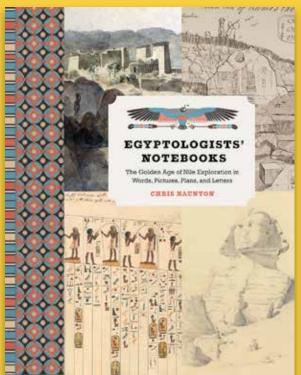
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UNLOCKING TUTANKHAMUN



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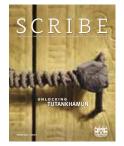
Previous filling and attempts at stabilizing fragile plaster surfaces in KV 62 PHOTO: FACTUM ARTE

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Unbroken seal and cord on the third shrine; Burton Po631 (colorized) © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD SCRIBE THE MAGAZINE OF THE AMERICAN RESEARCH CENTER IN EGYPT

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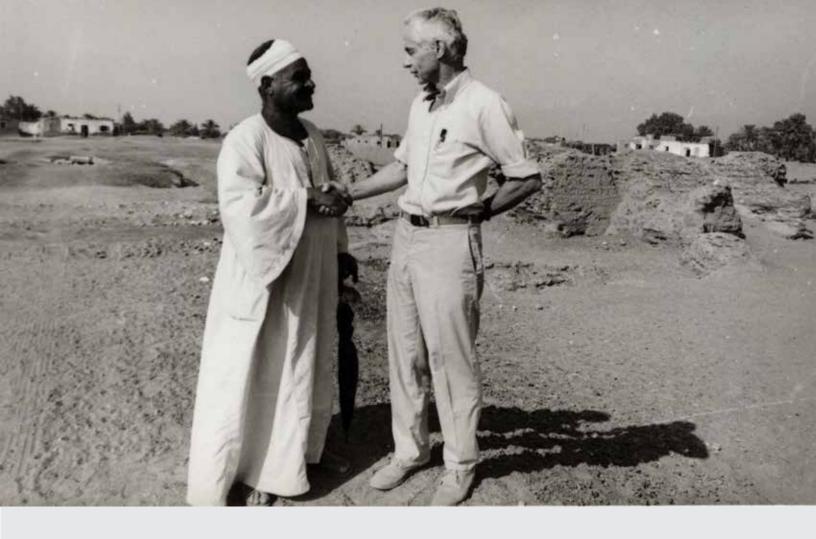
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PHOTOGRAPHER ACKNOWLEDGEMENT

On page 50 of Scribe Issue 8, we printed a photo of Robert Ritner with the note: "If you took this photo and gave a copy to Janet Johnson, please identify yourself so we can credit you."

This photo was taken by Brian Muhs, Associate Professor of Egyptology at the Oriental Institute at The University of Chicago, in 2014 at the ARCE Annual Meeting in Portland, OR, and shared with his colleagues, including Johnson.

Thank you, Brian!



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Sally El Sabbahy Editor In Chief

WE WANT TO HEAR FROM YOU!

Are you a student or researcher interested in contributing to Scribe? Have feedback or questions about any of our featured projects or content? Get in touch. **scribe@arce.org**

Unlocking Tutankhamun

his November marks 100 years since the discovery of the tomb of Tutankhamun, an event that forever altered our appreciation of the Valley of the Kings and made permanent the popular fascination with Egypt's pharaonic past. As one of the many ways that ARCE is marking the occasion, Scribe has gone full Tutmania with features that explore Tutankhamun's rule and government; the conservation of his tomb as well as the replication of it; an exciting archival exhibit at the Bodleian; and a never-before-told story of the tomb's fragmented false door. I am greatly indebted to our outstanding cohort of contributors, all of whom have made this issue of Scribe our most memorable one to date. I'd like to take this opportunity to extend thanks to Factum Arte, the Getty Conservation Institute, the Griffith Institute, Lyla Pinch-Brock, and Nozomu Kawai for sharing their knowledge and expertise with our readers.

Despite the excitement of the centennial and the sizable festivities planned in Egypt and institutions around the world, I imagine that by November 4 some of us may be approaching our saturation point for all things Tutankhamun, and so I have some advice: look beyond the golden mask. In recent years much has emerged and changed in the discourse around the discovery of Tutankhamun and the management of his tomb and funerary objects. It can be easy to overlook how complicated a discovery of this magnitude was at the time; 100 years may be insignificant in the lifetime and afterlife of Tutankhamun but that perspective shifts when you consider that the discovery of the tomb marked the first time that Egypt fought to assert its right to own and manage its heritage. Perhaps this is the year that such a story will finally join more popular narratives around Tutankhamun and serve as a reminder to us - as practitioners, scholars, and lovers of Egypt and its history - that this centennial represents much more than the discovery of a young pharaoh and his glittering tomb.

On a more personal note, I will be leaving my position as Scribe's editor in chief to dedicate my time more fully to ARCE's projects department. I am extremely proud of how Scribe has evolved and grown since I inherited it at Issue 4 and I look forward to seeing it continue to do so...but as a reader for a change! Updates on excavation, conservation, and research projects developing across Egypt



Dr. Louise Bertini Executive Director

"On behalf of ARCE, I am deeply grateful to all those who supported our End of Year fundraising campaign to support our Tutankhamun centennial celebration activities."

Celebrating the Centennial

fter two years of adapting and adjusting, we are thrilled to resume hosting our most important programmatic event of the year, the ARCE Annual Meeting in-person. Warmest welcome to our members and attendees who are joining us in California, as well as those continuing to tune in from across the globe for our virtual component. I'd like to thank our Annual Meeting sponsors:* Keynote Presentation Sponsor National Geographic, President's Reception Sponsor Getty Conservation Institute, and our official Airline Sponsor EgyptAir. Thank you as well as to our keynote speaker, George Herbert, 8th Earl of Carnarvon, for helping us to mark this special centennial year celebrating the discovery of the tomb of Tutankhamun. In addition to our regular programs and fieldwork, ARCE has been rolling out a suite of Tutankhamun-themed content to celebrate the 100-year anniversary, from lectures to a member tour. Let's take a closer look:

Philanthropic Support

On behalf of ARCE, I am deeply grateful to all those who supported our End of Year (EOY) fundraising campaign to support our Tutankhamun centennial celebration activities. Your support directly funds our outreach programs and events in honor of this great archeological discovery, like our upcoming Chapter Speakers Tour. Special thanks must be extended to ARCE Board of Governors Member Adina Savin, whose generous donation of \$100,000 has supported the restoration and adaptive reuse of Carter House in Luxor. Her gift ensures that this irreplaceable historic site will endure for future generations while enhancing the visitor experience. We'll look forward to sharing a detailed scope of the project with a feature article in a future issue of *Scribe*. Gratitude is also extended to Dr. Victoria Jensen for her gift to the Director's Discretionary Fund in support of ARCE's greatest needs. Our generous EOY donors are recognized on page 72 of this issue and I invite you to learn more about Dr. Jensen's journey into Egyptology on page 56.

Fieldwork

It is certainly a busy field year for ARCE. In the fall two major milestones were accomplished: the installation of a protective shelter to shield paintings in the nave of the Red Monastery in Sohag, and the full, high-definition 3D scanning of Khonsu Temple in Luxor. Thanks to our members who supported our Khonsu Temple fundraising drive in the spring, structural and stone repairs at Khonsu Temple have begun and will be ongoing until the summer. We continue this work in parallel with our exciting project at Carter House in the West Bank. To learn more about our current field activities, see page 54 of this issue.

Programs

This summer we will launch our National Chapters Speakers Tour. The series will feature Tut-themed lectures by Marc Gabolde and Betsy Bryan, so be sure to keep your eyes peeled for when they'll be in your city – I hope to see you there! There are also a number of Tutankhamun-themed festivities lined up, including a pop culture event in Washington D.C. in October and a centennial conference in Luxor in early November 2022. Make sure to bookmark our events calendar at ARCE.org, it's an easy, accessible way to keep track of our events in both the U.S. and Egypt. Speaking of our website, have you visited the ARCE Library's online portal yet? With over 5,000 e-books currently available and more to come, it is an ideal scholarly resource. See page 55 for more information.

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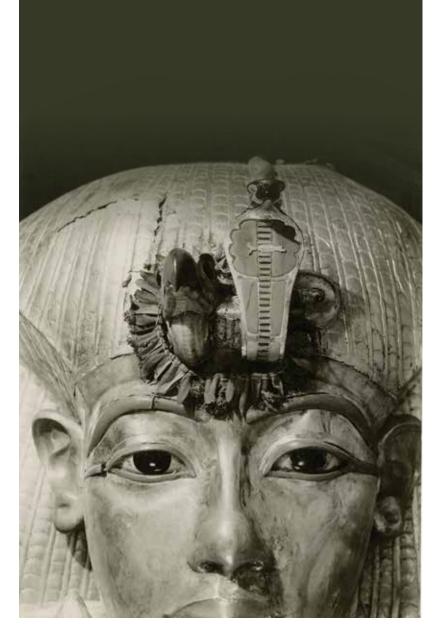
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Tutankhamun: the Oxford Archive

BY DANIELA ROSENOW AND RICHARD BRUCE PARKINSON, THE GRIFFITH INSTITUTE



n 1922, as Egypt became an independent nation, the tomb of the young king Tutankhamun was discovered at Luxor, the first known intact royal burial from ancient Egypt. The excavation of the small but crowded tomb by Howard Carter and his team generated enormous media interest and was famously photographed by Harry Burton (1879–1940) from the Metropolitan Museum of Art (MMA), New York. These photographs became part of an archive created by the excavators, along with letters, plans, drawings and diaries. When Carter died in 1939, he bequeathed most of his estate to his favorite niece, Phyllis Walker (1897-1977), who had spent a season in 1931 with him in Luxor. His estate included the archaeological records stored in his flat in London and, following the advice of the Egyptologists Alan H. Gardiner (1879-1963) and Percy E. Newberry (1869-1949), who had both been on the team, she presented the documentation with associated copyright to the Griffith Institute, University of Oxford, in 1945, as a memorial to her uncle and his work.

The Tutankhamun archive in Oxford comprises 48 maps and plans, over 3,500 object cards with associated photographic prints, around 1,200 original glass negatives, over 600 lantern slides and a set of ten large albums of Burton's photographs. It also includes Carter's personal diaries and archaeological journals, notes and drawings for his planned full publication, Lucas's conservation logbooks and notes, records of the unwrapping and examination of the king's mummy, as well as drafts of Carter's 'Autobiographical Sketches.' The Oxford archive continues to acquire new relevant material, expanding and diversifying the original holdings, and the collection is stored in the Egyptological archive of the Griffith Institute, preserving in part its original arrangement by Carter. Although the physical archive remains in Oxford as part of the processes that created it, it is shared internationally

LEFT: A small garland of cornflowers and olive leaves, on the royal insignia of cobra and vulture on the forehead of Tutankhamun's outer coffin; Burton Po709 © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD in the digital world and can be freely explored online (*griffith.ox.ac.uk/discoveringTut*), allowing scholars from across the world to continually reassess the burial and its discovery.

To celebrate the 100th anniversary of the



ABOVE: Phyllis Walker as a child in a family photograph, around 1903; Carter MSS viii.3 © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD discovery of the tomb of Tutankhamun in November 1922, the Griffith Institute staff are working with Bodleian Libraries, University of Oxford, on an exhibition of the archive, with Richard

Bruce Parkinson and Daniela Rosenow as lead curators. The free exhibition will take place in the 'Treasury' gallery in the Weston Library at the Bodleian from April 2022 to February 2023. Visitors will first see a short film sequence showing a three-dimensional flight through the tomb and then view a selection of over 200 documents from the Institute's archive, as well as material from the Bodleian's own collections, such as copies of the *Illustrated London News*. This material will present a vivid and first-hand account of the long search for the tomb and its discovery, of the spectacular variety of the king's burial goods, and of the remarkable work that went into the documentation and conservation of the tomb and its more than 5,000 objects.

One aim of the exhibition is to showcase the intricacies of the archaeological processes that included recording, cleaning, photographing, and conserving all the objects, which were packed at "All too often, the discovery of the tomb is uncritically narrated as a heroic event in a supposedly 'golden age' of archaeology..."



ABOVE LEFT: Carter's Diary for 1922. Carter used a pocket-size Letts's 'Indian and Colonial Rough Diary' to record his activities during the eight months that he worked in Egypt each year. Neat, concise entries noted his departures and arrivals, lunch appointments, meetings with officials and colleagues, as well as his excavation. TAA Archive i.2.21 © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD

ABOVE RIGHT: Draft poster of the exhibition "Tutankhamun: Excavating the Archive" WESTON LIBRARY, OXFORD the end of each season and shipped to the Egyptian Museum in Cairo for immediate display. The work took a full ten years and involved a team of specialists. Besides Carter, they included Arthur Mace (1874-1928, a curator at the MMA), Alfred Lucas (1867-1945, a chemist working for the Antiquities Service and responsible for the conservation of the objects), the engineer Arthur R. Callender (1875-1936), Douglas E. Derry (1874-1961, professor of anatomy who, together with Saleh Bey Hamdi (d.1957), conducted the autopsy on the king's mummified body), Percy E. Newberry (a specialist for botanical remains), Alan H. Gardiner (for the texts) and James Henry Breasted (1865–1935, for the seals). The photographer Harry Burton was lent to Carter from the MMA's Egyptian expedition, and his extraordinary photographs have been described by Prof. Christina Riggs as some of 'the most famous and compelling archaeological images

PROJECT HIGHLIGHT THE OXFORD ARCHIVE

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LEFT: One of Carter's record cardsshowing his drawing of the jackal god Anubis (Carterno. 261) with notes and measurements; TAA Archive i.1.261.1

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BELOW: Arthur

Mace (standing on the table) and Alfred Lucas (holding a spray) working on one of the 'guardian statues' (Carter no. 22) in the tomb of Sety II (KV 15); Burton Po493

© GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD

ever made.' During the clearance, Burton first took photographs of an area of the tomb and then again when numbered cards had been placed beside each object, assigning each an inventory number. Burton then developed his glass plate negatives in a nearby tomb, repurposed as a studio, and it is estimated that he took well over 3,000 shots in these difficult conditions. Archaeology is unavoidably always a process of destruction, and during the archaeological clearance the objects became removed and isolated from their complex context but the archival records preserve this lost context and document the process of clearing.

The team members were all men but a few women were involved, such as Harry Burton's wife Minnie (1875–1957). Although not officially a team member, she occasionally assisted her husband with numbering and cataloguing photographic prints. The exhibition will display, for the first time, her personal diary that is now a valuable source of information about who was in Luxor at the time. Her entries recorded social engagements—numerous lunches, teas and dinners with fellow archaeologists, their families and eminent visitors—her regular walks and daily routines, taking care of the couple's living quarters, sewing, writing letters, and gardening. Her entry on 19 December





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1922 records her first visit to 'the' tomb with the single word, underlined: 'Wonderful.'

The major aim of the exhibition is to demonstrate how the archive can enable a nuanced and inclusive view of the complexities of both the ancient burial and the modern excavation. We will spotlight the often overlooked Egyptian members of the team, who were so central to the discovery. These included the chief foreman (rais) Ahmed Gerigar, and his colleagues Gad Hassan, Hussein Abu Awad and Hussein Ahmed Said (dates unrecorded). They were named and thanked in Carter's publications, but Egyptians were otherwise rarely named in the records and their role was downplayed in official accounts. Nevertheless, their crucial presence and contribution is visible in the archive's photographs, perhaps most movingly in the images of an Egyptian boy wearing one of the king's jeweled pendants, which will be a focal point for the display.

All too often, the discovery of the tomb is uncritically narrated as a heroic event in a supposedly 'golden age' of archaeology, and is often described in terms of colonialist nostalgia. The popular appeal of the 'treasures' of Tutankhamun has unwittingly added to the legacy of orientalism in Egyptology, and this aftermath is perhaps the real 'curse' that emerged from the tomb. In contrast, the archive can reveal the story in all its historical complexity; it is very much part of its time, but it is still able to throw new light on both ancient and modern human stories. This exhibition will hopefully provide an accessible and authoritative overview of the archive, drawing on new research and giving intimate insights into one of the world's most famous archaeological discoveries. We hope it will give the visitor an opportunity to contextualize, celebrate, interrogate, and criticize the famous events that it commemorates.

