



Arsinoë II Philadelphos – a female pharaoh?

DR MARIA NILSSON

QUEEN Arsinoë II Philadelphos has been a topic of scholarly discussion for many generations, primarily focusing on her socio-political role as the wife of Ptolemy II. The academic world is divided as one part argues for and the other against a prominent role. In the recent doctoral thesis, *The crown of Arsinoë II: the creation and development of an imagery of authority*, one of the focal points concerned this discussion, and based on primarily a pictorial analysis of Ptolemaic reliefs, Arsinoë's political role was suggested as Ptolemy's co-regent, more exactly as the female king of Lower Egypt.

Among the 36 preserved relief scenes depicting the queen, six identify Arsinoë with the male royal title *nsw-bit*; *bit* (*tAwy*), King of Upper and Lower Egypt, alternatively King of Lower Egypt. While this title has been acknowledged previously, it has been dismissed and instead suggested to be an honorary title given to the queen after her death based on the traditional dating of the relief scenes. However, based on the new analytical approach toward the material, using the pictorial reference as a comparison with the hieroglyphic titles, the thesis suggests that at least two of the six scenes can be redated to Arsinoë's lifetime, thus placing the queen as a ruling pharaoh during her lifetime.

The first scene, divided into three fragments, today can be found in the Archaeological Institute of the University of Trier in Germany. It shows Arsinoë as an active benefactor, standing on the left side of the scene, presenting offerings to an unknown deity suggestively placed on a podium in front of and facing the queen. The queen wears a characteristic crown that was created exclusively for her: a symbolic combination of the red crown of Lower Egypt, ram horns, a tall double



Architrave photo from the Mediterranean Museum in Stockholm, showing Arsinoë and Ptolemy on each side with the local deities of Athribis. Photo by Ove Kaneberg.

PICTURE: MEDELHAVSMUSEET

feather plume, cow horns and a solar disc, all resting on top of the traditional queenly headdress of a vulture cap and a tripartite wig. While her figure is only partially preserved, the fragments show that she wore an elaborated (folded) sheath dress and traditional sandals on her feet.

The very fragmentary image of the deity, to which she presents offerings, is crowned with a crescent and a lunar disc (alternatively cow horns and a solar disc) according to previous scholars linking the figure to Thoth or Khonsu. Suggestively, such crown could also connect with the Apis bull. The bull is generally depicted with shorter bovine horns, smoothly following the outlines of a solar disc. An identification with Apis would not be farfetched, as Arsinoë occasionally is textually described as "Mother of Hep (Hep = Apis)".

There are no indications in this somewhat fragmentary relief that Arsinoë was accompanied by her husband-brother who, in accordance with the Egyptian principles, should have been placed in front of his sister-wife. Thus, Arsinoë is depicted

as a singular benefactor and, as such, she represents the royal house, while upholding her religious responsibility as a living queen.

Her hieroglyphic titles, with a shorter Greek text, describe her as "Great of Sweetness, Great of Praise, King's daughter, King's wife, Great daughter, King's sister, (the king) who loves her and she loves him, King's great wife, King of Upper and Lower Egypt, (Arsinoë Philadelphos), the Rightful". These are all titles of a living person, and allude to the Hathoric erotic nature of queenship, the royal legitimacy, and most importantly include the male kingship title "King of Upper and Lower Egypt" followed by "the Rightful". Not only does the scene show a living queen actively performing her religious duties in sacrificing to a deity, she is also described with royal titles that establish her as a female pharaoh. The Greek text adds another clue to the historical position of the queen, as it describes her as "Arsinoë the Divine brother-lover (Philadelphos)".

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Saturday, July 23

DAY SCHOOL – Baxter Studio Theatre
The Great Pyramids of Ancient Egypt

10am: Opening address

10.15am: Prof Anthony Humphreys –
The Emergence of the Early Pyramids

11.15am: Refreshments

11.45am: Keith Grenville – *The Giza Family of Pyramids*

1pm: Buffet lunch

2.15pm: Jean Smith – *The Era of Decline of the Pyramids*

3.30pm: Close

Cost: Members R120, non-members R150, student members R80

Closing date for bookings: Monday, July 18.

