



**FRENCH-EGYPTIAN
CENTRE FOR THE STUDY OF THE TEMPLES OF
KARNAK
MAE-CNRS USR 3172
ACTIVITY REPORT 2014**



LUXOR, 2015



*Ministry for Antiquities of Egypt
Centre National de la Recherche Scientifique
Ministère des Affaires Étrangères et du Développement International*

**FRENCH-EGYPTIAN
CENTRE FOR THE STUDY OF THE TEMPLES OF
KARNAK
MAE-CNRS USR 3172
ACTIVITY REPORT 2014**

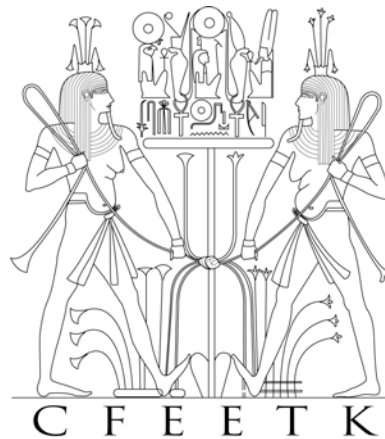


TABLE OF CONTENT

FOREWORD	4
1. SCIENTIFIC PROGRAMMES.....	6
1.1. Power and marks of power at Karnak	6
1.1.1. The Sphinxes of Pinudjem	6
1.1.2. The VIII th pylon	7
1.1.3. The “Marriage stela”	15
1.2. Peripheral areas	16
1.2.1. The Ptah Temple area	16
The second gate (D) of Shabako and the southern area	16
The Ptolemaic gate C’	19
Ceramic studies	20
Epigraphic survey	21
Conservation-restoration programme	22
1.3. Cults and places of worship	33
1.3.1. The Monuments of Amenhotep I	33
1.3.2. The Osirian sanctuaries	37
1.3.3. The bark-shrine of Philipp Arrhidæus	43
1.3.4. The central sanctuaries of the <i>Akh-menu</i> and the “northern storerooms”	43
1.4. Ceramic studies	48
1.4.1. Late Egyptian ceramic studies programme	48
1.4.2. Excavations in the Court of the Ninth Pylon	50
1.5 The Karnak project	51
2. RECONSTRUCTION PROGRAMMES	53
2.1. The chapel of Tuthmosis III	53
2.2. Cultural heritage and site management	54
3. ARCHIVES AND SCIENTIFIC DOCUMENTATION	56
3.1. Archives and databases	56
3.2. Photographic department	56
3.3. The scattered blocks survey	57
3.4. Architecture and topography department	57
4. TRAINING PROGRAMMES	60
5. PUBLICATIONS AND LECTURES.....	61
5.1 Selected publications of the CFEETK members and associated missions (2014).....	61
5.2. Lectures and media	61
6. MEMBERS OF THE CFEETK.....	63
7. ACADEMIC COLLABORATIONS	64

FOREWORD

Work of the French-Egyptian Centre for the Study of the Temples of Karnak in 2014 mostly took place on schedule and in accordance with the four year programme 2013-2016 and the decisions of the Scientific Committee which took place in June 2013.

Inside the temple, the activity of the Centre was mainly devoted to three programmes, as an extension of work of the previous seasons. The first concerns the archaeological investigations of the southern area of the temple (area of the second gate of Shabako and Ptolemaic structures). The conservation-restoration programme ended with an extensive restoration of the limestone stela of Horemheb and the colossus of Tuthmosis IV.

The second programme included the epigraphic survey of the northern area of the *Akh-menu* of Tuthmosis III. The work on the area of the sanctuary of Alexander the Great is ongoing. The “northern storerooms” are now fully recorded, and the fac-similes have to be collated before publication. This programme is linked with a huge conservation-restoration project.

The third programme, started in 2013, regards the survey and study of the inscriptions of the VIIIth pylon. Epigraphic survey is partly conducted on plastic film on the lower part of the walls and on the eastern side of the pylon. For the main part of the pylon, the use of high resolution orthophotographs allows recording of hieroglyphic texts and scenes, directly on computer. The study of many graffiti in this area is also underway.

Other programmes of restoration and conservation focused on the archaeological material excavated from different areas. In the Open Air Museum, the main reconstruction programme dealt with the calcite chapel of Tuthmosis III, with the lifting of the huge ceiling slabs.

Constant work has concerned the documentary database of Karnak, which was enhanced by the addition of new archives (archives of Francis Amin, Luxor). The website of the Centre reached one million and a half visitors. The online edition of all the hieroglyphic texts from Karnak (the *Karnak* project) is ongoing. The project is opened through the CFEETK website and many hieroglyphic texts and photographs are already available to scholars.

All the work led at Karnak has benefited from the constant help of Ibrahim Soliman and Sultan Mohamed Eid, former and present General Director of Luxor Antiquities, Mohamed Abdel Aziz, General Director of the Karnak temples, Amin Ammar, Director of Karnak temples, Abdel Satar Badri, Director of missions of Karnak Temples, Fawzy Helmi, Mona Fathi and Tayeb Gharib, Chiefs inspectors, Abd el-Nasser, Chief conservator, Tarek Milad Zikri, Chief architect of Upper Egypt, all the inspectors, the Raïs Mahmud Farouk and the workers of the *Ministry for Antiquities of Egypt*. It is a pleasure to thank all of them for their kindly and constant support.

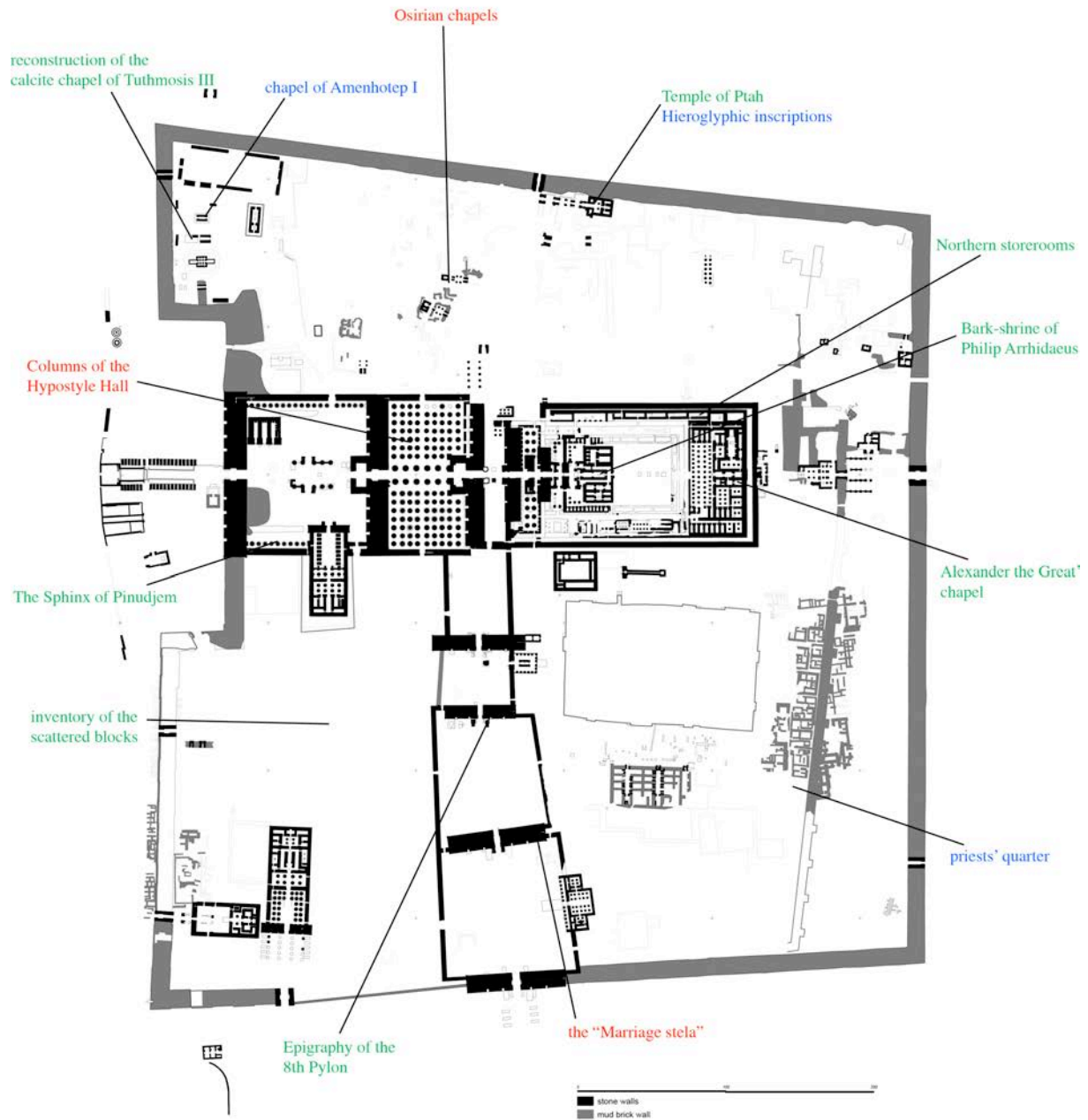
We would like to extend our grateful thanks to the French authorities of the *Centre National de la Recherche Scientifique* and of the *Ministère des Affaires Étrangères et du Développement International* for their constant financial support and interest on the programmes led by the CFEETK.

We are always delighted with the excellent relationships between the French-Egyptian Centre for the Study of the Temples of Karnak and the *Ministry for Antiquities of Egypt* led by H.E. Minister for Antiquities Pr. Dr. Mamduh Eldamaty.

Abdel Hakim Karar
General Director of Luxor and Upper Egypt (MAE)
Co-director of the CFEETK

Christophe Thiers
Director of the USR 3172 (CNRS)
Co-director of the CFEETK

Amun-Re temple, main fieldwork in 2014



temple of Ptah : main CFEETK projects
osirian chapels : projects hosted by CFEETK
priests' quarter : projects currently in publication

1. SCIENTIFIC PROGRAMMES

1.1. Power and marks of power at Karnak

1.1.1. The sphinxes of Pinudjem (Chr. Thiers, S. Biston-Moulin, G. Dembitz)

In spite of the fact that we possess very few securely attestable monuments from the problematic period of the 21st Dynasty, the inscriptions of the high priest of Amun, Pinudjem I carved on the plinths and bases of the currently 93 ram-headed sphinxes has never been the subject of a systematic programme of investigation, recording and publication.

The ritual space in front of the Second Pylon of the Temple of Amun at Karnak was altered several times in antiquity, and the actual position of the sphinxes is due to the reconstruction works carried out by G. Legrain between 1896 and 1909.

Although these sphinxes and their inscriptions enjoyed attention from the dawn of Egyptology onwards, only selected texts were published by G. Legrain, P. Barguet, M. Römer and others.

On the bases of the sphinxes, Pinudjem I emphasized the accomplishments that he made for Amun-Re; except for a few alterations, the sides and rear are inscribed with the same sentences formulae whilst the front parts are different in all of the surviving examples. In each case a divinity is mentioned with epithets and an attached geographical locality of religious cult, offering various benefactions to Pinudjem I. Despite the rather weathered condition of the plinths at least 23 divinities are safely recognizable with the attached toponyms, while other fragments allow the reconstruction of the names of further gods or cult places. Additionally, several fragments of the original bases of the sphinxes were found, decorated with a double offering scene of Pinudjem I to Amun-Re, but in the majority of the cases these remain unpublished.

A comprehensive examination, analysis and comparison of the geographical list will improve our limited knowledge of the religious centres of the period. The establishment of a possible geographical order of the towns mentioned might help us to find the original position of the sphinxes. The project will also enrich our understanding of the layout and religious role of the ritual space in front of the current entrance of the Amun Temple during the time of Pinudjem I.

From February to April 2014, we began the epigraphic documentation of the inscriptions carved onto the fronts of the plinths of the currently twenty sphinxes of the northern row in the Great Court.

The following sphinxes were documented:

- GCR.SN.sp1
- GCR.SN.sp2
- GCR.SN.sp5
- GCR.SN.sp6
- GCR.SN.sp7
- GCR.SN.sp8
- GCR.SN.sp9
- GCR.SN.sp10



GCR.SN.sp11

GCR.SN.sp16

GCR.SN.sp17

The epigraphic documentation of the inscriptions surviving on the fronts of the sphinxes designated as GCR.SN.sp12 and GCR.SN.sp20 was postponed. Unfortunately all inscriptions on the fronts of the GCR.SN.sp3-4, GCR.SN.sp13-15 and GCR.SN.sp18-19 are completely destroyed.

1.1.2. The VIIIth Pylon (S. Biston-Moulin, E. Frood)¹

Epigraphic and orthophotographic surveys

This first season of epigraphic recording began in October 2013. Two drawing techniques were used in a complementary way for this project. The first part of the work, completed in April 2014, was to conduct surveys on plastic film (acetate) of the lower parts of the pylon, the eastern wall of the courtyard of the eighth pylon as well as statues on the south side. The inscriptions on the eastern face of the eastern massif, including that of the high priest Roma were copied, as well as those of the “Amenhotep door”. The inscription of the high priest Amenhotep on the reverse of that door mentioning restorations undertaken in the temple of Amun-Ra, including a building of King Sesostris I, was the subject of particular attention because of its historical importance and its very advanced state of degradation. Collation made by G. Dembitz of the copies of A. Mariette and Maspero and a latex made by the CFEETK in the 70s during the integration of these inscriptions to the *Karnak project* helped complete the record.

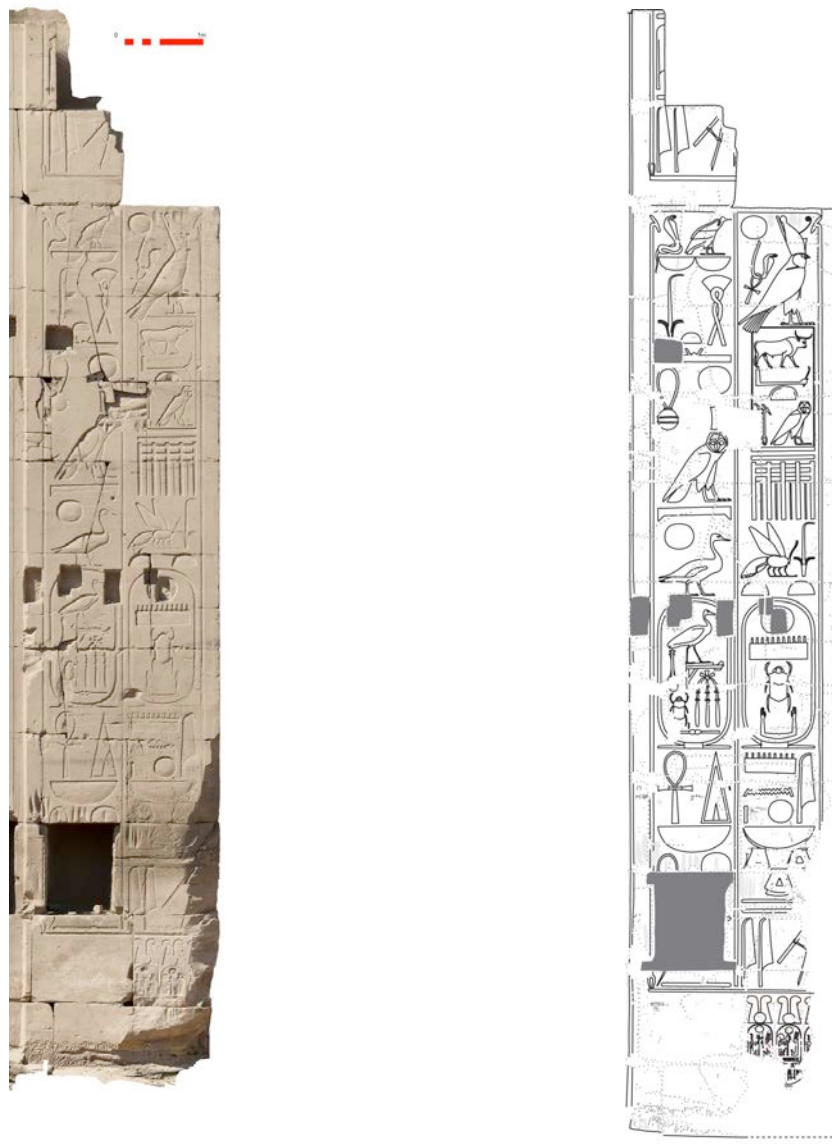


Epigraphic record of the inscriptions of the high priests of Amun, eastern face of the eighth pylon © CNRS-CFEETK/Chr. Thiers.

¹ With C. Salvador (Univ. Oxford), M. Abdel Ghassul (MAE-Cfeetk), K. Guadagnini (MAEDI-Cfeetk), P. Calassou (LabEx Archimede), G. Dembitz (Eotvos Lorand University, Budapest), Ph. Soubias, Cl. Audouit, R. Betzeze (Cnrs trainees).

The second part of the survey was carried out using high resolution orthophotographs. The records of the north face of the two massifs were thus made directly from these images. The inscriptions of the lower parts were drawn from acetate, and digitized drawings were then integrated into digital records. The decoration of the doorway of the pylon was also drawn using this technique with the exception of the lowest courses; here a significant amount of recarving required direct recording on the wall. The graffiti of the pylon were also integrated with these facsimiles from the work on this material by E. Froid and C. Salvador in order to complete the survey of the decoration of the wall.

Particular attention was paid to the many traces of recarving on the walls of this pylon, recarving that highlights modifications in the decoration from its original state during the co-regency of Thutmose III and Hatshepsut, through the many post-Amarna recarvings of Tutankhamun, Horemheb and Seti I, to the end of the New Kingdom with the inscriptions of the high priests of Karnak which reveal the functional changes of the monument.



Orthophotography and facsimile of the eastern doorjamb of the north face of the eighth pylon © CNRS-CFEETK/Ph. Soubias, K. Guadagnini, P. Calassou.