The exhibition will be accompanied by a program of collaborative and standalone events, including lectures by specialists on the period, and a visit is planned by the counter-tenor Anthony Roth Costanzo, who will be starring as Tutankhamun's father in Philip Glass' Akhenaten at the Metropolitan Opera New York. An accompanying book from Bodleian Library Publishing (*bodleianshop.co.uk/products/ tutankhamun-excavating-the-archive*) has been written by the staff of the Griffith Institute to provide an accessible and authoritative overview of the archive and features 50 key items. **TOP LEFT:** Photograph of an Egyptian boy wearing a heavy jeweled pectoral (Carter no. 267g–h). When first published in *The Illustrated London News* in April 1927, the photograph was described as having been taken simply 'to show the method of suspension,' but the boy's expression suggests a more complex human response and an awareness of the weight of ancient history on his shoulders; Burton P1189 © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD

TOP RIGHT: Diary of Minnie C. Burton for 1922–6, showing her entry on the day she entered the tomb for the first time: "Painting my furniture in morning & afternoon. Mr Carter sent over for me his donkey to ride over & see "the" Tomb Tutankhamen. Wonderful. Mr Callendar [sic] there & later Dr & Mrs Breasted & the little girl. Went over the hill both ways. Mr Hauser & Hall came back from Assuan. Mrs W[inlock] & F[rances] to the Davies' for tea". Minnie C. Burton, Luxor, 19–26 December 1922, M. Burton Diary, pp. 64-5. © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD

View of the burial chamber wall paintings from the antechamber platform looking northwest, showing the wall paintings, stone sarcophagus, and new lighting system © J. PAUL GETTY TRUST 11

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CONSERVING THE TOMO O THE TOMO O

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BY LORI WONG AND NEVILLE AGNEW,

GETTY CONSERVATION INSTITUTE



hen the tomb of Tutankhamun was discovered by archaeologist Howard Carter in 1922, the media frenzy that followed sent

shockwaves around the world. The tomb immediately became synonymous with the fame of the boy king (r. 1333 BCE - 1323 BCE) and the golden treasure found within, capturing the world's imagination. In the ensuing years, much has been researched and written about Tutankhamun, but mainly in the context of its archaeological significance and influence on the study of ancient Egypt. It is rare that the tomb itself is looked at through the lens of its conservation and preservation. Indeed, in the nearly hundred years since its discovery in November 1922, the tomb has been subject to numerous scientific investigations and conservation interventions, driven by ongoing concerns for its preservation and survival. As we approach the centenary of the discovery of the tomb, the question arises: how can we ensure that the values and legacy of Tutankhamun's tomb are protected and preserved intact for future generations?

In the Beginning

As early as Howard Carter's meticulous excavation of the tomb and removal of most of the artifacts, which lasted for a decade between 1922 and 1932, initial efforts were made to preserve the tomb and its contents. Carter, an artist turned excavator, with field experience but no formal archaeological training, took what was considered at the time to be a novel approach to site excavation, carefully recording and documenting the tomb and its objects before and after their removal (James 1992). He recruited Alfred Lucas and Arthur Mace to join the team to be, "responsible for the detail-noting, mending, and preservation" of the thousands of artifacts (Carter & Mace 1963, 130). The photographer Harry Burton and architects Walter Hauser and Lindsley Foote Hall were also employed to produce careful site documentation in the form of photographs and measured drawings that recorded the as found location of objects within the tomb.

Lucas, a chemist, who had been employed at the Egyptian Department of Antiquities in Cairo, provided a scientific approach to the preservation efforts, "As the objects from the tomb were all very dirty, and in some instances broken or in a bad state of preservation, a certain amount of cleaning, repairing and preservative treatment was necessary to enable them to be handled, photographed, packed and transported" (Gilberg 1997; Lucas 1963, 187-188). Mace, a curator at the Metropolitan Museum of Art in New York who had significant field experience in Egypt, was part of the excavation team for the first two seasons and also assisted in this work (Lee 1992). A makeshift 'laboratory tomb' was set up in the nearby tomb of Seti II (KV 15) to provide a secure location to undertake more laborious conservation treatments.

Though none of the excavation team involved had any specialized training in preservation, their actions, including making condition assessments and conducting preservation treatments, and the care they bestowed on the artifacts, can be viewed as a precursor to what was emerging in the first half of the 20th century into the modern field of conservation. These early preservation efforts were, however,







LEFT: Three separate scenes are depicted on the north wall of the burial chamber, arranged right to left. In the first, Tutankhamen's successor, Ay, is shown performing the 'opening of the mouth' ceremony before Tutankhamen in the form of Osiris. In the next scene, Tutankhamen appears in the form of a living king being welcomed into the realm of the gods by the goddess Nut. In the final scene, Tutankhamen is followed by his ka or double spirit, as he is welcomed into the underworld by an embracing Osiris.

PHOTO: CARLETON IMMERSIVE MEDIA STUDIO; CARLETON UNIVERSITY © J. PAUL GETTY TRUST mainly driven by museum exhibition priorities, which required objects to be strengthened enough to enable their removal from the tomb and to survive the journey to Cairo-and in some cases pieced back together again or restored to their original splendor-with the ultimate end goal of being put on display. Lucas's handwritten notes describe scientific analyses to understand the material composition of objects, provide information on their conditions and causes of deterioration, as well as detailing the treatment materials used and their application, "Before an object can either be cleaned or preserved, its nature, and also the nature of any change or deterioration that has taken place, must be known, as also something of the properties of materials in general, since, on this knowledge, must be based

the treatment required" (Lucas 1963, 187-188) (1). Mace's notes from the first season of excavation in 1922-1923, describe his work mainly consisting of, "Waxing & noting," (2) the former in reference to the liberal use of melted paraffin wax that was dripped or brushed onto objects to secure them for packing and transport. While these treatments were effective at the time, if we reevaluate these materials and approaches today, they would be considered inappropriate and even harmful to the object. The field of archaeological conservation has developed over the years and now places emphasis on concepts of 'minimal intervention' and 'reversibility' and interventions are based on scientific research and testing, experience, and the knowledge of how certain treatment materials can age and deteriorate over time.

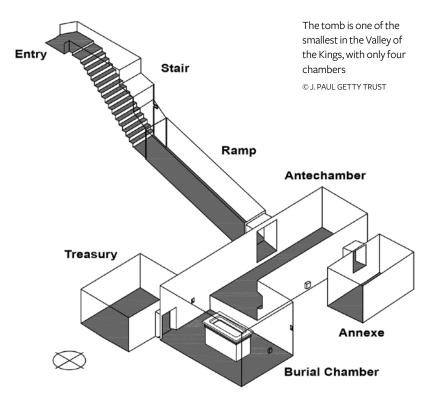
The Tomb's Enduring Concerns

While the objects Carter's team so assiduously catalogued and stabilized were then transported to Cairo, the tomb itself became a "must-see" attraction in the Valley of the Kings. The tomb of Tutankhamun has been open to the public since its discovery and at times heavily visited. Today, the tomb only houses a handful of original objects, including the mummy of Tutankhamun himself, the quartzite sarcophagus with its granite lid, and the wall paintings in the burial chamber.

Brown spots

The great demand for entry to the small tomb has given rise on numerous occasions to concerns among Egyptian authorities about the condition of the wall paintings. It was feared that the brown spots in particular—microbiological growths on the burial chamber's painted walls—were growing larger, threatening to engulf the paintings. "Your last chance to see Tutankhamun's tomb," read a news blog from *The Guardian* (Pitts 2011), "Visitors are causing so much damage to the tomb of Tutankhamun that Egypt's Supreme Council of Antiquities (SCA) wants to close it and open a replica instead."

The brown spots were already a concern when Carter first opened the tomb. Lucas describes, "The entire surface of all the walls show myriads of irregular roundish shaped dark brown-coloured spots having all the appearance of fungoid growths. On the ceiling there are a few similar spots as also on the walls and ceiling of the ante-chamber. The spots are raised



slightly above the surface of the wall." (3) It should be noted that no other tomb in Egypt is known to exhibit similar microbiological issues.

Visitors

Apprehension over the impact of visitors on the tomb is a valid concern since visitors introduce humidity through perspiration and their exhalation as well as emit carbon dioxide. In fact, the initial opening of BELOW: (a) Detail of Anubis on the south wall of the burial chamber showing the brown spots in a photograph taken by Harry Burton in the 1920s, (b) and the same area today. The brown spots have not changed and do not pose a risk to the paintings © J. PAUL GETTY TRUST



RIGHT: Patches of dust visible on the head of Tutankhamen on the north wall © J. PAUL GETTY TRUST



BELOW: Visitors waiting in the entry area to descend down into the tomb © J. PAUL GETTY TRUST the tomb caused a dramatic change in environmental conditions and the excavation team were aware of the severity of moisture as a cause of deterioration (Carter & Mace 1963). Humidity can physically stress objects when the amount of water vapor in the air fluctuates. In a 2009 article in *The Telegraph* (Bloxham 2009), Zahi Hawass, then-Secretary General of the SCA stated, that "the levels of humidity and fungus are increasing because of the breath of visitors and this means that the tombs could disappear between 150-500 years."

Carbon dioxide and physical damage

With thousands of visitors descending into the small subterranean rock cut tomb, carbon dioxide build up can create an uncomfortable and potentially unsafe atmosphere for visitors themselves. But perhaps even more harmful has been the damage to the wall paintings. Close examination of the condition of the surfaces of the wall paintings shows an accumulation of damage and loss, including scratches and abrasions in areas close to where visitors have access, and from inadvertent harm likely caused by film crews with equipment operating in the burial chamber's tight spaces.



Dust

Dust is also a serious problem in the tomb. Visitors carry dust on their shoes and clothing that settles on the floor and horizontal surfaces. A more serious consequence is that the dust forms a grey veil on the uneven surfaces of the walls, obscuring the colors of the paintings and necessitating cleaning, which increases the risk of damage and loss.

The effects of high humidity, excessive carbon dioxide, dust, crowding, and poor presentation have also made for an unpleasant visitor experience as tides of humanity flow in and out of the tomb during periods of peak visitation. Like the golden treasure that the tomb formerly held, ticket sales have been a golden egg—at least prior to the collapse of the tourism industry caused by the turmoil of recent years. Undoubtedly, visitor numbers will swell again when the threat of Covid-19 recedes and stability is reestablished, and when they do, the tomb's inherent fragility will remain a concern.

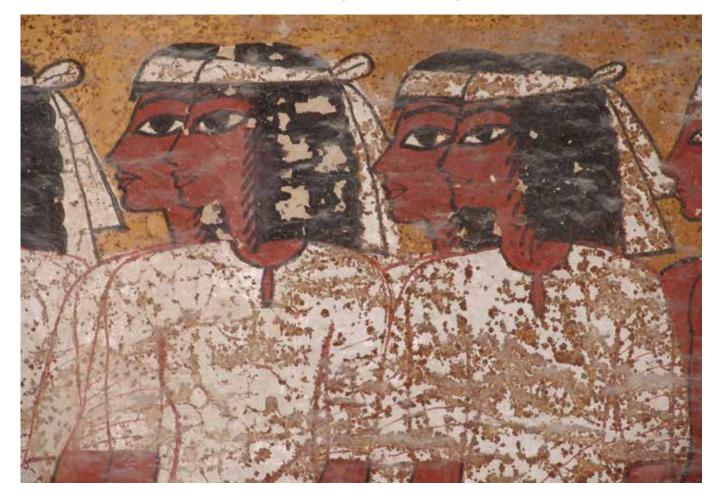
Creating a Plan

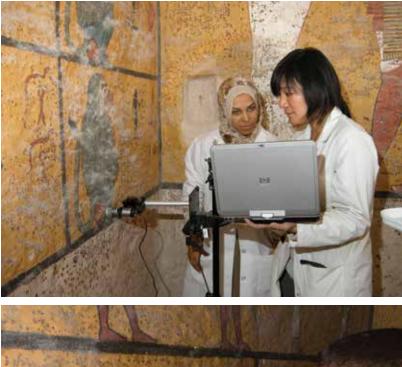
These concerns prompted Egyptian authorities to initiate a multiyear collaboration with the Getty Conservation Institute (GCI). In 2009, the SCA and



the Getty Conservation Institute entered into a collaborative project principally focused on the integrated conservation, management, and presentation of the tomb and its wall paintings, to ensure a sustainable future (4). The Getty Conservation Institute already had considerable experience working in Egypt on the Tomb of Queen Nefertari project in the Valley of the Queens (1986–1992) (5) and on the plan for the conservation and management of the Valley of the Queens (2006-2011) (6). As with all Getty site projects, intensive study and documentation of the condition were the first order of business, with the wall paintings a focus, given the evidence of their endangered state. The Getty—mandated to investigate the tomb's actual LEFT: Arthur Mace (standing) and Alfred Lucas (sitting) working inside the makeshift 'laboratory' (set up in KV 15, the tomb of Seti II) on the conservation of one of the two sentinel statues from the Antechamber (Carter no. 22) in January 1924. The statue shows the King wearing the nemes headdress, kilt and sandals, and carrying a mace and a staff; Burton PO5017 © GRIFFITH INSTITUTE. UNIVERSITY OF OXFORD

BELOW: Flaking of the black paint on the east wall © J. PAUL GETTY TRUST







TOP: Investigation of the wall paintings using a portable microscope © J. PAUL GETTY TRUST

BOTTOM: Conservator cleaning the wall painting © J. PAUL GETTY TRUST

condition—went on to carry out the most thorough study since Carter's time. The team of experts included Egyptologist Kent Weeks to provide archaeological knowledge and background context of the Valley of the Kings; environmental engineers to investigate the tomb's microclimatic conditions; microbiologists to study the brown spots; documentation specialists to produce a current survey of the tomb, architects and designers to upgrade the tomb's infrastructure; scientists to study the original materials of the wall paintings and their conditions; and conservators to carry out condition recording and treatment and to train local conservators.

The objectives of this interdisciplinary and collaborative project were to conserve the paintings; improve environmental conditions; upgrade the infrastructure (lighting, walkways, viewing platform, and ventilation) and presentation (signage and interpretive materials); undertake the training of staff; and devise a program for sustainable maintenance and visitation of the tomb. Because the project allowed for unprecedented study of the tomb and its wall paintings, its findings have provided a deeper understanding of tomb construction and decoration practices of the New Kingdom period in ancient Thebes. The findings have also shed light on the tomb's condition and the causes of its deterioration and have helped the development of measures to counter ongoing risks.

Work Commences

Tutankhamun's tomb is simple in comparison with other royal tombs in the valley. With only four chambers, it is one of the smallest. In contrast, the tomb of the sons of Ramses II (KV 5), the largest in the valley, has more than 120 chambers (7). Its diminutive size is unusual, as is its location in the main valley rather than in the neighboring Western Valley, where other 18th Dynasty rulers, including Tutankhamun's successor, the pharaoh Ay in KV 23, (8) are buried.

These circumstances tend to confirm the widely accepted belief that after Tutankhamun's untimely death, the tomb was hastily adapted from one already under construction. This might also explain why only the burial chamber was decorated; the other chambers were left with their bare hewn rock walls. Also, surprising technical inconsistencies in the paintings were observed from wall to wall, including differences in setting-out technique and the omission of a ground layer on one of the walls—again suggesting haste in the tomb's preparation (Wong et al. 2012).

The paintings were in relatively stable condition, apart from localized flaking and loss of paint. Flaking was especially prevalent with the black and the red pigments on the east and west walls, but not on the north and south walls. Because of this irregularity, the flaking was likely due to inconsistencies in the materials used and their application. Other losses were attributed to mechanical damage caused by visitors. Newly designed barriers now restrict visitor access in these areas. Further losses can be connected to physical interventions on the paintings, such as dusting. The installation of a filtered air supply and exhaust ventilation system in 2015, and the implementation of recommendations to limit visitor numbers, help control humidity and carbon dioxide levels and also mitigate dust intrusion (Wong et al. 2018). These measures will, if sustained, lessen the need for dusting, thus helping reduce the risk of damage to the paintings.