Tuesday, August 23, at 7.30pm

Lambert Vorster – *In the Beginning: Egypt before the Pharaohs*

Members' platform: To be announced

Tuesday, September 27, at 7:30pm

Günther Komnick – *Morocco through My Lens*

Members' Platform – Jean Smith – *Horse and Chariot in Ancient Egypt*



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OUR TREASURER**

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The Gate of Euergetes at Karnak showing Ptolemy III venerating and commemorating his parents. A scene nearby describes the transfer of power from the theoi Adelphoi (sibling gods = Ptolemy II and Arsinoë) to Ptolemy III and his spouse Berenice II. Her title in this scene is that of "Daughter of Amun", obviously an important and socio-religious claim to her rightfulness.

From page 1

Such a title suggests that Arsinoë indeed was deified in her own right already during her lifetime.

The second scene, which has been re-dated, is depicted on an architrave today located in the Mediterranean Museum in Stockholm, Sweden. The scene is divided in two sections, each one showing the ruling royal couple Ptolemy II and Arsinoë with the local deities of Athribis. Again, Arsinoë is placed as an active benefactor, this time performing the religious (Hathoric) ceremony of rattling two sistra (the naos type on the left side and the looped type on the right). In contrast to the previous scene, these two relief sections show Arsinoë standing in a traditional queenly position behind her ruling husband who, on both occasions, presents the ceremonial collar. Again, Arsinoë wears an elaborated sheath dress, sandals on her feet, and her characteristic personal crown on her head.

Here, Arsinoë's hieroglyphic title is short and clear, describing her in both sections as "King of Upper and Lower Egypt, Arsinoë". Intriguingly, her husband-brother's title does not define him with this traditional (male) royal title, but states instead "Lord of the Two Lands ("Powerful is the soul of Ra, Beloved of Amon) Lord of the crowns (Ptolemy)", evidently emphasising his kingship, but simultaneously separating him from the queen. There should be no

doubt that Arsinoë is depicted as a living figure, in accordance with which her title should be understood as a co-ruling female pharaoh.

As a matter of comparison to the six scenes mentioned above, three scenes located in the Temple of Isis at Philae, all dating to the reign of Ptolemy II, describe Arsinoë with a hieroglyphic title created exclusively for her: *HqAt aAt Kmt*, "Ruler of Egypt". Similarly, this title emphasises the queen's prominent role during and after her lifetime.

When combining the pictorial representation of Arsinoë, taking into account each individual detail of the scene, with traditional hieroglyphic titles describing her, the Egyptian material suggests that this second Ptolemaic queen in fact was considered a female pharaoh, Ptolemy II's co-regent; ruling as King of Lower Egypt. As such she can be placed in history as equivalent to the more famous female pharaohs Sobeknefru, Hatshepsut, Tawosret and her own dynastic descendant Cleopatra VII. Further, she can be described in similar terms as the queens who shared socio-political and religious responsibilities with their husbands as the God's wives of Amun, such as Amenirdis, Shepenwepet and Nitocris.

In the new light on Egyptian relief scenes, the socio-political position of Queen Arsinoë II of the Ptolemaic Dynasty should indeed be reconsidered,

possibly in a more prominent role as female pharaoh of Lower Egypt.

DR NILSSON obtained her PhD in classical archaeology/ancient history at Gothenburg University, Sweden, last year with a thesis on the crown of Arsinoë II. For the past four years she has been living in Luxor where she is working on the Sirius Project together with her life partner and colleague Dr John Ward. This project is an analysis of ancient symbolism and its migration from Ancient Egypt throughout the ages.

Their work includes documenting and building up a photographic library of the ancient monuments as they are preserved today. The symbolism which they study incorporates everything from scratched marks in the form of graffiti (rock art as well as graffiti in the temples, tombs and more), those on amulets, but primarily masons' marks in quarries and in temples.

