The Herakleopolis Magna Project (Ehnasya el Medina). Summary and Results of Work 2000-2015

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This article presents a summary of the main activities carried out by the Spanish Archaeological Mission from 2000 to 2015, within the "Herakleopolis Magna Project", affiliated to the Department of Egyptian and Middle Eastern Antiquities of the National Archaeological Museum. A description is given of the surveys carried out in the area of the Spanish concession and the work completed in the First Intermediate Period/Early Middle Kingdom necropolis and in the temple of Heryshef, focusing on their excavation, studies, documentation and restoration.

El artículo presenta una síntesis de las principales actividades llevadas a cabo por la Misión Arqueológica Española entre los años 2000 y 2015, dentro del Proyecto Heracleópolis Magna, adscrito al Departamento de antigüedades egipcias y del Oriente Próximo del Museo Arqueológico Nacional. Se explican las prospecciones hechas en el área de la concesión española y los trabajos realizados en la Necrópolis del Primer Periodo Intermedio/ inicios del reino Medio y en el Templo de Heryshef, centrándonos en la excavación, estudios, documentación y restauración llevados a cabo en estos dos lugares. Algunos de estos apartados han sido presentados en diversos congresos, y publicados en artículos o libros referidos en la bibliografía final.

Keywords: Herakleopolis Magna, First Intermediate Period necropolis, temple of Heryshef.
Palabras clave: Heracleópolis Magna, necrópolis, Primer Periodo Intermedio, templo de Heryshef.

In 1966 the Spanish Archaeological Mission began work at Herakleopolis Magna, present day Ehnasya el Medina, following the campaign to save Nubia from the consequences of the construction of the Aswan Dam[1]. This city was the capital of the 20th nome of Upper Egypt, called *Naret Khentet* or Upper Naret, and was situated near the Bahr el Yusuf, the branch of the Nile connecting el Fayum. It is difficult to define precisely the geographical limits of the nome, but the traditional boundaries were: the Western Desert (Libyan Chain) to the west, the Nile to the east, Abusir el Malaq to the north, and Deshasha to the south, although this frontier shifted several times during the history of Egypt.

Six excavation campaigns took place between 1966 and 1979, directed by M. Almagro, J. López and F.J. Presedo. In 1984, M.ª C. Pérez Die was appointed Director and led the annual campaigns, that have taken place until 2015, making this the longest running

1 López, 1974a: 299-316. Almagro and Presedo, 1979: 67-71.

TdE 7 (2016) — Páginas: **131-160**
Recepción: 10/10/2016 - Admisión: 26/10/2016
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http://doi.org/10.25145/j.TdE.2016.07.08

project of all those undertaken by Spanish archaeologists in Egypt[2]. As well as the work of our Spanish colleagues, the site was also excavated by E. Naville, W.M.F. Petrie, several German archaeologists, and the inspectors of Beni Suef Governorate, in the nineteenth and twentieth centuries[3].

The work in Herakleopolis Magna (Ehnasya el Medina) is affiliated with the National Archaeological Museum (Madrid) through the Department of Egyptian Antiquities, in collaboration with the Department of Conservation. It has been funded mainly by the Spanish Ministry of Culture, in conjunction with the Ministry of Foreign Affairs, the company Empty, the Spanish Association of Egyptology and the Association for the Protection of International Heritage. The Egyptian authorities, the currently Minister of State of Antiquities (before Supreme Council of Antiquities) and the Spanish Embassy in Cairo have supported all the actions, offering their ongoing cooperation. The aim of this project is to understand the topography, urban design, architecture, religion, society, funerary practices and art—in other words, the history—of one of the most important cities of Ancient Egypt. The results and conclusions have been made possible thanks to the work of specialists and the collaboration of a multidisciplinary team, including archaeologists, Egyptologists, draughtsmen, conservators, architects, geologists, astronomers and ceramologists.

The site is currently one of the largest to be found in Egypt. The Spanish concession includes the whole south-west area of the city. In this paper, the actions undertaken and results obtained by the Spanish team from 2000 to 2015 are presented[4], as the previous phase 1984-1999 was mainly devoted to the excavation and study of the Third Intermediate Period Necropolis with the overall results already published.

Our work over the past fifteen years has centred on:

1. Surveys.

2. First Intermediate Period/Early Middle Kingdom Necropolis: historical introduction, excavations, studies, documentation, and conservation and restoration.

3. Temple of Heryshef: historical introduction, excavations, studies, documentation and conservation and restoration.

Beside these tasks, the mission is working on the definitive arrangement of all the documents derived from the Project. Some of the plans have already been inserted into special covers to ensure their conservation. This archive is conserved in the National Archaeological Museum and will be made available for consultation.

1 | Surveys

1. 1 | Magnetic Survey

In 2009, Tomasz Herzbich, Robert Ryndziewicz and Wojciech Kasprzyk carried

2 Work has continued for 33 years in Egypt and in Spain (1984-2015), except for 2011, the year of the revolution.

3 Naville, 1894; Petrie, 1905; Wilcken, 1903.

4 The team members during the 2000-2015 seasons were: M.ª Carmen Pérez Die, M.ª Antonia Moreno, Antonio Gómez, Antonio Guio, José Ramón Pérez-Accino, Gema Garrido, Fernanda Pascual and Bettina Bader with occasional members: Alicia Rodero, Manuel Mejías, Enrique Gil, Tomasz Herzbich, Esther de Vega, Juan Antonio Belmonte, Juan J. Martínez, Lucía E. Díaz-Iglesias. For the TIP necropolis, see, Pérez Die, 2010b.

out a geomagnetic survey of three hectares in the Spanish concession[5] (fig. 1). The aim of the survey was to register archaeological structures in a zone linking the temples (of Heryshef and Kom el Akareb) and the necropoleis of the First Intermediate and Third Intermediate Periods. The survey was carried out in four areas of different dimensions. Earlier excavations and looting had left the surface of the site covered in many small mounds and depressions, with sizeable quantities of burnt brick and pottery fragments, both strongly disturbing the magnetic readings due to their high magnetic susceptibility.