ABOVE: (a). Training on the maintenance of the ventilation system and (b) environmental weather station to Valley of the Kings site inspectors and Ministry of Tourism and Antiquities conservators

© J. PAUL GETTY TRUST

Wall painting stabilization was undertaken, including paint flaking stabilization, plaster repairs, dust removal, and reduction of coatings from previous treatments. Past treatments were not always based on thorough understanding of the paintings' conditions and the causes of their deterioration. Condition monitoring protocols were also established to better evaluate future changes.

Another major concern has been the mystery of the brown spots that mar the paintings in the burial chamber. Already in the 1920s, Lucas scientifically studied the spots along with Dr. A. C. Thaysen, Head of the bacteriological laboratory at the Royal Naval Cordite Factory at Holton Heath, who was brought in to help evaluate the risks. They both concluded that the spots did not pose a risk to the tomb, "So far as can be ascertained no life of any kind, even of the lowest form, existed in the tomb when it was first found. Thus the morning after the sealed doorway of the Burial Chamber was opened, sterile swabs were taken into the extreme corner of the chamber near the back of the shrines, some six yards beyond where anyone had trod for more than 3,000 years, and were wiped on the walls, on the bottom of the outer shrine and under some reeds on the floor ... out of five swabs from which cultures were taken, four were sterile and the fifth contained a few organisms that were undoubtedly air-infections unavoidably introduced during the opening of the doorway and the subsequent inspection of the chamber, and not belonging to the tomb, and it may be accepted that no bacterial life whatever was present" (Lucas 1963, 165).

However, despite this diagnosis of the brown spots being dead, their highly visible nature has continued to fuel concerns over the years and led to additional microbiological investigations being undertaken. Most recently, in response to concerns raised by Egyptian authorities in 2009 about visitors causing the spots to grow larger, the Getty Conservation Institute, with microbiologists from Harvard University's Laboratory of Applied Microbiology (9), again concluded that the brown spots are no longer viable and do not pose a continued risk to the tomb and its wall paintings. A comparison of the spots with historic photographs from the mid-1920s showed no new growth. Scientists also undertook DNA and chemical analyses, mounted samples in cross section, and examined physical samples of the spots under magnification. These analytical investigations concluded that the spots were dead, and thus no longer a threat. Because the spots have penetrated the paint layer, they were not removed, since this would harm the wall paintings.

While the attention and care given to the preservation of artifacts by Carter and his team was unprecedented for its time and comprehensiveness and care, the modern profession of conservation has since emerged and advanced the way cultural heritage is protected and preserved. The conservation project between the Ministry of Tourism and Antiquities and the Getty Conservation Institute was completed in the fall of 2018. A holistic approach to the conservation of the tomb, including scientific study to understand original materials and causes of deterioration, pre-



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Undertaking a visual examination of the wall painting in the burial chamber © J. PAUL GETTY TRUST

ventive measures to create a more constant microclimate, remedial interventions to stabilize the wall paintings and infrastructure improvements to protect the tomb,

help to ensure that the values and legacy of TutankhamenTutankhamun's tomb are protected and preserved intact for future generations (Wong et al. 2021). All aspects of the project were undertaken in close partnership with the Ministry of Tourism and Antiquities and included training of conservators and Valley of the Kings staff. Throughout the project, the tomb remained open to visitors, with the exception of one month when the new viewing platform was installed. A symposium was held in January 2019 at the Mummification Museum in Luxor at which a summary of the project was presented. A project monograph is currently underway.

New viewing platform and barriers in the antechamber, designed to have minimal visual and physical impact on the tomb and to be of high durability and easily maintained © J. PAUL GETTY TRUST

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NOTES

1 The notes of the excavation team have been transcribed and made accessible through the Griffith Institute at Oxford University (www.griffith.ox.ac.uk/discoveringTut/journals-and-diaries)

2 Arthur Mace's Journal for 1922-23, p. 18, 28 April (© Griffith Institute, TAA iv.2.18)

3 Alfred Lucas's notes on conservation of objects from the tomb of Tutankhamun are available through the Griffith Institute, Oxford University: www.griffith.ox.ac.uk/discoveringTut/ conservation/4lucasn3.html (© Griffith Institute, TAA i.2.12a.3.13)

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5 www.getty.edu/conservation/our_projects/field_projects/ nefertari/

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7 www.thebanmappingproject.com/index.php/tombs/ kv-05-sons-rameses-ii

8 www.thebanmappingproject.com/index.php/tombs/kv-23-ay, the tomb is also referred to as WV 23.

9 groups.seas.harvard.edu/mitchell/index_files/Page404.htm

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ONE HUNDRED YEARS AFTER THE DISCOVERY

New challenges in a changing world

BY ADAM LOWE, FACTUM ARTE

I have often said I believe that the tombs of the pharaohs in the Valley of the Kings could be completely destroyed from modern activities in less than one hundred years. But there are tombs that we can replicate which contain magical, beautiful scenes. These are the tomb of Tutankhamun, the tomb of Seti I, and the tomb of the great Queen Nefertari. Therefore, I am supporting this important project to create facsimiles of these great tombs in order to save the originals. People can visit the exact replicas and experience the beauty of the tombs and know that they are preserving the past.

– DR. ZAHI HAWASS, 2009

A Sea of Change in the Valley of the Kings

A century is fraction of the 3,346-year history of the tomb of Tutankhamun, but even in the short time since Howard Carter made his discovery, the world has profoundly changed and these changes have accelerated in the past two years. The unavoidable specter of climate change and the COVID-19 pandemic have drawn a line between the past and the future, forcing us to urgently address how we experience, understand, and preserve our cultural heritage.

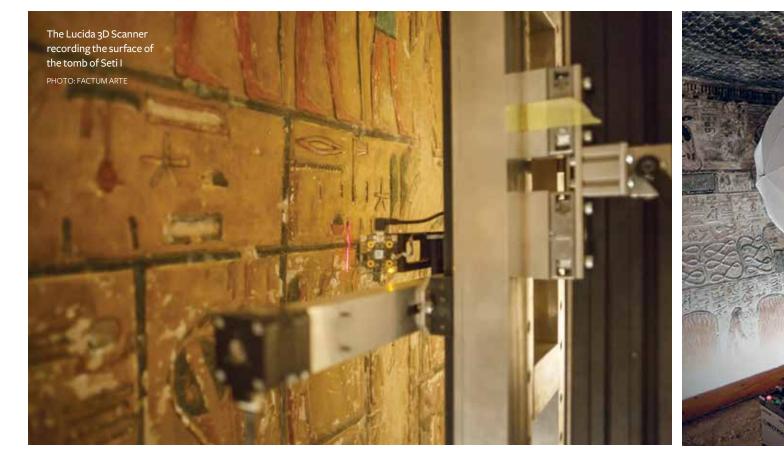
Now is the time to focus attention on sustainability, and Pharaonic natural philosophy has a great deal to offer: the tombs in the Valley of the Kings were built as part of a quest for eternity. Similarly, finding a way to avoid the irreparable loss of cultural heritage requires imaginative solutions and confronting some of our most deeply held prejudices about how we experience heritage. The relationship between vulnerable original objects that require constant maintenance to keep them intact, our experience of these changing objects, how we relate to material things, how they communicate, and what is being communicated must be reassessed.

It is in this context that I reflect on work that began in 2001* and that resulted in the high-resolution digital recording (in 3D and color) of the burial chamber, sarcophagus, and sarcophagus lid in the tomb of Tutankhamun – an initiative launched in 2009 by Factum Foundation with the Supreme Council of Antiquities (SCA), the Friends of the Royal Tombs of Egypt, and Basel University. From this collaboration and with the same partners, Factum Foundation also launched the Theban Necropolis Preservation Initiative (TNPI) in 2015, which is now based in Stoppelaëre House on a hill above Howard Carter's house (Carter House) at the entrance to the Valley of the Kings.

Factum's recording of the tomb of Tutankhamun in 2009 began on the instruction of Dr. Zahi Hawass and Dr. Mostafa Waziry with the support of the SCA. This work was undertaken by Factum Arte and led to the formation of Factum Foundation. The quality of the digitization demonstrated that it is possible to record the surfaces and structure of the tombs at a resolution that can be rematerialized with a close correspondence between the original and the replica. The resulting facsimile of the burial chamber of Tutankhamun was given to Egypt in November 2012 by Baroness Ashton on behalf of the European Union. In 2013, then-Minister of Antiquities, Dr. Mohamed Ibrahim, took the decision to install the facsimile adjacent to Carter House. In 2014, Factum Foundation commissioned Tarek Waly to design an underground space and the physical facsimile was installed, as planned, later that year. It attracted extensive media attention and now plays a

LEARN MORE

* The creation of a facsimile of the tomb of Seti I was first imagined in 1988 by the Society of Friends of the Royal Tombs of Egypt. Factum Arte's involvement began in 2001 with the approval of a research project by Dr. Gaballa Ali Gaballa to develop the techniques needed to scan the tomb. In 2002, an exact facsimile of the tomb of Thutmosis III was produced by Factum Arte, demonstrating the level of accuracy that is possible when the application of technology is combined with highskill mechanical and manual labor.



significant role in the discussion around the future of heritage preservation.

The Challenge

The technical skills of the pharaonic craftsmen ensured the survival of Tutankhamun's tomb. In 1922, Carter discovered the tomb in very good condition and filled with objects but in the 100 years since then it has suffered serious decay. When Carter opened the tomb, he found that the painted walls were covered in dark brown spots of microbacteria (more easily visible once the tomb had been emptied of its contents), which revealed that the tomb had been painted and sealed quickly. With the opening of the tomb, the young Tutankhamun emerged from obscurity and captured the public imagination. The painted chamber and its treasures are among the most celebrated cultural artifacts in the world and the stories that surround them continue to infuse generations with the draw of Pharaonic Egypt. In the years following his discovery, Carter expressed concern that large numbers of visitors would damage the fabric of the tomb - he likely never imagined that eventually over 1,000 visitors a day would pay considerable money to enter it!

The fragility of the surface of the tomb is clear to see. Every morning a thick layer of dust is wiped off the





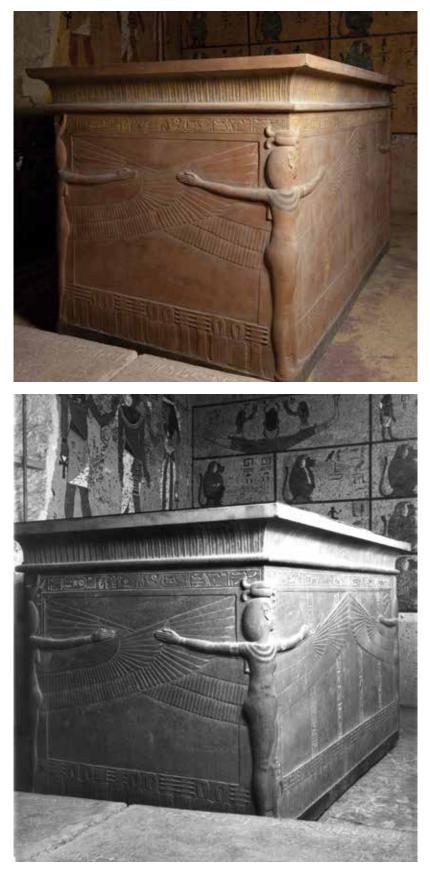
ABOVE: An image of the Stoppelaëre House with a Photoshop addition of the proposed sign PHOTO: FACTUM ARTE

BELOW: Gabriel Scarpa recording the color of the tomb of Seti using composite photography PHOTO: FACTUM ARTE sheet of glass that covers the sarcophagus. Removal of dust from the walls is a delicate task and any method causes some paint loss. Airborne pollutants, bacteria, micro-organisms, and general wear and tear add to the problems, but not as dramatically as the visitors whose bodily presence creates dynamic changes in the tomb's temperature and humidity, leading the plaster surface to expand and contract and gradually detach from the surface of the rock. The New Yorker described the atmosphere in the tomb as a "swampy mist of breath and sweat" in a 2016 article titled 'The Factory of Fakes - How a workshop uses digital technology to craft perfect copies of imperiled art' by Daniel Zalewski. In the same article, Bahaa AbdelGaber, now the Director of the West Bank, remarked on the smell, especially on hot days.

Previous restorations are visible and reveal different methods to disguise the interventions. On the north wall there is a large area, of about one square meter, that has been restored and repainted with dark brown paint flicked onto the surface to mimic the bacterial growth. When was this restoration carried out? Was it instructed by Carter or is it a more recent change? In Burton's photos the area appears intact but there is not enough detail when enlarged to see if it was an early infill. While Tutankhamun's tomb is one of the best documented of all archaeological sites, this is just one instance that highlights the importance of, and need for, written, drawn, and photographic documentation. In the 21st century, digital records of the highest resolution become a new resource.

The Critical Need for Documentation

Carter was an artist with a deep appreciation of the

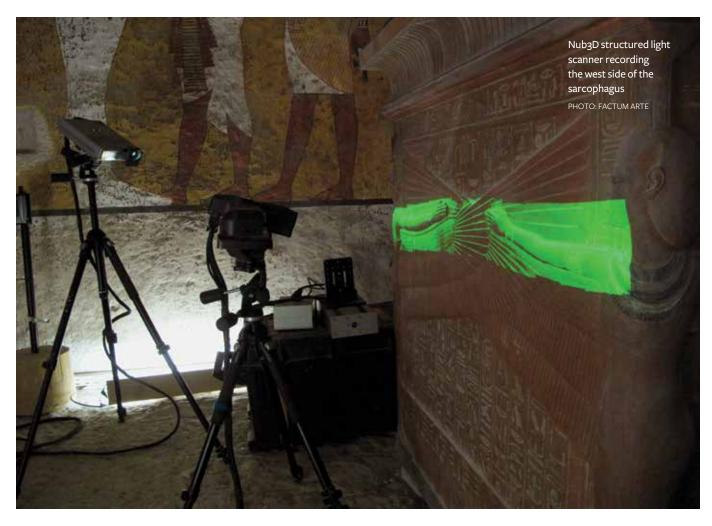


ABOVE: The facsimile of Tutankhamun's sarcophagus installed and Harry Burton's photograph of the original (Burton Po646; © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD), taken from a similar angle with a different lens PHOTO: FACTUM ARTE

articulate nature of material evidence. He looked and he drew, and through drawing his thoughts took form. Carter's drawings and notes, now preserved in the Griffith Institute, Oxford University, and freely available online, were supplemented by Harry Burton's photographs. Burton worked in Egypt for the Metropolitan Museum of Art from 1915 until his death in 1940, producing over 12,000 large format glass plate negatives. Institutions at that time saw the profound importance of documentation and so ensured that it was provided and funded. Sadly, this is not the case today. Burton was 'loaned' by the museum to help Carter, and the photographs he took in the tombs of Tutankhamun and Seti I are at once documents and works of art; his 'eye' and cinematic skills are now part of the tombs' histories. Chicago House developed its complex and technically beautiful documentation system to overcome subjectivity and provide accurate data for academic study using the technologies of the 20th century. The recordings carried out by Factum Foundation use 21st century technologies to ensure even greater objectivity. They complement the scientific studies done by the Getty Conservation Institute (GCI) during the recent ten-year program (2009-2019) that focused on research, restoration, and the upgrading of the infrastructure in the tomb.

Our in-house development of new technologies has enabled Factum's current methodology for recording fragile and vulnerable sites. All the work carried out is completely non-contact. Our mission is to digitize at the highest resolution, securely archive the data, and ensure that the Ministry of Tourism and Antiquities owns and benefits from the archive. The agreement with the Ministry ensures that the data is made freely available for the study and preservation of the tomb. Using specially designed software interfaces, the walls of the burial chamber were put online in 2012, allowing the tomb to be studied remotely at high-resolution as 3D surfaces and composite color images. The two can either be examined separately or overlaid. We are currently working on an interface that will add the 2019 color recording to facilitate condition monitoring. The online data has attracted significant attention and raised new speculation about the tomb. In response, ongoing research is being led by Dr. Mamdouh Eldamaty using ground penetrating radar (carried out by Japanese, American, Italian, and British teams). This is leading to a new form of digital connoisseurship and forensic study that is helping to reveal the complex histories of the Theban Necropolis and the dynamic nature of originality.

