, as well as a lack of a standardized baseline ceramic chronology for the 1<sup>st</sup> millennium BCE and later in Fars, accurate dating of surface collected pottery sherds remains problematic.<sup>16</sup> In this article, we use as our reference the ceramic assemblages published by Stronach (1978) for the four periods of occupation defined from excavations on the Tol-e Takht hill as they form the closest and most straightforward parallels to our collection.<sup>17</sup>

<sup>14</sup> See Gondet & Mohammadkhani 2017 for similar results combining geophysics and surface sherds mapping that evidenced mosaic of settled sectors and potential green areas west of the Persepolis Terrace.

<sup>15</sup> We built our own system of classification. For the Fars region, especially for the 1<sup>st</sup> millennium BCE and the following periods, no standardized classification system of the ceramics material is available. Although the ceramic assemblage of all sites presents its own particularities, the topic would necessitate future collaborative and comparative working program of all the teams involved in Fars archaeology for standardizing ceramic studies. Cf. comments fns. 16 and 17.

<sup>16</sup> Despite recent work for refining the Stronach 1978 chronological sequence on the Tol-e Takht hill by Askari Chaverdi & Callieri (2010), the characterization of ceramics in the Pasargadae region remains difficult. For Fars region in the 1<sup>st</sup> millennium BCE, comparisons are available with several excavation results on stratified sites recently published, see for example Potts et al., eds., 2009 and especially the PhD thesis of McRae 2014 for the Mamasani Valley; Askari Chaverdi & Callieri, eds., 2016 for the Tang-e Bolaghi Valley; Askari Chaverdi & Callieri, eds., 2017 for Persepolis West. For our current and future analysis at Pasargadae, we aim to implement further typological comparisons to be detailed in future publications.

<sup>17</sup> Implemented during the 1960's, the chronology of the Tol-e Takht hill is mainly based on coinage and at that time no absolute dating were performed. Askari Chaverdi & Callieri

The typological analysis of the diagnostic sherds from the area south and east of the pond revealed two groups of ceramics distributed in two distinct areas along the collection grid. The predominance of buff slip wares in the last three squares to the northeast does not present parallels with the Periods I to IV ceramics published by Stronach. The overall ware and form characteristics suggest they are of Islamic date and later than the Early Islamic Period IV (7<sup>th</sup>-8<sup>th</sup> century CE). These three squares are located on the south slope of the Tol-e Sangin hill, where remains of wall foundations, consisting of lines of stones visible on the surface, were recorded during the topographic survey. Consequently, this cluster of at least a dozen buildings is probably related to Islamic settlement on the Tol-e Sangin slopes. Further southwest, as far as the sluiceways, the assemblage is very similar to those of Period II and III defined on the Tol-e Takht hill. Examples of carinated bowls (Fig.4), often considered in Persia as the best marker of the Achaemenid/post-Achaemenid period, are present in small quantity (9 sherds) but are distributed all over the area.

This evidence suggests that there was an initial occupation of the plain south of the Tol-e Sangin hill contemporary to the Achaemenid/post-Achaemenid period. Based on this observation, we suggest that a part of the Pasargadae town was located southeast of the Royal Garden, sprawling in the plain to the other side of the pond. Further studies, excavations and ceramic comparisons, are needed to ascertain the contemporaneity of this sector with the construction phases of the Achaemenid Royal Area. However, as explained in the conclusion of this article, overall discussion on the spatial organization of the different settled sectors revealed at Pasargadae leads us to suggest the settlement southeast of the Royal Garden would have to be linked to the development of the Royal Area and the surrounding park.

#### *Evidence for Several Settlement Phases around the Tol-e Takht Hill*

After the 1999-2008 and 2015-2016 survey campaigns at Pasargadae, we characterized two new settlement sectors at Pasargadae: north of the Tol-e Takht hill, within remains of a mud-brick fortification line, and on the southern slope of the Tol-e Takht hill. The process for characterizing these sectors was similar

2010 and Callieri & Askari Chaverdi 2013: 705-706, based on C14 dating obtained in two trenches opened on the Tol-e Takht hill, suggest a more complex chronological sequence divided into 9 phases. For instance, they suggest dating the destruction layer, supposedly marking the end of the Seleucid period for Stronach 1978: 146, back to the Achaemenid period. Unfortunately, as expressed by Askari Chaverdi & Callieri (2010: 12), the ceramic material brought to light for post-Achaemenid phases came from erosion layers. Assemblages are made of re-worked and mixed ceramics that can hardly be associated to each of the successive phases. For this reason, for ceramics comparisons, we still need to refer to the Stronach chronological sequence by keeping in mind that it would necessitate to be entirely reconsidered.



to that used for the sectors southeast of the Royal Garden. First, they were defined thanks to mapping methods, by using geophysics and in 2016 aerial photos. Second, we collected surface pottery sherds and conducted a typological analysis for comparing the assemblages between the sectors and with those published by Stronach.

#### North Fortified Area: a Chronological and/or Functional Distinct Settled Sector

After discovery of fortification remains north of the Tol-e Takht hill by E.F. Schmidt (1940: 18-19) thanks to aerial survey and the limited excavation of one of the towers by D. Stronach (1978: 159), the organization pattern of the inner fortified space remained unknown. Geophysical surveys carried out within the North Fortified Area revealed large parts of the settlement layout standing within the ramparts (Boucharlat & Benech 2002: 26-29; Benech, Boucharlat & Gondet 2012: 23-26). In November 2016, we luckily benefited from a snowfall event while an aerial photo campaign by drone was being conducted by the Iconem Company. On the northern slope of the area, the differential snow melting along the buried buildings remains revealed their accurate plan (Fig. 5). This unexpected example of remote sensing allowed us to improve and better delineate the layout of the north part of the North Fortified Area (Fig. 6).