A fluxgate-type gradiometer by Geoscan Research, model FM256, 0.1 nT resolution, was used for the purpose. The measurement grid applied was 20 x 20m. The measurements were carried out in parallel mode, meaning that the magnetic-intensity recording equipment was moved along the measuring lines in one direction only. Sensors were adjusted at the reference point after completing each grid. Results were presented as grey-tone maps, with white and black corresponding to extreme measurement values. FM apparatus by Geoscan Research is capable of tracing changes in ground structure down to a depth of 0.5-4m, depending on the magnetic susceptibility of the objects. In conclusion, the magnetic method did not turn out to be very useful in the conditions on site in Ehnasya el Medina. The disturbing effect of the high content of pottery and burnt brick fragments in a surface layer meant that the structures lying in deeper layers could not be identified.

Figure 1. Geomagnetic survey.

1. 2 | Survey in several sectors of the site

A survey has been made in two sectors of the site: Sector P, situated behind the mission storehouse, between the temple of Heryshef and the western wall, and Sector Q, located between the temple of Heryshef and the Third Intermediate Period necropolis[6].

The survey and excavation of these Sectors provided important information on the surroundings of the temple, and its connection to the Bahr el Yusuf in ancient times. Moreover, it was possible to establish the urban development of Herakleopolis Magna, essential to the research project. The aim of the exploratory survey was to organise and document the surface finds and analyse the archaeological potential.

1. 2. 1 | Sector P

This is a large area located to the west of the temple of Heryshef and the Bahr el Yusuf. It is closed off on three sides by the brick and

5 The following paragraphs summarise the preliminary report provided by the authors of the work. Pérez Die, 2012a: 925.

6 Survey by A. Gómez. The following sections are taken from the preliminary report by the archaeologist, presented at the V Congreso Ibérico de Cuenca, 2015 and the XI International Congress of Egyptologists, Florence, 2015.

cement wall that surrounds the site. The zone is practically flat, with some small ground elevations, very little vegetation and only a few groups of palm trees. The south side is higher and slopes gently towards the river. The elements detected on the surface are walls, architectural elements and stones that appear scattered over the whole area and are fragments of columns (shafts, bases or capitals). Additionaly, there are three ashlars and various fragments of worked stone, which may be parts of pillars or lintels. Most of these are pink granite and limestone, with only three elements of basalt. Some mudbrick walls have also been noted (fig. 2).

1. 2. 2 | Sector Q

Situated between the temple of Heryshef and the Third Intermediate Period necropolis, Sector Q was also surveyed with findings similar to Sector P.

1. 3 | Survey of Kom el Akareb[7]

In 2014 the team performed surveys, documentation and astronomical studies on the temple of Kom el Akareb. Only part of the portico is well preserved, consisting of several rectangular blocks, some

Figure 2. Surface finds, zone P.

7 Daressy, 1917: 33-38. A study of the Herakleopolitan temples was made by J.A. Belmonte, to determine their exact location and astronomical orientation, and their relationship with other buildings in the town, see, Belmonte, Pérez Die and Díaz-Iglesias, 2015: 116-118. The results were presented at the V Congreso Ibérico de Egiptología, Cuenca, 2015, and the XI International Congress of Egyptologists, Florence, 2015.

columns and an ashlar with the name of Neferusobek, the last ruler of the Twelfth Dynasty, and a cartouche of Senuseret III, perhaps reused. Two colossi were found by an Egyptian team in 1915 and these are now in the garden of the Cairo Museum (fig. 3). The inscriptions mention Ramesses II and Merenptah, but the sculptures are certainly from the Middle Kingdom, thus belonging to Senuseret III or Amenemhat IV. During the 2011 revolution a third colossus was found bearing the cartouches of Senuseret III.

The topographical orientation of this temple to the funerary complex of Senuseret II at Lahun is very appealing and may reinforce the idea of an original construction of this building in the Middle Kingdom. The monument may be excavated in the future.

Figure 3. Colossus of Kom el Akareb. Garden of the Egyptian Museum, Cairo.

1. 4 | Survey NW of the city

After the landscape archaeology and archaeoastronomical studies carried out by J.A. Belmonte during the 2013 campaign, a possible relationship was suggested between a temple[8]—situated in the north-east of the city (of Graeco-Roman date)—and a quadrangular structure highlighted on the Google Earth maps in a zone further west, near the Bahr el Yusuf. During the 2014 season, the team revisited this quadrangular structure[9]. This area is surrounded by a modern wall of the same type as the walls enclosing the archaeological site and this zone was considered by the SCA to be part of the ancient city. Inside the wall, we noted the existence of archaeological remains, and that archaeological excavations had previously been undertaken here, although when they took place is not known. The survey revealed the existence of ancient, badly deteriorated walls, clearly from the Roman era, which occupied a fairly large area of ground and enclosures, although what these were used for is currently unknown[10] (fig. 4).

8 Excavated by Ahmed Galal some years ago. I am grateful for the information he provided. See, Belmonte, Pérez Die and Díaz-Iglesias, 2015: 118.

9 M.ªC. Pérez Die, G. Garrido, A. Guio, J.J. Martínez.

10 A test bore or excavation in the zone is required for its interpretation. Naville, 1894: pl. X and Wilcken 1903: 337, published the plan by Shaffer, identifying the enclosures with salt wells for making gunpowder.

Figure 4. NW area of the site.