Part of the purpose of recording is to encourage exactly this: we want people to look! New



observations continue to be made, and these in turn contribute to a deeper understanding of the making, significance, and ongoing history of the tombs. They can also inform future preservation and restoration protocols. One area of study now emerging is focused on the bacterial growth in the tomb. What initially appears to be everywhere, on closer inspection seems to prefer some areas and colors to others. The density of the microbacteria implies the presence of moisture or organic material in the binding agent used in the paint. Binding agents are more difficult to analyze than mineral pigments, but gum arabic has different qualities to an animal glue or a casein. Microbacterial patterns could lead to information about the thickness of the walls and the nature of the rock behind the plaster, while binding agents may offer insights into methods of paint application, especially in the black lines delineating the main figures.

The Process of Recording and Preserving Heritage in an Age of Mass Tourism

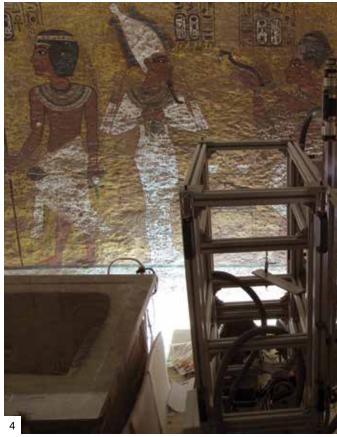
Recording the tomb of Tutankhamun presented specific challenges. It is a small space and the sarcophagus



and sarcophagus lid reduce the available working area. The distance between the sarcophagus and the wall is 126 cm at the narrowest point. Work to record the tomb was carried out in 2009 without interrupting the normal flow of visitors and used non-contact and entirely safe imaging technologies. On busy days over 1,000 people visited the tomb. Most showed a great interest in the work that was being carried

The system used to ensure accurate color matching during the production of the facsimile uses speciallyprepared color sticks that are matched to the exact tone and sheen of the color on the wall PHOTO: FACTUM ARTE





record one measured point every 100 microns, or 100 million per square meter.

The recording of Tutankhamun's tomb used different systems, some developed by Factum Foundation while others are commercially available. A Nub 3D white light scanner captured all the walls with one measured point every 600 microns. A Lucida scanner (designed by Manuel Franquelo and developed with Factum's engineering department) was used in some places on the rough plaster walls and recorded the relief on the sarcophagus at a resolution of 100 microns. Composite photography produced images of all the walls of at least 500 DPI at a 1:1 ratio. During the second photographic recording that took place over five days in late 2019, 1,626 photos were taken of the walls. These were later stitched together at sub-pixel accuracy to produce an archive of 427 GB. The total digital archive recorded in the tomb of Tutankhamun by Factum Foundation in 2009 and 2019 is 854Gb (379Gb in 2009 between 3D and color + 475Gb for the color in 2019).

Local Transfer of Global Knowledge, Skills, and Technology

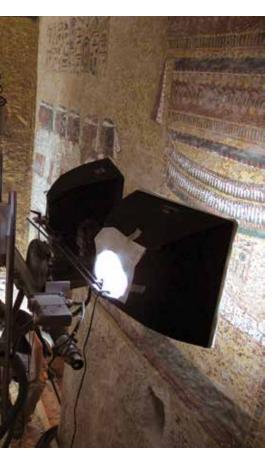
Factum Foundation's approach in Egypt, as elsewhere, is to initiate a transfer of skills and technology to a fully trained local team. Carrying out the full restoration of

out, while many expressed their concern that their presence was having a destructive impact on fabric of the tomb. There is a growing realization among the public that they are, in fact, a big part of the problem as the system is currently structured. This calls for imaginative rethinking.

The Lascaux, Altamira, and Chauvet caves located in France and Spain that contain Paleolithic cave paintings are closed to the public and have been replaced with copies. While the Lascaux copy was made by hand, the copy of the Cave of Altamira's aspired to a level of objective accuracy: it was recorded with photogrammetry with approximately one measured point per five centimeters, i.e., 400 measured points per square meter. By comparison, Factum's work in Seti's tomb in 2001 demonstrated it was possible to 1 The Seti Scanner (predecessor of the Lucida 3D Scanner currently being used in the tombs) recording the surface of the east wall

- 2 Color recorded in 2009
- 3 Color recorded in 2009

PHOTOS: FACTUM ARTE



4 The specially designed photographic system recording the walls of the tomb of Tutankhamun in March 2009

5 Abdo Ghaba and Amany Hassan scanning in the tomb of Seti I using the Lucida 3D Scanner

6 Trainees from the Theban Necropolis Preservation Initiative recording the tomb of Seti I using the Lucida 3D Scanner and composite photography

PHOTOS: FACTUM ARTE







<image>

1-2 In 2001, the side chambers were filled with fragments, many painted, used bulbs and waste. One of the distinguishing features of the project is that all known fragments of the tomb are being recorded in their current location. When complete the eventual digital models and physical facsimiles will be more complete than the original tomb itself. There are also a large number of fragments of different sizes, some painted, some not, that were found in or near the tomb. The excavations carried out by Susanne Bickel and Florence Mauric Barberio from the University of Basel, near the adjacent tomb of Ramses X (KV 18), brought to light roughly 8,000 fragments from the Tomb of Seti I between.

PHOTO: FACTUM ARTE

Hassan Fathy's precariously placed mud brick building (Stoppelaëre House) not only saved the historic and important architectural work, but also provided a base from which this local team could work.

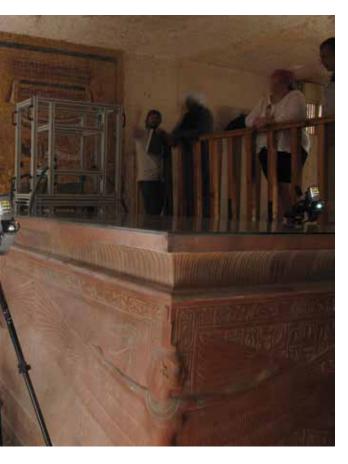
In 2015 Factum Foundation set up a training program focused on sustainability and knowledge transfer. Under the direction of Aliaa Ismail, the Egyptian team - Abdo Ghaba, Mahmoud Abdellah, Mahmoud Salem, Mina Fahim Razik, Amany Hassan, Hager Ahmed, and Mosa el-Sayed - has been working from Stoppelaëre House since it was opened in 2017 by Egyptian Minister of Tourism and Antiquities, Dr. Khaled El-Enany, and Irina Bokova, then-Director-General of UNESCO. In 2020, this team was the first 'mission' back in the Valley of the Kings following COVID-19 closures. By the end of 2021 they had finished the complete documentation of the tomb of Seti I, the largest area of carved and painted walls ever recorded at high-resolution in 3D and color. The iconography within this tomb constitutes the most complete account of pharaonic beliefs, knowledge, and philosophy, as well as being the highpoint of low-relief polychrome decoration.

When Factum's team started this work in 2001 the aim was to prove that the technology existed to produce an exact record of the tombs at a resolution that enables the creation of an identical replica. The digitization carried out in 2001 demonstrated it was possible to capture data that can be used in many different ways – both virtual and physical. The computer power and software to handle this data did not exist at the time and no-one understood where it would lead. 20 years later the quality of this data is still unmatched, and it has been used to raise both awareness and money for the Ministry through exhibitions in Basel and Lausanne. The copyright on all commercial applications of the data belongs in full to the Ministry for all current and future applications. The potential value of this data is significant as new uses and markets emerge.

Possible Future Applications

Virtual, mixed, and augmented realities are generating new uses for the data. In the exhibition Deep Fakes: Art and its Double at EPFL Pavilions, Factum's recordings were used in an animation by Scan Labs that linked the inside of the tomb to the high-resolution data recorded from the alabaster sarcophagus of Seti I at Sir John Soane's Museum in London. Events of this kind reach a new audience and draw attention to the importance of the high-resolution data that has been recorded since 2001.

The same 3D and color recordings may result in a new revenue stream for the Ministry. Non-Fungible



<image><image>

Tokens (NFTs) use blockchain, the technology behind cryptocurrencies, to certify the uniqueness of digital data in different forms. This has created a new market for digital collectibles. NFT sales exceeded \$11 billion in the third quarter of 2021, but no-one yet has found the right way to channel this money into the preservation and documentation of cultural heritage. If this is done correctly it could become a major new revenue stream for the Ministry. The celebrity of Tutankhamun's tomb should make different forms of the data ideal as collectible digital assets while turning the purchaser into both collector and philanthropist.

The Next Phase of Work in the Theban Necropolis

Following the completion of the recording of the tomb of Seti I at the end of 2021, TNPI and its partners, the University of Basel, and Friends of the Royal Tombs of Egypt have requested that the Ministry of Tourism and Antiquities allow for the continuation of the work launched in 2009. Once permission is granted the TNPI will:

• Undertake a complete high-resolution composite color and sub-millimetric 3D recording of the Tomb of Nefertari Finish the work in Stoppelaëre House to increase its potential as a 3D scanning, training, and archiving center. • Launch training courses to expand the capabilities of the local recording team. To this end, a MOU has already been signed with the Institute of Restoration and Conservation of Antiquities in Luxor.

5

• Produce a facsimile of the tomb of Seti I and all parts of the tomb removed since its discovery in 1817.

• Create an innovative visitor center near Carter House explaining the preservation of the Theban Necropolis, the recording of the tombs and the production of exact facsimiles that are identical to the original tombs. The production of the facsimiles will be part of the visitor experience.

• Install the facsimile of Seti I below Stoppelaëre House followed by the installation of a locally produced facsimile of the complete tomb of Nefertari.

Towards a Sustainable Future

To date, millions of tourists have already visited the tiny burial chamber of Tutankhamun. From Carter to **3** The recording of the tomb in March 2009

4 Installation of the facsimile sarcophagus inside the replica of the burial chamber, 2014

5 Delivery of the recording equipment to Egypt, 2009

PHOTOS: FACTUM ARTE





Hawass, Egyptologists, guardians, scholars and other interested parties all agree that the tomb will not survive this kind of continued exposure without undergoing continuous maintenance, significant damage limitation, and ongoing interventions. Constant restoration will be needed to counteract the impact of vast numbers of visitors, which will take the existing tomb further away from its original state. Many have argued that there are effectively two choices: that the tombs in the Valley should either be sealed up to preserve them for posterity and future generations or continue to be exploited for much needed short-term financial gain. But there are other options and imaginative solutions. Over the past 21 years of working in the Valley of the Kings, Factum has demonstrated, developed the technology, and set up protocols for the following:

• Documentation and data input: high-resolution, non-contact, objective digital recording using close-range laser scanning, photometric stereo recording, photogrammetry at different resolutions and LiDAR scanning can be merged with composite photography and other forms of digital data. There is a significant difference between data for screen viewing and recordings that can be re-materialized as exact facsimiles.

• Uses and data output: to act as a permanent record of the tombs, a resource for condition monitoring, in-depth study and remote online access, for the re-materialization of exact facsimiles, AR and VR applications and more. 1 The color "skin" was glued to the CNC-milled 3D surface using a vacuum system

2 The Theban Necropolis Preservation Initiative, led by Aliaa Ismail, is an all-Egyptian team trained by Factum Foundation in high resolution recording of cultural heritage. From left to right: Mosa El-Sayed, Mahmoud Abdellah, Abdo Ghaba, Aliaa Ismail, Hager Ahmed, Amany Hassan, Mina Fahim

3 In February 2017 the 3D Scanning, Training, and Archiving Center was opened in the fully restored mud brick building by the great Egyptian architect Hassan Fathy.

PHOTOS: FACTUM ARTE



• Skills and technology transfer: to a local team, with training and remote support. This will eventually include the transfer to a trained local team of the means of manufacture of facsimiles of the tombs.

• Improved visitor experience: facsimiles can provide enriching and educational experiences under controlled and comfortable conditions while taking pressure off the original tombs.

• Ownership of the data: remains with the Ministry, with all commercial gain to stay in Egypt for the upkeep of the cultural heritage assets and to support the local economy.



• Open access: the data will remain openly and freely accessible for study, academic, and non-commercial uses

The facsimiles of the tombs will help redefine the relationship between originality and authenticity and offer a partial solution to the protection of tombs that were built to last for eternity but never to be visited. To date, the training and creation of a team (almost entirely from the West Bank) has already generated a new local economy. If a new combined visitor center and workshops can be created next to Carter House and the replica of the tomb of Tutankhamun, it will make a dynamic attraction at the entrance to the Valley of the Kings. Plans for the renovation and improvement of Carter House have been developed by ARCE and will be implemented in 2022 in time for the centennial. When the facsimiles of Seti I and Nefertari are installed next to that of Tutankhamun's tomb, the Ministry will be able to demonstrate that it is leading the way in the application of technology for preservation. We hope the 100-year anniversary of the discovery of Tutankhamun's tomb will attract new interest, encourage reflection, and reveal the optimism and positive change that is leading to a sustainable future for the Theban Necropolis. 👽

To learn more about the Factum Foundation's work, visit: www.factumfoundation.org/ind/46/ the-theban-necropolis-preservation-initiative

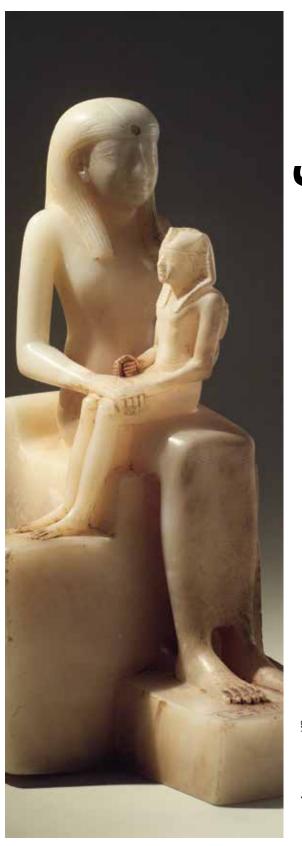


Image: Statue of Queen Ankhnes-meryre II and Her Son, Pepy II, ca. 2288-2224 or 2194 B.C.E. Egyptian alabaster, 15 7/16 x 9 13/16 in. (39.2 x 24.9 cm). Brooklyn Museum, Charles Edwin Wilbour Fund, 39.119. Brooklyn Museum

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THE HIDDEN DOOR

The false door between the antechamber and the burial chamber in the tomb of Tutankhamun hid its secrets for almost 100 years

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BY LYLA PINCH-BROCK, RESEARCH ASSOCIATE WITH THE ROYAL ONTARIO MUSEUM IN TORONTO CANADA

> here before us lay the sealed door and with its opening we were to blot out the centuries and stand in the presence of a king who reined three thousand years go," wrote the tomb's discoverer, Howard Carter. On the evening of 16th of February, 1923, the scene

in the antechamber of the newly-found tomb of Tutankhamun in the Valley of the Kings was lit with electric lights like a movie set. Carter's dramatic description of removing the partition between the antechamber and the sepulchral (burial) chamber that night was not entirely accurate, although the twenty officials and invited guests present would only learn that much later...

The excavation and clearance of the tomb of Tutankhamun would take over ten years to accomplish and evoke a series of revelations, some of which would shock and shame the archaeological word. There have been debates about when the tomb was actually found, when its chambers were first entered, their probable original state and how some of the finds left Egypt. Over the hundred years that have passed, many discoveries, re-discoveries and re-interpretations of historical events surrounding the discovery have taken place. In 1992, evidence from the other side of that wall reappeared - the fragments of the lost painting that once decorated the south wall of the burial chamber.

Destruction of the South Wall

Between Carter and glory stood a partition wall separating the burial chamber from the antechamber. It had been constructed in three parts and Carter would eventually remove it in two stages. The central

The blocking of the burial chamber still intact; Burton Po280

© GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD part, stamped with seals of the priests of the necropolis, was taken down that night; the rest, during the second season of work, when most of the finds in the burial chamber had been dealt with. But Carter already knew what was on the other side of the partition: A few months before, in the dark of night, he had dug out the plaster and stones from an old breach in the bottom of the wall, and, with Carnarvon and Lady Evelyn, squeezed through. Dazzled by the glittering gilded and inlaid shrine towering over their heads, the wall paintings would have been ignored by the trio. Yet, if they had glanced over their shoulders, they would have seen something that would soon never be seen again.

After the night visitors crept away, Carter re-plastered the breach so that the antiquities inspector who arrived the next day would not notice it. When the chemist Alfred Lucas, who was helping with the finds, spotted the cover-up, Carter first claimed it was ancient work, then later admitted it was his own doing.