Recording of the remains of a stela of Tutankhamun identified from an old photograph of G. Legrain (M. Azim, G. Réveillac, *Karnak dans l'objectif de Georges Legrain*, Paris, 2004, p. 251 p. 178 [4 7/51]) and the lower part of a statue of Ahmose-Nefertary (the other part is in the British Museum: R. Tefnin “Une statue de reine British Museum et Karnak et les paradoxes du portrait égyptien”, *JEA* 69, 1983, p. 96-107) were also carried out.

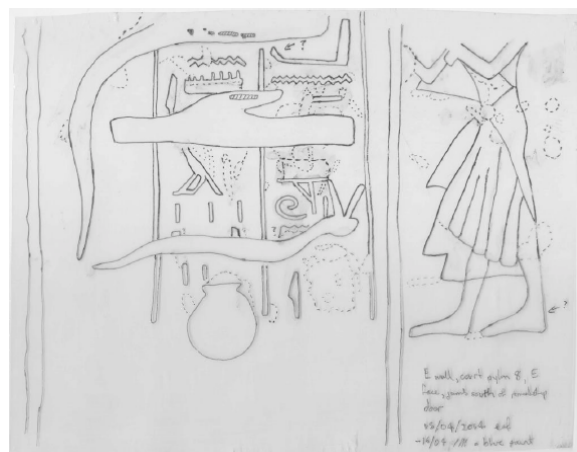
The epigraphic survey work next year will focus on the south face of the pylon, with its traces of extensive erased inscriptions of Hatshepsut, as well as the inscriptions on the colossi located at its front. The survey of the eastern wall of the courtyard of the eighth pylon will also be continued.

All the inscriptions copied as part of the epigraphic survey of the pylon were integrated within the *Karnak project*.

Graffiti

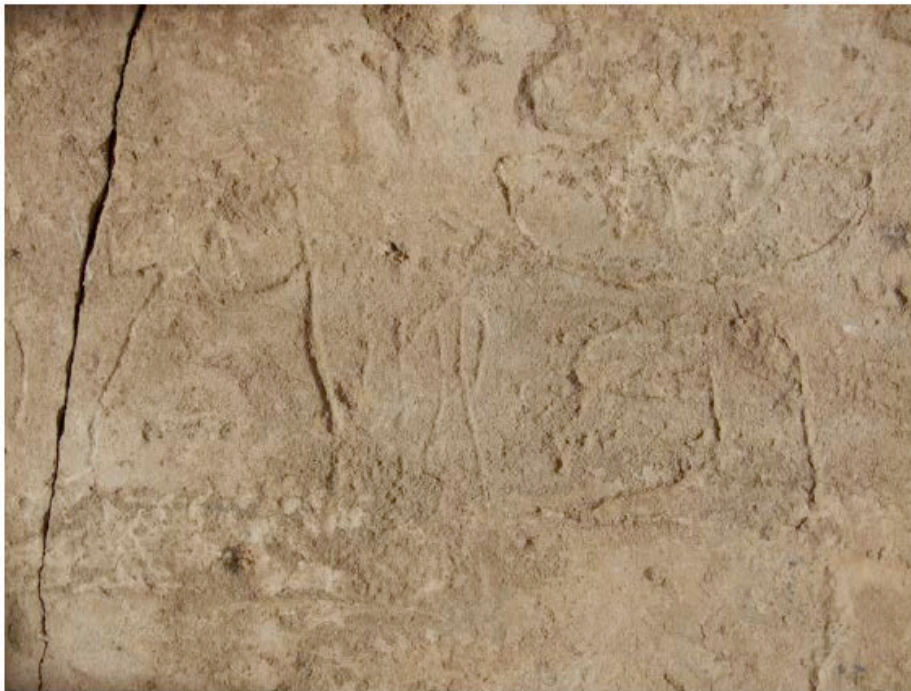
Work on graffiti at the eighth pylon started in October – December 2013 and continued in April 2014. These seasons aimed to complete epigraphic recording in particular areas (esp. the south faces, west gate, and eastern areas including the staircase) and to check the records of graffiti made during the Centre’s epigraphic and photographic recording of the primary decoration. The basis of the survey was the detailed records of graffiti made by Professor Claude Traunecker (from his notebooks IV and V, now in the Griffith Institute, Oxford). Additional graffiti ‘events’ were also found, and their locations noted in the draft survey plans.

Work, undertaken by E. Frood, J. Troche (Brown University), and C. Salvador, began with checking and, in some cases, redrawing graffiti that had been included in the CFEETK’s epigraphic drawings or orthophotography. These were located on the east face of the east massif of the pylon and on the exterior lintel and jambs of the east side door into the court of the 8th pylon. In two cases, the inscriptions were determined to be demotic (in one case perhaps early demotic) and will be passed to Professor Didier Devauchelle for confirmation and analysis. A small adoration scene underlying a later inscription of the high priest of Amun, Amunhotep, was redrawn, offering some improved readings although the name of the individual appears to have been erased. Further partly erased and/or figural graffiti within the scene of Roma and Bakenkhons on the east face were closely examined. Some will be redrawn epigraphically and others will be drawn from the orthophotography and then rechecked. Further graffiti on the thickness of the east side door were also drawn, comprising owls of various dimensions and styles.



Adoration scene below an inscription of the high priest Amunhotep, on the east exterior wall of the court of the 8th pylon (drawing by E. Frood).

All accessible graffiti on the south faces of both massifs were recorded, leaving only three large and high graffiti which will need to be drawn from photographs. The majority of the graffiti in this area cluster around and within the niches of the flagstaffs and comprise hieroglyphic inscriptions and pictures, including that of a large mirror. A series of drawings also were undertaken of graffiti in the west doorway. This area bears dense clusters of graffiti, including a large figure of a baboon on a pedestal and seated figures of Amenhotep I and Ahmose Nefertari (the latter drawn by J. Troche). Two blocks bearing barques, aegises and lotus blooms among other things, were drawn by C. Salvador; one block on the east thickness of the gate and one on east jamb. This completes the drawing of graffiti in this area, except for the large baboon figure which will be drawn in a future season.



Detail of block from the the east thickness of the west gate of the 8th pylon with baboon figure, standing human, aegis and perhaps some form of aegis stand (drawn by C. Salvador).

A final and major area of focus during both seasons was the staircase of the east massif, which bears carved graffiti ranging from complex scenes to rough signs, as well as dipinti. The majority of the carved graffiti were drawn and their locations recorded on draft plans. The dipinti were photographed and will be as fully documented as possible next year. The temporary removal of the doorframe allowed a preliminary drawing of a very complex adoration scene, usually blocked by the doorframe. This scene shows a standing figure of an individual named Roamun with his arms raised in adoration. He stands behind a figure of Ahmose Nefertari who is shaking sistras, thus interceding, before Amun and other Theban deities, including Taweret. The captions to the gods, especially Amun, emphasise their role in provisioning. This, and the representation of Taweret and Ahmose Nefertari, relates this scene closely to that of Nebuneh at the top of the stairs. Recording of the scene was greatly facilitated by the photograph of a latex made by Claude Traunecker and his notes on the captions.



Photograph of the latex of the inscription of Roamun at the base of the stairs of the 8th pylon, from Professor Claude Traunecker (from Cfeetk archive 6524).

The second half of the April season focused on the scenes at the very top of the staircase. By means of a climbing harness secured to the upper blocks of the pylon C. Salvador recorded the large scene of Nebuneb and the anonymous adoration scene at the very top of the stairs in complete safety.

The scene of Nebuneb is elaborate. It shows the chief confectioner Nebuneb kneeling in adoration before the Theban triad, the goddess Taweret, and the deified queen Ahmose Nefertari accompanied by her son Amenhotep I *p3 jbjb*. Amenhotep and Ahmose Nefertari may implicitly serve as intercessors on behalf of Nebuneb, although they are included with the other gods in the scene in contrast to the explicitly mediatory position of Ahmose Nefertari in Roamun's scene.



Adoration scene of the chief confectioner Nebuneb, at the top of the stairs of the 8th pylon, south side.

Also notable is designation of Amun here as ‘Amun of the passage’ (*Jmn-R' n t3 wm.t*), which is probably connected with the important function of the stairwell for the priests and staff attached to the temple workshops.

Opposite the scene of Nebuneb is an anonymous graffito representing a shaved priest standing in front of an offering table adoring the seated figure of Amun and Mut, standing behind him with her left hand on his right shoulder. Part of the right arm of Mut and the right leg of the priest are not carved, indicating that the scene was probably left unfinished.

Work in the coming year will focus in particular on finalising the records of graffiti in the eastern area of the pylon, where concentrations are particularly dense and complex, including the upper, outer areas of the staircase.



Anonymous adoration scene, at the top of the stairs of the VIIIth pylon, north side.

Other clusters of figural graffiti were recorded outside of the stairwell. The largest cluster is the one on the south thickness of the east gate of the pylon, which features a series of owls of various dimensions and styles. The season concluded with the record of a group of graffiti on the north side of the pylon on a low block next to the west gate. The cluster includes a barque with a ram-headed aegys, a possible baboon and a very stylized lotus flower which closely relates this cluster to that on the east thickness of the west gate mentioned above.

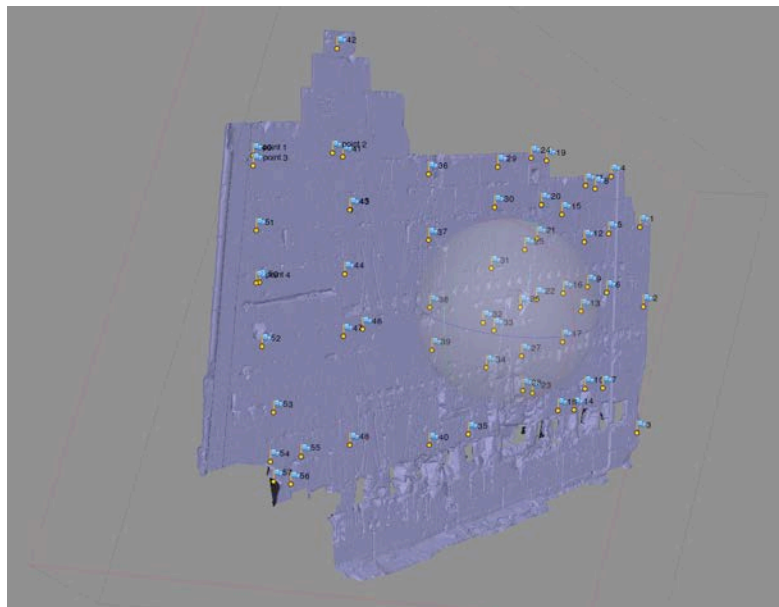
Orthophotographical survey



In April 2014, a campaign of photographic surveys of the north faces of the pylon's two massifs and the east side of the eastern massif was performed after an initial test in Spring 2013 by Aurélien Peyroux (Surveyor Cfeetk). Since the size and the batter of the pylon makes epigraphic drawing via acetate of the entire pylon difficult, the objective of this campaign was to obtain a high resolution photographic record of the entire surface of the pylon with the fewest possible deformations to allow a complete epigraphic survey via digital media.

Photographs of these areas of the pylon's surface were made by Philippe Soubias with a cherry picker.

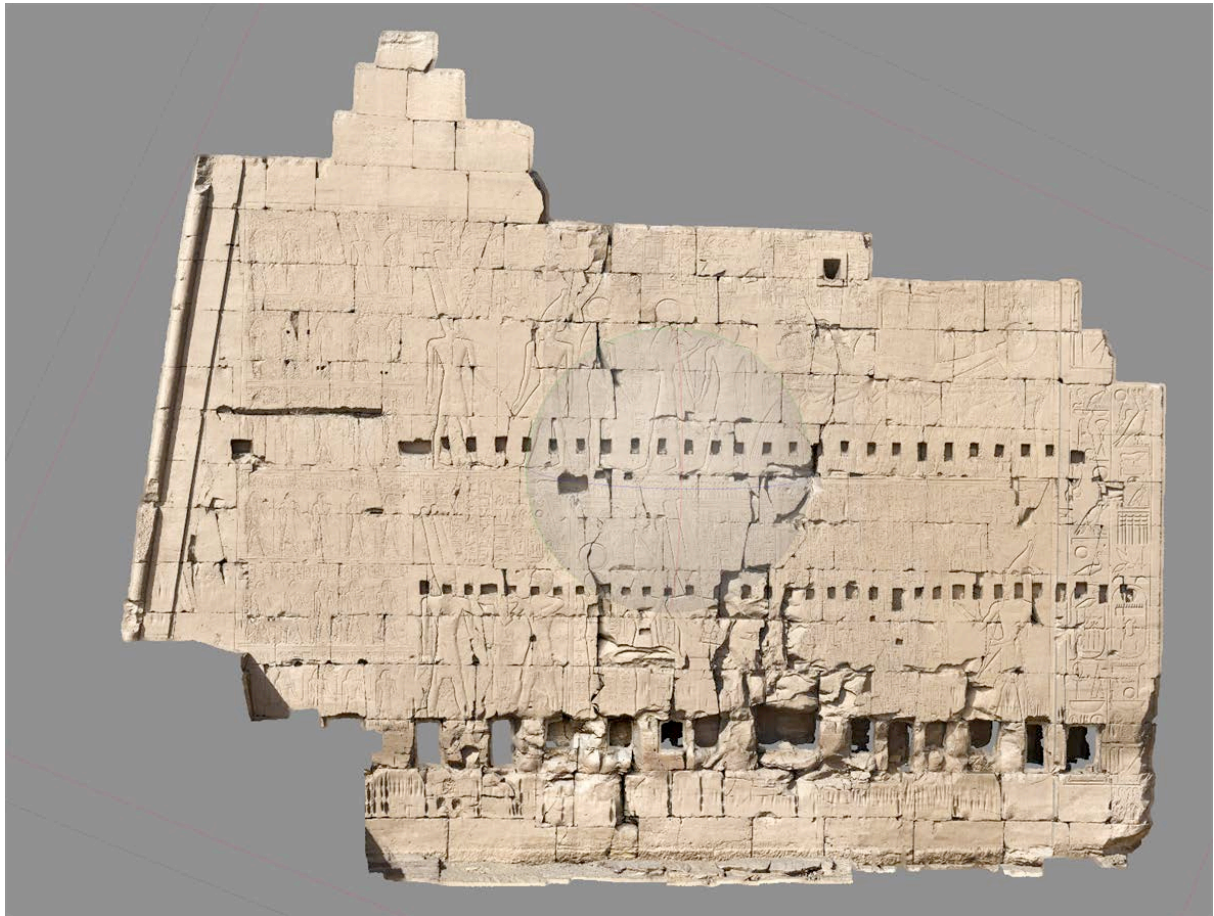
These photographs were then assembled by Kevin Guadagnini with Agisoft PhotoScan software to produce a single orthophotographic record associating all the photographs taken in the field.



Modelling of the pylon in PhotoScan © Cnrs-Cfeetk / K. Guadagnini

Once the assembly work was completed, the accuracy of the orthophotography was checked before the epigraphic survey of the scenes of north faces of the two massifs was undertaken. The resolution of these photographs allows the different traces of modification of the pylon's original decoration to

be precisely identified, whether the proscription of Hatshepsut, the Amarna hammerings and their restoration, or subsequent changes of decoration. This orthophotographic survey will also form the primary photographic support for the publication of the pylon.



Orthophotography of the pylon in PhotoScan © Cnrs-Cfeetk / Ph. Soubias, K. Guadagnini.

The orthophotographic surveys will continue and should be completed in 2014-2015, finishing with the south face of the pylon.

Cleaning of the courtyard of the IXth pylon

A series of benches were built in collaboration with ARCE in the courtyard of the ninth pylon to store all of the blocks that were previously on the ground and thus in a state of advanced deterioration. Two additional benches were made to the west and to the east to accommodate the fragments belonging to the seated colossi on the south face of the eighth pylon.



Moving the fragments of western colossi on a bench © Cnrs-Cfeetk / S. Biston-Moulin.

All the blocks and fragments were then moved using the Center's crane. This operation, led by M. Farouk, was conducted in collaboration with our colleagues Ammar Amin, Director of the temples of Karnak, Abdul Sattar Badri, Director of Missions of the temples of Karnak, and Fawzy Helmi, Mona Fathi and Tayeb Gharib, chief inspectors whom we are pleased to thank here.

1.1.3. The “Marriage stela” (D. Lefèvre)

The mission of D. Lefèvre (univ. of Geneva) took place from January 8 to 28, and was devoted to the preparation of the documentary record of the *Marriage Stela* of Ramesses II carved on the southern wall of 9th pylon:

- Several photographs were taken by the photographic service of the CFEETK to obtain an orthonormed photograph of the whole area of the stela (J. Maucor, K. Guadagnini and Ph. Soubias)
- The text of the *Marriage Stela* was collated directly on the wall and it was compared with two copies by Kitchen and Kuentz.
- Twelve blocks from the *Marriage Stela* were found in the courtyard of the 10th pylon. Some of them were reported in 1925 by Kuentz (*ASAE* 22), others are still entirely unpublished. They were copied and documented. They were also grouped together on a bench in the courtyard of the 10th pylon for restoration.
- Research was conducted in the area but no other block from the stela has been found so far.

1.2. PERIPHERAL AREAS

1.2.1. The Ptah Temple area²

The aim of the sixth campaign was to study the southern area of the temple. Work on the “kom” continued that begun in January-April 2013 by S. Maillot. From September to December 2013, the excavation was led on the area of the second gate (D) of Shabako. The main goal was to understand the articulation of the different structures recognised so far, interpreted, for some of them, as part of enclosure walls from various periods.

For this purpose, the so-called “Roman-Byzantine structure” was partly dismantled to gain access to the previous archaeological remains.

The southern part of sector 6 was partly dug by G. Legrain while he was looking for *radim* to fill the northern part of the hypostyle hall after the earthquake of October 3 1898. During that task, the worker reached the New Kingdom layers, identified by two groups of half buried storage jars found *in situ*. All the late structures are therefore destroyed, and only two courses of bricks belonging to the foundation of a structure can be observed in this area.