Dr Nilsson has focused on analysing Ptolemaic relief scenes primarily as an iconographical study, but also including hieroglyphic texts and titles and how image and text sometimes go hand in hand, but on other occasions counterpart each other in different media.

Can Egypt protect its ancient monuments?

The post-revolution elation has masked a disturbing uptick in archeological plunder.

DR KENT R WEEKS

THE euphoria with which Egyptians greeted the ouster of Hosni Mubarak in February was quickly tempered by the news – at first denied by officials, but later confirmed – that thieves had stolen several priceless objects from the Egyptian Museum, including pieces from the tomb of the pharaoh Tutankhamun, among them a gilded wooden statuette of the king and a silver trumpet. Over the next few days, there were more alarming reports: police throughout Egypt had abandoned their posts, leaving hundreds of archeological sites unguarded. A few weeks later, Zahi Hawass, the director of Egypt's Supreme Council of Antiquities, resigned. Though he later resumed his post as minister of archeological affairs, the SCA was left rudderless and confused in his absence. Gangs of armed treasure hunters took advantage of the chaos and began plundering ancient tombs and antiquities storerooms throughout Egypt. The robberies are ongoing and thought to exceed 400 incidents so far.

Antiquities theft is as old as the pyramids, but never before has it so shocked Egyptians. The Egyptian press voiced the public's revulsion at the desecration, and hundreds of youthful protestors and ordinary citizens in Cairo and Luxor volunteered to stand guard at museums and archeological sites. It was a noble gesture but a futile one. There are simply too many sites to protect in such an ad hoc way.

In truth, no one knows how many archeological sites are in Egypt: 5 000 is an oft-quoted figure, but other experts say there are many more. Some sites are tiny – graffiti scratched on a cliff face, or a small cemetery. Others, like Giza, cover several square kilometres filled with thousands of tombs and pyramids. Thebes (modern Luxor) boasts thousands of tombs, temples, shrines, and villages. The Valley of the Kings alone is chockablock with scores of elegantly decorated tombs, including that of the boy king Tutankhamun. Sites lie beneath the streets of modern

cities, in fields along the Nile, in desert wastelands, and distant oases – even beneath the Mediterranean and the Red Sea. They span thousands of years and represent several cultural and religious traditions – Neolithic, dynastic Egyptian, Greek, Roman, Jewish, Christian, and Muslim. In Egypt, one is rarely out of sight of an ancient monument.

Unfortunately, it is no exaggeration to say that every one of them is threatened with destruction – and theft and vandalism are the least of the problems. The graver threats are more subtle: changes in the environment, such as increasing temperatures and humidity, air pollution, and rising ground water; the expansion of industries, farms, and cities into archeological zones; and, perhaps worst of all, the growth of mass tourism and the burgeoning infrastructure required to support it.

The job of the SCA is to protect Egypt's historical sites, but it's an uphill battle being fought with a limited and outdated arsenal. The SCA is a bloated bureaucracy. It employs 58 000 people; about two thirds are local security guards, poorly paid, untrained, and unarmed. There are also between 20 000 and 30 000 Tourist and Antiquities Police, part of the Ministry of the Interior (not the SCA), who are posted at sites and museums most heavily visited by foreign tourists.

Though a pervasive presence, they are an unreliable one, as demonstrated by their immediate and wholesale disappearance early in the revolution. Many still have not returned to duty.

The SCA's on-site inspectors, who are supposed to administer and preserve the country's heritage, are underpaid and unmotivated. Most are young and – for the first few years, at least – enthusiastic about their job. But the low salary and near universal reluctance of their superiors to delegate authority leads to frustration. A large number leave to become tourist guides. Instead of taking 300 Egyptian pounds a month from the SCA (about \$50), they can earn six or seven times that amount as guides.

Besides staffing problems, the

SCA is perennially underfunded, even though archeological tourism generates considerable income. In December last year ticket sales to sites in Luxor alone earned \$30 million for Egypt. But much of this money goes to the government treasury, and the SCA routinely postpones or ignores conservation, maintenance, documentation and tourist management because of a lack of funds.