Carter never took a photo of the wall when it was still intact, and his notes and those of the people who accompanied him are almost completely devoid of such information. The closest he gets is a note on his plan of the tomb made in December, 1923; "the inner side within Burial Chamber was painted and decorated like the rest of the chamber." And in Volume II of his three-volume series on the Tomb of Tutankhamun, while describing the south wall: "Depicted upon it are scenes of the king before certain divinities. At the west end, King Tutankh-Amen is figured between Anubis and Isis. He wears the *Khat* head-dress. The goddess Isis repeats here the same wishes as those of Nut upon the north wall, the words of which I have already given. Behind Anubis, the goddess Isis is again figured and she holds in both her hands symbols of water. She is accompanied by three 'Great Gods, Lords of Duat,' (i.e. of the Underworld)."

The execution of the paintings he considered inferior: "... brilliant in their colours," he wrote, "but evidently somewhat hastily executed."

Description of the South Wall

Despite the unflattering critique, the painting on the south wall is important for our understanding of the history of the tomb because it may show part of the burial chamber in its pre-Tutankhamun state.

The question has often been asked, "Why was a pharaoh buried with such wealthy trappings in such a small, insignificant tomb?" In ancient times, tombs were usually cut in stages. KV 62 has the same plan as the nearby tombs of KV 55 and KV 46; no doubt all

OPPOSITE PAGE

1 Stamps on the mud plaster of the wall closing the entrance to the tomb, with the official seal of the royal necropolis; Burton Po276

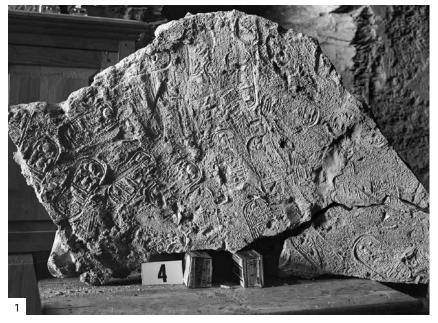
2 Doorway of sepulchral hall - plaster on surface; Burton P0282

3 Colorized photo of Howard Carter with a workman taking down a section of the false wall in order to enter the Burial Chamber. The rest of the wall, including the painting of Isis to the left (west), was removed the following year; Burton P0501.

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BELOW: The blocking of the burial chamber, colorized; Burton Pooo7 © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD





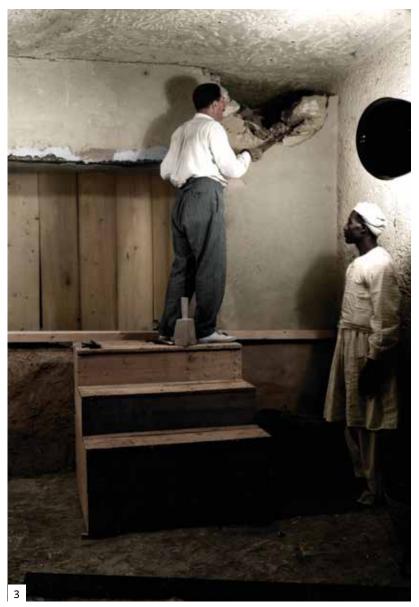


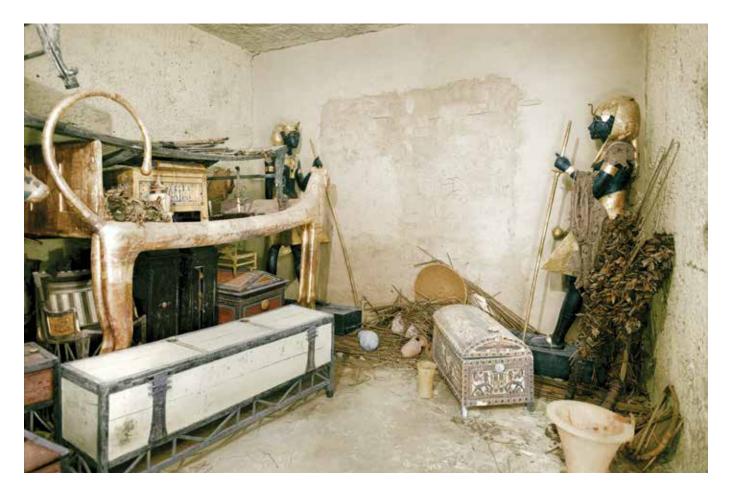
three tombs were cut at the same time, but for and by whom is uncertain; evidence seems to suggest before the Amarna Period. In KV 55, the mason's marks in the burial chamber indicate it was meant to be the First Pillared Hall of a much larger tomb, and the tomb was apparently cut some years before it was finally used. The floors of the burial chambers in KV 62 and KV 55 were lowered to accommodate tall shrines. Both tombs were cut into the rock at a level lower than the surrounding ones, allowing them to remain hidden, buried in debris from the floods that afflicted the Valley of the Kings for thousands of years.

While the glyphs and feet of the figures on both walls are the same size, the south wall composition is smaller than that on the north wall; its height from baseline to ceiling is approximately 193 cm (vs 244 cm on the north wall) and it is presently 282 cm long from the end of the west wall to the base of the cut. The bottom of its dado is level with the floor of the antechamber, and lines up with the scene on the east wall, while the scene on the north wall lines up with that on the west. The yellow dado has been added to the bottom of the south and east walls, apparently to balance the whole composition. There are some red marks which look like painter's tests on the south wall dado, a visible scrape mark behind Hathor's head at the west end, and a niche below (unopened in the Burton photo) holding one of the magical bricks.

The scene on the south wall is based on a grid of 18 squares, typical 18th dynasty proportions, whilst the north wall scene is 20, typical of the Amarna Period. Both walls are the same length, that is, about 638 cm.

On the south wall the figures are evenly spaced, whilst on the north wall they are squeezed together,





as if there was an attempt to fit them into a confined space. Some glyphs (in front of Tutankhamun, left) seem to be a last-minute addition. The heads of the figures on the south wall line up, whereas on the north wall, their heights are inconsistent.

Removal of the Rest of the Partition Wall

Carter began to take down the rest of the partition wall on December 1, 1923. The painting of Isis was behind the west jamb. Carter wrote in his journal:

"Commenced pulling down partition wall. The top part to level of wooden lintel found to be hollow, and comprised dry stone-work of splinters of limestone and flint boulders plastered only on the outer faces of this wall. Prepared tray of bran to receive the painted portions of the partition wall on inner side. The decorated portion of plaster on the inside face of the west door-jamb was removed with fair success; sufficiently good to reconstruct the scene (there on) for eventual record."

The figure of Isis painted on the plastered partition wall may have originally been painted on plastered rock, but perhaps the opening in the south wall was not wide enough to accommodate the shrine parts, so the masons cut back the west wall of the antechamber



wall. Still it was not wide enough, so they were forced to cut out a further wedge-shaped piece. Carter explained in his journal on December 2; "On the west side, in the rock wall of the Antechamber where it terminates, the commencement of a cutting was revealed, while taking away the partition wall, which appears to have been made to enable ingress of the long cornice pieces of the outer shrine. This would suggest that the parts of that shrine were taken in before the construction of the partition wall." The cut shows up on Carter's plan G.I. 3, but not on his G. I. 4.

The Isis figure was subsequently repainted over the plastered cut and the west part of the partition wall. Perhaps, because she was a later addition, Isis ABOVE: The entrance to the burial chamber with three-quarters of the plastered and sealed blocking removed © GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD

LEFT: Photo of the painting remaining on the south wall showing the cut on the left (west) side mentioned by Carter. It was apparently a last resort for inserting the shrine parts into the burial chamber in ancient times.

PHOTO: GEORGE B. JOHNSON, WITH PERMISSION OF THE SCA



TOP LEFT: The Isis painting photographed by Burton/ Carter in a sandbox; Burton Po589

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TOP RIGHT: The

fragments composing the right foot and forehead were misaligned. The newly discovered plaster fragments are superimposed by the author

© GRIFFITH INSTITUTE, UNIVERSITY OF OXFORD looks stylistically different from the other figures; on the south wall the water signs on her hands differ from those on the north wall. However, Carter was certain that, "the plastering and painting that covered the inner face of the partition wall was uniform with the rest of the decoration of the chamber." He concluded from the splashes of plaster visible on the shrine that the plastering and painting of this wall, at least, was done after the shrine parts were inserted.

Behind Isis is the base of the *akhet* symbol, denoting the end of the vignette. So what was behind that? Apparently nothing! In the absence of records, we will never know. Presumably, since the yellow color extends beyond the end of the vertical line on the left, the rest of the wall was painted yellow. The above right-side image shows my idea of what the wall might have looked like when the tomb was closed.

Burton's Photo

Harry Burton's photo of the missing Isis (above left), probably taken mid-December, 1923, was made by constructing a sandbox and arranging the broken pieces of plaster in their approximate original positions (this is a technique archaeologists often use when dealing with broken plaster). The edges of the sandbox can be seen in the photo as well as some unplaced pieces of plaster in the viewer's upper right. The photo was taken overhead and only in black and white, although I had discovered from some material I found in KV 55 that Burton had been experimenting with color photography. Up until recently we could not envision it in color, until Factum Arte helpfully produced a facsimile.

Recent Discovery of the Missing Plaster Fragments

It wasn't until 1992 that I learned what happened to the fragments of the Isis painting: One day, Ted Brock and myself were strolling down the central pathway from the tomb of Merenptah, where we had been recording his finds, and passed the tomb of Bay (KV 13). Ted stopped and pointed through the door grille to the back of the tomb, and asked; "Do you know what that is?" I could see a rubber basket on the ground at the back of the tomb. "There," he said, "in that basket are the fragments of the doorway taken down in the tomb of Tutankhamun." I was astounded; like everyone else, I thought they had completely disappeared. "You should photograph them," I suggested. "Nobody knows they still exist." Thank goodness Ted took my advice (he didn't always!) and in due course, accompanied by an inspector, the gate was opened and we took the basket and its contents a short distance away to be photographed. We lay them out individually on a



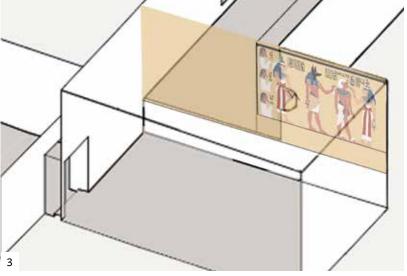
black cloth and gave them number tags and scales. When Ted had finished his photography, the rubber basket and all the pieces were whisked back into the tomb of Bay. After that, they disappeared. The tomb was flooded during the infamous Theban flood of 1994 and they might have been washed away. When Ted died in 2015, I inherited all his research materials, including his photo archive. That included the photos of the plaster fragments, apparently now the only record of their existence.

Restoration of the Scene on the South Wall

With the 100th anniversary of the discovery of the Tomb of Tutankhamun looming, it seemed a good time for me to take another look at the south wall and see what could be done with the fragments. One of Burton's photos (Burton P1592, Griffith Institute, University of Oxford) shows more of the glyphs remaining behind Anubis than can now be seen, and by combining those glyphs with what is left in front of Isis, it is possible to reconstruct the original text. Carter did give us a clue that it was the same speech given by Nut on the opposite wall.

I fit the Burton photo of Isis to his photo of the South Wall by lining up the register line and the remains of an "n" glyph (Gardiner's sign list N35) in front of Isis with the similar group of glyphs on the opposite wall. Isis is addressing Tutankhamun: The new text now reads; "She (Isis) may/will give health and life to your nose forever and ever." Since there seems to be room for a second small vertical stroke at the bottom, the suggested reading would then be, *sp-sn* - "twice," or, "double." The missing sign being Gardiner's O50. This new restoration establishes the approximate width of the painting with the figure included as 382.5 cm.





Ted and I counted 123 plaster fragments. Many were not in good condition; their painted surfaces, layered in black, white, blue, red ochre and green on a yellow ochre ground, had spalled away. This establishes that the whole wall was painted ochre first. The color on the small figures of the gods until now has been unknown, but our fragments show their hair appears to be blue, the beards black and the faces medium brown. On many fragments there was enough left for us to locate them on Burton's photograph. I did this by zooming in and arranging the fragments on the image by subject matter or by matching the outlines of the cracks. Some of the pieces - like the part of the figure of the lowest god on the left, and Isis' headdress - were quite large, while others were miniscule. One piece provides good detail of her collar. It is due to Carter's diligence in saving these small fragments that we have a record of them today. Unfortunately, none of them gives us a glimpse of what was originally on the wall behind Isis; this is open to conjecture, but, as the discovery of these pieces show, it is always possible some further evidence will turn up. 处

1 Three fragments of the original painting showing the heads of two of the gods and the collar of Isis

2 Restoration of the south wall in the burial chamber, showing how it may have looked just before the painters exited

© L.P. BROCK

3 Sketch plan showing the location of the painting on the south wall before the antechamber wall might have been cut back. (after Theban Mapping Project, KV 62 plan)

ACKNOWLEDGMENTS

This article is dedicated to the memory of Edwin C. (Ted) Brock who passed away in 2015. He was a very skilled photographer and left behind many valuable images of ancient Egyptian monuments. I donated the majority of his collection to Chicago House.

I am very grateful to several people who helped me with this article: Photographer George Johnson, who has made a complete high resolution photographic record of KV 62 and who lent me his photo of the south wall; Robert Demaree, who checked my restoration of the glyphs and provided a translation for the article and my illustration of the scene on the south wall, and Elizabeth Fleming and Francisco Bosch-Puche of the Griffith Institute, for fruitful discussions and for providing me with highresolution photos of Carter's plans of the tomb and the south wall.

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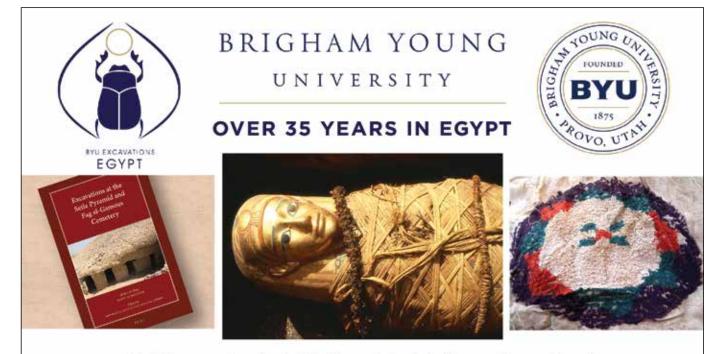
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Helping us understand daily life and death in Graeco-Roman Egypt "Excavations at the Seila Pyramid and Fag el-Gamous Cemetery" published by Brill, 2020

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The Time of Tutankhamun

What New Evidence Reveals

BY NOZOMU KAWAI, KANAZAWA UNIVERSITY

In spite of Tutankhamun's tomb – discovered 100 years ago this year – being the richest ever found in Egypt, his reign has been obscured due to the erasure of his memory by later kings and the dearth of hard evidence. He was long considered an unimportant king and his reign was largely disregarded due to its short duration of less than a decade. However, considerable evidence to the contrary is available nowadays thanks to recent archaeological excavations, epigraphic studies in the temples and tombs, and meticulous research in museums around the world. This article aims to introduce the current understanding of Tutankhamun and his time utilizing new evidence about the king and his court officials.

Head of Nakhtmin, found at his tomb in Akhmim, now at the Luxor Museum of Ancient Egyptian Art PHOTO: NOZOMU KAWAI

The end of the Amarna Period and Tutankhaten

Tutankhaten was clearly recognized publicly as a prince during Akhenaten's reign; his name was mentioned and images of him were represented in some royal monuments at Amarna. For this reason, Tutankhaten, literally "The living image of Aten," might have been the "crown prince" of Akhenaten, who likely regarded him as his legitimate successor. However, there was another male who seems to have been regarded as Akhenaten's successor: Smenkhkare Djeserukheperu. Smenkhkare appears to have shared the throne with Akhenaten late in his reign as co-regent. Akhenaten's eldest daughter, Meritaten, became Smenkhkara's "Great Royal Wife." Smenkhkare's reign was very short, probably less than a year, as suggested by the year date found on hieratic jar dockets bearing his name. After Smenkhkare's death Akhenaten's chief queen, Nefertiti, apparently assumed the role of his co-regent as female ruler Neferneferuaten with the epithet "beneficial for her husband," which was identified by Marc Gabolde. Gabolde and some other scholars believe that Neferneferuaten was Meritaten. When the co-regency of Neferneferuaten and Akhenaten ended, the political situation may well have descended into chaos in the court at Amarna. Some Egyptologists and Hittitologists are convinced that the queen who ruled before Tutankhamun's accession was the widowed queen known to have dispatched a letter to King Shuppiluliuma, asking him to send one of his princes to Egypt to share the throne with her. If this affair happened after Akhenaten's death, the widowed queen is either equated with Nefertiti or Meritaten. Other scholars prefer to date this affair after Tutankhamun's death, which will be discussed towards the end of this article.