The second gate (D) of Shabako and the southern area (B. Durand)

Study was led on the “enclosure wall” linked with the second gate of Shabako. The excavation allowed to observe a few states of walls, spanning the time of Shabako to the Byzantine period. It was then necessary to understand the exact development of all those walls as the area always played an important role in the spatial and functional organization of the temple of Ptah.



The area of the second gate (D) of Shabako (on the left). The Romano-byzantine structure in red bricks © Cnrs-Cfeetk.

² - Epigraphic survey: Christophe Thiers (USR 3172, head of mission), Elizabeth Frood (univ. Oxford), Mamdouh Abd el-Ghassul (MAE-Cfeetk), Pauline Calassou (LabEx Archimede).

- archaeology and ceramology: Pierre Zignani (USR 3172), Benjamin Durand (Cnrs missions), Romain David (LabEx Archimede), Catherine Defernez (UMR 8167), Stéphanie Boulet (FRS-FNRS-ULB), Mamdouh Abd el-Ghassul (MAE-Cfeetk), Chr. Thiers.

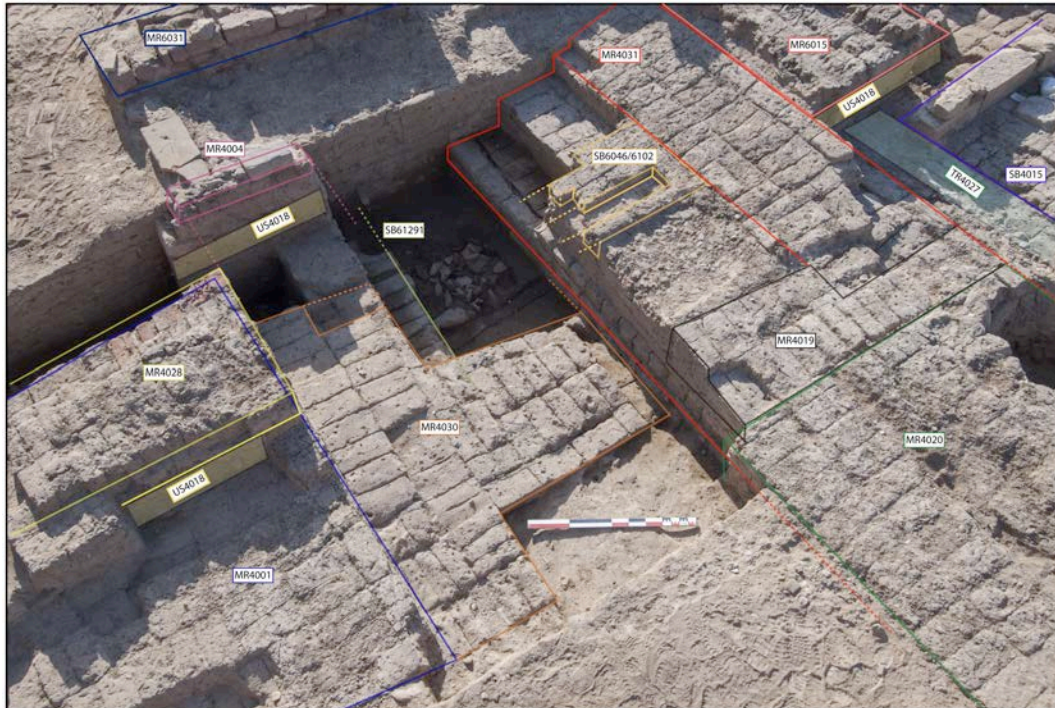
- photographic survey: Jessie Maucor (USR 3172), Philippe Soubias (Cnrs trainee), Karima Dowi Abd al-Radi, Ahmed Roubi, Mohamed Saïdi (MAE-Cfeetk).

- conservation: Camille Bourse (VI MAEDI), Abdou Qoraïm (MAE-Cfeetk), Mohamed Zaki (MAE-Cfeetk), Mohammed Zaki Masoud, Adel Mohamad Radouan, Ghaad Nubi Hussein, Ahmed Hassan Fuli, Waffaa Abo El Hamed, Nagwa Abd El-Ghafour, Yasser Farraj, Abdel Nasser Mahmoud, Mahmoud Said Ahmed (MAE-Cfeetk).

- MAE inspectors: Ali Mohamed Erfan, Abou al-Hassan Ahmed Ibrahim.

Programme supported by LabEx Archimede « Investissement d’Avenir » ANR-11-LABX-0032-01, project « Céramiques tardives d’Égypte (IV^e s. av. n. è.-VII^e s.), entre tradition et acculturation. L’exemple des sites de Karnak et d’Ermant ».

In order to understand the structural evolution of the area, work first began during the January-April season and was carried on during the September-December session. Despite work in this area is not yet concluded, some preliminary results help to understand some of the many changes that affected this sector. Indeed, we can now associate each wall to a specific period, even if the precise dating has yet to be determined. One important wall, almost two meters wide, could be the remains of the New Kingdom enclosure wall, but further investigations must be carried out to confirm this theory.



Commented picture with most of the walls found under the Roman-Byzantine structure. In red, nr 4031, the possible New Kingdom enclosure wall of the Ptah Temple © Cnrs-Cfeetk/B. Durand.

Work was also carried out on the Roman-Byzantine structure, which appears on the map made by Legrain when he cleared out the area of the temple of Ptah. The main work was done inside the main room, as it was important to check if floors and materials, linked to the occupation of the structure were conserved. Unfortunately, very few of them were found, and the exact function of the building remains unclear.

Area of the “kom”

The first investigations on the mound were led during the January-December season, through a 1.50 m by 5.40 m sounding. As a result, a mud brick floor from the Ptolemaic period was reached. A red brick structure, unidentified at that time, also arose from the western limit. This sounding was completed in September-December with an extensive excavation which extended 7.5 m to the West from the limit of the sounding.

The extensive excavation enabled us to first recognize Coptic structures, that may be houses or economic structures. Some ceramics and artefacts were found, but the walls are preserved up to two courses of mud bricks, so very little was found *in situ*. Two silos were also uncovered in this area.



Coptic structures on the “kom” © Cnrs-Cfeetk/B. Durand.

The Ptolemaic levels were lying just beneath the Coptic structures. Two different typologies of spatial organization have been identified so far. The goal of the 2014 investigation was to reach the mud brick floor that came to light in the adjacent sounding carried out during the first campaign.



The last layer of the Ptolemaic occupation on the left, the first Coptic structures on the right © Cnrs-Cfeetk/B. Durand.

During the last campaign a red brick structure appeared in the eastern limit of this sounding and it was impossible to understand its function, or even the general shape of it. The extension of the excavation to the east allowed to uncover it completely. It finally appeared to be a kiln, probably used to produce copper alloy object as we found, in the destruction layers, a fragment of crucible showing some traces of green metal inside.



Different level of filling of the kiln © Cnrs-Cfeetk/B. Durand.

The Ptolemaic gate C' (Chr. Thiers)

Following a conservation work led on gate C' (see below), especially with the addition of a loose block atop the eastern doorjamb, it was found that the southern block (29 x 142 x 66 cm) of the threshold was reused (erased cartouches of Shabako, see *CFEETK Report 2012*, p. 29). In the joint, the opposite side also showed traces of sunken reliefs. It was decided to temporarily remove the two stones forming the western doorjamb to move the threshold block, and record the hieroglyphic inscription (see below).

After this operation, conducted by the team of A. Garric, it was then possible to observe the foundations of the gate under the threshold slab. This foundation consists of one course of mud bricks (14/15 x 31 x 10/11 cm) installed on an adjustment level of *mouna* (6-8 cm thick) that seals a level of compacted soil. A slight east-west dip of the bricks is observable (alt. inf. 76.86 m ASL to the east, 76.72 m to the west). A 3 to 6 cm thick layer of relatively compact *mouna* covered the bricks layer; the bricks were partially lined by pinkish mortar which has flowed from the vertical joints of the threshold slabs. The same mortar was used inside the masonry of the doorjambs.

No trace of sand was observed in the foundations. No foundation deposit was identified despite removing the bricks and sounding the southwest corner. The few ceramic sherds uncovered during this excavation unfortunately do not allow to establish a precise date of this building, which is dated only by incomplete Ptolemaic cartouches still visible on the front of the doorjambs.

The primary decoration of the removed threshold bears a *bandeau* of hieroglyphs with the name of Amun (maybe from the time of Tuthmosis III), then re-carved with an offering scene of wine (*rdt jr[p]*), with a bunch of flowers (above an offering table) to Ptah. This last scene seems to date to the Ramesside period. Later, during the reign of Shabako, the block was reused as a lintel, with a raised relief bearing the names of the Kushite king (see below). Its final use was as threshold of the Ptolemaic Gate C'.

At the end of the work, a slab carved out of a new sandstone block was installed in place of the removed threshold and the two blocks of the western doorjamb were placed back to their original location. The reused block removed from the gate was stored on a bench.



Mud bricks foundation of Gate C' and the same gate rebuilt with new threshold stone © Cnrs-Cfeetk/Chr. Thiers.

Ceramic studies (R. David)³

The material from the excavations of the Ptolemaic and Byzantine structures discovered within the precinct of the temple of Ptah, conducted by B. Durand under the guidance of Chr. Thiers and P. Zignani, was studied from January to June 2014. Along with R. David, CFEETK's post-doctoral researcher, Z. Baharona, Phd student at the University of Barcelona, was involved in the study as part of an internship at the CFEETK. Juliette Laroye worked also at the drawings of the ceramics in March 2014. A total of nearly 15.000 fragments were studied and about 1.000 of them were drawn. Most of this material will be published in the next volume of the *Cahiers de la Céramique Égyptienne* edited by R. David specifically dedicated to the Theban ceramics from the Ptolemaic period.



Ptolemaic ceramic from Ptah Temple
© Cnrs-Cfeetk/R. David.

Ceramological researches led by St. Boulet (FRS-FNRS-ULB) took place from 13 April to 15 May 2014. The aim of this mission was to study some archaeological contexts from recent excavations in the area of the Ptah temple. A great part of ceramic sets was composed of very small sherds. Some interesting contexts bring to light testimonies to a ceramic industry dating to the 25th Dynasty (US 4024-5025-5026).

Finally, a small assemblage mainly composed of sherds dating back to the 5th century BC, coming

³ USR 3172, LabEx Archimède, programme « Investissement d'avenir », ANR-11-LABX-0032-01. With Mamduh Abd el-Ghassul (MAE-Cfeetk), Zulema Barahona and Juliette Laroye (Cnrs trainees).

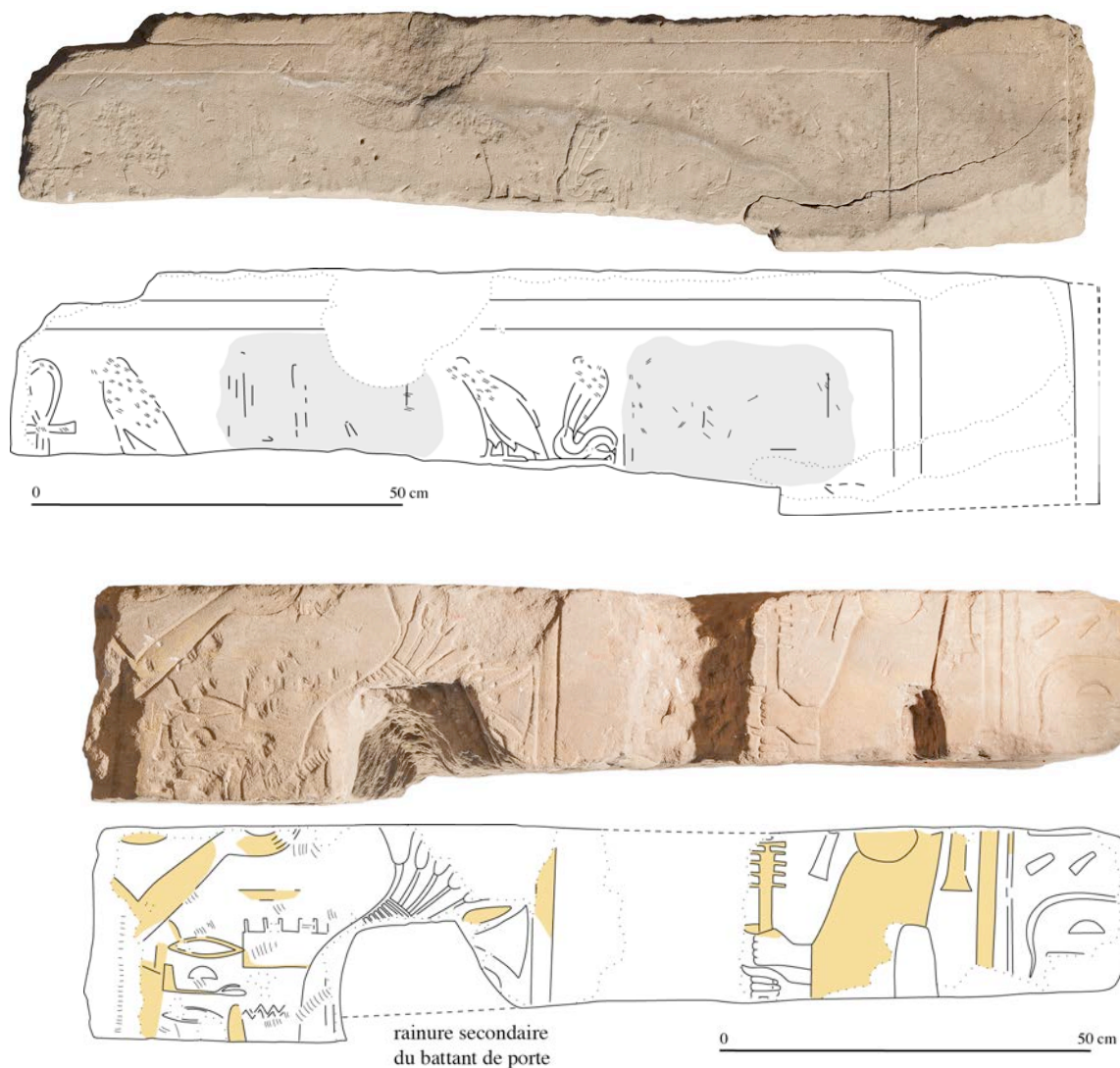
from an area excavated in 2011, was also analysed and reveals important information about the ceramic industry of the Persian period.

Epigraphic survey (Chr. Thiers)⁴

The epigraphic survey of the temple of Ptah was completed in the field. The manuscript *Le temple de Ptah à Karnak 1. Relevés épigraphiques et photographiques* was submitted in early 2014 for publication at the IFAO, planned for 2015.

The study of graffiti (hieratic, hieroglyphic and figurative) led by E. Froid (univ. Oxford) was completed in the field. The work now concerns finalizing the vectorization and the preparation of the publication. Only few photographs were necessary to complete the survey.

Epigraphic documentation from the excavation of the temple of Ptah was also treated: it concerns a threshold block from the Ptolemaic Gate C' (see above), and a sandstone doorjamb of Thutmose III (see below conservation work).



The two sides of the southern block of the threshold of the Ptolemaic Gate C' © Cnrs-Cfeetk/Ph. Soubias, Chr. Thiers, P. Calassou.

⁴ With Pauline Calassou USR 3172, LabEx Archimede, programme « Investissement d'avenir », ANR-11-LABX-0032-01.

Conservation-restoration programme (C. Bourse)⁵

Gate A': two granite bases

On the south side of the Ptah temple, in the area of Gate A', there are two granite pedestals which present similar alterations. The full conservation treatment was carried out with the aim of integrating the fragments both structurally and visually, and preserving the rest of the granite base which was in a poor state of conservation.

We started with a necessary mechanical cleaning, with scalpel and brushes. Then, in order to consolidate the bases, we used Araldite, Kemapox, an Egyptian liquid resin. We applied Araldite 2015, a pulp resin to the fragment that we could extract.

Many salts were visible on the west side. After two applications of pulp cellulosic compress with Attagulic the salts disappeared.



Bases before and during the work © Cnrs-Cfeetk/C. Bourse.

On the north base, alterations were so significant that some parts risked to go lost gone. We drilled two fiberglass dowels in order to hold up the fragile parts. A final cleaning was carried out with demineralized water and paper.

The mortars are composed of stone and a white powdery element. In order to identify this white element, we did an acidic test. As there was no reaction, we therefore concluded that it was plaster and not lime. To consolidate the stone we used a 5% Paraloid B72 solution diluted in acetone-ethanol (1.1) and for the plaster we used Amox, a 5% ammonium oxalate solution diluted in water. There was a lot of dust under the south base, so we removed it and replaced it with whitewash (lime, sand and little pebbles).

As regards the foundations, the powdery sandstones were removed and replaced by a mix of lime, sand (1.3) and stone masonry.

The statue of Ptah inside the temple

The ancient fillings were removed. PLM-M temporary flashings were applied under the granite scales. Then they were fixed with some injections of a 15% Paraloid B72 solution diluted in acetone-ethanol (1.1). Some new fillings were made with lime, sand and mineral pigments (1.3).

⁵ From September 15th 2013 onward. With Abdou Mahmoud Quoraïem, Mohammed Zaki Masoud, Waffaa Abo El Hamed, Nagwa Abd El-Ghafour, Achraaf Mostafa Ali, Abdelnasser Mahmoud, Mahmoud Said Ahmed, Adel Mohamad Radouan, Ghaad Nubi Hussein and Ahmed Hassan Fuli.



Statue of Ptah: In black, many scales which were fixed with some Paraloid injections © Cnrs-Cfeetk/C. Bourse.

