

**“HERAKLEOPOLIS MAGNA  
PROJECT”. IHNASYA EL MEDINA,  
BENI SUEF.  
SEASON 2015**



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## **INTRODUCTION**

The project depends of the Archaeological Museum in Madrid, with the help of the Spanish Embassy in Cairo and the Supreme Council of Antiquities of Egypt. The 2015 campaign took place during the very short period 18 May – 6 June 2015, by the Security Problems on the site. This affected our activity and the results. The Excavation and Restoration was financed by Spanish Ministry of Culture, Empty and ACOPHIA Association

The members of the team were:

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The work took place in the Temple of Heryshef, focusing on three aspects:

I.-Excavations. II.-Photogrammetric documentation. III. - Restoration - reconstruction of the Temple.

### **I.-EXCAVATIONS**

In total 7 zones were excavated, covering a surface area of **233 m<sup>2</sup>**.

**I.1. Excavation** was started of different zones in the south of the Temple (Zones 1 and 2) and work continued in the east of the courtyard (Zone 3). Zone 1 is located at the entrance to the Temple and Zone 2 is in the centre of the courtyard. Both were excavated for the first time in 2015. In Zone 3 the excavation work started in previous years was continued (Photo 1 *in blue*).



**Photo 1. Zones excavated in the 2015 Season**

**I.2.-** Additionally, **other archaeological interventions** also carried out in this 2015 campaign have provided support for restoration work. These are Zones 4, 5, 6, and 7 (Photo 1 **in red**) which have been selected to build the supports (*mastabas*) on which architectural and sculptural items will be placed, forming part of the open air museum which is being set up in the Temple. It was necessary to check that there were no archaeological remains under the supports.

**I.3 Work carried out:**

**Work started on the initial clearing of the temple**, to remove all the vegetation cover. (Photos 2a and 2b).



**Photos 2a. Before cleaning**



**Photos 2b. Cleaning work**

### **I.3.1.- Excavation zones South and East**

**Zone 1. Extending the entrance to the Temple.** In 2013 excavation started of the east side of the entrance, locating some structures dated to the Roman period. The work in 2015 has focused on removing the fallen earth, which did not contribute any archaeological material. (Photo 3).



**Photo 3 Zone 1. Temple entrance**

### **Zone 2. Excavation of the Temple (new area uncovered) (photo 4)**

This is located in the south of the Temple courtyard. The whole surface of this area was found covered with disturbed earth, fallen onto some sort of severely ruined construction. It was not possible to finish the excavation (Photo 4).



**Photo 4. Zone 2**

**Zone 3. Excavation of the Temple (continuing work started during the 2012-2013 campaign).** The aim here was to clear this area of the Temple to provide greater visibility and to continue with cleaning the adobe wall which was identified as the enclosure wall of the Temple. The zone where this work was carried out in 2015 was, just as in other previous years, covered with piles of earth and fragments of materials from older excavations (Photo 5).



**Photo 5. Zone 3, excavations**

As the excavation progressed, the rest of the adobe wall was found, and although for the moment we do not know its total width, it would seem to be more than 70 cm thick. The wall runs N-S with a length of 8.40 m, decreasing in height towards the South where it is broken and disappears (Photo 6).



**Photo 6. Zone 3. Adobe wall**

The material collected includes remains of iron scoria, and also ordinary pottery (bowls, plates, cups and other tableware, lamps etc.) and pottery kitchenware (storage jars, different types of amphorae etc.); the presence was noted of numerous fragments of African terra-sigillata. Fragments of terracotta figures were also found (Photo 7).



**Ph**

**Photo 7**

As already mentioned above, the excavation of Zone 3 could not be completed and so has been left prepared for completion during the next campaign.

### I.3.2 Excavation zones related to the pedestals (*mastabas*). Zones 4, 5, 6 and 7

**Zone 4. Space to install the support (*mastaba*) for the block with inscriptions.** Two different levels were found in this location although no monument was discovered. The excavation had to be abandoned at a depth of 4.85 m. because water was present. It was left covered with sand (Photos 8a and 8b).