2 | First Intermediate Period/Middle Kingdom Necropolis

A large gap is present for the monumental record of the First Intermediate Period in Egypt. The decadence of the centre corresponds to the impulse of the periphery, to the disappearance of a global canon, and to the generalisation of local habits. The Memphite traditions were maintained in Lower Egypt until the Eleventh Dynasty before being gradually replaced by the new forms that were being developed simultaneously in Upper Egypt. The history of this period must be studied in the provincial cities and above all in their cemeteries. Throughout most of the Old Kingdom the superstructure, i.e. the chapel, was accessible because of its role in the funerary cult, reaching the appex of its development of its architecture and decoration. At the end of this period there was a notable decrease in the size of the tombs and their chapels, which gradually became smaller, replacing the more costly ones of earlier eras. Small mastabas have been found from the First Intermediate Period, which include false doors and decorated chapels. The false door now takes on greater importance.

On the other hand, from the reign of Unis in the Fifth Dynasty the custom of decorating the walls of the burial chamber of private tombs became widespread in those of the privileged classes. This practice was continued during the successive reigns, particularly during the reign of Pepy II, in the Herakleopolitan era, and in the Eleventh and Twelfth Dynasties. The decoration of the private funerary chambers is basically figurative and the scenes depict lists of offerings, food, drink and grave goods. The artisans are local. It is difficult to say if the change was the result of a relaxing of customs or simply that the funerary chambers were occasionally used as an extension or as a substitute for the chapel superstructure, as some authors suggest, although opinions differ in this respect[11].

Concerning the pottery of this period, B. Bader considers that the difficulty in dating the pottery during the transition from the late Old Kingdom to the early First Intermediate Period is rooted in the political situation of Egypt at the end of the Old Kingdom[12]. At this time, it seems that the central administration broke down and amongst other issues the pottery production was not organised as centrally as before. Thus, it is very difficult to obtain dating for pottery by comparison with well-dated pottery from different sites, be-

11 The most important Memphite cemeteries of that era are situated in Saqqara (one near the pyramid of Teti and another in Kom Fakhri). In Middle and Upper Egypt the hypogea and saff tombs constitute the main type of tomb architecture. The numerous publications existing on this period include those of Seidlmayer, Moreno García, Kanawati, etc. whose titles are not mentioned in the final bibliography.

12 B. Bader. See references provided in the bibliography.

cause there are remarkable regional differences. For this reason, every effort must be made to obtain a good chronological sequence of pottery in order to provide independent means of dating, at least in relative terms.

2. 1 | Excavations

The mission has adopted the theorethical approaches of the "archaeology of death", which defines funerary practices as exponents of a social reality. This includes attempting to verify the different status of the individuals who chose this cemetery for burial, describing the relevant superstructure of the tombs (architecture) and their content (grave goods). The discovery of this necropolis has been one of the most important for the history of the city, as this is a cemetery built when fundamental cultural and political change was taking place, with a series of innovations that affected Egyptian society and culture at the point in time when Herakleopolis became the capital of Egypt during the Ninth and Tenth Dynasties (fig. 5).

During the years 1968-1979, 1984-1987, 2000-2013 the work of the Spanish Archaeological Mission concentrated on the excavation of this First Intermediate Period/early Middle Kingdom necropolis.

The necropolis is located in Sector C of the site and is completely covered with a thick layer consisting of a uniform succession of various courses of mudbricks laid on a layer of desert sand, perhaps constructed during the Third Intermediate Period. Under the sand there are other strata in different shades

Figure 5. Sector C. Upper levels and necropolis.

Figure 6. Tombs of the Heracleopolitan Period / Middle Kingdom necropolis.

of black, red, grey and yellow, superimposed on the First Intermediate Period cemetery, and which can be explained thanks to the geological studies[13]. Thus, the different colourings can be interpreted as the manifestation of a series of climate changes in this site, from a humid, reducing atmosphere to an oxidising atmosphere, possibly in a predominantly arid climate. There is evidence of a further change, in this case fluvial, with a predominantly moderate climate.

A total of 21 sectors in the cemetery have been excavated, containing a series of tomb complexes arranged in parallel rows or streets (fig. 6); these normally consist of two chambers, some of vaulted mudbrick, oriented N-S, with a small chapel containing the false door, the offering table and sometimes a large number of pottery containers. It is not possible to determine if these tombs had a mudbrick superstructure, since the upper levels of the cemetery were found completely destroyed, as mentioned above. Additionally, there is no evidence of burial pits or underground chambers and the burial equipment has not survived. Within each stone chamber, there is a small sunken area in the floor reserved for the safe-keeping of offerings (fig. 7). The false door was usually located in the west wall of the funerary chapel, facing east, with offering tables in front of it. Sometimes two false doors form a small chapel with many pottery bottles in its interior (fig. 8).

13 The conclusions are presented in the report by the geologist Enrique Sanz. The strata occupy what may have been the tomb superstructures, now destroyed.

Figure 7. Interior of the stone chambers.

Some of the walls of the stone funerary chambers are decorated with representations of the dead with their titles and names, along with high reliefs and symbolic paintings, including the list of food offerings, and the ceremonies carried out by the priests during the funerary rites, which also occur in other Memphite cemeteries. The inscriptions and reliefs show very careful workmanship, which at times is reminiscent of the tombs of the Old Kingdom. The Herakleopolitans considered themselves to be the legitimate heirs of the Memphite tradition.