Although much better defined thanks to aerial photos, the overall description of the area does not change very much from our suggested reconstruction made from the geophysical survey. Within the fortified area, of more than 20 ha, the archaeological remains are better preserved on the slope of the northern hill range. In the basin, surrounded to the north by this hill range and to the south by the Tol-e Takht hill, long linear features appear in the northwest part only on the magnetic map. They are probably the remains of a drainage or plot system of undetermined date, some of them being certainly related to farming after the abandonment of the North Fortified Area. Apart from an isolated building, possibly preserved in the southeast part of the basin, archaeological remains in the basin seem to have been deeply destroyed by modern ploughing. However, on the foot-hill located near the northwest corner of the rampart line, a series of rectangular features are related to buildings and could be evidence that the whole fortified area was settled. On the northern slope, the occupation appears denser in the northwest part of the hill range than in the southeast part. This observation may be explained by the slope being steeper to the southeast and certainly more difficult to build on. In the northwest part, the plan is rectangular; buildings of a similar size are placed against one another and form long lines. In between, spaces seem to be left free and may correspond to courtyards or squares. The 2016 aerial photography allows us to suggest that this layout pattern extends to the other side of the small pass to the northeast where a gap in the fortification line is visible and where a gate might have stood. It extends at least as far as the projecting tower

located southeast of the pass. This layout shows an original pattern that, as far as we know, is not comparable to any site in Fars.

During the 2015 campaign, we undertook surface pottery collection along two lines across the northwest part of the North Fortified Area (Fig. 6). The average sherd density is low and for the majority of squares less than 0.3 sherds/m<sup>2</sup>. Only the two squares overlaying the fortification present slightly higher density up to 0.5 sherds/m<sup>2</sup>. On the one hand, the rather dense occupation did not leave much ceramic material on the surface. On the other hand, the assemblage of only 46 diagnostic sherds from the North Fortified Area is the smallest collected at Pasargadae during the 2015-2016 campaigns. However, the concentration of plain-rim bowls, red-brown fabric, and red slip distinguished this small assemblage from the others, including from the settled sector southeast of the Royal Garden. This preliminary observation is important because it might suggest that the north fortified settled area may be dated to a period distinct from the sector southeast of the Royal Garden, although the differences in the two assemblages may stem from functional rather than chronological differences. Given the small number of sherds in the collection, the surface pottery from the North Fortified Area is difficult to assess and further collections are warranted. To this end, a new surface survey was implemented during the 2017 campaign along the fortification line to the north, and data are still being processed. Targeted excavation would also provide better evidence for the chronology and function of this area.<sup>18</sup>

### Early Medieval Town on the south Slope of the Tol-e Takht Hill

During the 2015-2016 magnetic survey northwest of the Royal Garden, we extended the mapping as far as the Tol-e Takht hill southern slope (Fig. 2). The result provided evidence that the whole southern slope was settled. Unfortunately, probably because of the geology, the quality of the geophysical data was not detailed enough to clearly define the layout. In 2016, we supplemented the mapping work through topographic and aerial survey, the aerial survey being implemented after the snow had revealed traces of numerous constructions. Gathering all the results together, we were able to draw a first interpretative map of archaeological features recorded in this sector (Fig. 7).

The most visible feature revealed by the geophysical survey was a long linear construction that defines the northwest limit of the settled sector. It is made up of two parallel lines of construction spaced 12 m apart. Projecting from them on both sides are at least two 5 × 15 m symmetrical rectangular projections, spaced 18 m

<sup>18</sup> In 2006, a limited excavation was implemented in the area next to the find spot of four decorated stone fragments as reported by Mousavi & Atayi (2013). The trench was located on the fortification line running northwest of the central basin of the North Fortified Area. A foundation of the fortification, Achaemenid according the authors, and a later water channel, Post-Achaemenid, were brought to light. The suggested dating of excavated structures is provided on the basis of ceramic studies, but no sherds are published.

apart. Topographic and aerial surveys provided better detail of the structure. The north line of construction and parts of the south line, were visible in the field as a row of stone blocks with an average 1.7 m in width. The stones were several decimeters in size, of irregular shape and with no apparent traces of stone cutting. When overlaying the drawings made from the different survey techniques, we observed that the lines visible on the magnetic map do not perfectly overlay with those on the topographic map or aerial photos. It would appear that the geophysical survey was not recovering the foundations of the construction itself, i.e. the stone lines visible on the surface, but more probably ditches and/or foundation trenches. The size of the structure also appears smaller when considering the topographic survey of the visible stones. For example, the size of the projecting spaces is considerably smaller at  $4 \times 7$  m. Considering the size and shape of the features and the fact that the settled sector does not seem to extend further to the north, beyond this construction, we suggest it is the remains of a rampart defending the settled sector located on the south slope of the Tol-e Takht hill. It would have been a double-walled rampart, with an interior corridor of on average 8 m in width between the walls, with the projections being the remains of rectangular towers.<sup>19</sup>

As no concentration of stone rubble was recorded on the field around the features, we suggest the walls were built in mud-brick. This possible rampart leans against the west corner of the Tol-e Takht platform and its remains can be followed along the slope for almost 100 m towards the southwest. Unfortunately, beyond the foothills, where it reaches the modern access road, it is no longer visible. We can only hypothesize that it would have run along the foothill to the east to protect the settlement on the south slope. Along the south Tol-e Takht hill, several features, probably deep canals or field limits of later date, were mapped. They might hide or have caused the destruction of additional remains of the rampart.