Gate C'

Stone/lime masonry was made in order that the silicated block was put back in place. Once the stone was placed back in its location, a protective layer of a 5% Paraloid B72 solution diluted in acetone was applied. To set up the masonry we created a grid and pierced 15 holes. We filled the holes with fiberglass rods and added Araldite AY 103 and its hardener HV 930 to make them more resistant. Then the stone/lime masonry was put back in place. A top layer composed of sand, lime (3:1) and mineral pigments finished the work.



Gate C' during the work and when finished © Cnrs-Cfeetk/C. Bourse.

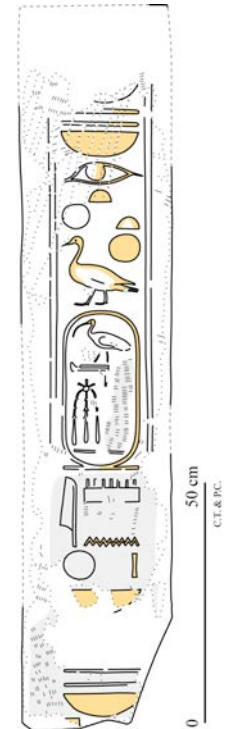
Tuthmosis III' doorjamb

Discovered during excavations, this doorjamb was in a very bad condition and a restoration was necessary. All the 27 little fragments were consolidated with a 5% Paraloid B72 solution diluted in acetone-ethanol (1.1). Then they were replaced and glued together with some Araldite 2015. In order to hold them up with the rest of the doorjamb, we pierced and injected fiberglass with Egyptian Araldite, Kemapox.

The powdery surface was consolidated with a 2.5% Paraloid B72 solution diluted in acetone-ethanol (1.1). Finally a mortar (stone/sands/lime (3:1)) and a topcoat (sand/ lime/ mineral pigment (3:1)) completed the shape of the doorjamb.



Before and after the treatment © Cnrs-Cfeetk.



Ptah, n° 2518

Abacus of Shabako

In order to facilitate the circulation of silicate in the stone, the top surface was separated and reversed. We cleaned it from all the stone powder and pierced it with 15 holes on each part. To protect the surface, a 5% Paraloid B72 solution diluted in acetone-ethanol (1.1) was applied as a protection layer. The silicate was then diluted with white spirit (50/50) and applied for three hours until exuded. The two parts were wrapped for three weeks.



Before the work and during the silicate treatment © Cnrs-Cfeetk/C. Bourse.



After three more weeks, the treated surface was put back on the base. The protection layer was removed using *hiba* and acetone. A mortar of sand and lime (3.1) was prepared in order to fix the cracks on each side and filled them with whitewash. Two fiberglass with liquid Egyptian Araldite,

Kemapox, were put in order to hold the structure together. To conclude, a topcoat (sand/lime (3.1)/mineral pigment) was spread all over the surface.

*Tuthmosis IV's colossus*⁶

This limestone colossus presented significant cement conservations, made by G. Legrain around 1900. There are two kinds of structural alterations:

- The first ones are stone alterations with missing parts like the head, the left hand and part of the feet. There are also many cracks which cause some peeling and fragmentation. Further more, the statue pedestal is almost nonexistent and the stone barely touches the ground.
- The others damages were caused by cement mortars: the cement masonry used by G. Legrain to stick the colossus to the west wall of the Ptah temple is powdery.



The grey masonry that was built to support the dorsal pillar and to fill up the gap between the colossus and the back wall was full of cracks. This had a structural impact.

There are two kinds of surface alterations:

- The first ones concerns the stone which presents some salt efflorescence, especially visible on the feet of the sculpture; many brown cement splashes are also visible.
- The others affected the ancient mortars which inflated, and therefore were no longer stuck to the limestone. Whenever they are in fine layer, it's powdering.

Moreover G. Legrain's masonry replaced some missing parts like the left hand. Today, the conservation moves toward minimal interventions: the elements are not restored unless we are sure of their historical forms and only to propose a better understanding of the object.

Our priority was to balance the colossus weight between its base and its backing against the wall. Therefore it was necessary to rebuild a pedestal.

As said before, the pedestal was no longer existent. The broken stone under the statue was removed by the team of Antoine Garric. Then a new limestone was slid under and put in place. Whitewash was injected in order to fill in the space between the limestone and the pedestal.

⁶ Work made by Camille Bourse (MAEDI-Cfeetk), Abdel Nasser Mahmoud, Mahmoud Ahmed, Achraaf Mostafa Ali, Adel Radouan, Abdou Mahmoud, Mohamed Zaki, Hashem Abd el Hami, Gamal Sallem et Ramadan (MAE-Cfeek).



The new pedestal of the colossus © Cnrs-Cfeetk/C. Bourse.

A first surface cleaning revealed that the mortar was boundless and covered most of the stone surface. Under the cement mortar some ancient mortar, pink and mixed with some pebbles, was still preserved. This mortar was consolidated with a 5% Ammonium oxalate solution diluted in water. To maintain it PLM-M with pink and yellow pigments was used. The gap between the colossus's back and the wall was filled up with mortar of lime and sand joint (1.3) which was then injected with whitewash (of lime and sand 1.3).

Once the cement was removed, two fragments of the chest and three of the back pillar were dismantled.

The back pillar was reassembled separately. The three parts were stuck with Araldite 2015. Then, three fiberglass dowels were used in order to hold the pieces together. The fiberglasses were stuck with fluid Araldite AY 103 and its hardener HY 956.



Parts of the chest after dismantlement © Cnrs-Cfeetk/C. Bourse.

Four step procedure was applied to put back the dorsal pillar: we first drilled three holes in the back of the pillar. We then drilled three others in the wall so that we could fix fiberglasses. They were stuck with fluid Araldite AY 103 and its hardener HY 956. Once the fiberglasses were fixed, we put Araldite 2015 on them and filled the holes of the dorsal pillar with fluid Araldite AY 103. Finally, the open space between the pillar and the wall was closed with lime-sand (1.3) injected with a lime-sand whitewash (1.3).

To reassemble the two parts of the chest, we had to build a temporary lime-sand and bricks moulding to fill up the space between the chest and the rest of the colossus. Once this moulding was hard, we stuck the first fragment with Araldite 2015 and then we drilled two fiberglasses to which fluid Araldite AY 103 and its hardener HY 956 was added.

The second element was then stuck without any difficulty because the contact surface was large enough. A last fiberglass secured the two chest fragments to the rest of the colossus. Finally, a stone lime-sand (1.3) masonry was built in order to fix it to the wall.

The pedestal was much altered. The stone was under its original level. Many fragmentations, limestone chips and uprisings, were visible. These were removed and then placed back with Araldite

2015. The salt was removed with scalpels. For the large fragments that were about to fall, three fiberglasses were drilled with Araldite AY 103 and its hardener HY 956 to maintain all the scales together. A final coloured mortar was then applied.



The lower part of the statue and the pedestal before and during treatment
© Cnrs-Cfeetk/C. Bourse.

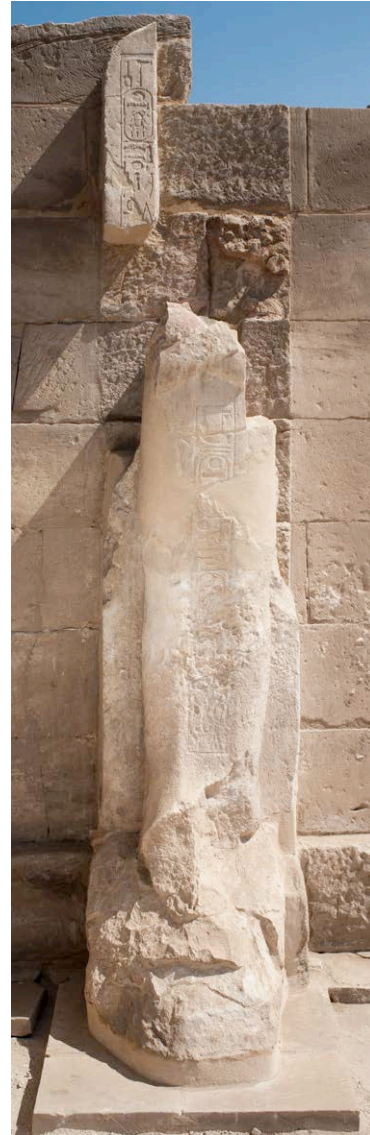
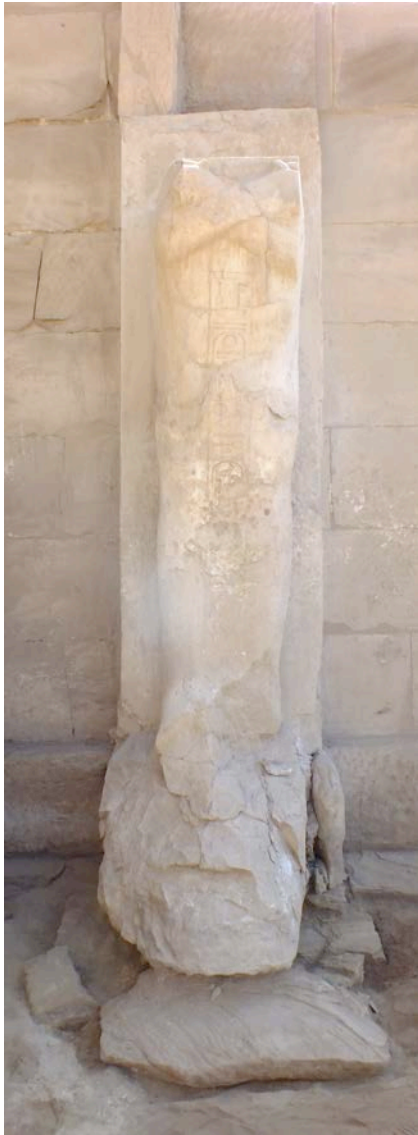


The stone and the ancient mortar had some uprisings deep cracks forming empty spaces inside. For the stone we used PLM-M flashings to inject a 15% Paraloid B72 solution diluted in acetone, for the mortar an Acril 33 solution diluted in water. At the end, the flashings were removed.

Lime water was used three or four times to consolidate the limestone. For the thin and powder mortar layer, we verified that the lime water was not sufficient, so we used a 5% Ammonium oxalate solution diluted in water.

For the right hand of the colossus, the red colour traces were cleaned with a toothbrush and consolidated with a 3% Klucel solution.

The rest of the cleaning was made with toothbrushes and burins to eliminate cement stains. Only on the stone without polychrome, demineralized water with absorbent papers was applied to remove dust.



The colossus of Tuthmosi IV, before and after restoration © Cnrs-Cfeetk/C. Bourse, Ph. Soubias.

The stela of Horemheb⁷

This limestone stela is located on the west wall of the north courtyard, at the entrance of the Ptolemaic kiosk. The last known conservation campaign was carried out by G. Legrain around 1900.

The stela presented four kinds of structural alterations: some missing parts, four cracks and some flakes on its surface as well as a significant fragmentation of the limestone which only appeared when the stela was removed from the wall. It then fragmented into more or less large pieces throughout its thickness.

There were three kinds of surface alterations: salts efflorescence on the cracks, stone powdering on the top and sides and different colouration on the surface.

Because of the fragmentation after the dismantlement, the priority was to give back a long lasting structural cohesion to the stela by reassembling the different pieces at best. The second goal of the conservation treatment was aesthetic in order to make the reliefs readable and highlight the stela.

⁷ Work made by Camille Bourse (VI MAEDI-Cfeetk), Abdel Nasser Mahmoud, Mahmoud Ahmed, Achraaf Mostafa Ali, Abdou Mahmoud (MAE-Cfeetk) and Antoine Garric's team.

The work of dismantlement was carried out by Antoine Garric's team. Before the removal, some surface consolidations were made with a 15% Paraloid B72 solution diluted in acetone-ethanol (1.1). As the stela was completely embedded in and supported by a mud brick wall, it is only after dismantling it that major fragmentation of the limestone appeared. This fragmentation can be explained by the fact that the mud brick wall provided a constant supply of salts by capillary rise. The stela was put upon a cement base which locked the salts in the limestone. Furthermore, during the removal the lower part of the hieroglyphic inscription of the stela was found impressed in its old cement base.



During the dismantlement, the pieces were classified and numbered in order to facilitate reassemblage. Small fragments were first glued together to obtain larger volumes. During the reassemblage, the salts were removed with scalpels. Surface cleaning tests were also made: first mechanically with toothbrushes, scalpels and abrasive fiberglass rods. These proved too abrasive on the oxydation layer of the stone, therefore chemical cleaning was tested: first with demineralized water, then with enzymes. The difference between the two was not significant, as the enzymes left a slight patina. Therefore, the most effective treatment was to begin with a mechanical cleaning with toothbrushes and then continue with demineralized water.



Fragments of the upper part of the stela, before and during cleaning work © Cnrs-Cfeetk/C. Bourse.

As previously reported, the lower part of the stela was inserted into and obliterated by a cement pedestal which was removed in order to reveal the original stone. It turned out that the lower part of the stela was inscribed. So it appeared to recreate a pedestal and complete the missing parts. A foundation slab was made to limit any capillary rise and salts infiltration.

Drillings were made and metal studs were glued with Araldite 2015 to create a binding grid for the masonry. In order to avoid corrosion of the metal, the internal part and the metal studs were coated of 15 cm deep in the stone with a protective layer of a 5% Paraloid solution diluted in acetone-ethanol (1.1). Then, the metal studs were welded together. To bear the weight of the stone, the masonry was composed with one part of cement, one part of hydraulic lime and three parts of sand. Pieces of bricks baked, at a low temperature to prevent salinity, were added to set up the masonry and optimize the hydraulic capacity of the lime. A first coating composed of lime and sand (1.3) was applied to smooth and level the surface.

The stela was then raised with a winch. To maintain the different parts together, two fiberglass studs with the addition of Araldite AY 103- HY 956 were used on the top, and on the right side a fiberglass stud was inserted and stuck with Araldite AY103- HY956.

Then, the top of the stela was reassembled. This fragment was then repositioned, first dry and then glued with Araldite 2015.

To secure the whole stela, two fiberglass rods were drilled through the entire stone and glued with liquid Araldite AY 103-HY 956.



Fragments glued all together, and reassembling of the upper part of the stela © Cnrs-Cfeetk/C. Bourse.

As said previously, some significant fragments were missing at the back of the stela. To fill the gaps in the stela we put temporary PLM-M flashings and injected liquid Araldite AY 103-HY 956 mixed with sand. This procedure prevents limestone chips to come off and the stela to disintegrate. Once this phase was completed and a homogeneous first layer created, the stela was laid down in order to replace the last fragments on the back side. They were glued with Araldite 2015 and then

injected with Kemapox, the Egyptian liquid Araldite. As before, we used PLM-M flashings and as the fractures were large, the epoxy was mixed with sand.



Treatments at the back of the stela © Cnrs-Cfeetk/C. Bourse.

Then, the PLM-M flashings were removed and final coatings made of lime and sand (1.3) were applied to consolidate the splits. The stela was finally set up.

On the front side, we found that some of the reattached fragments still rang hollow. So consolidations with 15% Paraloid B72 solution diluted in acetone were made. This worked out well for the small flakes. For the larger pieces, in addition, some liquid Araldite AY 103-HY 956 was used.

The stela was cleaned according to the protocol stated in the tests: mechanical cleaning with a toothbrush and then chemical cleaning with distilled water and cotton sticks. Some powdery parts on the front of the stela were consolidated with lime water. For the upper back part, a 5% solution of Ammonium oxalate diluted in water was preferred. Pieces found in the old cement pedestal were cleaned with scalpels and chisels. To finish, a coloured topcoat was applied, composed of 20g of brown pigments and 40g of yellow pigments in 5 litres of lime. Then 1 part of this mixture was added with 2 parts of sand.



Stela before and after treatment © Cnrs-Cfeetk.

New window grille (claustra)

In order to show visitors the architectural changes in the courtyard of the temple which received ceiling slabs and windows (*claustra*) during the Ptolemaic period, a part of the north-east corner of the court was rebuilt and a wooden *claustra* was installed, indicating how this part of the building looked like in the Ptolemaic period.



Wooden window grille at the top of the northern wall of the courtyard © Cnrs-Cfeetk/Chr. Thiers.

1.3. CULT AND PLACES OF WORSHIP

1.3.1. The Monuments of Amenhotep I (L. Gabolde, J.-Fr. Carlotti)⁸

The mission from February 19 to March 17 2014 had various objectives:

1. Definitely fix the layout of the blocks belonging to the slaughter-houses;
2. Check the validity of the hypothesis as to their original location;
3. Check the layout of the northern and southern niches;
4. Check the layout of the monuments in the central part of the temple which co-existed or succeeded those of Amenhotep I against their remains: the Hatshepsut suite, the VIth pylon, the northern and southern peristyle, etc.
5. Attempt to determine the layout of the Amun's temple before Amenhotep I undertook his building campaigns.

Tasks accomplished

- Checking of the dimensions of the slaughter-houses' blocks supported the initial hypothesis. The restitution of the slaughter-houses in the north-western and south-western corners of Amenhotep I's buildings was thus confirmed. Following this reconstruction, the two façades of the slaughter-houses facing the courtyard showed, on the eastern side of the northern slaughter-house, great offering scenes, including estates in Middle and Upper Egypt, with gratification to deceased kings and to their reigning consorts (with endowment for Ahmes-Nefertary); on the eastern side of the southern slaughter-house, a great offering scene portraying the standing king offering to Amun. The western half of the slaughter-houses was decorated with great offerings' calendars.

- J.-Fr. Carlotti accomplished the survey of the upper surfaces of all the niches blocks (87 drawings). This survey will insure the architectural placement of each stone and will reduce the uncertainties as to the layout of the niches which remained unsolved by the decorations and texts assemblages.

- L. Gabolde has studied the rituals represented on the rear walls of the niches with the hope to define more precisely their succession, through parallels from other temples (Medinet Habu, the Red Chapel, southern magazine of Tuthmosis III), and with the help of studies like that of N. Tacke, *Das Opferritual des ägyptischen Neuen Reiches*, OLA 222, Leuven, 2013.