The most important tomb, found in 2001, belonged to Hotep-wadjet, "Sole Friend, Chancellor and Measurer in the house of Antiu" (fig. 9)[14]. The east wall is decorated with the food listed in columns. Underneath, the priest performs the rituals facing Hotep-wadjet, offering libations, burning incense and reading the sacred books. The procession ends with an offering bearer and the cutting of the khepesh, the most important piece of meat. On the south wall, offering bearers with fruit, vegetables, bread, meat, beer and livestock scenes, including

14 In 1968 J. López (1975: 57-78) discovered the great family tomb of Sakat, Nefeririut and Heryshefnakht with reliefs, inscriptions and paintings and texts from the Coffin Texts, studied by A. Rocatti (1974: 161-169). In 1979, F. Presedo (1979: 525-532) presents the results of the excavations in the necropolis during the seasons 1969-1979. In 1985 the tomb of Sehu was discovered (Padró, 1992: 105-113 and Padró, 1999). For this necropolis see also: Pérez Die, 1992: 93-100; Pérez Die, 2004: 21-24; Pérez Die, 2005: 239-254; Pérez Die, 2009a: 55-65 and 180-207.

Figure 8. Chapel with two false doors.

Figure 9. Tomb of Hotep-wadjet.

the slaughtering of the bull and the provision of the ox, are depicted (fig. 10).

2. 2 | Studies on the necropolis

2. 2. 1 | Studies of the iconography, epigraphy and typology of objects

Several studies of the iconography, epigraphy and typology of the objects were undertaken. On the false doors[15], the deceased are seated at a table laden with offerings, surrounded by their names and titles, which identify the owners of the tombs as important dignitaries and high-ranking officials. The owners' names on the false doors are:

15 Pérez Die, 2010a: 357-393.

Figure 10. South wall of the tomb of Hotep-wadjet.

Ipy, Buy, Hotep-wadjet, Shedy, Ibenen, Kheti-wah, Nen, Ipepi, Ankhef, Heryshefnakht, Kaiwuwi, Tjau, Mery, Senty, Djadaj, Nefeririut and Sakat. The most common titles are: "Sole companion", "Overseer of the fields", "Scribe", "Overseer of the house", "Overseer of the two granaries", "Expedition leader", "Regulator of a phyle" (fig. 11). Women also had their own tombs, such as Meret, "Ornament of the King" or Nofret. Additionally, a family tomb belonging to Saket, Heryshefnakht and Nefeririut was also found.

2. 2. 2 | Archaeology of Fire

Research was also undertaken into the possible intentional destruction of the necropolis. The upper levels of the necropolis and the mudbrick and stone chambers are sometimes filled with rubble and red earth, indicating that they may have been exposed to fire. During excavation, many fragments of stone walls, altered with obvious signs of destruction, perhaps partly due to plundering, pillage and fire in some tombs, were found. Some charred corpses were also found.

Figure 11. False door of Ipi.

Some of the tombs were destroyed and there is evidence that the destruction was deliberate. In this context, the studies of the archaeology of fire and geology were very useful to determine the degree of destruction of the tombs and the cracks they present.

In 2007, the mission worked on the "archaeology of fire", trying to prove that there had been a fire in the necropolis. All the different sectors were analysed and it was possible to identify traces of bluish-black and red colouring[16] (fig. 12). In conclusion, the study of the different traces and colourings of the building materials in the tombs and in the streets of the necropolis, as well as on the charred bones, seems to indicate that there were several single, identified fires in some tombs, since some other stone and mudbrick tombs do not show any traces. It would seem that this was not a widespread fire affecting the whole necropolis, causing its complete destruction at a specific moment in time.

2. 2. 3 | Geological studies

The geological studies carried out were also very useful. Their initial objective was

Figure 12. Enclosures with fill and reddish bricks.

16 The conclusions were established in the preliminary report by Rafael Ferrándiz.

to interpret the fractures present in the stone chambers[17]. One of the most interesting features from a structural point of view was the curious fracture pattern that could be seen on both the lateral slabs and the roof of some tombs. This is a very usual fracture pattern in geology, generally formed naturally as the result of earthquakes, as during this type of event energy is released through rock fractures. This could indicate that the structural tilting observed in the bases of columns and in the tombs in both the temple of Heryshef and in the necropolis may be related to seismic events.

2. 2. 4 | Pottery

Regarding the pottery, studies by B. Bader have shown that the pottery found near the tombs, dating from the First Intermediate Period/early Middle Kingdom, is very homogeneous and can be dated by typology to the pottery found in Sedment and Haragah, Cemeteries C and D, as well as the early Gurob. Many containers have been found in the Herakleopolitan cemetery, among them roughly made flasks for water or beer, often broken or incomplete. Sets of pottery consisting of goblets, plates and cups that were clearly and intentionally situated in a specific moment and place were also found[18] (fig. 13).

2. 2. 5 | Documentation

A database has been compiled in Access to include all the fragments and complete items. Other documentation includes digital and analogical photography, drawings of ground plans, elevations and individual items[19].

2. 2. 6 | The chronology of the necropolis

The chronology of the necropolis has become clearer, although no royal monuments have been found or any reference to a specific king. Some evidence has been found, such as the false door containing the offering formula or the epithets of Anubis, which are well documented in the Ninth and Tenth Dynasties. Other factors exist, which may suggest the Middle Kingdom[20]. The pottery has parallels in the First Intermediate Period and at the beginning of the Middle Kingdom, up to the reign of Senuseret I, but it is very difficult to establish the boundary between these two periods[21].

The false doors are fairly homogeneous, although with some differences that allow them to be individualised. After a study of the typology of the false door, it can be confirmed that they date from the First Intermediate Period and the early Middle Kingdom[22]. The possibility of two different phases in the building of the necropolis cannot be ruled out[23]: the older one, perhaps from the

17 Conclusions established by the geologist E. Sanz, resulting from his report.

18 B. Bader. See Bibliography.

19 Database: Weimar Viatela; photography: Felipe Alcoceba, Ahmed Amin, M.ªC. Pérez Die and A. Gómez; drawings: A. Guio and A. Gómez.