Southeast of the putative rampart, the slope appears to have been densely settled. The data obtained after topographic and aerial surveys provided evidence for numerous buildings, distributed over almost 8 ha, especially in the lower half of the slope. For the upper part, traces of remains are more scattered, probably because they would be covered over by earth resulting from erosion of the mud-brick construction further up the hill. The revealed plan is rather different than in the North Fortified Area. The buildings are more irregular in shape and size. They

<sup>19</sup> As far as we know and after consulting synthesis on fortifications in Ancient Iran published by Kleiss (1990), we did not find examples of fortification that match perfectly. Most of Sassanid and Islamic examples present projecting towers only towards the exterior of the ramparts and are often semicircular and not rectangular. Considering earlier periods, the plan of the fortification of the Hasanlu IV Citadel, as published by Kleiss (1990: fig. 3d), would present similarities with same pattern of rectangular towers symmetrically projected to the interior and exterior of the curtain wall. Regarding the fortification of Persepolis and the synthetic work of Mousavi 1992, the rectangular towers mainly project towards the exterior. The walls of the Persepolis fortification appear as much thicker and above all inner corridor as much narrower, about 2.5 m in width after Mousavi 1992: 223 based on the excavation results of A. Tadjvidi. In our present case at Pasargadae on the Tol-e Takht south slope, the space between the two walls is much larger, 8 in width being surprisingly large for a potential corridor in a defensive wall.

seem to be clustered as irregular rectangular blocks rather than the more regular elongated blocks we observed north of the Tol-e Takht hill. Longer linear features, as illustrated by the aerial photos, may be evidence for a drainage system. If the northwest limit seems clearly to correspond to the rampart described above, in the other directions limits are more difficult to accurately determine. Towards the southwest and the plain, we do not observe an extension of the settlement. Along the base of the hill, we mapped only long linear features, some of which were also visible on Schmidt's 1930's aerial photos, and which are probably related to a field network dating to a later period than the settlement of the southern slope.

Towards the south, the settled area seems to extend as far as a small hill located 100 m from the base of the Tol-e Takht hill. The layout is here difficult to define. As a matter of fact, the topographic survey indicated that this area is crossed by many canals and stone lines probably mostly related to recent farming. Towards the northeast, the topographic survey recorded several buildings and long lines of stones along the east foothill as far as the Tol-e Takht north hillslope. The settlement remains in that direction appear more scattered than in the south hillslope, and it remains unclear if they are contemporaneous. Altogether, the results of the 2005-2016 survey suggest that a town, probably fortified, stood on the south Tol-e Takht hillslope and extended over at least 8 ha.

The surface pottery was collected along two parallel lines of squares: the first and longest one was placed across the hillslope; the second was placed in between the Tol-e Takht hill and the smaller hill located 100 m to south. The distribution of the pottery perfectly overlays the area of the settled sector as defined by the magnetic and topographic surveys. The highest concentration of sherds was found on the slope while the density values dramatically decreased for squares located in the plain. Hence, the settled area was concentrated on the slope. The density values along the second, southern, ceramic collection grid, however, indicates that the space between the two hills was also settled. The ceramic assemblage defined from the typological analysis of diagnostic sherds from the southern slope of the Tol-e Takht is distinct from the other ceramic survey assemblages discussed above. It is very homogeneous and includes form and ware types that were not recorded elsewhere in our surface ceramic collections at the site. For example, a pithos rim with applied ridges (Fig. 8), the typical Late Sassanian/Early Islamic ribbed jar, as well as a ware type with a buff fabric and core with medium to coarse temper, used to make large jars, are found almost exclusively on the south slope of the Tol-e Takht hill. Our preliminary observations also lead us to suggest that ceramics decorated with incisions are more frequent in this area. These types of ceramic are directly paralleled in Stronach's Period IV (Stronach 1978: figs. 123-124) which he dates to the Early Islamic period but which also bear strong parallels to Late Sassanian assemblages from other sites (Whitcomb 1985). Further comparative analysis will be required to refine the relative dating of this assemblage, but it is clear that the town standing south of the platform is considerably later than the Achaemenid period and might date to the Early Medieval era.

### *Concluding Remarks and Perspectives*

The 2015-2016 survey campaigns at Pasargadae, allow us to construct an upgraded archaeological map of the site within its fenced limit and outside this fence in the North Fortified Area (Fig. 9). The results are still preliminary as work on the site is ongoing and should last at least until 2019. The dataset already gathered at Pasargadae suggests some new hypotheses about the landscape dynamics at Pasargadae and leads us in new research directions both for better mapping the Achaemenid layout and understanding changes in the later settlement pattern.

The 2015-2016 geophysical survey provided us with data on the layout and the extent covered by the park of Pasargadae. After the first 1999-2008 survey phase, we suggested that the park encompassed the Royal Area, i.e. the palaces, the pavilions, and the Royal Garden, as indicated by a network of earth ditches which delineated an extension of the stone channels towards the northeast and the Zendan-e Soleiman complex. The new map demonstrates that this network extended as far as the southern slope of the Tol-e Takht hill. The exact nature and dating of the long features remain unclear because some of them are overlaid by stone lines visible on the surface. However, their orientation, and for the main part, the values and shapes of the geophysical anomalies are comparable to those formerly mapped between the Royal Garden and the tower. Targeted soundings across selected linear features should be undertaken to define these features more accurately. Concerning the extent of the park in the other directions, the unbuilt areas highlighted along the southeast edge of the large pond as well as around Gate R show evidence of open areas. They might indicate that the park extended towards the southeast and surrounded all the monumental constructions forming the Royal Area. Towards the southwest, data was still unavailable after the 2015-2016 fieldwork because we focused on the mapping of the northeast part of the site. However, a description in Strabo, as cited by D. Stronach (1978: 24), suggested the Tomb of Cyrus stood in a “paradise.” Mapping the southwest part of the Pasargadae protected area is the main objective of our ongoing and future survey with the expectation of revealing potential traces of landscape management comparable to those running northeast of the Royal Garden. Finally, we implemented two sampling campaigns of the infilling sediment of the pond mainly for carrying out palynological analysis. This work is still being processed, and we aim to reconstruct the vegetation landscape of the park as well as the vegetation history in the area.