- The plans of the different phases of the temple evolution, from what preceded Amenhotep I to what succeeded him, were refined.

- Few modifications have been made to the manuscript of volume I concerning the monuments of Amenhotep I at Karnak, devoted to the calcite bark shrine in the names of Amenhotep I and of Tuthmosis I.

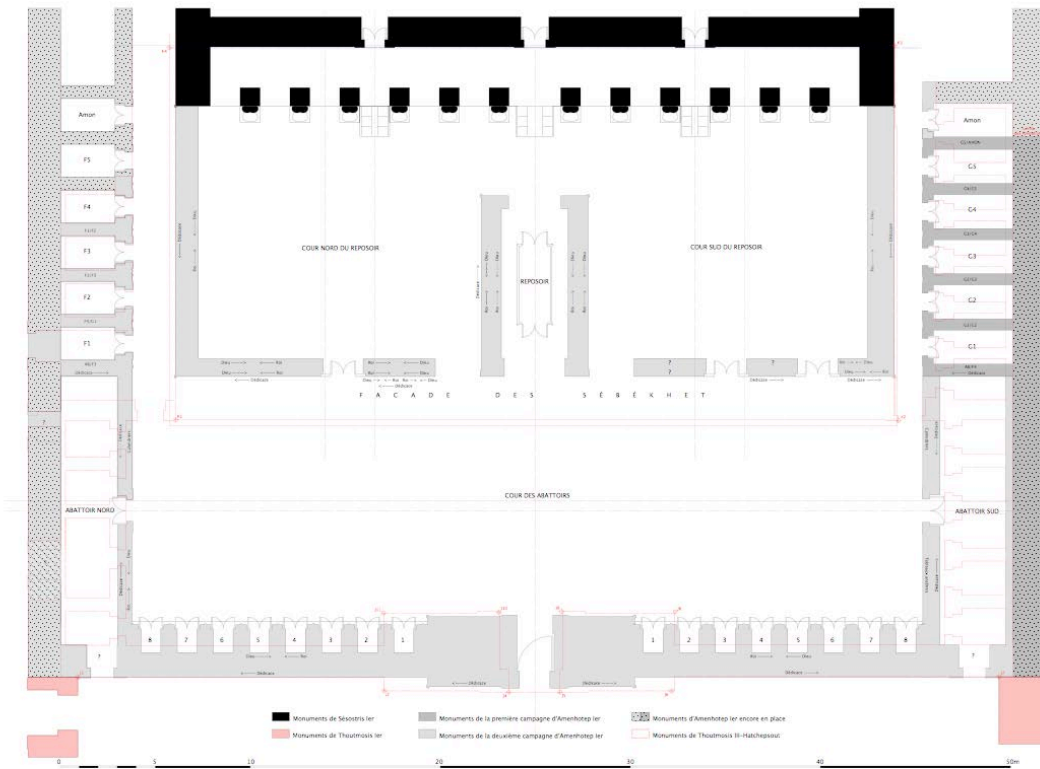
Progress of the program

80% of the program was fulfilled. The epigraphical plates are in progress: vectorized drawings are underway. The second volume of the *Monuments of Amenhotep I at Karnak*, which will be devoted to the architectural study of the buildings, will be delivered for edition at the end of 2015. The first

⁸ CNRS UMR 5140-univ. Montpellier 3 and UMR 8164-univ. Lille 3. M. Amin Ammar, Director of the Temples of Karnak has welcomed us in the name of the Ministry of State for Antiquities and favoured our work on the spot with a very kind attention for which we are very grateful. M. Ibrahim Suleiman, General Director of Upper Egypt Antiquities, kindly fulfilled our requests for documentation visits in the theban area. The CFEETK, represented by the director of the USR 3172 of the CNRS Christophe Thiers and of its administrator, Veronique Puelle, provided us with an efficient logistical help, and its documentalist, Sébastien Biston-Moulin, opened to us the ressources of the library and of the archive.

volume, dealing with the calcite chapel, has been submitted – and accepted – to the IFAO and is presently the subject of funding quest.

When the assemblage schemes shall be delivered, in 2015, rebuilding of the monument will possibly be planned. However, taking into account the state of the blocks, hewn out of a variety of local limestones full of micro-cracks, we highly recommend rebuilding it on the original location spot, of the monuments, at Karnak.

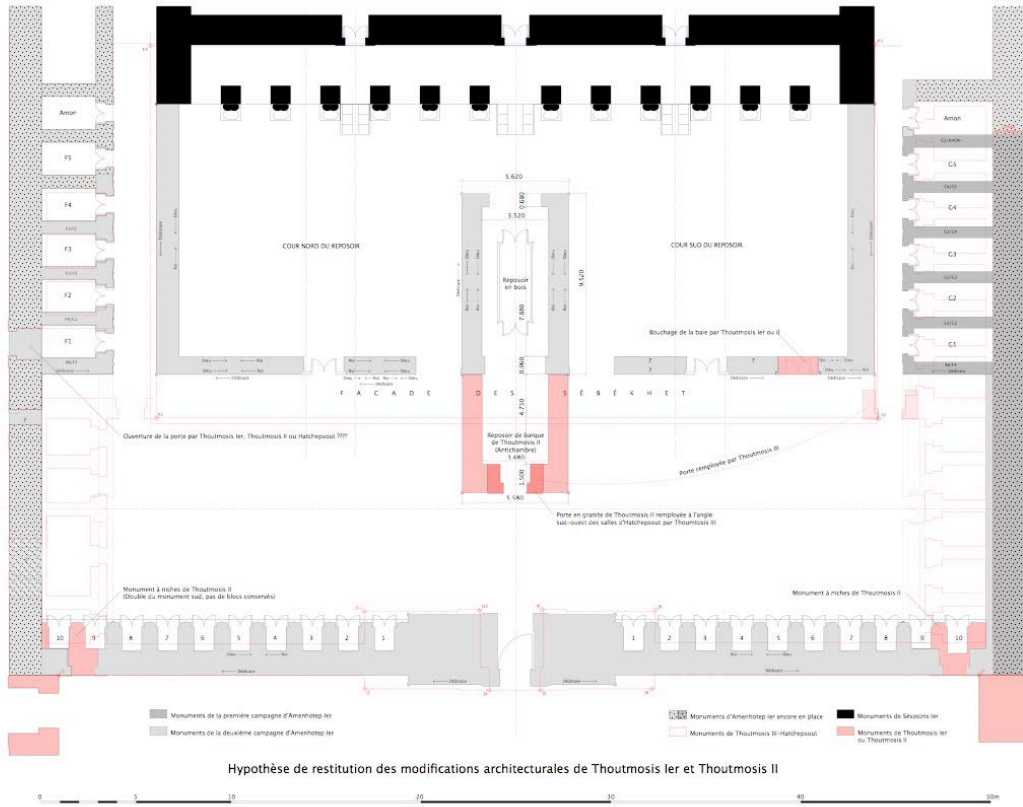


Plan, hypothetical restitution of the monuments of Amenhotep I at Karnak.

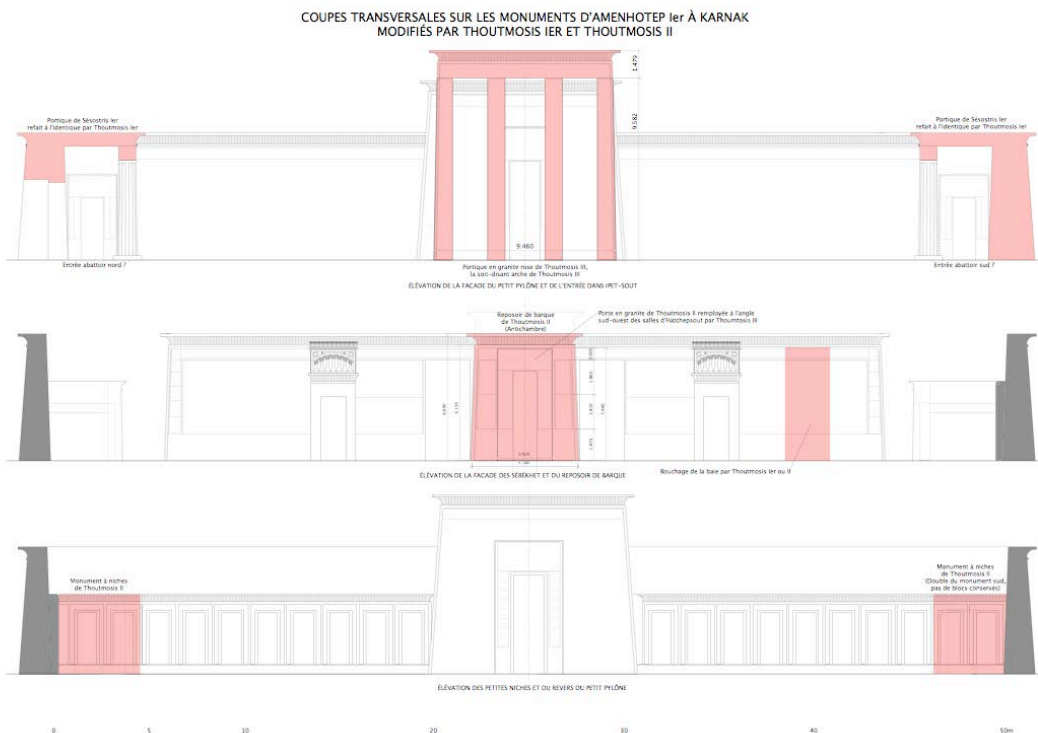
COUPES TRANSVERSALES SUR LES MONUMENTS D'AMENHOTEP Ier À KARNAK

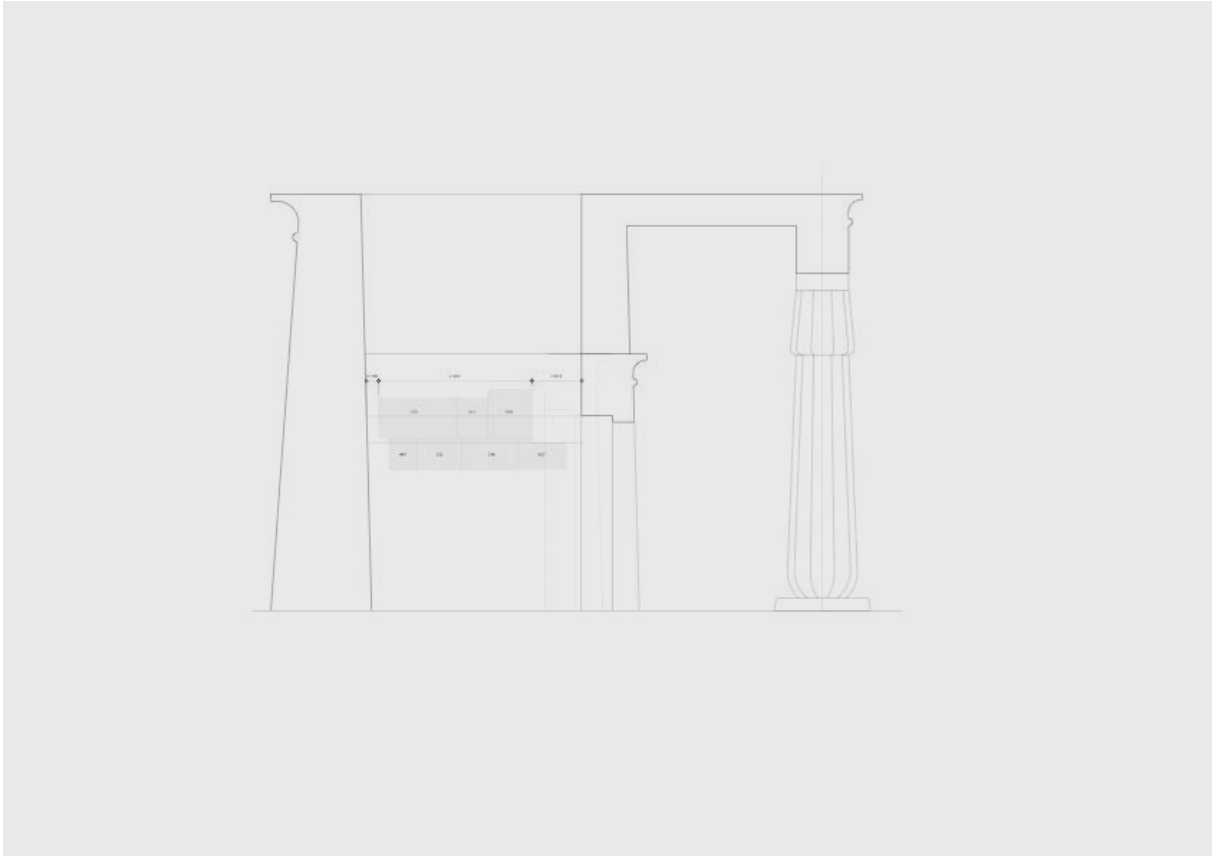


Sections, hypothetical restitution of the monuments of Amenhotep I at Karnak.

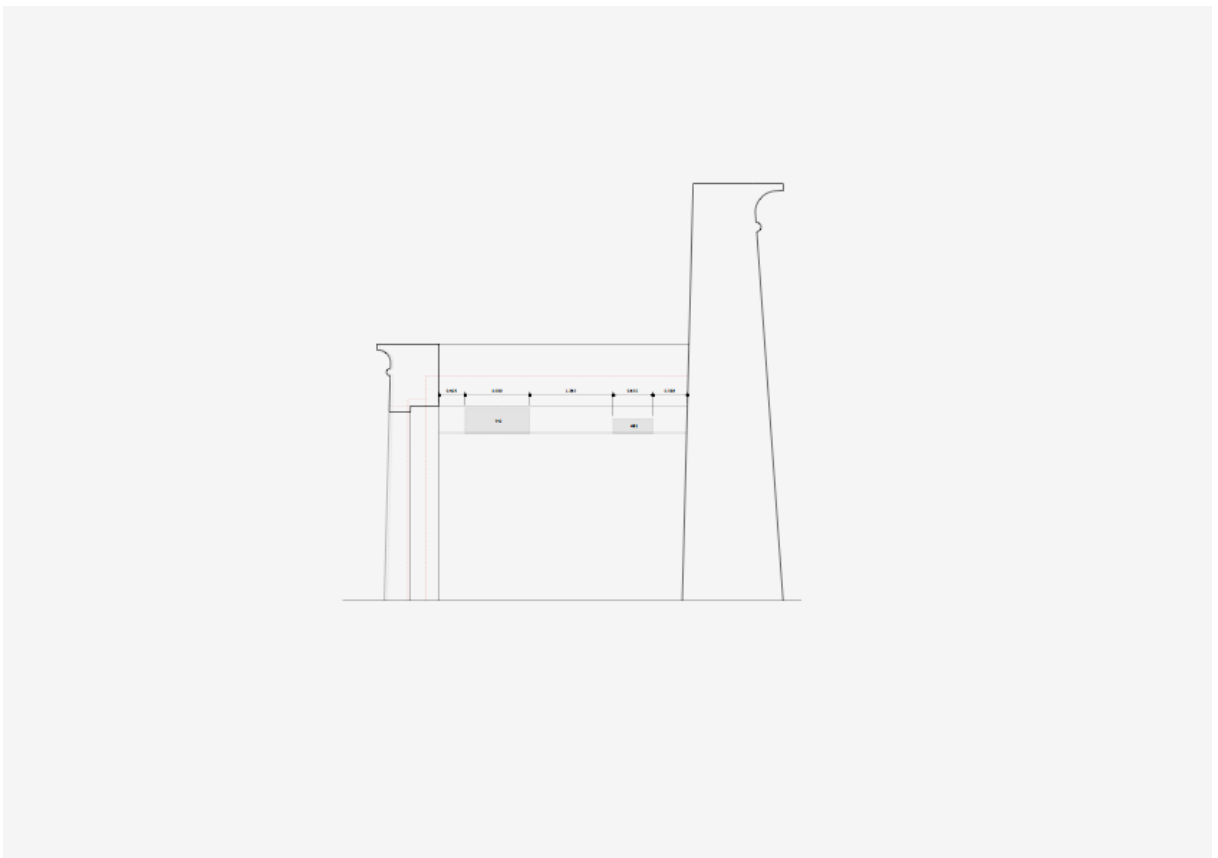


Plan, hypothetical restitution of the temple under the reign of Tuthmosis II.





Transversal section, looking eastward, on the northern slaughter-house.



Transversal section, looking eastward, on the southern slaughter-house.

1.3.2. The Osirian sanctuaries (L. Coulon, C. Giorgi)⁹

The thirteenth campaign of excavation and restoration of the chapels of Osiris to the north of the Great Hypostyle Hall was undertaken with the support of the CFEETK, the French Institute in Cairo (IFAO), INRAP, HiSoMA (Maison de l'Orient et de la Méditerranée, Lyon), Orient & Méditerranée - Mondes pharaoniques (Paris-Sorbonne), between 1 February and the 17 March 2014.

Excavations in the Chapel of Osiris Wennefer Neb Djefau and its surroundings

Several soundings were undertaken inside or next to the chapel of Osiris Wennefer Neb Djefau in order to pursue the systematic analysis of the chapel. Additional topographic data were recorded in order to model the architectural stone elements and reconstruct the reliefs. These models were based on architectural remains in situ, but also on elements found during the excavations (lintels, doorjambs...). Besides this work on stone architecture, our work focused this season on the already well-advanced systematic documentation of the components of brick architecture in the chapel, its precinct walls, its partition walls and its foundations.

Three new sectors were excavated this year, which allowed to refine the data collected during the previous seasons. Inside the building, to the north-east of the naos, it was possible to determine more precisely the extension of the Third Intermediate Period pavement discovered last season, which may belong to an earlier temple. At the entrance of the chapel of Osiris Wennefer Neb Djefau, the ramp was excavated and carefully studied, in order to define its successive building phases and to record all its architectural components.

To the south-east of the chapel, additional excavations of the Ptolemaic levels were undertaken in order to better understand the structure of the buildings along the alley of the Ptah temple.