20 Willems,1996: 99-109.

21 Opinion of B. Bader.

22 Pérez Die, 2010a: 392-393.

23 The final battle between the Herakleopolitans and the Thebans should not be forgotten, with the victory of the latter and the inauguration of the Middle Kingdom. H. Winlock suggested that the individuals found in Deir el Bahari died in the battle against Herakleopolis, but this has not been proven. Winlock, 1945: 24.

Figure 13. Pottery.

Herakleopolitan Period, which was partly intentionally destroyed (by the Thebans?), and another more modern one, perhaps from the early years of the Middle Kingdom.

2. 3 | Conservation and restoration

Materials and objects, both movable and immovable, have been recovered and treated to restore the consistency lost over time[24].

The systems used in the restoration are summarised below:

a) Eliminating materials and products used in previous campaigns to protect and conserve the limestone.

b) Removing remains of earth and dirt with the help of different brushes, scalpels, wooden toothpicks etc. The solvents used include acetone, water and alcohol, mixed and combined with each other.

c) Attaching fragments. Adhesives with various compositions were used: nitrocellulose and polyvinyl acetate adhesives for the smaller fragments; the larger pieces were joined with Araldite epoxy resin. Areas with large cracks and problem joins were reinforced with the same resin and cotton gauze.

d) Consolidating. Two types of consolidation were carried out: superficial strengthening of the smaller fragments and consolidation of the limestone laminae detached from the internal areas of the stelae. Injections of synthetic mortars PLM and LEDAM were used, reinforced with acrylic resins in an aqueous solution to facilitate

24 The director of the restoration and conservation project, M.ªA. Moreno, provided the data included here from her reports.

penetration into the smaller fissures and cracks.

e) Material and chromatic reintegration. To restore the morphology and identity of missing parts, plaster and synthetic mortar Parrotx MIX were used for areas with large gaps and on the exterior surface of the slabs. The chromatic integration was carried out with powdered natural pigments (ochre earth, yellow, natural shades, burnt ochre).

Essentially, the restoration carried out includes false doors (fig. 14), offering tables, fragments of tomb walls, pottery, a bronze axe, and a pottery coffin from the New Kingdom[25]. One season was specifically devoted to the consolidation of the paintings of Hotep-wadjet, given their importance[26].

Figure 14. Fragments of a false door stela.

3 | Temple of Heryshef

The temple of Heryshef, located in the centre of the site, is the monument where most work has been undertaken in the last four years and was the axis of the main buildings of the city. The temple was discovered by E. Naville in the late nineteenth century and excavated by Petrie in the early twentieth century. The work of the former centred on the portico, while the latter continued the excavation of the temple, discovering the courtyard, the hypostyle hall and the sanctuary. Petrie defined the different stages in the construction of the sacred precinct: Middle Kingdom, Eighteenth and Nineteenth Dynasties, Late and Roman Period. Both authors' publications include photos showing the great quantity of blocks, columns, capitals, architraves, etc. which existed at the time when the temple was excavated, but which have now disappeared from their original location, with some conserved in museums outside Egypt. However, the current location of most of these is unknown. This has been an important problem, as a large quantity of data crucial to the interpretation of the monument has been lost.

Heryshef was the main divinity and tutelary deity of Herakleopolis. He was associated with many aspects, including fertility, water and stellar phases, while he was linked to Hathor as his wife and to Horus as his son, and intimately associated with Osiris and Re[27] (fig. 15).

25 M.ªA. Moreno, Cruz Medina, F. Pascual, Yolanda Gonzalo, Miguel López.

26 Pérez Die, Moreno and Álvaro, 2002: 40-47.

27 Díaz-Iglesias, 2014. Belmonte, Pérez Die and Díaz-Iglesias, 2015: 109-111. Gamal Mokhtar, 1983: 139-175, and other authors.

Figure 15. Hieroglyph of Heryshef.

3. 1 | Excavations

In 1966, the Spanish Archaeological Mission directed by M. Almagro excavated the south-east corner of the temple, finding a colossus of Ramesses II.[28] Between 2004 and 2015, work has continued on the monument under the direction of Pérez Die.

The main aim was to define the boundaries of the temple and to get as close as possible to the lowest levels reached by Petrie, in order to discover if there was still any intact areas that could be worked on.

On arrival at the site each year, the monument was flooded, with some zones completely inaccessible, such as the hypostyle hall and the sanctuary, and with nearly all the precincts covered with vegetation formed by tall stands of reeds (*Arundo donax*. Family: *Poaceae*). Our work has consisted of clearing the different areas and removing the rubble that had accumulated over the years (fig. 16). The water was extracted by water extractors during the season[29]. Thus, cleaning work had to be carried out at the start of each campaign to facilitate the access and mobility of the workers and machinery and improve visibility of the work zones.

The work of the Spanish team was mainly to excavate all the different enclosures of the temple, although this has not been possible until now due to lack of time and resources. However, the excavations have continued in each campaign. Firstly, in an attempt to locate the *temenos*, which had been found by Petrie but which was later covered by the rubble from his own excavation. In the eastern zone of the Spanish Mission, part of a wall has been uncovered, which may belong to Petrie's *temenos*.

Another aim was to clear the access zone to the south-eastern area of the temple. Abundant materials are present at the different levels. Most seem to fit into a late Roman chronology and present the same typology and chronology independently of the different zones and levels at which they have appeared, indicating that these strata have been disturbed. To sum up, the typologies of the

28 López, 1974b: 115-117.

29 It should be noted that the desiccation project started by the SCA has not yet been completed.

Figure 16. The temple covered with vegetation.

pottery finds and small fragments of terracotta collected present a similar chronology and appear in strata formed by rubble and waste materials from the twentieth century, although the materials themselves are late Roman. All the materials collected in this excavation are therefore decontextualised and can only provide incomplete or partial data.