After the discovery of a settled sector southeast of the Royal Garden during the 1999-2008 campaigns, sprawling in the plain south and east of the pond, we are now able to suggest that it might be related to the initial phase of development of the site. Pedestrian survey, collection and analysis of the surface pottery sherds demonstrate that the bulk of the ceramic assemblage might date to the Achaemenid/post-Achaemenid period. Doubt about the chronology is linked to our inability to more accurately determine relative chronology solely on the basis of the ceramic studies, a topic that will need deeper synthetic work in the future. We are,

therefore, not able to confirm that the settled sector highlighted south and east of the pond was a part of the Achaemenid town linked to the Royal Area. However, combining data from ceramic analysis with observations on the spatial arrangement of this settled sector as well as preliminary results after the 2017 campaign, it leads us to suggest that parts of the town might have extended to the east of the Royal Area. Several characteristics may be compared with results from the survey west of the Persepolis Terrace/Royal Area (Boucharlat, De Schacht & Gondet 2012; Gondet & Mohammadhani 2017). First, the settled sector beyond the pond was found at some distance from the Pasargadae Royal Area. This layout follows the same pattern that was already observed west of the Persepolis Terrace where settled sectors are placed at a distance from the Royal Area. At Pasargadae, the limit between the Royal Area and the town would have been defined by the pond. Second, preliminary observations made during the 2017 campaign led us to suggest that other Achaemenid/post-Achaemenid settled sectors must be in the plain outside the protected area of Pasargadae as far as the Pulvar River flowing 2 km east. Pedestrian survey followed by sherd collection demonstrated that the plain was densely settled there, and supplementary sectors of Achaemenid/post-Achaemenid were defined in this area. East of the Pasargadae Royal Area, we might find a similar town layout to the layout at Persepolis with an open and mosaic landscape made of inhabited areas and others left free. Mapping east of Pasargadae will continue during future campaigns, and a program of targeted soundings, similar to that implemented at Persepolis (Askari Chaverdi & Callieri, eds., 2017), would provide critical data for a more precise attempt at reconstruction.

#### Achaemenid Tol-e Takht Monumental Platform as Possible Pivotal Point for Later Occupation Phases

Compared to the settled sector southeast of the Royal Garden, the North Fortified and the Tol-e Takht south hillslope areas appear morphologically very different. This may be explained by taphonomic processes. The buried archaeological remains on the hill slope are better preserved from modern farming practices than in the plain, and the multidisciplinary survey methods used were able to map parts of the layout of these sectors better than in the plain. Several organizational differences, however, between the three settled sectors were observed. North and south of the Tol-e Takht, the settlement pattern appears to be relatively dense while east in the plain it looks much sparser. Remains of ramparts, probably leaning against the Achaemenid stone platform, define the limit of the settlement recorded around the Tol-e Takht hill. Southeast of the Royal Garden, the survey did not reveal traces of fortifications. The absence of convincing evidence for reconstructing a rampart connected to Gate R was already assessed after the 1999-2008 survey (Benech, Boucharlat & Gondet 2012: 18). The complementary survey carried out since 2015 has confirmed that the settled sector extended further along

the southwest/northeast axis of Gate R and that no large remains have been recorded either on the surface through topographic survey or under the surface through geophysics. As at Persepolis, the settled areas in the plain do not seem to be fortified. It is worth noting that fortified areas, north and south of the Tol-e Takht hill, might be considered anomalous compared to the much more open landscape that we reconstruct in the plain. Morphological characteristics alone suggest that the settlement around the platform might correspond to different patterns and phases of development than in the plain further east and south.

This assessment is strengthened by the preliminary data from the surface ceramics collected from the pedestrian ceramic collection surveys of 2015 and 2016. In summary, the form and ware type assemblages identified in the three settled sectors form discernible patterns of distribution (Fig. 10). These different types have functional associations in terms of food service and storing, but are also almost certainly indicative of a chronological difference between the areas. The assemblages from the North Fortified Area and from the plain southeast of the Royal Garden can find shape parallels in Stronach's Period II and III plates (Achaemenid and Post-Achaemenid) which are not stratigraphically differentiated in terms of the pottery. Between the two sectors, the ware differences are greater than for the form. Pastes and slips are more distinct with, for example, frequent occurrence of red-slipped sherds. Given the notable differences in both the architectural layout and the ceramics, it is tempting to suggest that the construction in the North Fortified Area is a later development than the settlement in the plain (maybe post-Achaemenid as suggested by Boucharlat & Benech 2002: 26-29). However, to be firmly demonstrated, this suggestion will need further comparative studies with other sites, supplementary ceramic collection, test soundings and absolute dating. The evidence for distinguishing the remains from the Tol-e Takht southern hillslope from other areas is more straightforward. Both mapping data and ceramic analysis lead us to suggest one relatively homogeneous occupation dating to the Sassanid/Early-Islamic periods (corresponding to Stronach's period IV) over the southern slope of the Tol-e Takht hill. According to preliminary observations after two seasons of work, it seems that the Achaemenid/post-Achaemenid Period II-III and Early-Islamic Period IV as defined by Stronach from the excavation on the Tol-e Takht summit are only a small part of wider settlement at the site. After the abandonment of buildings in the plain, the settlements might have been moved and concentrated behind fortifications: first north of the Tol-e Takht platform and then, some centuries later, south of it. This reconstruction is, of course, still speculative and requires additional chronological evidence to be verified. However, the proposed reconstruction creates a framework for ongoing and future research toward better understanding the *longue-durée* of Pasargadae.

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#### SUMMARY

Following the 1999-2008 archaeological survey campaigns at Pasargadae, in 2015 an Iranian-French team resumed fieldwork on the site and its surrounding territory. This article focuses on data gathered during two research campaigns at Pasargadae implemented during the fall of 2015 and 2016. The methods used for mapping Pasargadae are complementary and multidisciplinary: geophysics, topography, aerial survey, pedestrian survey, mapping and analysis of the surface pottery. Combined together, the preliminary data, which are still being processed, shed new light on the archaeological landscape of Pasargadae. They allow us to draw new perspectives on Achaemenid Pasargadae and later evolutions of its landscape: the layout of the park at Pasargadae was more extensively mapped northeast of the Royal Garden and possible remains of the town connected to the Achaemenid Royal Area were discovered east of the site, and a rich dataset was compiled to suggest a reconstruction for the north part of the site where, around the Tol-e Takht hill, two settled areas might correspond to developments in the post-Achaemenid and Early Medieval periods.