Meanwhile, the number of visitors to archeological sites increases every year. The Valley of the Kings, which had perhaps 100 visitors a day in 1970, had 8 000 a day in December of last year, and the Ministry of Tourism hopes for 15 000 a day by 2015. The pressures such numbers inflict on tombs and temples are enormous. Yet no long-term comprehensive management plan to protect them has yet been agreed upon.

Tourism is a major pillar of the Egyptian economy, and given the income that archeological sites generate, one might think their protection would be a primary goal. After all: no sites, no money. But almost every branch of government wants some control over that income and wants as much of it as possible for themselves, focusing only on short-term gain. Since the revolution, the number of tourists has dropped dramatically, and one can imagine that the SCA will now feel even more financial pressure.

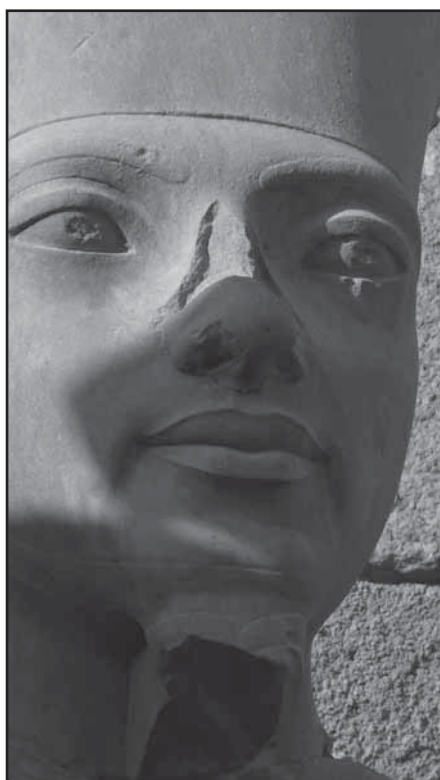
Typical of the shortsighted schemes is Luxor's multimillion dollar development plan to increase tourist numbers and revenue. The plan is already doing irreparable harm to many of Luxor's monuments, demolishing historical buildings, paving over archeological sites, moving whole villages and thousands of Egyptians far away from tourist centres and ancient monuments. Many archeologists and tourists, as well as many locals, believe that these acts are turning the largest archeological zone in the world into a gaudy theme park designed only to make money in the short term, with little concern for long-term protection or the needs of Luxor's residents.

From page 4

What should be done to protect Egypt's monuments? Here's a list on which most Egyptologists agree: consult with local and international agencies and specialists to develop and implement long-term management plans; train on-site inspectors and give them greater responsibility; design better security for sites and museums; allocate more money for site conservation and documentation; and take a strong stand against commercial and political interests that threaten the monuments.

Egypt's archeological patrimony is humankind's as well, and requires urgent efforts if it is to be saved for future generations. Egypt's revolution, and the energy of the youth that drove it, captured the world's imagination and gave renewed hope for the country's future. It would be a tragedy if this were not also translated into a renewed commitment to its past. – <http://www.newsweek.com>

DR KENT Weeks is professor emeritus of Egyptology at the American University in Cairo and founding director of the Theban Mapping Project (thebanmappingproject.com).



Detail of a depiction of a Theban villa, from the 18th dynasty tomb of Minnakht.

Sycamore trees in ancient Egypt

THE *Ficus sycomorus*, or sycamore fig, is an ancient tree that has been cultivated in Egypt since the third millennium BC.

It can grow to a height of 20 to 25 metres, has a trunk girth of up to six metres, and possesses a dense crown of spreading branches which offer a delightful shade up to a few hundred square metres. Its fruit – rosy, plump figs arranged in clusters – grow directly on the trunk. This fig tree was introduced to Egypt from the Southern Arabian Peninsula and from Ethiopia. It is also found in Lebanon and Cyprus.