**Photos 8a and 8b. Zone 4**

**Zone 5. Space to install the support (*mastaba*) for the sculpture.** This is an excavation of larger dimensions as it has to support the two blocks with the fragmented sculpture.

After removing a thick layer of disturbed earth, compact level ground was revealed extending over a large surface area in the south of the courtyard. This ground rests on a layer of mixed broken pottery, mostly from the Roman era. (Photos 9a and 9b).



**Photo 9a Zone 5. Ground**

**Photo 9b. Pottery layer**

**Zones 6 and 7.** Related to the pedestals to support the architraves. No archaeological remains were found (Photo 10).



**Photo 10. Zones 6 and 7. Pedestals for architraves (*in white*).**

### **I.3.3 Covering the religious complex**

Once the work had been completed the whole of the Temple of Heryshef was covered with sand and gravel. Large quantities of sand and gravel were spread, especially in the area in front of the decorated frieze of Ramses II, with the aim of delaying the growth of vegetation. This meant that a clear and orderly view of the temple was obtained, with the precincts and architectural features of the building clearly visible. The low level of the water table also enabled this clear view (Photos 11-12).



**Photos 11-12 Sand and gravel cover II. –**



## II.-DOCUMENTATION USING PHOTOGRAMMETRY

In this latest campaign we used *photogrammetric technique*. To document the excavation, and also the architectonic and sculptural elements of Temple of Heryshef, digital system photogrammetry was used for the first time in Herakleopolis. This system is based on generating 3D images, which allow orthophotos to be obtained for drawing plans.

**Photogrammetry** could be considered as the fusion of Topography and Photography with exciting possibilities still under-developed for the documentation of Historical Heritage in many different aspects: archaeology, objects etc. Using photogrammetry requires special archaeological software, which began to be developed in the early years of this century. Photogrammetry is a discipline which brings together mathematics, photography and optics to determine the geometric properties of the objects photographed.

The actions carried out were as follows:

### **II.1 Aerial photogrammetry (photo 13 a and b)**

For the Aerial photogrammetry a Phantom 2 drone was used, carrying two types of cameras: a Gopro 3+ with gimbal and mechanical suspension and a Canon Powershot S110, without mechanical suspension. The images were taken in both JPG and RAW.



**Photo 13 a and b. Drone cuadricóptero DJI PHANTOM2 with gimbal zenmuse H3-2D for cameras gopro hero3. And Inhalambric conexions for the control of the Drone.**

## **II.2 - Digital documentation: Terrestrial photogrammetry**

“Terrestrial photogrammetry” was also used in the temple but in this case handheld digital cameras were used for the terrestrial scanning. To elevate the camera a monopod was used (3 or 4 m) or a tripod (2 m), to cover a wider surface area

To document the excavation a digital system using photogrammetry was used for the first time (Photos 14-17). This system is based on generating 3D images, which allow orthophotos to be obtained for developing plans. A tripod was also used to take complementary photographs of all the elevations. This type of documentation is more accurate, but requires more effort, as well the complications caused by the illumination of the objects.

**II.3 Close-range terrestrial photogrammetry.** This system was also was applied to architectonic and sculptural elements still existing in the temple, including columns, bases, colossus etc. to enable them to be compared with items found in Herakleopolis and transferred to the garden of the Museum in Cairo : Triad of Ramesses II, Ptah and Sekhmet



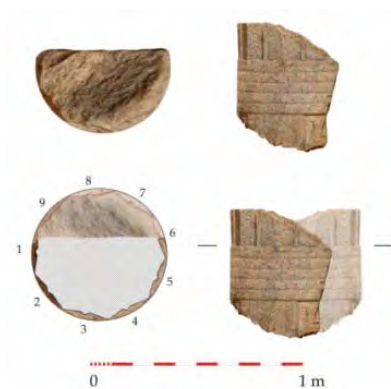
**Photo 14 Series of photos taken by the camera (blue squares) to generate the 3D model of the Colossus found in the Temple of Heryshef**



**Photo 15. Colossus of the Temple of Heryshef, from terrestrial photogrammetry**



**Photo 16. Photogrammetry of a block reused in the foundations of the Temple**



**Photo 17. Photogrammetry of the fragment of a column from the Temple**

### **III. - CONSERVATION AND RESTORATION WORK**

**The aim of the project is to enable visits to the whole monumental site and to create an Open-air Museum. To do this and to recover partially the original appearance, taking into account the remains currently conserved in the sanctuary, **it has been essential to carry out the restoration and conservation of the Temple of Heryshef.****

A difficult problem to solve is the presence of surface water as the water table rises at certain times of the year and floods a large part of the monument. This is combined with the growth of weeds and bushes which obstruct the visibility of the site as a whole and which have to be cut every year (Photo 18).