After Akhenaten's demise, Neferneferuaten assumed sole reign, which probably lasted for about two years. A graffito written by a certain Pawah in the tomb of Pairy (TT 139) suggests that by Year 3 of Neferneferuaten the return to orthodoxy was initiated, although she maintained the cult of Aten and the capital at Amarna. Presumably, the movement to restore the traditional religion was stipulated after the death of Akhenaten, who considered himself as the sole master for the cult of Aten. The fact that a number of objects found in Tutankhamun's tomb had been made for the burial of Neferneferuaten, adapted and reinscribed for Tutankhamun's use, implies that Tutankhaten and his entourage did not want to recognize the preceding reign. Neferneferaten had assumed sole reign despite the fact that Tutankhaten, the crown prince, was the legitimate successor. Instead of giving up her kingship to a young boy,



Neferneferuaten may have wished to continue her sole rule not only because she was already reigning, but also because Tutankhaten was just a boy between five and 10 years old. Although Neferneferuaten began restoring the cults of Amun and other deities she also simultaneously maintained the cult of Aten at Amarna, resulting in a dissatisfied faction of officials and priests who advocated a quick return to orthodoxy. When Neferneferuaten's reign ended, probably after about three years, Tutankhaten and Akhenaten's third daughter Ankhesenpaaten were the only surviving members of the Amarna royal family.

The Return to Orthodoxy

Tutankhaten likely ascended to the throne at Memphis at around the age of eight. He seems to have abandoned Akhetaten (the capital created by Akhenaten) immediately as he did not leave any royal monument **ABOVE:** A stela of Tutankhaten worshipping Amun and Mut

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BELOW: Back of the

Golden Throne of Tutankhaten/Tutankhamun, showing the king and queen under Aten

PHOTO: NOZOMU KAWAI, COURTESY OF THE EGYPTIAN MUSEUM, CAIRO





ABOVE: An

applique from Tutankhamun's chariot, showing Tutankhamun wearing both Upper and Lower Egyptian crowns with the name of both Tutankhaten and Tutankhaten and Tutankhamun PHOTO: NOZOMU KAWAI, COURTESY OF THE EGYPTIAN MUSEUM, CAIRO there. Tutankhaten worshipped Amun and other traditional deities since the movement back towards orthodoxy had already been initiated under Neferneferuaten, while continuing to worship Aten - at the beginning of his reign at least - as indicated by a depiction of the god on Tutankhamun's golden throne. It has been suggested that Tutankhaten and Ankhesenpaaten changed their names to Tutankhamun and Ankhesenamun respectively at the time of the removal of the

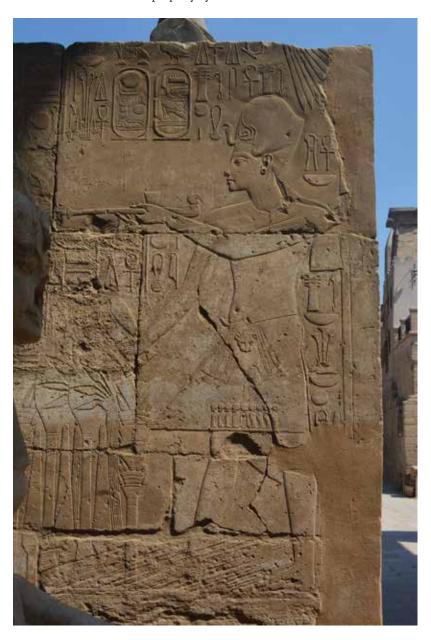
capital to Memphis. I propose, however, that early in his reign, the king had two names simultaneously, Tutankhaten and Tutankhamun, worshipping two national gods, Amun and Aten, at the same time for a very short period. The alteration of his name was not very sudden; instead, there was a coexistence of two names implying a compromise between the Aten and Amen cults. Tutankhamun firmly established Thebes again as the center of the state religion and vigorously carried out a restoration program throughout the country at the same time. Finally, the king changed his name to Tutankhamun.

Tutankhamun's Restoration Stela provides us with information on the policies of the early part of Tutankhamun's reign. Although some scholars suggest that the decree was issued in Tutankhamun's Year 1, it is more likely that the Restoration Stela documents the institutionalization of the restoration program, describing what had already been affected to the benefit of the traditional cults, as Marianne Eaton-Krauss rightly suggested. On this stela, Tutankhamun described the time before his accession to the throne as a phase when the gods were absent, the result of which was a human, political, and religious catastrophe, without naming the concrete reasons that supposedly led

The Restoration Stela of Tutankhamun PHOTO: NOZOMU KAWAI, COURTESY OF THE EGYPTIAN MUSEUM, CAIRO

Egypt into this enormous crisis. According to the stela, Tutankhamun's first imperative was the restoration and re-opening of the temples of the traditional cults throughout Egypt, accompanied by amends to the ravaged temples. First, he embellished the divine statues of Amun and other traditional gods, which were ignored or destroyed during Akhenaten's reign. Second, the king installed the children of influential local officials in the priesthood, across the ranks. Third, he increased the revenue of the temples and cities, including private property. In other words, the properties owned by the king and Aten temples during the Amarna period were redirected to the temples of the traditional cults and local cities. Fourth, male and female servants and singers were consecrated and protected from all standard requisition of the temple property by the state.

Tutankhamun performing a ritual for Amun on a wall of the Colonnade Hall, Luxor Temple PHOTO: NOZOMU KAWAI



Although Neferneferuaten reasserted Amun's prominent position at his cult center in Thebes, the actual physical restoration activities seem to have been initiated in Tutankhamun's reign. Despite its brevity, Tutankhamun's reign was marked by a significant increase in artistic and architectural activities throughout Egypt. While it is impossible to know the full extent of Tutankhamun's restoration and building activities, the evidence implies that Tutankhamun's restoration and reactivation of temples occurred on a large scale and spanned from the Delta to Upper Nubia. Tutankhamun himself was often depicted presenting a bundle of lotus flowers to Amun and other traditional deities, which was the central public icon of Tutankhamun's restoration of orthodoxy.

In the Delta, Tutankhamun recorded his activities in the temples at Tjaru, Avaris, Bubastis, and Letopolis, suggesting that he re-opened the temples of local deities in these regions. Since Tutankhamun moved the capital to Memphis from Amarna, vital building activities can be observed in the Memphite area. In Heliopolis, Tutankhamun built a chapel associated with the cult of the Theban gods Amun and Khonsu, who dwell in the House of Re, reaffirming the connection between Re and Amun since Heliopolis was a cult center of Aten during Akhenaten's reign. The king built his rest house in front of the Great Sphinx at Giza, which created a close association with Sphinx itself - the inscription on the door lintel describes him as "beloved of Houron." Thus, Tutankhamun made an effort to honor Re-Horakhty and Horemakhet, the Heliopolitan deities. It is likely that he did this not only to restore the cult of the gods, but also to connect himself with the line of the 18th Dynasty since these deities were favored by Amenhotep II and Thutmose IV. In Memphis and Saqqara, Tutankhamun decorated the Temple of Ptah and resumed the Apis burial, which was initiated during Amenhotep III's reign and abandoned under Akhenaten.

Inarguably though, Tutankhamun's most impressive restoration work was undertaken in Thebes. He continued the unfinished work of Amenhotep III's building projects, neglected by Akhenaten. By resuming the building program of Amenhotep III, Tutankhamun aimed to legitimize himself as the successor of the last orthodox king before Akhenaten. For example, Tutankhamun decorated the Colonnade Hall of Luxor Temple, which was left unfinished and neglected by Akhenaten. On the scene of the Opet Festival, Amenhotep III is represented as the statue of a deified and deceased former king on each divine barque of the procession conducted by Tutankhamun. This suggests that Tutankhamun's association with Amenhotep III

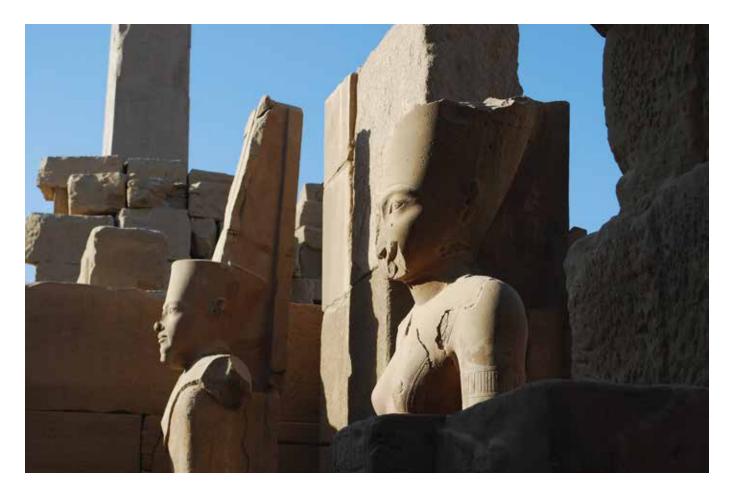


Statues of Tutankhamun, once placed under the chins of the criosphinxes between the Tenth Pylon and the Precinct of Mut, Karnak

PHOTO: NOZOMU KAWAI, COURTESY OF THE EGYPTIAN MUSEUM, CAIRO was displayed publicly during the festival as political propaganda, likely strengthening his legitimacy as a successor of the orthodoxy. At Karnak, Tutankhamun seems to have depicted his smaller figure behind Amenhotep III's figure on the north tower of the Third Pylon. Eaton-Krauss and William Murnane have also pointed out that the construction of the Tenth Pylon at Karnak, initiated by Amenhotep III, was probably resumed under Tutankhamun; they have also argued that Tutankhamun was the first king to dismantle Akhenaten's monument in Karnak, since the talatat blocks from Akhenaten's structure at Karnak were used as fill in the pylon during the post-Amarna period.

My personal observations of Tutankhamun's monument in Karnak reveal that he often focused his activities in the key areas of the temple and the main processional ways. In front of the Third Pylon, which was probably the first main gate of Karnak Temple at that time, at least two stelae, including the famous Restoration Stela, were installed. The figures of Amun, expunged by the agents of Akhenaten, were restored along the main axis. On the wall of the east face of the Sixth Pylon, he left three renewal formulae for Amun. In the Akhmenu, Tutankhamun erected quartzite colossi of Amun and Amunet, which were later moved in front of the Sixth Pylon. On the other main axis, Tutankhamun similarly installed stelae in front of the Seventh Pylon. On the Eighth Pylon, the figures of Amun and other deities seem to have been restored by Tutankhamun. The edifice of Amenhotep II was restored and a stela seems to have been erected in this forecourt. The sphinxes between the Tenth Pylon and the Precinct of Mut were transformed from heads showing Akhenaten and Nefertiti into those of criosphinxes, which possess small statues of Tutankhamun under their chins. Presumably, some duplication of the Restoration Stela was erected in front of one of the main gates of the Karnak Temple Complex. Tutankhamun appears to have begun building his memorial temple at Karnak. However, this monument was apparently left unfinished in its initial stages. Ay went on to complete the temple as a dual memorial temple to propagate his association with Tutankhamun and legitimize him as the successor. Scenes in the temple show several rituals to Amun performed by Tutankhamun accompanied by the official, Ay, behind him. Most of the blocks of this temple were reused as fill of the Second and Ninth Pylons at Karnak by Horemheb.

Additionally, numerous statues of Amun in various sizes were constructed and restored particularly in Thebes during Tutankhamun's reign, which were recently published by Eaton-Krauss. Some of them possess a smaller figure of the king, sometimes being protected by Amun or represented as the High Priest of Amun. Others show Amun with a boy's face, showing the assimilation of Tutankhamun with Amun. These statues were probably placed to show Tutankhamun as the "Living image of Amun" – literally, his name. On the west bank of Thebes, Tutankhamun also restored the images of Amun in the memorial temple of Amenhotep III and left a renewal formula.



The evidence of Tutankhamun's physical restoration activities can be further observed at other Upper Egyptian temples, including plastering and re-carving over the damaged figures of Amun, while leaving the images of other deities generally unchanged. Sometime the attribution of the work is clear due to the distinctive features of Tutankhamun's figure, even though he did not leave renewal inscriptions. In Nubia, Tutankhamun erected two temples in Faras and Kawa. In Faras, the temple was called "Pacifying the gods," the same as his Golden Horus name. There, Tutankhamun was worshipped during his lifetime, as was Amenhotep III in Soleb. Tutankhamun also left his restoration formula on a recumbent lion statue in the temple at Soleb.

The leading figure in Tutankhamun's restoration program must have been none other than the regent Horemheb. A scribal statue of Horemheb from Karnak mentions that he had restored the temple of Amun at Karnak and magnified Thebes from its devastated situation – without mentioning his king. However, the actual restoration works of the temples of the traditional gods and the production of divine statues would have been implemented by the Treasury of the government. Meryre, who was most probably Meryre II under Akhenaten, became the Overseer of Treasury under Tutankhamun. His block statue describes how the king charged him with assessing the entire land in order to institute divine offerings for the traditional gods. By Year 8 of Tutankhamun, this position was replaced by Maya, who was probably named as May during Akhenaten's reign. A stela mentions a decree of Tutankhamun in Year 8, stating that like his predecessor Meryre, Maya was charged with levying tax in order to institute the divine offerings to all the gods of Egypt from Elephantine to the Delta. Both decrees of Tutankhamun for Meryre and Maya suggest that the Overseer of the Treasury was in charge of reestablishing endowments to the temples whose finances had been redirected by Akhenaten. This great revision of the economy was undertaken throughout Tutankhamun's reign.

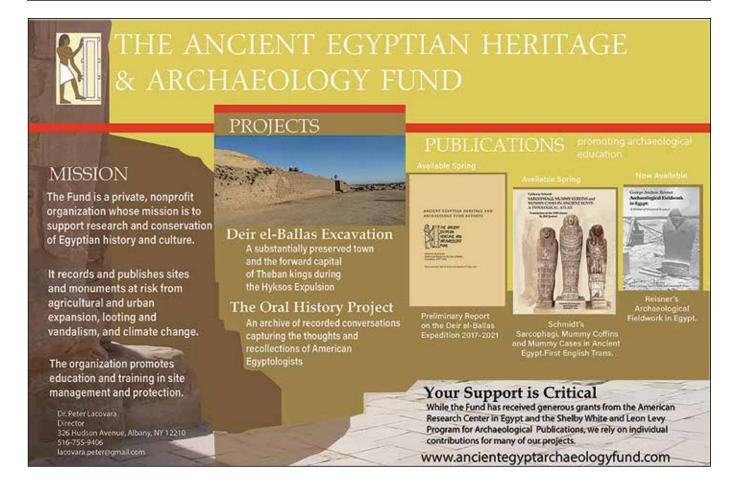
Tutankhamun's Court

As previously mentioned, Tutankhamun ascended to the throne at around eight years old – or was at least was no older than 10. He could have ruled the country alone with the support of some senior officials and courtiers (as Amenhotep III did), however, power instead passed into the hands of influential officials. During the reign of Tutankhamun, a pattern emerged wherein high officials took on royal prerogatives. Ay's Amun and Amunet with features of Tutankhamun, Karnak Temple PHOTO: NOZOMU KAWAI participation in royal cultic ritual is one example. Generalissimo Horemheb as the regent, in his separate sphere, takes on similarly royal attributes by depicting himself as the victorious military leader and an excellent legislator, which are supposed to have been significant roles of the king. Even Maya, Overseer of the Treasury, who played an important role in the administration, adopted epithets normally reserved for royalty. The appearance of royal iconography, epithets, and powers among influential high officials suggests that, practically speaking, the traditional royal functions within the administration and court had similarly been delegated to these three men. Mostly, the young king seems to have been operating in the shadow of these individuals.