According to Professor al-Mewafy al-Ghadban, responsible for the greenhouse and botanical garden in Egypt's National Gene Bank, it was widely cultivated by the ancient Egyptians who called it “the tree of love”. It is represented in the tombs of the early, middle and late kingdoms.

There are various reasons why the ancient Egyptians valued the sycamore so highly. They relished relaxing under the tree's dense foliage for its shade, freshness and breeze. They enjoyed its figs which have a savoury taste and were deemed to reduce blood sugar levels. The bark and latex were used for many purposes, some medicinal, as the latex is efficient in treating skin diseases

when rubbed on the epidermis. Finally, the hard wood of the sycamore was used for fuel, while the softest part was used for carvings and furniture making, and the leaves constituted a good fodder for domestic animals.

“The sycamore wood was used for the coffins and furniture of the dead included in their graves,” Professor al-Ghadban explains. “The ancient Egyptians would also place the sycamore's fruits in their tombs, as an ex-voto to the dead.”

Today the sycamore does not propagate itself naturally in Egypt any more, since the wasp responsible for its pollination has become extinct. Furthermore the tree does not create proper seeds, and those that can be collected have a poor viability.

The only way to propagate the sycamore tree in Egypt these days is by making cuttings, and no more than a few hundred trees in total remain. In Cairo some beautiful specimens can be observed in the Museum of Agriculture in Dokki, in Shubra and in Matareya. Considered rare, the tree's original functions are highly appreciated. As Professor al-Ghadban concludes: “The sycamore tree continues to be a symbol of ancient Egypt.” – Louise Sarant, Al-Masry Al-Youm

GUEST COLUMN

SCRIBBLES FROM THE SCRIBE



Corn mummies and the Festival of Khoiak

DEBBIE BLINKHORN

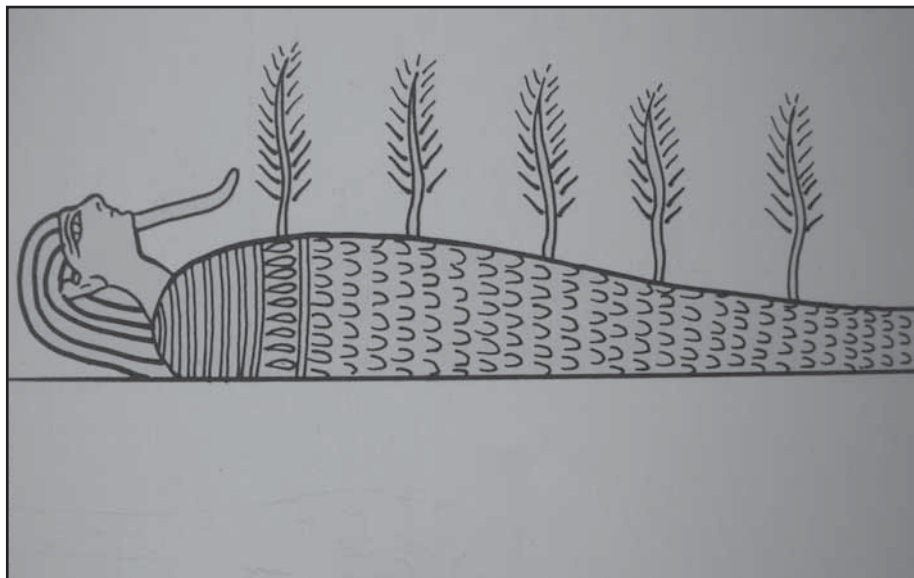
MUMMIFORM shapes of Osiris-Sokar were made from a mixture of clay, sand and grains such as barley. These were then wrapped in layers of bandages and a wax mask of Osiris placed over the face. The mummiform shape was then placed in a wooden sarcophagus of the falcon headed god Sokar. The corn mummies of Osiris-Sokar were a powerful metaphor for resurrection and rebirth of not only the deceased but also the land, for they were used in both private tombs and the ceremony of the Mysteries of Osiris, the month long festival of Khoiak.