**Photo 18 . Aerial View of the Temple**

### **III.1 Action proposals**

**III.1.1 .- Provide a historical and expositional unity for the Temple as a whole**, so that the general public can see the relationship between the parts conserved *in situ* and also those conserved in museums or collections.

**III.1.2. - Observe the natural evolution of the materials** and techniques used in previous campaigns and determine the influence of the water and salts on the reconstruction.

**III.1.3. - Review the wooden wedges and supports**; this material is frequently used in Egypt as wedges and chocks, to move and support heavy stone blocks.

**III.1.4. - Solve as far as possible the presence of surface water from the water table** in some parts of the Temple. We have had to spend much of our time removing the water from the building.

**III.1.5. - Construct bases or pedestals (*mastaba*)** for the sculptures and inscriptions, unifying the various elements into a whole to fulfil two functions: to insulate the stones physically from the damp and to enable a reading and understanding of the architecture of the Temple.

**III.1.6- Work with the workmen from Luxor** who started the restoration in 2014 under the direction of the Reis Gamal to continue the installation of the inscribed blocks and replacement of the displaced blocks, observing the established criteria.

### **III.2.- Actions**

Of all the actions listed above, only the first five were carried out, obtaining the following results:

**III.2.1. The first four actions** have provided a series of very positive results, confirming that the treatments carried out in previous years and the materials used were appropriate: wooden supports, wedges, mortars, bricks etc. This has proved that the

work can be continued along the same lines in future campaigns, using the same means and the same criteria.

**III.2.2. Action n° 5 (Presence of water table and desiccation)** has been, as always, one of the most complicated as the water table rises and falls throughout the year making it much more difficult to carry out the tasks of extracting and relocating the stones, and of reconstruction.

**III.2.3 Action n° 6 (Determining and defining the definitive location for the decorative elements and sculptures)** has been mostly carried out. The decisions as to the siting of the different elements were made taking into account the possibilities of placing them “in situ” or to the contrary finding the most appropriate place where they can be displayed to advantage and better understood (Photo 19).



**Photo 19. Sculptures to be relocated**

The following elements were installed :

a. - **Architraves.** It is impossible to relocate these in their original raised position resting on the columns as these are currently scattered in museums throughout the world. For this reason, the decision was taken to place them in the courtyard, in front of the original granite bases of the columns, thus directly relating them to their original position (Photos 20 and 21).



**Photos 20 and 21. Fallen architraves in front of the column bases**

b. - **Fragmented granite triad.** Thanks to Petrie's indications we know where this was originally located, i.e. on a base of stones in the eastern zone of the courtyard access, facing the entrance to the portico. For this reason, we have decided to place this triad behind the base, so as not to hide the original stones (Photos 22 and 23).



**Photo 22. Lower part of the triad together with its original base**



**Photo 23 Triad. Upper part**

c. - **Inscription with adoration scene**, original location unknown. We have considered placing this near the colossus, to form part of the planned Open-air Museum (Photo 24).



**Photo 24. Item with inscription**

d. - **Colossus**. Not work on it (Photo 25).



**Photo 25. Colossus of Ramses II**

e. - **Large granite stone (door? or pylon)**, fallen, with inscription. Its definitive location will be determined next year. Nevertheless, we consider that it should be placed on the other side of the access door to the courtyard. We will have to take into consideration that it is very near the water and it may have to be displaced slightly (Photo 26).