The peristyle court has been cleaned and expanded, continuing the work carried out in 1966 when López found the lower part of a colossus at the entrance with the cartouches of Ramesses II. The statue is still *in situ*, facing east. The back of this colossus was surrounded by a construction, which preserved in its interior a large number of Graeco-Roman terracottas[30]. In the current state of the excavation we can suppose that the *temenos* mentioned above rested on this construction, leaving the colossus of Ramesses outside the courtyard. This statue may have been the centre of a popular cult, a well-attested custom in the time of Ramesses II and lasting until Roman times (fig. 17)[31].

In 2015, work continued on excavating the northern zone of the peristyle courtyard, documenting here an occupation layer by trampling, formed by compaction of multiple

30 Pons, 1997: 95-119. Pons, 1998: 81-104.

31 López, 1974b: 115-117.

Figure 17. Colossus of Ramesses II.

pottery fragments. The advanced chronology this presents, with pottery ranging from the first to the fourth centuries AD, seems to show that this occupation layer may belong to the most modern stage of the temple[32].

So far, the mission has not found the remains of any pylon. However, according to Petrie, the peristyle court was modified by Ramesses II. The bases and colossi were constructed opposite each of the columns along the sides of the court. Only some bases and fragments of columns currently remain. Part of this court still retains the limestone paving, which undoubtedly covered the whole area.

To the south of the peristyle court there were two triads of red granite. The figures depicted on one of them are Ramesses II between Ptah and Sekhmet. On the back, there are nine columns of text. This statue is currently exhibited in the forecourt of the Cairo Museum. In the east, another triad of seated figures of the same gods was found in a severely weathered condition. These fragments are currently conserved in the temple (fig. 18).

Stairs lead from the peristyle court to the portico, oriented east-west, where the floor level must have been higher than at present. Nowadays, only six granite bases of the columns and the great scene of the *heb-sed* of Ramesses II are preserved. The bases supported the columns found by Naville, which are

32 Excavations by G. Garrido, A. Gómez and J.J. Martínez.

Figure 18. Fragment of triad.

now dispersed in museums throughout the world: British Museum, Manchester Museum, Bolton Museum, South Australian Museum, Museum of Fine Arts in Boston, and the University Museum in Pennsylvania (fig. 19).

The columns have inscriptions of Ramesses II and Merenptah. These columns have been recently studied by Y. Yasuoka who, just like Petrie, maintains that originally there were eight columns, even though only six have been found. In Yasuoka's opinion, the proportions and form of the capitals are typical of the Old Kingdom and they probably come from a Fifth Dynasty complex. The latter author also suggests that this new element was built by Khaemwaset, the son of Ramesses II who worked on the reconstruction of monuments[33], and Merenptah, who added new inscriptions.

The seated quartzite colossus of a king of the Twelfth Dynasty, usurped by Ramesses II, was found in the north-eastern corner of the portico by Naville and is now conserved in the Pennsylvania Museum in Philadelphia[34]. The other standing figure in the opposite corner was found by Petrie. Additionally, the throne is kept in the Cairo Museum[35].

33 Yasuoka, 2011: 31-60.
34 Miller, 1939: 1-7.
35 Petrie, 1905: pl. XIX.

Figure 19. Naville's excavations. Columns of the portico.

The inscriptions of Ramesses II extend from each side of the axial doorway along the back and sides of the portico. The walls are made of large breccia slabs engraved with the name and titles of this king. Some of the slabs have been moved from their original location, falling forwards or backwards (fig. 20).

In the middle of the inscriptions there is an access door to the hypostyle hall, where only the foundations and some of the column bases still remain. Originally there were 24 columns, which have now disappeared. The hypostyle hall area is currently in a ruinous state. A floor has been identified and the blocks found there were cleared of rubble as far down as the water allowed. It was possible to excavate deeper here, reaching the level of the temple built by Thutmose III, which could be dated from pottery vessels typical of the lifetime of this king (fig. 21).

The north of the temple was divided into three parts, but no further details can be traced. The northern part is occupied by a number of chambers, including the sanctuary. With regards to the location of the external walls of the temple, the east-west outside walls in the hypostyle hall have been documented, as has the northern exterior wall of the sanctuary, although it has not been possible to determine its full length[36] (fig. 22).

3. 2 | Studies on the temple of Heryshef

3. 2. 1 | Studies of the water in the temple

Water has been one of the main problems when working and continuing our in-depth

Figure 20. View of the portico before restoration.

Figure 21. Hypostyle hall.

36 Excavated by J.R. Pérez-Accino, G. Garrido, A. Gómez and J.J. Martínez.

Figure 22. Northern enclosures.

Figure 23. The temple flooded.

exploration of the temple, as many of the rooms are completely flooded, particularly at certain times of the year[37]. The temple has been, and continues to be, flooded. The main problem is to determine if it was flooded in ancient times, as the interpretation of this monument in religious and mythological terms may vary depending on this natural phenomenon[38] (fig. 23). The geological study[39] concluded that since the temple suffers annual flooding, there is superposition of geological processes which makes it impossible to differentiate between the height of the floodwaters in pharaonic time and present day levels. Man-made traces can be seen, which suggest that the flow of water between the different rooms of the temple was facilitated. The name Heryshef "He who is upon his lake", strongly suggests that a possible religious and mythological interpretation of the temple may vary depending on this phenomenon. Worth noting is the fact that two lakes existed in the temple of Heryshef, called Maat and Natron, although their exact location has not yet been established[40].

3. 2. 2 | Studies in Landscape Archaeology and Archaeoastronomy

One of the most important tasks carried out by the Spanish Mission in Herakleopolis has been the work on Landscape Archaeology and Archaeoastronomy[41]. The main objective of this task was to determine the orientation and location of the temples and of the main monuments in the Spanish concession. The temple of Heryshef—in addition to its undeniable relationship with the in-walls necropoleis of the First and Third Intermediate Periods—would have been astronomically orientated (azimuth

37 The water starts to rise from late March to late April and from mid-November to late December. This phenomenon currently tends to coincide with the opening of the Aswan Dam and the irrigation season of the fields surrounding the city.