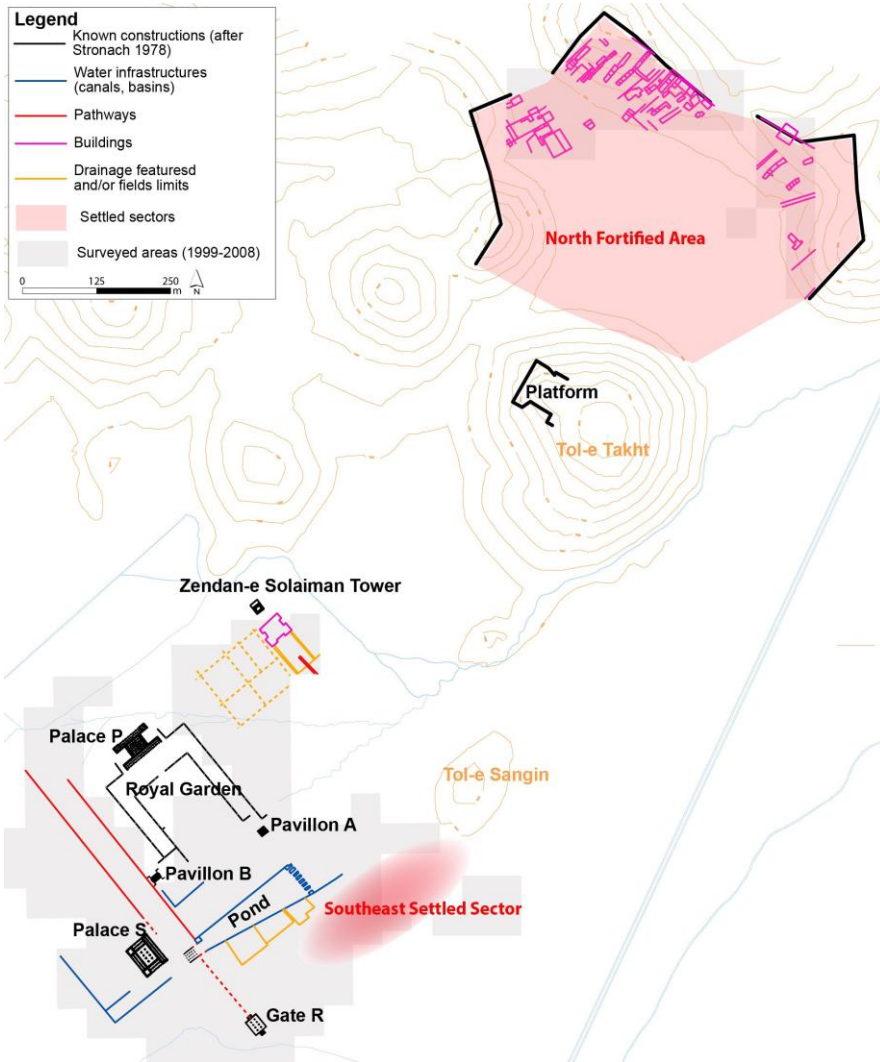


Fig. 1 – Interpretive map of the results obtained after the 1999-2008 survey carried out at Pasargadae (adapted from Benech, Boucharlat & Gondet 2012: 29, fig. 15).

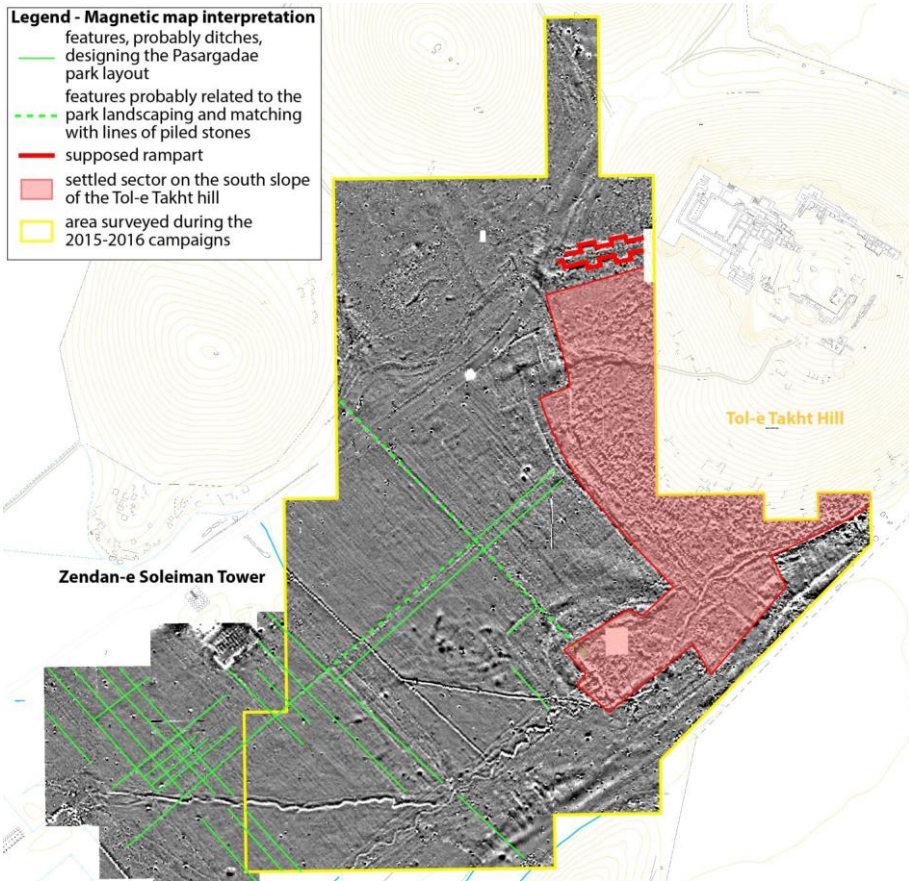


Fig. 2 – Magnetic map and proposed interpretation (colour scale  $-1.5/+1.5$  nT/m from white to black). The green lines correspond to features related to the park organization. The green lines are hypothesized to be buried remains of ditches while dashed green lines match with mapped alignment of stones (Magnetic map drawn by C. Benech, S. Gondet, and K. Mohammakhani – Iranian-French “Shiraz” Project at Pasargadae).