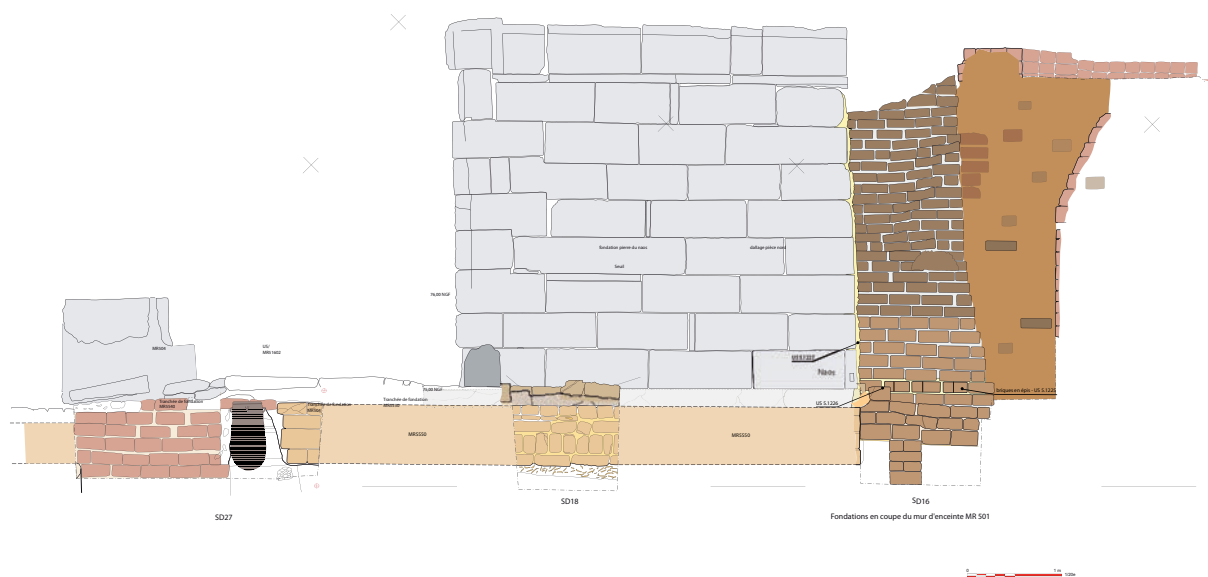
Foundations and brick architecture of the chapel

During the previous seasons, several soundings allowed to get precise information on the three main mud brick foundation platforms on which the columns of the hypostyle hall and the naos are settled. This year, additional soundings led to a better understanding of the foundation system of the second door and the walls surrounding the chapel. Although apparently similar to each other, their structure differ in the size of the bricks and the mortar used: large bricks joined with sand are used in foundation platforms, small bricks joined with *mouna* are used in the other types of wall foundations.

Several longitudinal trench-cuts were made during these soundings through the chapel, which allow to obtain a comprehensive view of the structural elements of the building and the earlier phases.

⁹ The members of the team were Laurent Coulon (egyptologist, Cnrs, UMR 5189, director of the mission), Cyril Giorgi (archaeologist, INRAP, co-director of the mission), Catherine Defernez (ceramologist, Cnrs, UMR 8167), Frédéric Payraudeau (egyptologist, univ. Paris-IV, UMR 8167), Stéphanie Boulet (ceramologist, Research Fellow Fnrs - CREA-Patrimoine - ULB), Juliette Laroye (artist and ceramologist), Laurent Vallières (topographer, Inrap), Anna Guillou (archaeologist, artist), Alexandre Rabot (archaeologist, univ. Lyon 2/HiSoMA), Thomas Faucher (numismatist, archeologist, Cnrs, UMR 5060-IRAMAT), Aleksandra Hallmann (PHD candidate, egyptologist, univ. Varsovie / Oriental Institute, Chicago), Hassan el-Amir (conservator, Ifao), Sylvie Marchand (ceramologist, Ifao), Khaled Zaza (artist, Ifao), Adeline Bats (PhD candidate, egyptologist, univ. Paris IV, UMR 8167). The objects were photographed by Jessie Maucor (USR 3172/Cfeetk) and her team.

Mrs. Abeer Sayed Mohamed, Mr. Oussama Mohamed Mustapha and Mr. Abu al-Hassan Ahmed Ibrahim were representing the Supreme Council of Antiquities under the direction of Mr. Amin Amar, director of the temple of Karnak.



Deuxième porte montant nord MR 504 et angle NE MR 550
 Fondation en brique du naos et dallage plice nord
 Section drawing (east-west) of the Chapel of Osiris Wennefer Neb djefau from the second gate until the precinct wall © A. Guillou, L. Vallières, C. Giorgi / Mission Sanctuaires osiriens de Karnak.

During these operations, additional ceramic material was recovered, which can be ascribed to the building phase of the chapel (XXVIth dynasty). Many objects were also found, which were probably part of the temple furniture (statue fragments, collar, figurines, etc.).

The earlier levels

This season, as an extension of the previously excavated sectors where Third Intermediate Period cooking areas had been identified, other sectors were excavated to complete the documentation concerning these levels. Although the presence of later walls prevented extensive excavation, an area of about 200 square meters could be identified in the northern part of the chapel. The wealth of these levels led us to extend some areas already studied, in order to collect enough ceramic material to establish a varied corpus, as only few samples were known from the chapel, but also from the Karnak temple and, by extension, from the whole Theban area. The material was exclusively found in cooking areas or domestic occupation levels. It could be dated to the end of the XXIst dynasty and XXIInd dynasty (end of Xth-IXth ce nt. BC). The study of St. Boulet, under the supervision of C. Defernez, showed that this material and some ceramic assemblages from North-Karnak, Mut temple and Merenptah's funerary temple share many similarities. Parallels can be also found in Elephantina and Memphis. From a general point of view, this material fits into the continuity of Ramesside ceramic production.



The Third Intermediate Period levels - XXIst-XXIInd dynasty © C. Giorgi / Mission Sanctuaires osiriens de Karnak.

Moreover, the work was also focused on the north-western corner of the chapel, where a pavement made of large sandstone and limestone slabs had been discovered last season, on which a part of the precinct wall surrounding the naos was set up. This pavement, well preserved in its northern part, doesn't extend further north but to the west, under the precinct wall of the chapel. For security reasons, we could not excavate the whole surface of this pavement, but only an area between 8 to 10 square meters was cleared. Last year, a finely decorated pottery, a stone cobra head, a small arrow tip and several gold leaves had been found on the limestone slabs surface. This year, the southern part of the pavement was cleaned. It appeared that many fragments are missing in this area. A polished spearhead and a copper alloy figurine of Khonsu were found, the latter having been buried as a deposit during the construction of the pavement. Ceramic material is dated from the transitional phase between the end of XXVth dynasty and the beginning of XXVIth dynasty, but the presence of many earlier pieces suggests that an higher date should be taken into account.



The pavement of an earlier building © C. Giorgi / Mission Sanctuaires osiriens de Karnak.

The ramp and the levels posterior to the XXVIth dynasty

Several soundings were needed to achieve the excavation and the analysis of the ramp leading up to the chapel. Its width is 3,20 m and its length 7,5 m, with a slope of 6-7°. Its structure is composed of two different parts, clearly distinguished by the layout and the quality of their components, which implies two building phases.

The upper part, giving access to the first gate of the chapel, is composed of large sandstone slabs, each side being made of squared sandstone blocks, which maintain the whole structure. The pavement, several parts of which are quite well preserved, had probably been coated with lime. The core of the ramp structure is made of irregular layers mud brick of alternated with silt and sand layers. At some places, pits filled with pottery and other occupation levels prior to the construction are visible under these layers. The ceramic material found was dated to the XXVIth dynasty.

The lower part of the ramp leading to the alley of Ptah is made of irregular sandstone blocks, relatively well disposed to extend in the two directions of the alley. Many reused blocks, made of granit, limestone and various materials (fragments of obelisks, statues, reliefs and column...) were found in it. This secondary extension of the ramp, less carefully built than the first one, is settled on a levelling layer, which can be dated to the end of the Late Period and the beginning of the Ptolemaic Period.

As many reused blocks, including some inscribed fragments, were found in the ramp, a complete inventory of its stone elements was made by A. Rabot. Moreover, the two soundings made inside the ramp and the removal of several stone fragments in the lower part of the ramp led to the discovery of a Ptolemaic circular structure. The main pit is flanked by a dozen of baked brick plaques and the second pit, at the centre of the first one, is lined by fired bricks forming a spiral. This structure is settled on a pit filled with topsoil. As similar structures found next to processional ways have been interpreted as tubs for trees, the same interpretation may be applied to this one.



Ptolemaic circular structure for a tree © C. Giorgi / Mission Sanctuaires osiriens de Karnak.

The Ptolemaic and later levels

Beside the Ptolemaic workshop area located between the alley of Ptah and the façade of the chapel of Osiris Wennefer Neb djefau, found in 2008 and excavated in 2013 and 2014, traces of later transformations are visible both inside and outside the chapel. Inside the building, several late occupation levels have been observed. It is difficult to clearly identify all of them and to understand how the sanctuary was reorganized at later times, but it is possible to single out some restorations and reoccupations of this building. Such transformations are visible on the mud brick walls surrounding the « service room », the partition walls of the chapel and the northern part of the pylon. The upper part of almost every wall still standing show a simpler bondage than in the lower part. At some places, the surface is filled with fired bricks and coated with a mortar made of limestone and pottery fragments or mouna. In some cases, inscribed blocks from the chapel itself were reused, as exemplified by two lintel fragments discovered this season. Moreover, several deposits, sometimes made of Ptolemaic coins, were found in connection with the walls rebuilt at later times (precinct wall, pylon and hypostyle hall).

Outside the chapel, the excavation of the monetary workshop area, started by Th. Faucher in 2013, was continued and allowed to collect a rich and complex set of data. Due to the very frequent transformations of the sector located next to the alley of Ptah in a short period, the sequence of the successive reoccupations cannot be easily reconstructed. At the surface of the western part of this sector, the remains of a monetary workshop had been clearly identified (ovens, slags, metal scalings, “chapelet de flan”, coins,...) ; the discovery of many additional elements (moulds, figurines, bronze fragments) has confirmed that the metallurgic production in this area would include the fabrication of small iron and copper alloy objects. The ceramic material found in this sector was studied by S. Marchand. It is mainly composed of domestic pottery of Greek and Pharaonic tradition, which is dated from the IIIrd and IInd cent. B.C.

In the lower levels, where an abundant ceramic, faunal and metallic material were found, a group of rooms was identified, which was connected with small living units and a working area including several vaulted storerooms.



The Ptolemaic workshops area to the east of the chapel of Osiris Wennefer Neb djefau © L. Coulon / Mission Sanctuaires osiriens de Karnak.

Conservation work

The conservation work on the XXVIth dynasty precinct wall was continued in its north-western and northern parts under the supervision of Hassan el-Amir. The pavement was also restored.



General view of the chapel of Osiris Wennefer Neb Djefaou at the end of the 2014 campaign © L. Coulon / Mission Sanctuaires osiriens de Karnak.

Epigraphic studies

The epigraphic survey and studies were led by L. Coulon, Fr. Payraudeau, A. Guillou and A. Hallmann. The epigraphic publication of the chapel of Osiris Wennefer Neb djefaou will be sent to the publisher at the beginning of 2015. The next volume, which contains the epigraphic publication of the chapel of Osiris Ptah Neb ankh is currently being prepared. Additional drawings were made this season in the chapel of Osiris Neb ânkh / pa wesheb iad.

A. Hallmann started this season a research programme on the iconography of the chapel of Osiris Neb djefau with special attention to representations of Ankhnesneferibre, Amasis, and the High Steward of the Divine Adoratrice Sheshonq (A). She has prepared a catalogue of figures which contains their description, detailed photos and hand drawings of particular elements of figures' silhouette, anatomy features, and items of clothing. At the same time, she has been checking the drawings of the chapel. In order to collect the widest possible comparative material, the preliminary survey of the iconography of other Osiris chapels was also carried out; some additional material was also provided by the CFEETK's photo database.

1.3.3. The bark-shrine of Philipp Arrhidaeus (Chr. Thiers, A. Tillier)¹⁰

Part of the season was devoted to checking the drawings of the scenes for the publication. The facsimiles of the exterior walls were checked, except for the western entrance.

Loose blocks were also recorded and will complete the final survey of the monument, and if possible, will be placed back into the building.

Next season will focus on the final checking of the western entrance and the two inner rooms.

During collation, some areas of the reliefs showed structural alterations with detached fragments of granite. Under the supervision of C. Bourse,¹¹ the raised areas have been filled with liquid Araldite AY 103 with its hardener HY 956 and sand. The application of these products required PLM-M flashings mixed with pigments.



Drawing of a scene from the southern outer wall of the bark-shrine of Philipp Arrhidaeus © Cnrs-Cfeetk/P. Calassou.

1.3.4. The central sanctuaries of the *Akh-menu* and the “northern storerooms” (Chr. Thiers, Chr. Leitz, S. Biston-Moulin)¹²

Epigraphic survey

The team at Karnak carries out the epigraphic survey on plastic film (scale 1:1), which is then vectorized on the computer and reduced to a scale of 1:10. The rooms of the “solar complex” and the “northern storerooms” (MN 1-7) are now fully completed in the field. The remains of colours on the walls of the “northern storerooms” were identified and included in the final drawings. Collating of the facsimiles is the next step before the completion of the programme and the final publication.

¹⁰ With Mamdouh Abdel Ghassoul (MAE-Cfeetk), P. Calassou (LabEx Archimede).

¹¹ With Waffaa Abo El Hamed, Nagwa Abd El-Ghafour (MAE-Cfeetk).

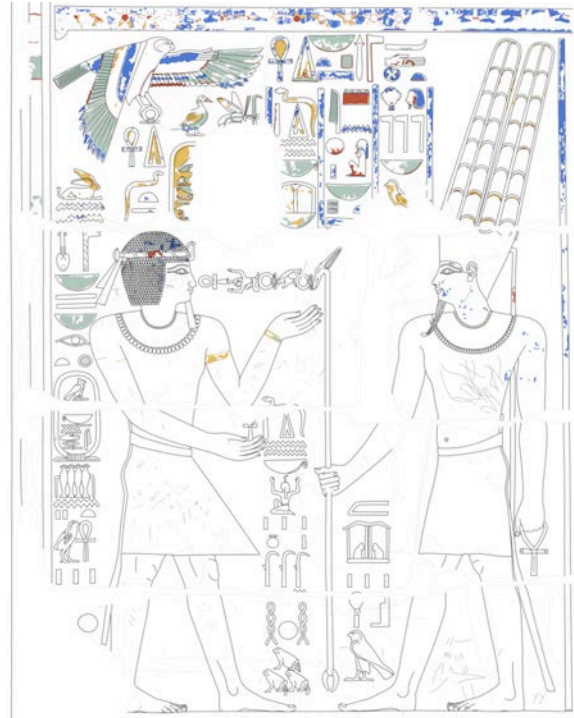
¹² With Mamdouh Abdel Ghassoul (MAE-Cfeetk), P. Calassou (LabEx Archimede), Vessela Atanasova, S. Cassor-Pfeiffer (Cnrs trainees), D. Mendel, A. Rickert (univ. Tübingen).

Hieroglyphic texts and first transliteration and translation were entered. All texts will be integrated into the *Karnak* project online.



Drawing of the southern wall of the fourth northern storeroom (MN 4) © Cnrs-Cfeetk/P. Calassou.

For the area of the central sanctuaries, J. Maucor (photographer, USR 3172) and K. Guadagnini (VI topographer, MAEDI) provided high resolution orthophotographs. Since the beginning of the scientific work in 2013, numerous high resolution photographs have been taken, processed and sent to Tübingen by the CFEETK as basis for the drawings. By means of these photographs, the drawings of rooms SX 1 and SX 2 have been completed. At the moment, the team works on the drawings of the reliefs of SX 4 as well as of the sanctuary itself (SX 5). Due to the richness of detail and the well preserved colours of the mural relief, the drawing process for the last-mentioned area requires a lot of time. During the 2013 field campaign, the first drawings were collated and overview photographs were taken. The general plan of the area, showing the different ground levels in the building, has been checked and completed by Daniela Mendel. She also created ground plans for the rooms SX 1 to SX 5 in which will be indicated the position of each scene in the planned publication. A second campaign will take place in november 2014 in order to continue collation work and to study the architectural context.



Drawing of the main sanctuary (SX 5), north wall, first register, first scene.

Conservation programme of the “northern storerooms” (C. Bourse)¹³

The conservation programme began with the 7th storeroom. The upper part of the walls is decorated in high relief. The paintings required a pre-consolidation to treat two kinds of alterations: flaking and powdery surfaces. For the flakes, injections were made with 20% Paraloid B72 in acetone-ethanol (1.1) and for the powdery surface we used 10% Klucel diluted in ethanol. The cement plaster in excess was removed with chisels and scalpels.

The affected stones were consolidated with some white spirit and ethyl silicate (1.1). Then they were covered for three weeks.



A cleaning and a pre-consolidation of the painting were made in order to silicate the sick stones
© Cnrs-Cfeetk/C. Bourse.

¹³ With Mahmoud Said Ahmed, Adel Mohamad Radouan, Ghaad Nubi Hussein, Ahmed Hassan Fuli (MAE-Cfeetk).

The sandstone in the foundation presented major alterations caused by salts which could not get out due to old cement masonry.



The new lime and stone masonry (right side).
Left: The old cement and brick masonry
© Cnrs-Cfeetk/C. Bourse.

For the upper blocks covered with inscriptions and drawings, we used silicate in white spirit (50/50). Holes were drilled in order to inject the silicate. Then the blocks were covered for three weeks. As for the lower part, we removed all the damaged stones and the old cement masonry and replaced it with a new one made of stone, lime and sand (1.3).