Germination of the seed ensured the rebirth of the deceased; one was found in the tomb of Tutankhamun, the seeds having grown a few centimeters before they died.

Sokar was one of the oldest funerary gods whose cult predates the unification of Egypt. The connection between Sokar and Osiris can be attested as far back as the Old Kingdom.

(PT 532). The Book of the Dead BM10470 says "Sokar – Osiris, Lord of the Sacred place (St A.yt), Great God, Lord of the Necropolis."

The festival revolves around the Osirian mysteries in the month of Khoiak where the dead god was restored to life. Khoiak was the fourth month of the civil calendar which was the time when the flooded Nile (inundation) was receding; leaving behind fertile soil for sowing (*peret*). The name of the festival was *Ka-her-ka* but survived as the Coptic name for the month of Khoiak.



A seeded grain Osiris figure, detail from a coffin in the Fitzwilliam Museum, Cambridge

Each year temples throughout Egypt where parts of the dismembered body of Osiris had been buried performed the funeral rites of Osiris. Today you can read the details of the proceedings on the enclosure walls of temples, a place where no ordinary person was allowed in antiquity. These rites started on the 12th and lasted till the 30th of the month of Khoiak.

The festival began with a ceremony of ploughing and sowing on the 12th day.

A boy scattering seed followed two black cows that were yoked to a plough made of tamarisk wood. The field was divided into three and sown with barley, spelt and flax.

During this ritual the priests recited the revalant chapters of "The sowing of the fields".

Plutarch tells us that on the 19th day priests carrying a shrine which contained a gold casket went down to the water. They poured water into the casket while the spectators shouted that they had found Osiris. Afterward they took vegetable matter, mixed it with precious spices and wrapped the shape in robes and placed ornaments on it. Some of the ingredients used to fashion these mummiform figures included date pulp, incense and resin. The figure was also anointed with moringa oil and incense.

On the 22nd day at the eighth hour an image of Osiris and 34 other deities were placed on little boats made of papyrus that were illuminated and sent onto the sacred lake.

After sunset on the 23rd day the wooden sarcophagus of the Osiris mummy was placed in the burial chamber and at the ninth hour, the effigy from the last year was exhumed and buried.

In the New Kingdom the night of the 25th was dedicated to making onion necklaces which were offered to the deceased and to Sokar. The ka priests made libations and fumigation all through the night. The last days of Khoiak were filled with great sadness as it was believed that Osiris was dead by the 26th day. One of many features of this festival is that people tied rows of oil lamps to the outside of their houses that burned all night.

Finally, on the 30th day, the festival ended with the raising of the Djed pillar, the backbone of Osiris, which symbolised resurrection and rejuvenation. This brought the first season to an end, the rites having ensured a plentiful harvest for the season of Peret (going forth). The first day of the fifth month was treated as a New Year's Day.

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Robot reveals hidden hieroglyphs

THE latest scheme to explore the mysterious shafts of the Great Pyramid of Khufu by robot has shown previously unknown hieroglyphs written in red paint on the floor of the southern shaft. These could have been symbols of religious significance, or perhaps graffiti made by the stone masons 4 500 years ago. When deciphered they may help archaeologists figure out the purpose of the four narrow shafts, first discovered deep inside the Giza pyramid by British engineer W Dixon in 1872.

From the upper or King's Chamber two shafts exit into open air. From the lower Queen's Chamber two shafts, one on the south side and one on the north side, disappear within the pyramid's structure. While the King's Chamber originally contained Khufu's sarcophagus and possibly his mummy, the Queen's Chamber probably didn't contain the remains of a queen as Khufu's wives were interred in three smaller pyramids of their own. It is thought that the two shafts extending from the Queen's Chamber were built to allow Khufu's ka, or spirit, to cross to the afterlife.

Dr Zahi Hawass, currently Egypt's Minister of State for Antiquities Affairs,

established the project through which the pyramid's southern shaft was first investigated by German robot technology in 1993. The shaft was found to be blocked 60m from the start by a small limestone slab with two copper pins embedded in it.