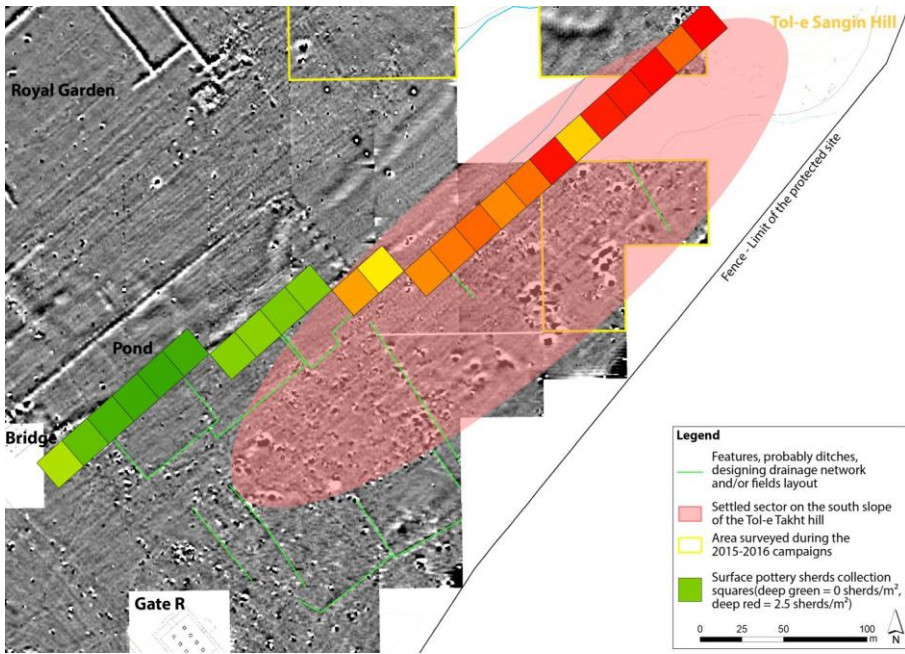


Fig. 3 – Magnetic map (same colour scale as Fig. 2) and proposed interpretation southeast of the Royal Garden overlain by ceramic sherd density map. Green lines correspond to features related to drainage/field system. The settled area is outlined by a light red oval (Magnetic map drawn by C. Benech, S. Gondet, and K. Mohammadkhani; underlying topographic map by D. Laisney S. Nazif – Iranian-French “Shiraz” Project at Pasargadae).

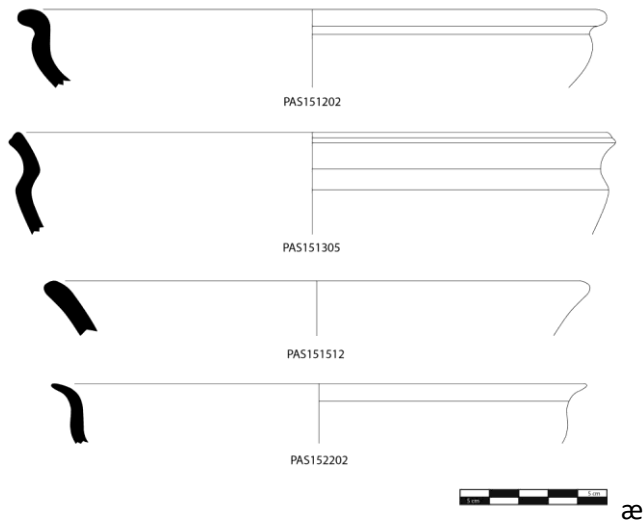


Fig. 4 – Plate of diagnostic sherd profiles collected in the settled sector southeast of the Royal Garden. Examples of carinated bowls rims (Drawing by F. Notter-Truxa, type identification by H. Gopnik, with S. Nematollahi Nia and H. Abbasi – Iranian-French “Shiraz” Project at Pasargadae).



Fig. 5 – Aerial photo, taken by drone after November 2016 snow event, of the southeastern slope of the hill range bordering the North Fortified Area to the north. The differential snow melting made the settlement layout appear in the area. Especially in the center of the figure, several constructions create a layout divided into successive rectangular blocks (Aerial photo by Iconem Company – Iranian-French “Shiraz” Project at Pasargadae).