Storeroom 7 was then paved. Three blocks lying on the top of the southern room were previously recorded by the epigraphic survey, and their original location, on the eastern wall of storeroom 7, was confirmed. Only the lower part of this wall, in limestone, was still preserved. Thus, a new wall with cement-lime and sand (1.1.3) was built in order to put the three blocks back to the east side of the storeroom.



The loose blocks relocated to the east wall of the storeroom 7
© Cnrs-Cfeetk/Chr. Thiers.

The eastern part of each storeroom is divided into two spaces, with huge flooring slabs. In storeroom 7, most of this flooring is lost. A huge fragment of slab was lying on the ground, and its original location on the eastern part of the room was identified. Thus, this fragment was fixed, using liquid Araldite Kemapox and three fiberglasses.



Holes were made before the block was replacing in order to fix the fiberglasses © Cnrs-Cfeetk/C. Bourse.



On its left side, flooring slab was fixed with three fiberglasses, and a coffering was made to its right side © Cnrs-Cfeetk/C. Bourse.

To fill the empty space between the slab and the southern wall, a cement coffering was built.

Two blocks of the east doorjamb of the entrance door, which moved due to deep roots of camel thorns, were removed, cleaned, consolidated with liquid Araldite Kemapox and fiberglass, and put back to their original location.



The work is currently ongoing inside the other storerooms. Conservation of the lower parts of the walls and adding of a new flooring were realized in storerooms 6, 5 and 4.

1.4. Ceramic studies

1.4.1. Late Egyptian ceramic studies programme (R. David)

The CFEETK is hosting a post-doctoral fellowship since February 2013 within the frame of the programme « Investissement d'Avenir » (ANR-11-LABX-0032-01 Labex ARCHIMEDE, CNRS USR 3172-CFEETK, CNRS UMR 5140-univ. Montpellier 3) to develop research projects connected to Late Egyptian Ceramic studies. In accordance with LabEx Archimede's research topic "Identity", in which this project fits, research will focus on the process of acculturation and the survival phenomena of the Egyptian culture since the Greek and Roman dominations. The priority was given to the analyses of ceramics from Ptolemaic contexts recently unearthed within the precinct of the temple of Ptah, the treasure of Shabako (dir. N. Licitra) and the forecourt of the Amun-Re temple (dir. M. Boraik).

Field work

Much work has been done on ceramics coming from excavations of the area close to the temple of Ptah (see above).

In collaboration with Nadia Licitra, ceramics collected during the excavations of buildings settled on the remains of the treasure of Shabako, south of the temple of Ptah, was examined in September 2014. The documentation will integrate the volume previously mentioned.

The Roman material uncovered during the archaeological investigation of the chapel of Osiris of Koptos (dir. Fr. Leclère) was analyzed in October 2014 in collaboration with A. Simony. The results will be presented in a chapter of the final publication of this building still in preparation.

Finally, the ceramics mainly dated to the Byzantine period at Armant will be examined in November 2014.

Ethno-archaeological investigation on Egyptian wheel-made pottery

A joint research project between the CFEETK and the Ministry of Egyptian Antiquities aims at defining the distinctive criteria for the recognition of the different processes involving the potter's wheel in ceramic manufacturing. It was inaugurated in February 2014 with the visit to a pottery workshop at Ballas. The complete documentation will be in a report available on the CFEETK's website.

Diffusion of knowledge and training

A week of training in IT tools for the study and the publication of ceramics (Illustrator®) took place in January 2014. Ten Egyptian inspectors have followed theoretical and practical courses in order to perfect their knowledge of software commonly used in archaeology.

Furthermore, a trainee in ceramic studies was integrated in the CFEETK from February to April 2014. Z. Baharona (Phd student, Univ. Barcelona) improved her knowledge about the ceramic productions of the region by being involved in the study of the material from the temple of Ptah as well as its publication. Another student, J. Laroye (Univ. Libre of Brussels), will join the team for two months from 10 October 2014.

Scientific activities

The organization of an international workshop which will be hosted between 28-29 september at the CFEETK contributes to the scientific enhancement of the Centre. Devoted to the study of the Ptolemaic ceramics of the Theban region, the workshop will gather researchers from European universities in order to define a common system for referencing the existing different types of ceramics. Co-organized by Romain David (CFEETK) and Mohamed Naguib Reda (Ministry for Antiquities of Egypt), it illustrates the scientific partnership of French-Egyptian institutions. This event will lead to the publication as an edited book in the *Cahiers de la Céramique Égyptienne*.

Several papers were submitted and accepted in 2014, and will be published shortly:

- R. David, "La céramique des niveaux ptolémaïques du temple de Ptah à Karnak", in R. David (ed.), *Les céramiques thébaines en contexte hellénistique, Cahiers de la Céramique Égyptienne 11*, forthcoming.
- N. Licitra, R. David, "La céramique issue des niveaux ptolémaïques du Trésor de Chabaka à Karnak", in R. David (ed.), *Les céramiques thébaines en contexte hellénistique, Cahiers de la Céramique Égyptienne 11*, forthcoming.
- R. David, Z. Barahona Mendieta, St. Boulet, "Les productions oasiennes du temple de Ptah à Karnak", *Cahiers de la Céramique Égyptienne 10*, forthcoming.
- R. David, "Karnak au début de la période byzantine : caractérisation d'une production locale", in D. Dixneuf (ed.), *LCRW 5. Actes du Ve Congrès International sur la Céramique Commune, la Céramique Culinaire et les Amphores de l'Antiquité Tardive en Méditerranée. Archéologie et Archéométrie. Alexandrie, 6-10 avril 2014*, forthcoming.

Finally, an analysis of Byzantine ceramics from Karnak and Ermant was presented during an international conference: "Les céramiques byzantines de Karnak et d'Ermant", *LRCW 5, Fifth International Conference on Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry*, Alexandria (Egypt), 6-10 April 2014.

INTERNATIONAL WORKSHOP
28TH-29TH SEPTEMBER 2014



THEBAN CERAMICS
IN HELLENISTIC CONTEXT

FRENCH-EGYPTIAN CENTRE
FOR THE STUDY OF THE
TEMPLES OF KARNAK, LUXOR

Ce projet bénéficie du soutien du Labex ARCHIMEDE au titre du programme « Investissement d'Avenir » ANR-11-LABX-0032-01



1.4.2. Excavations in the Court of the Ninth Pylon (C. van Siclen)

Work in the court between the Eighth and Ninth Pylons began on 12 January and ended on 29 January 2014. A second mission began on 2 March and ended on 19 March 2014. This was a continuation of a study season in preparation for the publication of the excavations in the court. The work consisted of examining and recording as necessary pottery stored on the concrete slab to the north of the west tower of the Ninth Pylon. Most of the pottery drawn during this period came from the Seventeenth and early Eighteenth dynasties, from the Late Period and early Ptolemaic Period, and from the late Roman Period. Some record photography was done at the end of this period and copies will be forwarded when available. The study season may resume in November 2014.

1.5. The *Karnak* project (S. Biston-Moulin, Chr. Thiers)¹⁴

Initiated in January 2013, the *Karnak* project (CNRS, USR 3172 - CFEETK / UMR 5140, Équipe ENiM - Programme “Investissement d’Avenir” ANR-11-LABX-0032-01 Labex ARCHIMEDE) aims to organize and make available textual documentation from the temples of Karnak.

In 2014, the *Karnak* project reached 1.000 hieroglyphic inscriptions of the temple of Karnak accessible online. It is now possible to use a single system of citation for more than 2.200 documents using KIU + Document number or the permalink providing access to the full records (hieroglyphic text, photographs, facsimiles, bibliography, etc.). The *Karnak* project is already at this stage one of the largest freely accessible hieroglyphic databases on the internet.



Green: Online or partially online. **Orange:** Integrated to the project, validation in progress. **Purple:** Partially integrated to the project.

Slightly more than 5.000 hieroglyphic inscriptions are now integrated into the project. These

¹⁴ Collaborators of the project: LabEx Archimede, programme « Investissement d’avenir », ANR-11-LABX-0032-01: Dr. Anaïs Tillier, Dr. Cédric Larcher, Pauline Calassou; Cnrs missions: Dr. Ali Abdelhalim Ali, Dr. Mohamed Raafat Abbas, Silke Caßor-Pfeiffer, Gabriella Dembitz, Elena Panaite, Anne-Hélène Perrot, Ch. Salvador.

entrees are gradually released online after reviewing and approval by the project members. This step is relatively long for large monuments, therefore we decided to release the records of such monuments as soon as validated without waiting for the validation of the monument's records to be completed. Hundreds of scenes of the Red Chapel, the alabaster chapel of Tuthmosis IV, the Hypostyle hall and the temple of Opet are already available online. The Chapel of Philippe Arridaeus and the temple of Ptah, two monuments whose publication is forthcoming at the Ifao as part of the *TCFEETK* collection will be released online in the *Karnak* project even before the paper publication will appear, thus allowing direct access to this valuable documentation remained up to now largely unpublished.

Several modifications to the interface of the project were introduced (0.1.2 to 0.1.5) to correct some reported issues or activate new features. The next major evolution of the interface, which gives access to the indexes of the project, will be online soon.

650.000 visitors accessed the project online during the its first year of existence.

As part of the collaboration programme between Oxford University and the CNRS, the workshop "Giving Context to Texts: Space and Writing in Ancient Egypt and Nubia" was organized in 2013 by the Griffith Institute (Faculty of Oriental Studies) and USR 3172 CNRS-CFEETK. Funding enabled to gather at the Griffith Institute in Oxford on 6 and 7 January 2014.¹⁵ The opportunity was given for participants to present current work on different databases and exchange experiences on their development, their use and their possible inter-operability; the directors of the *Karnak* project (S. Biston-Moulin, Chr. Thiers), the *Karnak Cachette* (L. Coulon)¹⁶ and the Porter-Moss Online (V. Razanajao)¹⁷ were especially keen to discuss possible collaborations.

After this workshop, the obvious complementarity of the two projects for the knowledge, study and enhancement of the monuments of Karnak led to the idea of a first link between the two databases. Between 1903 and 1907 the excavations led by G. Legrain in the court of the seventh pylon of Karnak brought to light nearly 800 statues and statuettes, about 17,000 artefacts in bronze, and stelae. Most of them have joined the collections of the Egyptian Museum in Cairo but also other Egyptian and foreign museums, which led to the scattering of this extraordinary documentation. Launched in November 2009 under the leadership of Laurent Coulon (CNRS- HiSoMA), with the collaboration of Emmanuel Jambon, the *Karnak Cachette* database (IFAO-MEA) aims to propose an exhaustive inventory of monuments discovered by G. Legrain in the court of the seventh pylon of Karnak. For each one are given photographs, museum data, epigraphical and prosopographical data and a bibliography. Thus, since June 2014 access to the *Karnak Cachette* database is possible through the *Karnak* online project. Some documents kept in the archives of the CFEETK (old photographs, rubbings) complete the data from the *Karnak Cachette* database basis.

The ongoing work on the two projects could lead in the future to increase the interoperability, and thus making accessible all the data of the epigraphic documentation from the temples of Karnak.

In order to strengthen the French-Egyptian scientific cooperation at the CFEETK in Luxor, the USR 3172 of CNRS offers five scientific missions for the season 2014-2105, from one to two months. The aim of these missions is to integrate young Egyptian researchers in the scientific programmes of the CFEETK including them in the *Karnak* project team.

Work on the *Karnak* project also allows complete reorganization of the CFEETK's archives by

¹⁵ We are pleased to thank Elizabeth Frood and Vincent Razanajao for organizing the "workshop" and their welcome in Oxford.

¹⁶ <http://www.ifao.egnet.net/bases/cachette/>

¹⁷ <http://topbib.griffith.ox.ac.uk//index.html>

associating directly the archival material of the Centre to the project. This association allows instant documentation of the archival material with the full record of a monument, an object, a scene, etc.

The work on the *Karnak* project also allows identifying insufficiency in the photographic documentation kept in the archives of the CFEETK. A programme of photographic survey based on the inventory of the *Karnak* project was accordingly established with the photographic service of the CFEETK. The orthophotographic technique (AgiSoft PhotoScan software) also allows obtaining within a reasonable time the large number of photographs necessary for the progress of the project and to regularly add online new documents.

2. RECONSTRUCTION PROGRAMMES

2.1. The chapel of Tuthmosis III (A. Garric)

This work was the main activity of this season. The ceiling stone - broken into six fragments the largest of which weighs 51 tons - was completely reassembled. Each “small” fragment (with a mass of 6.7 t, 2 t, 6.9 t, 3.7 t and 4.9 t) was lifted by a crane and placed as close as possible to its final position on the principal fragment to be adjusted and sealed. 20mm diameter fiberglass dowels and injections of liquid epoxy resin provide a very strong permanent seals. The ceiling stone after full assemblage thus reaches a mass of 75.2 tons.

Prior to its lifting at the summit of the chapel, we had to move the stone to place it in front of the chapel, properly oriented and centred on its final position. Thus, the ceiling slab had to be turned 90° by means of a turntable and a cable pulling on a side face. It was then towed 5 m eastward and pushed 3 m south with metal rolls. All lifting operations (for the installation of the turntable and rolls) were conducted manually, the crane only allowed us to tow or push the block. The lift to the summit of the chapel is currently in progress. The CFEETK crane is not powerful enough to lift this weight. So this operation is performed using powerful hydraulic jacks manually operated from structural walls temporarily constructed below the stone. Those walls are elevated each time we lift it. The ceiling is currently at half its altitude. It will then have to be moved by metal rolls over the walls and adjusted to its final location.

The team also worked at the Temple of Ptah:

- Installation of the monolithic jamb and part of the limestone lintel of Senakhtenre Ahmose found during excavations in the area. They are exposed along the central axis of the temple.
- Installation of a wooden claustra copy in the courtyard of the Temple
- Consolidation of statue foundations by laying new stone slabs.
- Removal and refitting of a doorjamb and its foundation for an epigraphic face reading.

“Northern storeroom” of the Akhmenu:

- Installation of a new sandstone paving on rooms 7, 6 and 5.
- Removal and refitting of two blocks unsealed on a doorjamb of room 7.
- East wall of the room 7:
 - Consolidation of the limestone first course.
 - Construction with masonry of a missing course.
 - Installation to their original location of three epigraphic blocks.
 - Consolidation and replacing of a broken floor slab.

2.2. Cultural heritage and site management

One of the main aims of the CFEETK is to work on the conservation and restoration of the Karnak temples. The French-Egyptian teams of restorers and stonecutters are totally devoted to the preservation of the Egyptian cultural heritage and thus to restore temples, chapels, stones and archaeological finds.

The site management continued, including protection of archaeological areas already excavated by addition of new flooring, implementation of new signs for tourists at the entrance of the first pylon, and opening of areas previously closed to the public.

Throughout the year, special attention was paid to manual weeding of most sectors of the temple. Indeed, the growth of camel grass deteriorates mud brick structures and is now developing in some walls. However, the deep root system is not easy to eradicate pulling by hand. We thus have resumed to spray weedkiller in 2013-2014, with good results, especially in the northern area, in the central area (Middle Kingdom courtyard) and in the south axe.

In order to lit and protect the enclosure wall and the temple by night, old electric cables and lamps were replaced by new electric devices.



Updated general plans at the entrance of the Karnak temples © Cnrs-Cfeetk/Chr. Thiers.

In close relationship with the work on the VIIIth pylon, a complete clearance of the courtyard of the IXth pylon was initiated. All the blocks lying on the ground were moved using the crane: epigraphic, architectonic blocks, and fragments of statues were stored upon new mastabas built in this area with the collaboration of ARCE at the beginning of 2014.

Others mastabas were built on the northern area, east of the Open Air Museum, to store huge sandstone blocks.



Clearance and removing of blocks in the courtyard of the IXth pylon, and weedkiller spraying © Cnrs-Cfeetk/Chr. Thiers.



Building of new mastabas in the northern area © Cnrs-Cfeetk/Chr. Thiers.

Other mastabas were built in the northern area of Karnak, east of the Open Air Museum, to store hundred of blocks lying on the ground. Other mastabas will be built next season.

3. ARCHIVES AND SCIENTIFIC DOCUMENTATION

3.1. Archives and databases (S. Biston-Moulin)

Photographic archives' database of the CFEETK

Work on the photographic archives continued in 2014. The annual photographic documentation of the Centre was integrated into the archives, with more than 10.000 new documents added this year. Work on the *Karnak* project (*supra* 1.5) facilitates the reorganization of the CFEETK's archives connecting the *Karnak* project's scientific information directly to the photographic database "ArchéoGrid Karnak" – legacy of the documentary work done at the CFEETK since its foundation. The inventory work of the Karnak Temple inscriptions also allows to complete the archives through identification of the objects and scenes of the monuments for which the photographic documentation kept in the CFEETK's archives is insufficient. A programme of photographic campaign based on this inventory was therefore established with the CFEETK's photographic service.

In 2014, 10.000 photographs from the CFEETK photographic archives database were accessible online in connection with the scientific information regarding monuments, objects or inscriptions directly in the *Karnak* project database. Access to the photographs is provided by the CFEETK's website as a temporary solution since the "ArchéoGrid Karnak" database does not provide public access to the photographic material. A more permanent solution is being implemented with the help of HUMA NUM (the French Very Large Facility which aims to facilitate the digital turn in humanities and social sciences) and should be in place at the end of 2014.

Library of the CFEETK

The library of the CFEETK was enriched with about 100 new books this year. The library hosts inspectors and students at Master level from the University of Qena.

Website

The CFEETK's site welcomed more than 400,000 visitors this year and reached 1.4 million visitors since the site was launched in March 2009.

3.2. Photographical department (J. Maucor)

The photographic department continued in 2014 the survey of the walls of the *Akh-menu* to deliver orthophotographs. The work is almost complete, with good results. In particular, the Sanctuary of Alexander, recently restored, has been the subject of high resolution orthophotographs.

The team also monitored the ongoing excavations of the Temple of Karnak, in the field and in the studio for object photographs. All photographs of the walls of the Temple were made previously processed and delivered for publication.