Among these three men, Generalissimo Horemheb gained the most powerful political position. Horemheb's career started as a general under Akhenaten, and he later emerged as commander-in-chief of the Egyptian armed forces. Evidently, he took advantage of the political instability of the country after Akhenaten's death and was a driving force for the return to orthodoxy. Not only was Horemheb the military commander but he also dominated all other branches of the administration of the country. As the regent



of the king he outranked two viziers who would have traditionally served as prime ministers under the king. He was the political leader under Tutankhamun as his most prominent title, "Hereditary Prince," suggests and inarguably acted as the commander of the government on behalf of the boy king. Towards the end of his private career, Horemheb consciously presented himself as a wise civil administrator rather A relief block from Tutankhamun's memorial temple at Karnak, showing the king presenting a bundle of lotus flowers to Amun, now at the Open air Museum at Karnak PHOTO: NOZOMU KAWAI





LEFT: The dyad of Maya and his wife Merit from the tomb of Maya at Saqqara, now at the National Museum of Antiquities, Leiden

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RIGHT: Tutankhamun's entourage depicted behind his throne, two leading men before two viziers must be Horemheb and Ay, at the tomb of Maia, the wet-nurse of Tutankhamun, at Saqqara PHOTO: NOZOMU KAWAI than a military man, which indicates that he intended to display his capability as a ruler.

Ay, on the other hand, was the closest courtier to the king. He and his wife, Ty, had served the royal family since Akhenaten's reign, even when the new royal couple was born. Although Ay did not retain political power as an administrator during most of Tutankhamun's reign, he was the most influential private advisor to the king. In any case, both Horemheb and Ay outranked the two would-be prime ministerial viziers and were even depicted immediately behind the king in the tomb of Tutankhamun's wet-nurse Maia at Saqqara.

As previously stated, the Restoration Stela describes how the king installed the children of influential local officials in the priesthood from high ranks to low ranks. Members of these important families occupied a number of significant positions in both civil administration and religious administration



from Tutankhamun's reign onwards. There were several influential families in Upper Egypt that occupied these important offices. For example, the strong influence of the people from Akhmim, which developed in Amenhotep III's reign, persisted under Tutankhamun. Ay and Senged were the most influential among them and played an important role at the court as advisors or nurses of the king, while Nakhtmin functioned as one of the generals who eventually became the crown prince under Ay. A certain Ay, whose father was a god's father of Mut, Nakhtmin, and whose mother was a sister of Ay's wife, Ty, was probably appointed as the second prophet of Amun under Tutankhamun. Taemwajsy, likely a descendant of Yuya and Tjuya from Akhmim, had very influential power in Nubia as the "Great one of the Musical Performers of Amun," a position that was probably inherited from Tjuya, as well as the "Great one of the Musical Performers of Nebkheperure" for the cult of the living deified king Tutankhamun. She married Khaemwaset, Troop commander of Kush, and later married Amenhotep Huy, viceroy of Kush, and kept her influence in the temples at Faras and Kawa.

Furthermore, the High Priest of Amun, Parennefer/Wennefer, who originated from Thinis in the Coptos area, also functioned as the High Priest of Onuris at Thinis and his brother, Minmose, was the High Priest of Min and Isis at Coptos. Parennnefer/ Wennefer's son, Hori, was appointed as the High Priest of Mut under Tutankhamun and later inherited his father's title as the High Priest of Onuris. Much like the family from Akhmim, the members of this family occupied several important positions throughout the 19th Dynasty, especially during Ramses II's reign. The family of the vizier Usermontu also seem to have been influential in the Armant area. His brother, Huy, was a priest of Montu at Armant. Usermontu's subordinate, Hatiay, was the High Priest of Montu, Sobek, Anubis, and Khonsu.

The End of Tutankhamun's Reign and Aftermath

The events surrounding Tutankhamun's death remain far from clear. The latest scientific study of Tutankhamun's mummy has revealed that he died around the age of 18 or 19 – probably unexpectedly in his Year 9 or 10. Tutankhamun was eventually buried in a small tomb in the Valley of the Kings that was likely originally intended as a private tomb, although his tomb seems to have been prepared in the western Valley of the Kings. His tomb was also prepared in a hurry, as the paintings in the burial chamber indicate. Ay was responsible for Tutankhamun's funeral as his successor, representing himself as Pharaoh in priestly regalia while performing the Opening of the Mouth ritual on Tutankhamun's mummy.

At that time, Egypt was engaged in military skirmishes with the Hittites, who were invading the northern border of the Egyptian empire. While there is no Egyptian source stating the date of Tutankhamun's death, a Hittite source seems to provide information on this event. According to a Hittite document, it would seem that the death of Nipukhururiya (in Egyptian, "Nebkheperure," Tutankhamun's throne name) and an Egyptian defeat at Amka by the Hittites occurred at approximately the same time. Since there was no offspring to succeed Tutankhamun as king, it is possible that the aforementioned widowed queen who asked the Hittite king Shuppiluliuma for a son who could marry her and become king of Egypt was actually Ankhesenamun. This extraordinary plan failed, however, since Shuppiluliuma's son Zannanza was murdered on his way to Egypt. The result was that the war with the Hittities continued. Therefore, Ankhesenamun likely sought to establish a co-regency with Ay, who eventually did ascend to the throne. For unknown reasons, Ankhesenamun then disappeared from the scene. Horemheb became less visible under Ay, who made a conscious effort to prevent Horemheb from succeeding to the throne by appointing Nakhtmin as "King's Son," "Hereditary Prince," and "Generalissimo." Thus, Nakhmin was elevated to a higher position than Horemheb, although he was previously Horemheb's subordinate under Tutankhamun. Horemheb would finally ascend to the throne after Ay's demise and enacted a damnatio memoriae against Ay and Nakhtmin. Ultimately, Tutankhamun's memory was largely erased by Horemheb in order to legitimate his succession as the new king - and the main reason why Tutankhamun was relatively unknown until the British archaeologist Howard Carter discovered his tomb in 1922! 🝁

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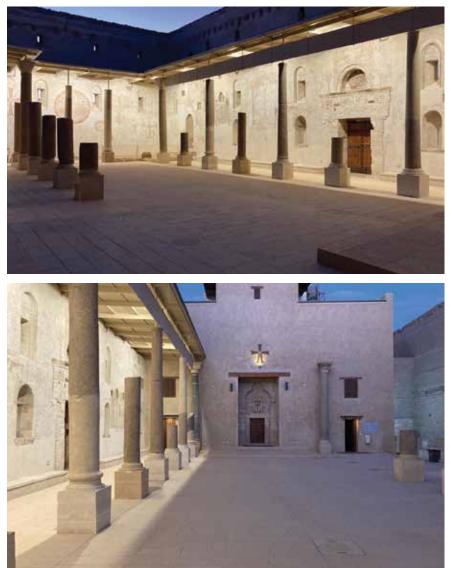
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The latest from ARCE's offices in the U.S. and Egypt

Protecting the Red Monastery Church's Nave Paintings

On November 1, 2021, ARCE began work to install a shelter in the nave of the Red Monastery Church. This project was overseen by Dr. Nicholas Warner, Director of Cultural Heritage Projects and the previous project director of ARCE's architectural conservation of the monument.

Beginning in 2003 and with funding from the United States Agency for International Development (USAID), ARCE undertook substantial conservation and restoration work that revealed a number of Early Antique and Coptic religious wall paintings. Concerns for the paintings in the nave, which are directly exposed to sunlight and environmental elements, prompted Dr. Warner to design and propose the concept of a protective shelter. The shelter was installed after receiving approval from the Supreme Council of Antiquities and the Ministry of Tourism and Antiquities and will ensure that the invaluable paintings in the nave are protected and maintained for years to come.

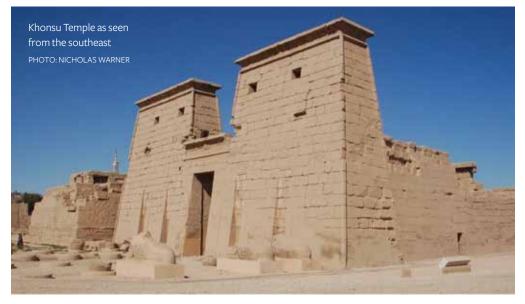


ARCE Coordinates Museum Exhibit and Conference on Exalted Spirits

On November 9, 2021, Minister of Tourism and Antiquities, Dr. Khaled El-Enany inaugurated the exhibit "Exalted Spirits: The Veneration of the Dead in Egypt through the Ages," at the Egyptian Museum in Cairo in the presence of Nicole Shampaine, Deputy Chief of Mission at the U.S. Embassy, Dr. Mostafa Al-Waziri, Secretary-General of the Supreme Council of Antiquities in Egypt, Dr. Louise Bertini, Executive Director at the American Research Center in Egypt (ARCE), and Ms. Sabah Abdel-Razik, General Manager of the Egyptian Museum in Cairo.

The exhibit was spearheaded by Dr. Yasmin El Shazly, Deputy Director of Research and Programs at ARCE, and represents a collaborative partnership between the Ministry, ARCE, and the American University in Cairo (AUC). It ran until February 9, 2022, and shed light on the veneration of deceased figures in Egypt from the Pharaonic period up to the present day. The exhibit featured a total of 41 objects from the collections of the Egyptian Museum in Cairo, the Coptic Museum, and the Museum of Islamic Art. Some of the highlights included a stela dedicated to Amenhotep I, an icon of St. Mena, two sleeves from a clerical costume, an anthropoid bust of Khandjer, and silk textile from the Mosque-Mausoleum of Sayyid Ahmad al-Badawi.

The inauguration of the exhibit was followed by a three-day conference at the Tahrir Cultural Center in AUC's downtown Cairo campus, which was organized by ARCE. The conference featured academic papers as well as panel discussions focusing on current practices related to the veneration of the dead and their origins. Just under 200 registrants attended the conference in-person and virtually.



Conservation at Khonsu Temple

ARCE received official permission from its longtime partner, the Ministry of Tourism and Antiquities, to complete the conservation of this major Pharaonic monument in Luxor's East Bank.

Made possible by the support of many generous ARCE donors, work started in the fall of 2021 with full documentation using 3D laser scanning. The project is scheduled to continue for at least four years and will initially focus on structural repairs and consolidation work followed by the conservation of the remaining untreated polychrome painted surfaces and further training for local conservators and site managers. We look forward to the day when this remarkable and enduring example of Egypt's unique cultural heritage can be visited in a fully conserved condition!

ARCE's Library is Online!

The beta version of ARCE's library portal launched in late January 2022. ARCE members may access the online catalogue and digital library, which currently include over 5,000 e-books. Non-members can access the online catalogue and all open-access publications linked to the portal. The ARCE library is currently subscribed to the Brill, Archaeopress, and JSTOR databases and will soon be adding new subscriptions and the option to purchase individual e-publications.

Visit ARCE's library portal at: library.arce.org

ARCE Leads Conservation of Howard Carter's Luxor House

On February 15, 2022, ARCE began on-the-ground efforts to conserve the historic house of Howard Carter – popularly known as Carter House – in the West Bank of Luxor. The project will address rising conservation concerns stemming primarily from water damage to the structure of the building, as well as upgrade the visitor information and experience at the site. Work is expected to be complete in time to relaunch the house-museum during the national centenary celebrations of the discovery of Tutankhamun's tomb by Carter.

This work is being implemented in partnership with the Egyptian Ministry of Tourism and Antiquities, with generous support from Board of Governors member Adina Savin, the United States Agency for International Development (USAID)-funded Integrated Management of Cultural Tourism (IMCT) project.



The latest from ARCE's offices in the U.S. and Egypt

Donor Spotlight: Dr. Victoria Jensen

RCE is honored to recognize Dr. Victoria Jensen for her generous support of ARCE's greatest needs through a gift to the Director's Discretionary Fund. She spoke with U.S. Director Liska Radachi about her experience with ARCE. Edited for length and clarity. To read her full interview, visit *arce.org/donor-spotlight*.

A Path to Egyptology

Like so many ARCE members, I first fell in love with ancient Egypt as a kid. When I was 12, the Tutankhamun exhibit was touring the U.S. and it really permeated our culture, not only in the media and school curriculum but you could even get wallpaper and fabric printed with ancient Egyptian iconography! I begged my family to take me to see the exhibit in Chicago, the nearest venue to my hometown of Dayton, Ohio, and that summer my grandmother and mom made it happen for me. I was mesmerized by the artifacts, especially the iconic gold mask. In middle school, I wrote to Christine Lilyquist, then the curator of the Egyptian Department at the Metropolitan Museum of Art, essentially asking how I could be her when I grew up. She was kind enough to reply and mentioned several graduate schools with good programs including Berkeley and the University of Chicago.

As I continued through high school, my father steered me away from thinking of a career in Egyptology toward something more practical, so I attended the University of Chicago but as a political science major. I had a work-study job on campus in the Sponsored Projects office that became a full-time career after I graduated, and I continued to assist faculty with their grant and contract proposals after I moved from Chicago to the Bay Area.

I was about 40 years old when I discovered that UC Berkeley had an Egyptology program and decided that after 20 years of helping others to attain funding to make their dreams come true, I should give my long-dormant dream a chance. I wasn't at all sure how viable it would be – I had a full-time job with a good salary and benefits, plus a young daughter to raise – but I met with Dr. Candy Keller who was Department Chair at the time and she encouraged me to take the first steps of enrolling in Egyptian history and language classes as an Extension student. I really loved these classes and that was when I learned about ARCE. I fully took the plunge when I quit my full-time job and applied to the Ph.D. program. I am grateful for the guidance of Drs. Rita Lucarelli, Carol Redmount, and Kim Shelton who supervised my dissertation, "The Cemeteries of Deir el-Ballas: Non-elite burials of the 17th – 19th Dynasties and their relationship to the royal palace," which I completed in 2019.

Connecting to ARCE

ARCE was the organization that opened my eyes to the ongoing fieldwork and conservation work being done in Egypt, and it has been the conduit to my being able to meet and become friends with many like-minded people. Thanks to ARCE, I have been graced with deep friendships both with professional colleagues as well as amateur enthusiasts. The local Chapters bring in speakers who present the latest research from the field, and this is a fantastic way



to link people in the area who are interested in Egyptian history, as well as to develop professional relationships among experts in the field. Also, I love the annual meeting; it is a smorgasbord of interesting presentations.

I have always been drawn to cross-cultural communication and learning in general, believing that if we can try to see the world through the eyes of peo-

ple of different cultures, that would help to counteract the default human mode of categorizing people as "us vs. them." My innate enthusiasm for ancient Egypt brought me to visit the country to see and study the ancient remains, but it was my immersion in a local family that has resulted in me living in Luxor. Participating in daily life activities with the family like sowing and reaping crops, making bread, and tending animals is not only inherently satisfying but it has given me invaluable insight to understand the lifestyle of ancient Egyptians.

I appreciate that many of my international colleagues in Egyptology have deep and meaningful connections with Egyptians, which are expedited by the incredibly warm hospitality that is characteristic of Egyptian culture. One of the main reasons I believe ARCE is a worthwhile organization to support is that ARCE's partnership with the Egyptian government provides the opportunity for many personal linkages between Americans – including scholars, students, and amateur enthusiasts – and Egyptian scholars, students, and regular citizens who are justifiably proud of their national heritage.

NEWS chapters

The latest from ARCE's Chapters

ARCE-MO and ARCE-OH

SUBMITTED BY PROF. STACY DAVIDSON AND DR. SARAH SCHELLINGER

On Saturday, 18 Sept 2021, ARCE-MO and ARCE-OH jointly produced an online, interactive, Members Only workshop on Egyptian scribal palettes with Presidents Stacy Davidson (ARCE-MO) and Dr. Sarah Schellinger (ARCE-OH) co-presenting. ARCE-MO Board Member Anne Austin worked with a creative reuse non-profit in St. Louis to carve out the palette pieces from reclaimed wood; Clara, Ella, and Scott Wright finished the palette components in their home workshop as well as collected the raw materials for the rest of the kit



Scribal Palette Kit PHOTO: STACY DAVIDSON



Workshop Poster PHOTO: STACY DAVIDSON

which included dry pigments and hand-crafted reed pens. ARCE-MO Treasurer Rozanne Klinzing donated the papyrus. Kits were assembled and mailed by the Wrights to members stretching from California to Pennsylvania. During the workshop, instruction was given on how to soak the reed pens ahead of time, glue on the palette lid, and mix the pigments. In between drying times, Davidson and Schellinger gave short presentations on writing deities Djehuty and

Seshat, a history of decipherment, and an introduction to hieroglyphs and hieratic. Experiments in replicating scribal palettes and pigments by woodworker James Terry of Studio Pth were also highlighted. At the end of the program, participants were able to use their reed pens and pigments to write on papyrus. Both Davidson and Schellinger hope this workshop is the first in a series of experiential offerings by their chapters, and the variation in a traditional online lecture format was widely celebrated by their participants.