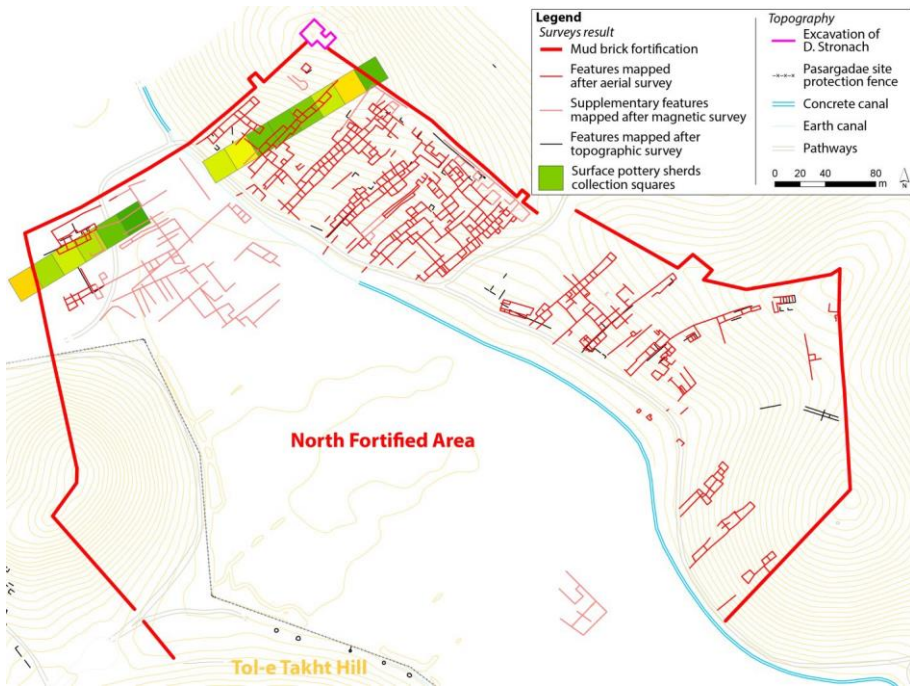


Fig. 6 – Interpretive map of visible archaeological features in the North Fortified Area drawn after the geophysical and the aerial survey. It overlays sherds density map (color chart same as Fig. 4) drawn after pottery collection along two lines across the northwest part of the area (Iranian-French “Shiraz” Project at Pasargadae).

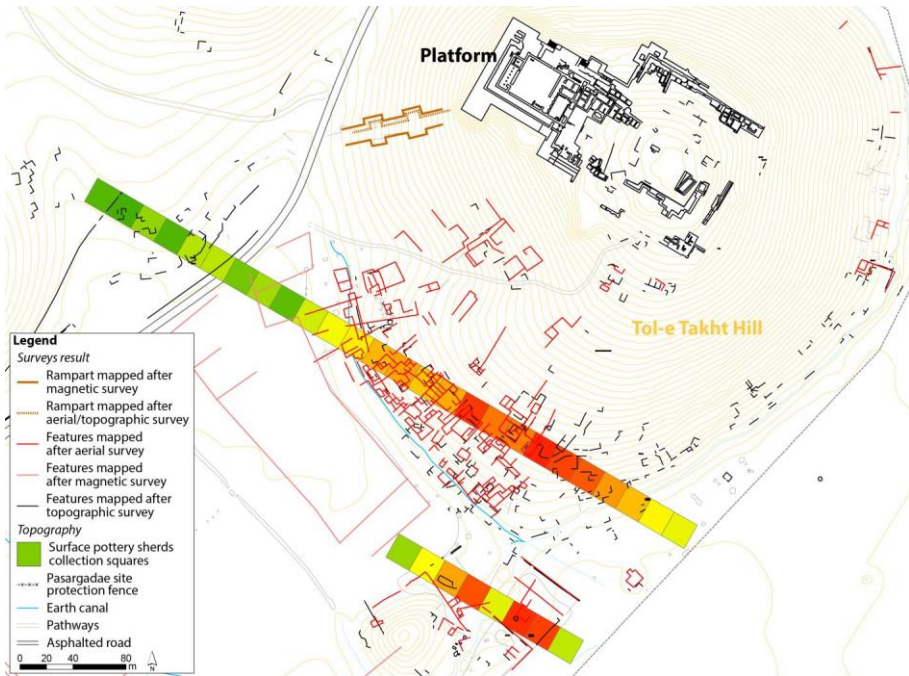


Fig. 7 – Interpretive map of visible archaeological features on the south slope of the Tol-e Takht hill drawn after geophysical (light red lines), topographic (black lines) and aerial survey (red lines). It overlays a sherd density map (color chart same as Fig. 4) from pottery collection along two parallel lines across the south part of that area (Iranian-French “Shiraz” Project at Pasargadae).



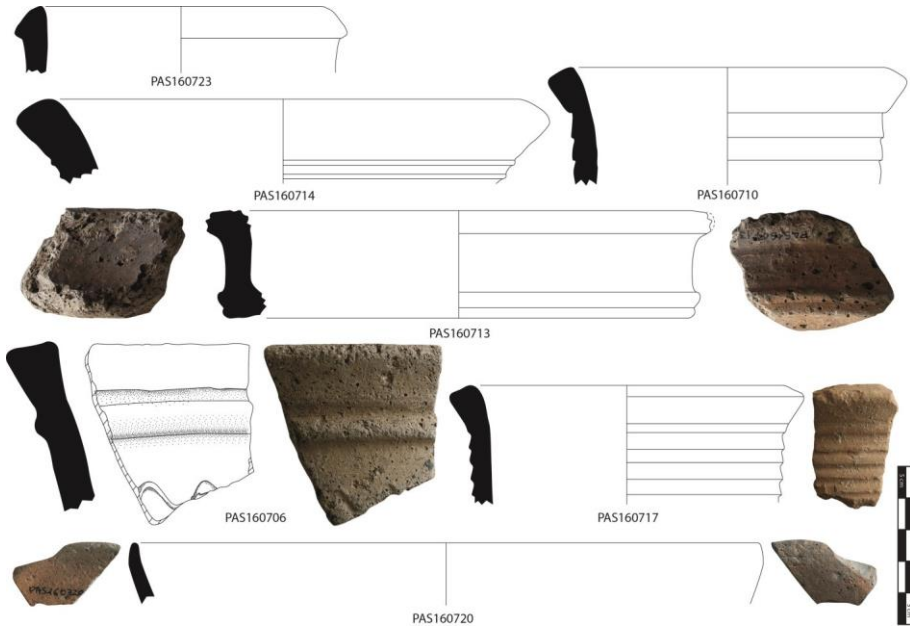


Fig. 8 – Miscellaneous examples of several diagnostic sherds collected in one square (square 7) located on the Tol-e Takht south slope. The sherds PAS160706, PAS160710, PAS160713, and PAS160717 are examples of the jar rim with applied rims (Drawing by F. Notter-Truxa, type identification by H. Gopnik, with S. Nematolahi Nia and H. Abbasi – Iranian-French “Shiraz” Project at Pasargadae).