38 J.R. Pérez-Accino is firmly convinced of the flooding of the temple in ancient times and his interpretation of this occurrence is included in Pérez-Accino and Pérez Die, 2007: 707-724.

39 Conclusions supplied by the geologist E. Sanz.

40 Spell 17 of the Book of Going Out in Daylight. Díaz-Iglesias Llanos, 2014: 180-270.

41 Belmonte, Pérez Die and Díaz-Iglesias, 2015: 121.

of c. 201º) to the setting of Canopus (the second brightest star in the Egyptian sky), at the time of the first monumental building of the temple in the Middle Kingdom, sometime between the reigns of Senuseret II and Senuseret III. When the temple was rebuilt during the New Kingdom, the axis remained, perhaps with slight variations.

The stellar epithets of Heryshef describe him as leader of the cosmic sphere. Several texts refer to him as "King and Lord of Heaven", "Pillar and ruler of the stars", "He who rises and illuminates the earth, whose right eye is the sun disk and whose left eye is the moon, whose emanation is light", showing a trend towards the astralisation and solarisation of Heryshef. Hence the orientation of the temple and of other buildings including the chapel of the Third Intermediate Period cemetery.

3. 3 | Documentation

The documentation of the temple of Heryshef has been produced with digital photos, videos and drawings[42]. In 2013-2014, aerial

Figure 24. Aerial view of the temple.

42 Photography: A. Amin, M.ªC. Pérez Die, A. Gómez, Juan Á. Ruiz Sabina. Draughtsmen: A. Guio and A. Gómez.

photographs were obtained with a camera attached to the tail of a kite moving overhead above the site. Several hundred photos were obtained[43].

In this latest campaign, the mission used photogrammetric techniques[44]. In order to document the excavation, and also the architectonic and sculptural elements of the temple, digital system photogrammetry was used for the first time in Herakleopolis. This system is based on generating 3D models, which allow orthophotos to be obtained for drawing plans.

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 (fig. 24).

"Terrestrial photogrammetry" was also used in the temple, but in this case handheld digital cameras were used for the scanning. To elevate the camera, a monopod (3 to 4 m) or a tripod (2 m) were used, to cover a wider surface area (fig. 25).

Finally, close-range terrestrial photogrammetry was applied to architectonic and sculptural elements still existing in the temple, including columns, bases, colossus etc., to enable to be compared with items found in Herakleopolis and transferred to the garden of the Museum in Cairo, as the triad of Ramesses II, Ptah and Sekhmet (fig. 26).

3. 4 | Conservation, restoration and reconstruction

The conservation, restoration and reconstruction of the temple of Heryshef has been one of the main aims of this project, to create an open-air museum, taking into account the remains currently conserved in the sanctuary. This project was started in 2013[45]. The most important aim has been to safeguard, as much as possible, all the architectural ele-

Figure 25. Terrestrial photogrammetry of the excavations.

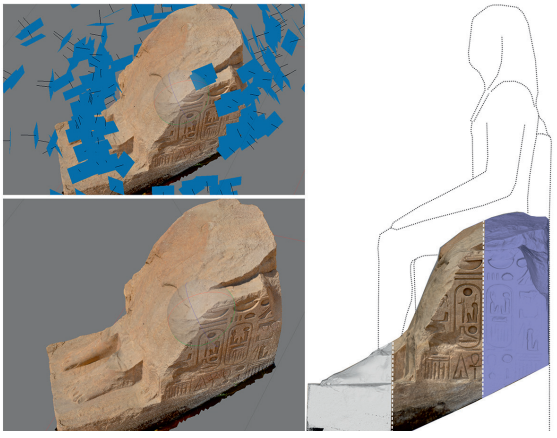

Figure 26. Close range photogrammetry.

43 Made by J.J. Martínez.

44 J.Á. Ruiz Sabina, A. Gómez and A. Guio: *Fotogrametría del yacimiento y avance de los primeros resultados*. Communication presented at the V Congreso Ibérico de Egiptología, Cuenca.

45 Project Director: M.ªA. Moreno, Departamento de Conservación, Museo Arqueológico Nacional. The data presented are taken from her reports. A communication on this topic was presented at the V

ments of the building, protecting them from climatic alterations, especially from the fluctuations in the water level, ground salts and humidity. In the case of Herakleopolis Magna, as well as the destruction of the temple and the displacement or removal of many of its stone elements, as can be seen from the documentation and publications of Petrie[46], there is also the constant presence of water and humidity in the whole area of the temple and its surroundings.

3. 4. 1 | Treatment of the fallen stone blocks

The aim of restoring, at least partly, the original appearance of the temple is gradually being achieved, but various campaigns will be needed to carry out this restoration and complete it fully (fig. 27). The moving and relocation of the fallen stone blocks were facilitated by the collaboration of a team of specialists who work in Luxor, under the direction of the *rais* Gamal Mahmoud Ahmed el Gasap, who provided the means and expertise needed to carry out these tasks (fig. 28). The processes involved are documented in the relevant files, reports, photography and videos. The actions undertaken were:

a) Relocation and permanent or temporary installation of the stone elements that had fallen or were displaced from their original location. Many large stones from the portico fell down many years ago. The main work carried