In 2002 another robot drilled through this stone door and photographed what was on the other side – a small empty chamber 20cm long, with what appeared to be a second blocking stone at the far end.

Further exploration

Soon thereafter Dr Hawass established the Djedi project for the further exploration of the pyramid's mystery shafts. He named the project after the magician Pharaoh Khufu consulted when planning his tomb.

Through an international competition the third robot, designed by engineers at Leeds University, was chosen. Its unique tools include a "bendy" camera that can see around corners. In the previous expeditions all the images were taken looking straight ahead. This time, the camera captured

the previously hidden hieroglyphs on the floor.

It also photographed the back of the first door, showing that the two famous copper pins curved back onto themselves into small loops, and that the door was polished on the back and not left as a rough piece of stone.

The Djedi robot is expected to reveal much more in the coming months. It is equipped, amongst other things, with a miniaturised ultrasonic device that can tap on walls and analyse the sound to help determine the thickness of the stone.

This will be used to check whether the shaft's second obstruction that was discovered in 2002, is in fact another door or a solid block of stone.

Thereafter the pyramid's northern shaft will be explored. Initial robot surveys have revealed that that shaft too is blocked by a limestone slab. The work is expected to be completed by the end of 2011, and a detailed report on the findings should follow in early 2012. – Sources: Rossella Lorenzi, <http://news.discovery.com/archaeology>; Rowan Hooper, <http://www.newscientist.com>

Ancient mega-lake found in Egyptian desert

THE hyper-arid deserts of western Egypt were once home to a lush mega-lake. Fossilised fish and high-resolution space shuttle radar maps have defined the bed and drainage channels of the long-lost lake, stretching as far as 400km west of the Nile in southwestern Egypt.

The source for all the water would most likely have been Wadi Tushka, a pass to the west of the Nile, which is low enough for the Nile River to have flooded through, provided there was more rainfall and larger annual floods than are known today.

This theory was put forward by Dr Ted Maxwell of the Smithsonian Institution's Center for Earth and Planetary Studies in Washington in a recent issue of the journal *Geology*.

The discovery of this lake pushes back the origin of the "Gift of the Nile" floods to more than a quarter million

years ago and paints a drastically different picture of Egypt's environment than is seen today. It also explains the longstanding puzzle of the fish fossils found in the desert – fish that are of the same kinds that live in the Nile today.

Other researchers studying the same evidence are not convinced however that the Nile was the source of the water. They cite the absence of ancient shorelines, or "bathtub rings," that are often the definitive evidence of long-lost mega-lakes of wetter times in other parts of the world, including Nevada and California in the USA. Also absent are the distinctively lake-formed sediments in the basin itself.

These researchers are more inclined to believe that a long lineage of great lakes filled the basin that might not have needed the Nile as their source.

"Other possibilities for the water supply include drainage from the

highlands to the west, groundwater recharge from the south, and local rains, potentially from different directions and sources," says Prof Christopher Hill of Boise State University, Idaho.

According to him, the older sedimentary remnants associated with springs and archaeological artifacts seem to point to local rains or groundwater creating lakes that were smaller and smaller over time. Those sources could have, perhaps, enlarged the lake enough to join and flow into the Nile and allow the fish to move upstream into the lake, without Nile flooding.

That would mean the water at Wadi Tushka would have been flowing east into the Nile rather than west into the lake. In other words, the ancient lake certainly existed, but the jury is still out on how it got there. – Source <http://news.discovery.com>

Buried pyramids found via satellite

SEVENTEEN pyramids previously concealed underground are among the ancient structures identified in a new satellite survey of Egypt.

Infra-red images from NASA have revealed more than 1 000 tombs and 3 000 early settlements so far. Initial excavations have confirmed several of the findings, including two of the pyramids.

US Egyptologist Dr Sarah Parcak, from the University of Alabama at Birmingham told reporters that she couldn't believe they could locate so many sites all over Egypt. "It just shows us how easy it is to underestimate both the size and scale of past human settlements," she said.