**Photo 26. Granite stone**

**III.2.4** A considerable part of the **construction of the pedestals or *mastabas*** has been completed.

Which materials to use to construct these pedestals was considered for a long time. After examining the possibility of building them in stone, or with rendered concrete bricks, it was finally decided to use white bricks, the same solution as used in the Temple of Merenptah in Luxor by the Swiss Archaeological Institute in their Open-air Museum (Photo 27).



**Photo 27. Temple of Merenptah, Luxor**

The bricks were brought from Cairo, and some of them have already been used; the rest are deposited in the store of the Spanish Mission in Ehnasya for use in future campaigns. (Photos 28-29).



**Photo 28. Transporting the bricks to Ehnasya**



**Photo 29. Transferring the remaining unused bricks to the store.**

To construct the pedestals (*mastabas*), the bricks were laid alternating headers and stretchers in seven superimposed horizontal courses to ensure they are all the same height; the bricks are joined with a mortar of white cement, sand and pebbles and the pedestal is reinforced with steel mesh at different levels and with plastic sheeting to prevent the water from reaching the upper part and affecting the exhibit when there is a significant rise in the water table. They were then covered with white bricks (Photo 30).



**Photo. 30. Construction process**

The joints between the bricks have been pointed, unified and smoothed; these pedestals will be painted next year, when the cement has set and dried, to tone in better with the rest of the Temple complex and the colour of its stones, as at present the white is too bright (Photo31).



**Photo 31. Finished pedestal**

The size of the architraves and sculptures has been taken into account and the pedestals have been made to measure.

#### **a. -Architraves**

##### **Pedestals for architraves 1-3 and 4-6**

Placed in a horizontal line, one beside the other, in the western and eastern part of the courtyard in front of the column bases. The exact location was chosen where there were no slabs on the ground.

##### *Architrave n° 1*

Placed last year on a concrete pedestal. This has been clad with bricks to unify it with the others (Photos 32-33).



**hoto 32. Placing architrave in 2014**



**Photo 33. Architrave in situ 2015**

*Architraves n° 2-3*

Built this year, in front of the column bases in the west, beside the pedestal for architrave 1 (Photo 34).



**Photo 34. Pedestals for architraves 1-3**

*Architraves n° 4-6*

Built this year in front of the column bases in the east (Photo 35).



**Photo 35. Pedestals 4-6**



**Photo 36. Pedestals 1-6 for architraves**

**b. - Fragmented granite triad**

The triad will be installed on two pedestals, one with the lower part and the other with the upper part. The central part of the sculpture is missing although it may still be found in future excavations in other zones near the Temple.

The two pedestals already constructed have been placed behind the stones which formed the base for the sculpture. Excavation of the ground had previously been carried out to ensure that there were no archaeological remains. The two pedestals, located side by side are of almost the same dimensions, as they have been designed for the different measurements and weights of the sculptural fragments they are intended to support (Photos 37 and 38).



**Photo 37. Pedestals 7-8 for triad.      Photo 38. Triad- upper part**

These pedestals 7-9 have been installed in the south of the Temple and the sculptures will be placed on them during the next campaign (Photo 39).



**Photo 39. Pedestals beside the sculptures.**

**III.2.4 Action 7.-Work with the workmen from Luxor** who started the restoration in 2014, under the direction of the Reis Gamal, to continue the placing of the inscribed blocks and of the displaced blocks in their original location or on the pedestals constructed this year. Unfortunately the team from Luxor was not able to come to Ehnasya due to problems of timing, as the police in Beni Suef informed us that we had to leave just in the week when the team was supposed to come. For this reason, this part of the work, perhaps the most important and above all definitive in terms of enabling visits to the Museum, will have to be carried out in future campaigns.

### **III.3 Future actions**

- a. - Install the sculptures, architraves and the remains of the corresponding inscriptions on the pedestals constructed in 2015.
- b. - Install the colossus and the fragment of door on new pedestals, pending construction.
- c. - Finish replacing the inscriptions of the portico, left unfinished in 2014.
- d. - Replace the stones of the courtyard and of the hypostyle hall which are currently not in place.

The pedestals for these two elements have not been built yet, because first they have to be moved and displaced from their current position by expert workmen and special machinery. This has been left pending for next year.