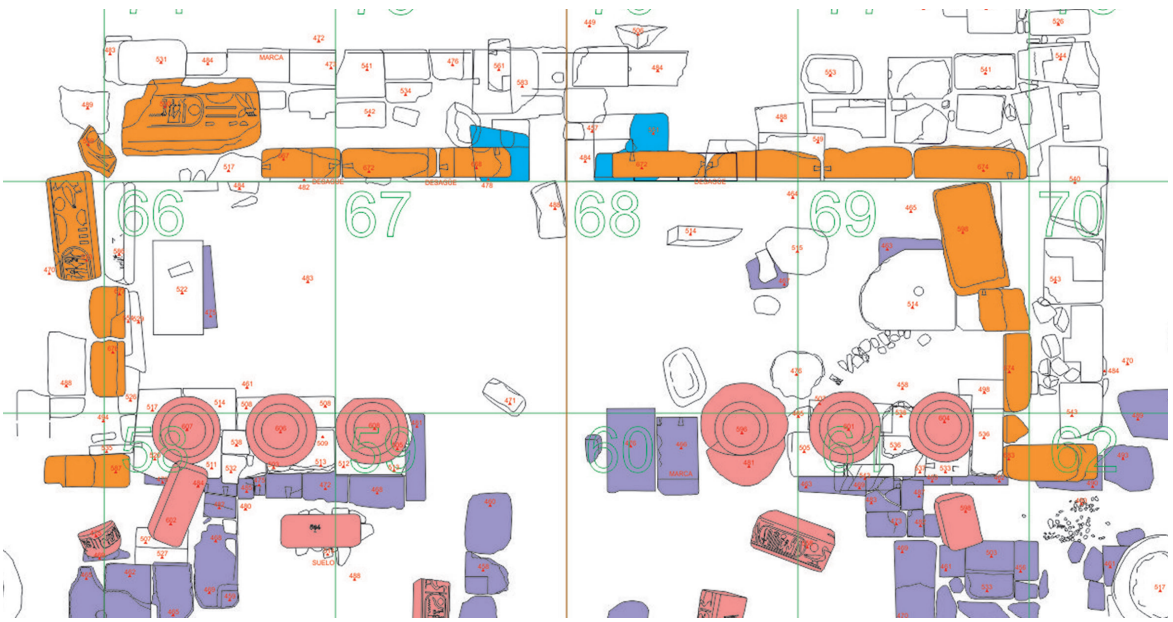

Figure 27. Stone elements fallen from the portico.

Congreso Ibérico de Egiptología and the XI International Congress of Egyptologists. See also Pérez Die and Moreno, 2009: 297-311.

46 Petrie, 1905. This publication includes photos showing the great quantity of blocks, columns, capitals, architraves, etc. which existed when the temple was excavated, but which have now disappeared from their original location.

Figure 28. Work of the team from Luxor.

out during the 2014 season consisted of restoring these blocks with inscriptions of Ramesses II to their original position and joining them together with mortar. The materials used in the reinforcements and constructions to support and stabilise the great blocks of stone were those established by the MoA criteria; to this end the collaboration of the technical experts from the MoA has been invaluable in the tasks of cleaning, consolidation, reintegration of the material and chromatics of the original and additional materials.

b) Review of the state of conservation of zones to be treated in order to determine the possible incidents occurring since the end of the previous campaign. Whitish saline coatings which form as the ground dries were observed, especially in the lower areas and those nearer ground level; these are a result of the high salt content in the water, from the effects of drying and the action of the sun and wind.

c) Preparation, clearing of work areas and testing of mortars and hydraulic fill materials for the new supporting structures.

d) Building new bases to support the blocks, with waste limestone fragments of different sizes, blocks of white building stone and mortars with a mixture of white cement, crushed limestone dust and natural pigments (fig. 29).

e) Relocation of the statues and inscriptions that were not found *in situ* on bases or pedestals to ensure the coherence and uniformity of the Open-air Museum, and to facilitate a reading and understanding of the architecture of the temple.

In 2015, the mission focused on constructing the pedestals. The question of which materials to use in the construction of these pedestals was considered. After examining the possibility of building them in stone, or with rendered concrete bricks, it was finally

Figure 29. Bases, column drums and inscribed slabs replaced in the portico.

decided to use white bricks, the same solution as used in the temple of Merenptah in Luxor by the Swiss Archaeological Institute[47]. A considerable part of the construction of the pedestals has been completed. In the coming seasons, the intention is to continue the placing of the inscribed blocks and of the displaced blocks in their original location or on the new pedestals constructed. They will be painted according to the colour of the stone to ensure the set is more homogeneous (fig. 30).

f) In the portico and courtyard, the gaps and flooded areas have been filled in with *salata* and desert sand; this is to unify the archaeological areas and reduce the impact of the seasonal floods, which damage and destroy the materials.

Restoration was also carried out of the objects found in the temple. These items are made of pottery, terracotta or stone. Their state of conservation is fair, although in general they present problems of wear and loss of compositional materials, more evident in the decorated reliefs. The treatment used here was mechanical dry cleaning combined with wet cleaning methods using distilled water, alcohol and acetone. The items were then boxed and packed with inert and stable materials for transfer to the Egyptian magazine.

Conclusions

The importance of the Herakleopolis Magna Project is demonstrated after 50 years

47 Our thanks to Cornelius von Pilgrim, Director of the Swiss Archaeological Institute, Cairo, for the information provided to obtain this material in Egypt.

Figure 30. Pedestals prepared for architraves.

(1966-2016) of excavation in Egypt. The mission hopes to continue the work in rewriting the history of one of the most important cities of ancient Egypt.

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Trabajos de Egiptología
Papers on Ancient Egypt

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Número 7
2016

Trabajos de Egiptología está producida por
Isfet. Egiptología e Historia
con la colaboración del **Centro de Estudios Africanos**
de la Universidad de La Laguna

C/ Blanco 1, 2º
38400 Puerto de la Cruz
Tenerife-Islas Canarias
España

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Imprime: Gráfica Los Majuelos

Depósito Legal: TF 935-2015
ISSN: 1695-4750

Contents