The team analysed images from satellites orbiting 700km above the earth, equipped with powerful cameras that can pin-point objects less than 1m in diameter on the earth's surface. Dr Parcak explained that the ancient Egyptians had built their houses and structures out of mud brick, which

was much denser than the soil that surrounded it.

This meant that the shapes of houses, temples and tombs became visible on infra-red images.

When Dr Parcak and her team visited Egypt for the making of the new BBC documentary, *Egypt's Lost Cities*, the local authorities were initially skeptical about her findings. But after being told by Dr Parcak that she had seen two potential pyramids near Saqqara, they made some successful test excavations and now believe in the significance of these finds.

Some exciting trial excavations also took place at Tanis. As Dr Parcak explained: "They unearthed a 3 000-year-old house that the satellite imagery had shown and the outline of the structure matched the satellite imagery almost perfectly. This was a real validation of the new technology."

The satellite surveys will serve another important purpose: the Egyptian authorities will use them

to protect the country's antiquities in future. During the recent political revolution looters accessed some well-known archaeological sites. Dr Parcak confirmed: "We can tell from the imagery at which particular period of time a tomb was looted. We can therefore alert Interpol to watch out for antiquities from that time that may be offered for sale."

She added that this new technology would be a major help for archaeologists around the world, as it would give them a much bigger perspective on excavation sites and assist them in deciding on which areas to focus their attention.

A great future is predicted for this innovative "space archaeology". As Dr Parcak says: "In Egypt we have just looked at the sites close to the surface. There are many thousands of additional sites that the Nile has covered over with silt. This is just the beginning of this kind of work." – Source: Frances Cronin, BBC News

Oldest human heart-disease case found

THE oldest known incidence of heart disease in a human being occurred in an ancient Egyptian princess who lived more than 3 500 years ago.

This discovery was made by a team of American and Egyptian physicians and scientists who examined the CT scans of 52 mummies over the past few years. Their findings were published in the medical journal *JACC Cardiovascular Imaging* in April this year.

The paper presents the clearest evidence yet that atherosclerosis, the hardening of the arteries from a build-up of deposits that restricts the blood flow to the heart, isn't just a modern problem. In fact, it was a major health threat to people who lived thousands of years ago.

The ancient Egyptians had a healthy diet of fruits, vegetables and grains, plus the occasional lean meat. They were probably much more active than today's society. As the US cardiologist Dr Greg

Thomas said: "To me it's shocking that people who had entirely different lifestyles would have had the same disease we have."

Most of the mummies come from the National Museum of Antiquities in Cairo, where they were examined over five years from 2005 to 2010. The remains were carefully removed from their sarcophaguses and linen wrappings and run through the tube of a CT scanner. Because of the varying trends in mummification over the centuries, the organs were often missing. But in the 44 mummies in which cardiovascular tissue was visible, 20 of them showed the unmistakable signs of atherosclerosis.

Upon further examination of the images, it became clear that two of the mummies definitely had heart disease. These were a man in his 50s named Djehor (who lived between 304 and 30 BCE) and Princess Ahmose-Meyret-Anon, who lived between 1580 and 1550 BCE.

The previous oldest case of confirmed heart disease was in an Egyptian mummy named Lady Teye, who lived during the 21st Dynasty, from 1070 to 945 BCE.

The princess' cause of death is unknown, but her condition probably severely diminished her quality of life. As Dr Thomas said: "There's a good chance she had heart and chest pains, and she could have died because of the extensiveness of her blockages." Today, she would live much longer through modern medicines and innovations like stents and bypass operations.

A medical text written on papyrus circa 1555 BCE, therefore during the princess' lifetime, describes the classic signs of a fatal heart attack: "If thou examinest a man for illness in his cardia, and he has pains in his arms, in his breasts and on one side of his cardia ... it is death threatening him." – Source: Landon Hall, *The Orange County Register* <http://www.ocregister.com>