In addition, the department supported the documentation service in the enrichment of the database. Stelas, walls and monuments, which hitherto had not been photographed survey, were regularly photographically surveyed.

The links between photography and topography were further developed during the year, especially for the survey north of the eighth pylon. Photogrammetric techniques, and the quality of materials used for shooting, have given excellent results.

Photographers were also involved to survey the graffiti of the Ptah Temple, and on the work of other missions (photographs of objects for the mission of Osiris Neb Djefau, dir. L. Coulon).

The digitalization of the photographic archive continued. In addition to the archives of the CFEETK, scanning has concerned private funds, such as that of Francis Amin.

3.3. The scattered blocks survey

This programme continued, always focusing on the southern mastabas between the temple of Ramses III and the temple of Khonsu.

3.4. Architecture and topography department (P. Zignani)¹⁸

Architecture

The department worked this year with a reduced team because the architectural documentations of the major projects are complete and need only corrections according to the progress of the manuscript. Pierre Zignani began to work on the text for the publication of the architecture of the temple of Ptah.

In addition, he did the architectural survey of the blocks of the doorframe of Senakhtenre Ahmose to allow its reconstruction at the entrance of the causeway of the Temple of Ptah, between the gates of Ptolemy VI and Shabako.

He also prepared a drawing of the south exterior wall of the chapel of Thutmose III for the project on the graffiti led by Elizabeth Froid.

Topography (K. Guadagnini)

The surveyor's activity can be divided into two main subjects, photogrammetry and topography. For the activities related to photogrammetry, the main goals are to establish a processing chain which results in the production of ortho-corrected pictures. These pictures have to meet the following requirements:

- To be accurate enough to realize facsimiles
- Reduce the time spent on topographical surveys related to archaeological excavations
- Corrected pictures will be published on the Internet and used to enrich the *Karnak* project database (<http://www.cfeetk.cnrs.fr/karnak/>).

Last quarter 2013:

Based on A. Peyroux's works in 2013, the ortho-corrected processing chain based on the I.G.N. software "MICMAC" was completed and improved. Then, a study had been led to compare the ortho-correction capacities of two softwares, MICMAC (IGN) and Photoscan (Agisoft). For this purpose, several tests were conducted in collaboration with the photography department for the acquisition of the shots.

As main conclusions, MICMAC is a suite of free software running perfectly under Linux, but porting on Microsoft and Macintosh platforms is incomplete and delicate to perform. Furthermore it only works on command lines, the few modules having graphical interface have no user interface which makes them tedious and tricky to use. Furthermore, the ortho-rectified images have many artefacts. However, the more the photographed subject has brutal depth accidents (stones with damaged surfaces or holes for instance), the worst the results will be. Nevertheless, the console provides many statistical indicators related to the performed treatments, including the correction of

¹⁸ During the season 2014, the members of the CNRS team were: Pierre Zignani (architect-archaeologist), Kevin Guadagnini (surveyors VI MAEDI).

radial lens distortion and least-squares fit of the calculation of the internal orientation of each shot.

PhotoScan is a proprietary software, paying and multiplatform (Linux, Microsoft and Macintosh). It has a friendly user interface and its handling is quick. Moreover, the software is updated monthly. The images are visually better. Although computational algorithms are similar, Photoscan software provided little statistical information on the resulting accuracy and quality.

The geometric quality of the images produced by each of the two software is close to a few millimetres (< 2 mm, in the examples treated). In addition, the superposition of produced images with facsimiles shows that both software meet the required goals.

Given these results, the Centre has purchased a “professional educational” license on 14 November 2013. Until late December, the two programmes were used in parallel in order to determine the strengths and weaknesses of each of them. Ever since, only PhotoScan is used.

December 2013: Creation of an application programmed in Visual Basic (Microsoft) specially tailored to accentuate low depth inscriptions such as graffiti. Moreover, it also enables to smooth the natural grain of the stone, making the inscriptions ever more visible. Thanks to a 3D model (PLY Stanford Triangle Program) built with MICMAC or PhotoScan programme. The software highlights the reliefs included in a range defined by the user and partially smooths the noise due to the nature of the stone.

First quarter of 2014: Development of the photographic acquisition process, by trying to simplify the technical means necessary for shooting. This phase of “production / improvement” enabled to prepare the production of ortho-images of the northern side of the VIIIth pylon. The lighting conditions required for optimum legibility of the inscriptions (present and deleted) require the pictures to be acquired in April, in the early morning.

List of photographic projects that enabled this goal:

- *Akh-menu*, axial sanctuaries and chapels
- Open Air Museum, chapels, gates, statues, lintels
- Taharqo ramp
- Southern Bubastide portal (Sheshonq I)
- Philipp Arrhidaeus’ area: walls, doors, pillars, heraldic pillars
- Opet Temple: facing south basement wall, various doors
- Central temple area: doors, walls, obelisk
- Central pillars area: doors, statues
- VIIIth pylon: eastern tower, east side, reprocessing with Photoscan software of Aurélien Péroux 2013 shots.
- IXth pylon : stela

During the first quarter of 2014, about a hundred subjects were ortho-rectified, consisting of about 613 GB of images. At the end of April, only three subjects are put on hold due to problems related to logistics (scaffolding), or day lighting.

In the light of the experiences mentioned above, the use of scaffolding is essential with regards to the required spatial resolution (< 1 mm). Hydraulic platform appeared to be necessary to ensure the most regular spacing between views. Thereby, it solves the issue of the obstruction (shadows ...) caused by the fixed scaffolding. Moreover, the disassemblage of different levels of such scaffolding is time-consuming, and the variation of the size of the shadows between pictures is incompatible with the expected results.

Shadows constrain the duration of the acquisition sessions from 7:45 to 9 am. Outside of these hours, the size of shadows makes the inscriptions hardly legible.

April 2014: Application of the process for the western massif of the VIIIth pylon

A test strip (corresponding to a descent lift), of a width of about 3.5 m, was performed in order to adjust the equipment to be used in this particular case: a tripod, a focal length of 100mm.

The massif was divided into eight bands with inter-band 20% overlapping. Each band is composed of about 225 images. The geometric quality of the model has been enhanced by the addition of topographic measurements located on the limits of the tower and in the overlapping areas.

For archaeological excavations, the ortho-rectification enables the production of so-called “metric images”, which are corrected, among other things in depth related to relief and parallax effects. They are stackable to a plan. They can therefore be used to their establishment insofar as accuracy meets the requirements of the users. The georeferencing accuracy (absolute orientation) of two contiguous ortho-images should also be relevant.

Today, two protocols have been developed in this perspective. The first allows us to draw the plan in that most conventional representation (plane perpendicular to the altitude axis), the second allows to draw different stratigraphical layers, or elements that composed a berm (altitude axis coplanar with the ortho-rectification map). Both methods also require the production of a 3D model, which is a simplification of the topography. Accordingly, they may be used for the drawing of sections, but so far this method has not been used.

Late April 2014, south of the Ptah temple, an orthophoto-map of 500 m² was performed using 400 photographs, the internal precision is less than 1px (<2 mm), and the accuracy of the absolute orientation is about a few tens of millimetres in the global ortho-corrected picture and a few millimetres for individual area's images.

These methods could be improved by the use of an U.A.V. (drone) that takes shots perfectly in either direction. Acquisition time, number of images and therefore the processing time would hence be reduced. Finally, the cosmetic quality and geometric accuracy would also be improved.

In all cases, both of these methods significantly reduce the time spent into purely topographical tasks. Furthermore they provide exhaustive information of an area. However, they do not replace them. Indeed, topographical measurements still guarantee the accuracy and the reliability of the 3D models and the produced images.

Activity related to topography

Main goal: Ensure the reliability of topographical benchmarks and the development of graphical documents requiring topographic measurements.

All mission duration:

Control of the accuracy of topographical benchmarks

Densification of the benchmarks network, in order to suit the daily needs

Update of the topographical map of Karnak Temples (for instance, open air museum area, south Ptah temple area)

Realization of various graphic documents linked with the southern Ptah temple area (maps, sections, elevations)

Geo-referencing of photogrammetry sites:

36 of the 96 benchmarks have been valued for direct needs. Six marks are unusable and two others were reprocessed. In addition, six new points have been set up (three in the Open Air Museum, one in ZPC.Cr5n between the northern door and the northern colossus 2, two in the chapel of Tuthmosis III to the west of the Sacred Lake.

4. TRAINING PROGRAMMES

Epigraphic training in the field epigraphy (facsimile of scene at scale 1:1 on plastic film) was provided under the supervision of Pauline Calassou (LabEx Archimede) and Mamduh Abd el-Ghassul. These kinds of 10 day sessions will be repeated in the course of 2015.

A training programme for computer software used in ceramic studies (drawing, database) was provided by Romain David in January 2014 (see above).

Due to unexpected administrative delay, it was not possible for the French Cultural Centre in Cairo to provide financial support to find French courses at the CFEETK's office during the season. This course should be delivered in November/December 2014.

A training programme in archaeology is planned at the end of 2014/beginning 2015.

5. PUBLICATIONS AND LECTURES

An every 6 months brief report is published in the “Digging Diary” pages of *Egyptian Archaeology*.

5.1. Selected publications of the CFEETK members and associated missions (2014)

- BOULET St., DEFERNEZ C., “Ceramic Production in the Theban Area from the Late Period: New Discoveries in Karnak”, in E. Pischikova, J. Budka, K. Griffin (ed.), *Thebes in the First Millenium B.C.*, Cambridge, 2014, p. 603-624.
- COULON L., “The Quarter of the Divine Adoratrices at Karnak (Naga Malgata) during the Twenty-sixth Dynasty: Some Hitherto Unpublished Epigraphic Material”, in E. Pischikova, J. Budka, K. Griffin (ed.), *Thebes in the First Millenium B.C.*, Cambridge, 2014, p. 565-585.
- FROOD E., HOWLEY K., “Application of Reflectance Transformation Imaging (RTI) in the Study of Temple Graffiti”, in E. Pischikova, J. Budka, K. Griffin (ed.), *Thebes in the First Millenium B.C.*, Cambridge, 2014, p. 625-638.
- GHILARDI M., “La vallée du Nil en Haute Égypte pendant la période dynastique : un exemple d’adaptation des sociétés humaines aux modifications hydrologiques dans le secteur de Karnak”, in G. Arnaud-Fassetta, N. Carcaud (ed.), *La géoarchéologie française au XXI^e siècle*, Paris, 2014, p. 157-165.
- LABRIQUE Fr., “Les soubassements du propylône de Khonsou à Benenet : notules philologiques”, in A. Rickert, B. Ventker (ed.), *Altägyptische Enzyklopädien. Die Soubassements in den Tempeln der griechisch-römischen Zeit, Soubassementstudien I*, Wiesbaden, 2014, p. 841-854.
- LICITRA N., THIERS Chr., ZIGNANI P., “A Major Development Project of the Northern Area of the Amun-Ra Precinct at Karnak during the Reign of Shabaqo”, in E. Pischikova, J. Budka, K. Griffin (ed.), *Thebes in the First Millenium BC*, Cambridge, 2014, p. 549-564.
- MASSON A., “Offering Magazines on the Southern Bank of the Sacred Lake in Karnak: The Oriental Complex of the Twenty-fifth-Twenty-sixth Dynasty”, in E. Pischikova, J. Budka, K. Griffin (ed.), *Thebes in the First Millenium B.C.*, Cambridge, 2014, p. 587-602.
- PREYS R., “L’originalité des soubassements de la porte monumentale du deuxième pylône du temple d’Amon à Karnak”, in A. Rickert, B. Ventker (ed.), *Altägyptische Enzyklopädien. Die Soubassements in den Tempeln der griechisch-römischen Zeit, Soubassementstudien I*, Wiesbaden, 2014, p. 855-875.
- THIERS Chr., “Armant: recent discoveries at the temple of Montu-Re”, *Egyptian Archaeology* 44, 2014, p. 32-35.
- ZIGNANI P., “L’architecture de Dendara : un travail excellent pour l’éternité”, in Ch. Méla, Fr. Möri (dir.), *Alexandrie la Divine*, Geneva, 2014, p. 588-598.

- BISTON-MOULIN S., THIERS Chr., *Le temple de Ptah à Karnak 1. Relevé épigraphique, n^{os} 1-191*, IFAO, 2015, forthcoming.

5.2. Lectures and media

- 6-7.01.2014: *Re-placing Writing: Space and Inscription in Ancient Egypt and Nubia. A CNRS/University of Oxford Workshop* (Univ. Oxford-CNRS USR 3172): S. Biston-Moulin, Chr. Thiers, “The Karnak project”.

- 6-10.04.2014: *LRCW 5, 5^e Congrès International sur la Céramique Commune, la Céramique Culinaire et les Amphores de l'Antiquité Tardive en Méditerranée. Archéologie et Archéométrie*, Alexandrie: R. David, "Les céramiques byzantines de Karnak et d'Ermant".
- 11.10.2014 : *De la Nubie à Karnak. Autour de l'œuvre scientifique de Michel Azim*, Lyon, Hisoma univ. Lyon 2: G. Charloux, "De retour dans la cour du X^e pylône à Karnak. Première étape dans la publication des fouilles conduites par Michel Azim en 1975-1977".

- 03.2014: "L'odyssée de l'obélisque" (La Galerie France 5/Sequana Media, DVD and film at Musée de la Marine).
- 05.2014: film about Queen Hatchepsout, for Egyptian TV.
- 22.09.2014: castings for "Guardians of Egypt", National Geographic Film scheduled for January 2015.

6. MEMBERS OF THE CFEETK

MAE permanent members

- KARAR A.H. Co-director of the CFEETK, general director of Luxor and Upper Egypt
- SOLEIMAN I. General Director of Antiquities of Upper Egypt till August 2014
- EID S. General Director of Luxor antiquities
- ABDEL AZIZ M. General Director of the Temples of Karnak
- AMMAR A. Director of Karnak temples
- MILAD ZIKRI T. Chief architect of Upper Egypt
- ABD EL NASSER A. Chief conservator
- ABD AL SATTAR B. Chief inspector, head of foreign missions
- HALMI F. Chief inspector
- FATHI M. Chief inspector
- GHARIB T. Chief inspector
- IBRAHIM G. Chief inspector
- ZAKI R. Draftsman
- LOUIZ M. Documentation officer
- DOWI ABD AL-RADI K. Photographer
- RUBI A. Assistant photographer
- FOUAD E. Secretary

Non permanent Egyptian inspectors

- EL MASEKH S.
- YOUSSEF BELAL W.
- EDREES B.
- ABD AL-ATY M.
- AL-NASEH A.
- SAAD EL DEEN H.
- ABD EL HARSS E.
- MOSTAFA Y.
- ABDY M.
- ERFAN A.
- ABU EL HASSAN A.

CNRS permanent members

- THIERS Chr. Director of the USR 3172, co-director of the CFEETK, Egyptologist
- BISTON-MOULIN S. Documentalist-egyptologist
- CHARLOUX G. Archaeologist, from September 2014
- GARRIC A. Stone-cutter
- PUELLE V. Administrator
- MAUCOR J. Photographer
- ZIGNANI P. Architect, till August 2014

USR 3172, LabEx Archimede, programme « Investissement d'avenir », ANR-11-LABX-0032-01

- CALASSOU P. Epigraphist
- DAVID R. Ceramologist
- LARCHER C. Egyptologist
- TILLIER A. Egyptologist

International Volunteers (French Ministry of Foreign and European Affairs)

- BOURSE C. Conservator
- GUADAGNINI K. Topographer

CNRS trainees and missions 2014

- Dr. ALI ABDELHALIM A.	Egyptologist
- AUDOUIT Cl.	Egyptologist
- BARAHONA Z.	Ceramologist
- BETBEZE R.	Egyptologist
- CASSOR-PFEIFFER S.	Egyptologist
- Dr. DEMBITZ G.	Egyptologist
- Dr. DURAND B.,	Archaeologist
- JUNG M.-P.	Egyptologist
- PANAITE E.	Egyptologist
- PERROT A.-H.	Egyptologist
- Dr. RAAFAT ABBAS M.	Egyptologist
- SOUBIAS Ph.	Photographer

Associated researchers (field mission 2014)

CARLOTTI J.-Fr.	Architect, Lille	Monuments of Amenhotep I
COULON L.	Egyptologist, Lyon	Osirian chapels
DEFERNEZ C.	Archaeologist-ceramologist, Paris	Osirian chapels
FROOD E.	Egyptologist, Budapest	Graffiti
GABOLDE L.	Egyptologist, Montpellier	Monuments of Amenhotep I
GIORGI C.	Archaeologist, Paris	Osirian chapels
PAYRAUDEAU Fr.	Egyptologist, Cairo	Osirian chapels
LEITZ Chr.	Egyptologist, Tübingen	<i>Akh-menu</i>
LICITRA N.	Doctoral candidate, Egyptologist, Paris	Treasury of Shabako
LEFÈVRE D.	Egyptologist, Geneva	“Marriage stela” of Ramses II
MENDEL-LEITZ D.	Egyptologist, Tübingen	<i>Akh-menu</i>
SALVADOR C.	Doctoral candidate, Egyptologist, Oxford	Graffiti
VAN SICLEN Ch.	Egyptologist, San Antonio	Courtyard of the IX th pylon

7. ACADEMIC COLLABORATIONS

- UMR 5140 – Univ. Montpellier III (LabEx Archimede)
- American Research Center in Egypt (ARCE)
- Chicago House (Luxor)
- Univ. of Oxford
- Univ. of Tübingen
- USR 3134 – Centre d’études alexandrines (CeAlex)
- Institut français d’archéologie orientale (IFAO)
- École Pratique des Hautes Études (Sciences religieuses), Paris
- UMR 5189 – HiSoma Univ. Lyon II
- UMR 8167 – Univ. Paris IV Sorbonne
- UMR 8164 – Halma-Ipel Univ. Lille III
- UMS 3657 – Archeovision Univ. Bordeaux III