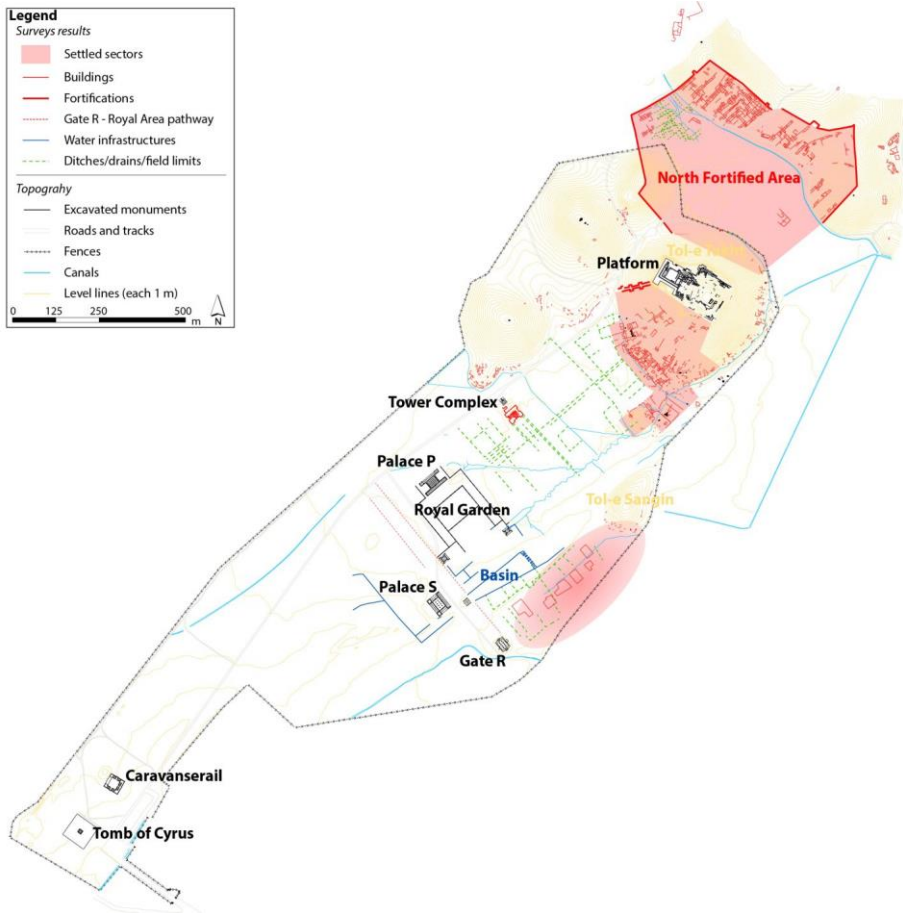


Fig. 9 – Proposed archaeological map of Pasargadae after the 1999-2008 and 2015-2016 archaeological multidisciplinary surveys campaigns (Iranian-French “Shiraz” Project at Pasargadae).

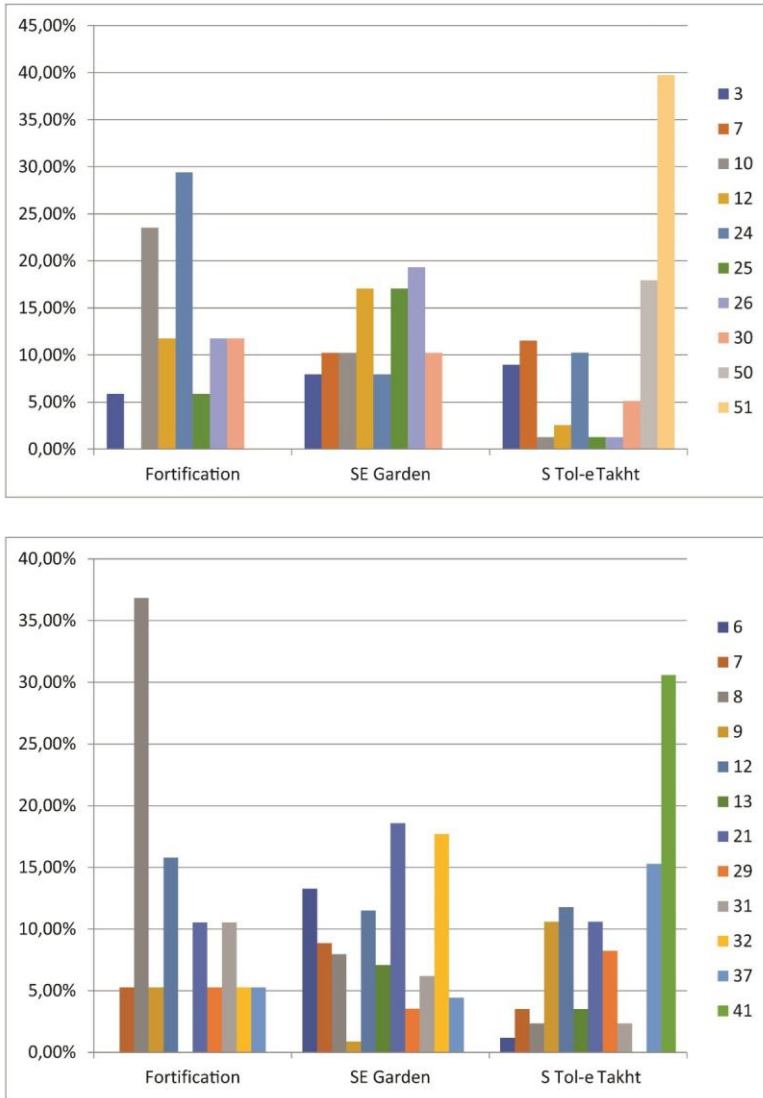


Fig. 10 – Form (above) and ware (below) type distributions sorted by surface pottery sherd collection areas, results after the 2015-2016 pedestrian survey campaigns at Pasargadae. For both form and ware types, only those with more than 10 examples among all collected diagnostics sherds. “Fortification” = North Fortified Area; “SE Garden” = Southeast Royal Garden settled sector; “S Tol-e Takht” = Hillslope south of the Tol-e Takht hill settled sector (Analysis by H. Gopnik – Iranian-French “Shiraz” Project at Pasargadae).