ARCE Chicago News

Through Fall 2021 and into the winter, ARCE's Chicago Chapter continued to host monthly Saturday programs on Zoom. These virtual events are open to the public with advanced registration. In September, Dr. Marie-Lys Arnette (ERC Locus Ludi, University of Fribourg, Switzerland) spoke about "The Egyptian Game of Senet, from the New Kingdom to Roman Times: Funerary Destiny, Astronomy, and Medicine." Dr. Aidan Dodson (University of Bristol, UK) presented "Amarna Enigmas: Or Why Is There So Little Consensus About the Late 18th Dynasty?" in October and Dr. Nigel Strudwick (McDonald Institute for Archaeological Research, University of Cambridge) delivered "Hundred-gated Thebes': What Do We Know Up to the Beginning of the Middle Kingdom?" in November. In December the chapter organized a virtual interactive Egyptian trivia event. Zoom lectures resumed in January 2022, with Dr. Gabriele Pieke (Reiss-Engelhorn-Museen, Mannheim) giving a talk entitled "Finding a New Balance: Non-Royal Tombs of the Post-Amarna Period in Western Thebes." Although upcoming lectures will remain remote due to the pandemic, we hope to return to in-person events soon.

ARCE North Texas SUBMITTED BY SALLY HANSEN, CHAPTER PRESIDENT

For the first time since March 2020, North Texas ARCE met in August 2021 to catch up and enjoy a documentary. We then paused until early December when we had a holiday lunch. We are paused again and hope to be able to restart with spring. Thank goodness for virtual talks and all the good internet sites. Best wishes to all of us for 2022!

The latest from ARCE's Chapters

ARCE New York

The New York Chapter continued to present virtual lectures, which has allowed the Chapter to host speakers located outside the U.S. The first lecture of 2022, "Diving the Pyramids at Nuri, Sudan," was given by Dr. Pearce Paul Creasman on January 30 speaking from Jordan. Dr. Creasman discussed the current underwater excavation of the Pyramid of Nastasen, the last pyramid constructed at the royal necropolis of Nuri, which was only partly excavated by Reisner in the early 1900s and is now fully submerged.

On February 13 Dr. Nicky Nielsen, Senior Lecturer in Egyptology at the University of Manchester in England presented "Excavating the City of the Snake Goddess: Flinders Petrie at Tell Nabasha." Dr. Nielsen's talk explored what Petrie found in 1886, his current excavations at the site and how these finds can help reconstruct the chronology, development, and function of the ancient city of Imet, the cult center of the snake goddess.

Dr. Peter Lacovara's lecture titled "The Burials of the 25th Dynasty and Napatan Kings" originally scheduled for Fall 2021 has been rescheduled for early May.





Dr. Pearce Paul Creasman at Nuri PHOTO: PATRICK GREAVES

Diver entering Nastasen's pyramid PHOTO: STEPHANIE DENKOWICZ

The Chapter will complete its Spring lecture schedule on June 22 with a lecture by Dr. Marc Galbode, part of the National Chapters Speakers Tour celebrating the 100-year anniversary of the discovery of King Tutankhamun's Tomb. The lecture is presented in co-sponsorship with The National Arts Club.

ARCE Northern California

SUBMITTED BY ALYSON CAINE, UNIVERSITY OF CALIFORNIA, MERCED

During COVID-19, ARCE Northern California is offering its 10 yearly public lectures via Zoom. Our speakers have Zoomed in from as far as Cairo (Barry Kemp), Italy (Francesco Tiradritti) and even from a quarantine hotel in China (Julien Cooper). In June, we launched ARCE NorCal's YouTube channel with Rita Lucarelli's "Ancient Egypt and its Reception in Black America." We're grateful to our speakers for allowing six talks to be posted so far.

We continue to award grants totaling \$2,500 yearly to graduate and undergraduate students of Egyptology or related disciplines who attend school or have a hometown in Northern California. Our fourth ARCE Northern California Eugene Cruz-Uribe Memorial Student Grant went in January 2022 to Halima Ibrahim, a sophomore art history major at Stanford University who plans to contextualize the post-Arab Spring murals of Cairo's Muhammad Mahmoud street within the larger setting of Egyptian contemporary art. The grant honors Eugene Cruz-Uribe, a beloved chapter member who was editor of JARCE at his death in 2018 in a bicycle accident.

In spring 2021, we awarded our Marie Buttery Memorial Student Grant to Alyson Caine, a doctoral candidate at the University of California, Merced. Caine, a bioarchaeologist with an emphasis on health, evaluated osteological data from the National Museum of Natural History's specimens from Lisht to better understand how lived experience related to mortuary practices in the Middle Kingdom.



The late Kathy Hansen with a chariot built based on New Kingdom depictions and examples in Tutankhamun's tomb PHOTO: ANNE PAYNE

Finally, we mourn the death in 2019 of chapter board member Kathy Hansen, a horsewoman and expert on ancient Egyptian chariotry. As author of Moon Publishing's 1993 Egypt Handbook, Hansen introduced many of us to Egypt. With support from PBS, Hansen traveled to Egypt to supervise construction and driving of two replica New Kingdom chariots. The result was a NOVA special, "Building Pharaoh's Chariot." We are looking for ways to honor Hansen's contribution to the discipline and to our lives.

$N \to W S$ antiquities endowment fund

The latest from ARCE's Antiquities Endowment Fund (AEF)



Conservation of the Mausoleum of Ibn Ghurab, Cairo

Sa'd al-Din Ibn Ghurab held key state offices before he died aged thirty in 1405. He reached the top of the Mamluk military hierarchy although he didn't belong to the caste, once boasted that he had deposed the sultan then brought him back, and that had he wanted he could become sultan himself! Ibn Ghurab is buried in a small domed mausoleum in the Eastern Cemetery within Cairo's 'City of the Dead.' Some seventy years later, the illustrious sultan al-Ashraf Qaitbey built his enormous funerary complex - a masterpiece of Islamic art - next door.

Since 2014, the Cairo based consulting office ARCHiNOS Architecture has been working in the Qaitbey area with the double purpose of preserving its precious heritage and of reintegrating it with the lives of the people of the neighborhood. This includes work in a huge lot that was once part of the Sultan's private-use section of the complex and that ARCHiNOS intends to open to the public as an archaeological park together with the adjacent earlier structures. ARCE already previously supported this project when it awarded ARCHiNOS an AEF grant for the conservation of the tomb of Amir Mankalibugha, which was carried out in 2018 – 2019.

In the case of the mausoleum of Ibn Ghurab, the AEF came to the rescue again. The tomb had been buried in layers of rubble and refuse many meters deep, and in precarious structural condition. A small grant from the Barakat Trust in July 2019 – February 2020 helped to avert impending collapse but the building was still in dire need of conservation. The AEF-funded work commenced in December 2021 and is scheduled to last for a year. It comprises two components: conservation of the fabrics of the building and its decoration, and excavations in the immediate surroundings with the aim of opening the area to the public. The work is directed by Agnieszka Dobrowolska, a conservation architect who first directed a project for ARCE in 1996-8, then continued with a number of others.

The current work at the tomb of Ibn Ghurab is an example of how AEF involvement in a larger, primarily EU-funded project can be a meaningful contribution to grafting together historic preservation with work benefiting the local community. LEFT: Mausoleum of Ibn Ghurab, half buried in rubble and refuse in 2017 PHOTO: JAROSŁAW DOBROWOLSKI

RIGHT: Muqarnas internal supports under the dome of Ibn Ghurab: masterfully built, but calling for conservation PHOTO: GEORGE FAKHRY, 2020

To learn more about the fascinating Qaitbey neighborhood, visit www.aliveinthecityofthedead.com More about ARCHINOS and its work can be found at www.archinos.com

The latest from ARCE's Antiquities Endowment Fund (AEF)

The Pyramid Complex of King Sahura: Protection, Restoration, and Documentation

In 2021, with the generous support of an AEF grant, a conservation project for the interior compartments of the pyramid complex of Sahura at Abusir was resumed. The major focus of the work is to consolidate the rest of the newly discovered magazines on the east side of the pyramid, consolidate and restore the pyramid substructure, and prepare a plan to clean and restore the west side that contains the unexplored burial chamber.

Work started in October 2021. The team was able to remove rubble and fallen debris that rose about four meters above the original floor level and stabilize and clear the magazines that had previously been discovered. During clearing of the fallen blocks from the magazine area we made very interesting finds of animal bones and rudimentary tools, as well as many pieces of basalt.

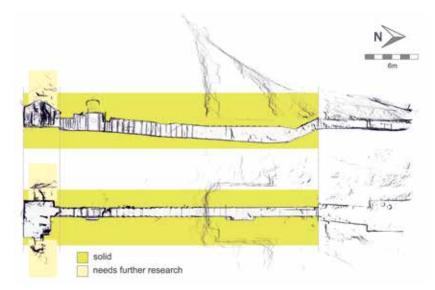
The area behind the sixth and last magazine was explored and cleared of large blocks and the team reached the south end of the horizontal corridor that leads to the antechamber. There we found the southern foundation wall, which has several graffiti with the names of the crew who would have overseen the building activities on the south side.

Towards the end of the season, our team ventured even further, as far as to the west of this area, removing large blocks along the way in the hopes of eventually reaching the burial chamber.

TOP: Result of the photogrammetry reconstruction of the interior design of the pyramid including the reconstructed antechamber

ABUSIR PROJECT, PLAN BY JOHANNES VÄTHJUNKER

BOTTOM: The sixth and last magazine after cleaning and consolidation, showing remains of the original wall as well as the reconstructed simulating wall of the destroyed one ABUSIR PROJECT, PHOTO BY SAYED EL SHOURA





The Pyramid Complex of Queen Setibhor

The end of the 5th Dynasty has been a complicated subject of discussion for scholars who focus on ancient Egyptian history. Crucial evidence has recently been unearthed at Djedkare's royal cemetery at south Saqqara, a site that holds the key for our understanding of that period. With the support of ARCE's AEF grant program, awarded twice to the Djedkare Project (DJP) mission of the Charles University, new evidence has been brought to light in the pyramid complex of Djedkare's wife, Queen Setibhor.

The mission succeeded in discovering a previously unknown part of the queen's funerary temple, which held evidence emphasizing the importance of this previously anonymous queen. The name of the queen and her titles were found carved on a granite column in the south side of her funerary temple and also on relief fragments from her temple decoration; they designate the queen as "She who sees Horus and Seth, Great one of the Hts-sceptre, Great of Praise, Companion of Horus, Beloved of Hathor every day, Revered, Beloved of all the gods, King's wife, Setibhor."

Because of the queen's special position at the end of the 5th Dynasty, her pyramid complex is one of a kind. The size of Setibhor's pyramid is exceptional: it measured 41.5 meters, making it the largest pyramid complex built for a queen during the Old Kingdom. It is even larger than some pyramids of kings, such as the 8th Dynasty pyramid of Ibi. Setibhor's monument also contains unusual architectural features emphasizing her special status. For instance, the east side of her funerary temple shows the square antechamber, a room that was – in that period – built only in kings' pyramid complexes. Setibhor was not only the first queen to have this room in her temple, but her square antechamber was the largest in all the Old Kingdom pyramid complexes.

The burial apartment of the queen's pyramid was documented in 2021. Its plan included the so-called serdab room to the east of the burial chamber, which is again the earliest known example among queens of the Old Kingdom. The evidence uncovered by the DJP mission, with the support of the AEF grants, proves that Setibhor was an iconic queen who defined standards for later queens of the Old Kingdom.





ABOVE: The substructure of Setibhor's pyramid after the cleaning DJEDKARE PROJECT, PHOTO PETR KOŠÁREK

LEFT: The south side of the funerary temple of Queen Setibhor with the granite column

DJEDKARE PROJECT, PHOTO HANA VYMAZALOVÁ

$N \to W S$ antiquities endowment fund

The latest from ARCE's Antiquities Endowment Fund (AEF)







Soknopaiou Nesos Project. Conservation and Presentation of Dime es-Seba (El-Fayoum) Project

PAOLA DAVOLI (UNIVERSITY OF SALENTO)

In 2021 a three-year project for the presentation and restoration of the temple area dedicated to the god Soknopaios began, funded by ARCE's AEF grant program, began. The work was planned and carried out in collaboration with architects Nicholas Warner and Ahmed Abdelgawad in the frame of a Supreme Council of Antiquities' concession to the Soknopaiou Nesos Project (SNP) of the University of Salento (Italy).

The SNP has been working in Dime es-Seba since 2003, under the direction of Mario Capasso and Paola Davoli. Soknopaiou Nesos had its maximum development between the 4th century BCE and the mid 3rd century CE. The ruins lay in the desert north of Lake Qarun in the Fayoum, far from the inhabited and cultivated areas. For this reason, the archaeological site (660 x 350 meters) is quite well preserved but was pillaged of its stones and treasures including hundreds of papyri in Greek and Demotic, today found in collections and museums worldwide.

The site is famous for its papyri among scholars, but also among tourists and visitors for its impressive conservation of the templar area; the white mudbrick enclosure walls (temenos) are still standing 15 meters in height. They are a veritable landmark in the desert, visible from the south shore of the lake in clear days.

The site is now part of the North Lake Qarun Park and thanks to newly built paved roads is easily accessible to visitors all year round. It is thus urgent to proceed with a proper plan of presentation and conservation of the site.

The first-year interventions involved the clearing of the large and heavy architraves found while excavating the two temples built in limestone blocks and located in the middle of the temenos. These blocks were temporarily stacked on both sides of the sanctuaries, preventing safe circulation. They have now been moved outside the temenos to areas free of buildings. The work was accomplished without the aid of mechanical means given the fragility of the monuments. A Moving lintels from the west side of the sanctuary
 Making mud bricks to be used in 2022 season
 The west wall of the temenos with deep erosion and the trench already prepared for 2022 restoration
 PHOTOS: PAOLA DAVOLI

debris dump from previous old excavations was also removed from the temple area.

Some sectors of the mud brick temenos have been identified as particularly eroded at the base and therefore at risk of collapse. Consolidation will consist of constructing new courses of mudbricks that will fill the erosion gaps. This work will take place in 2022. It has been estimated that at least 50,000 new mudbricks (30 x 15 x 10 cm) are needed. The making of these bricks is in progress by local specialized workmen with local clay similar to what was used in antiquity. The excavation of trenches at the base of the walls has already begun, in order to reach their original. The SNP also plans to produce a printed and web-based guide as part of its long-term project objectives.

BYU Egypt Excavation Project

After a profitable study season was held in 2020 and part of 2021, which included the launch of a database on the burials of the Fag el-Gamous Cemetery, the BYU Egypt Excavation Project was able to resume field work in Egypt in the fall of 2021. We excavated the western side of the Seila pyramid, enabling us to determine the outside dimensions of the pyramid and discover some unexpected and somewhat unique building techniques. We also excavated trenches westward from the base and were able to determine that there were no further structures on the western side.

We also performed analysis and conservation work on textiles from previous seasons. We humidified, unfolded, cleaned and analyzed 3 adult tunics and 4 children's



tunics, along with the hood of a child's tunic and 3 hairnets. The tunics were made of both wool and linen, with a variety of decorative styles, including crosses. Some of the techniques used to make these tunics are heretofore unseen. Results of this analysis has already been reported at the Textiles of the Nile Valley conference held in Amsterdam in November of 2021. All of these textiles were then conserved and stored in acid-free museum quality storage boxes obtained from the IFAO in Cairo.

Further, we conducted an osteological field school for four Egyptian inspectors. We believe that the graduates of this field school will prove to be a valuable asset to the work of many excavation teams in the Fayoum.

TOP: The shoulder of a tunic during the conservation process

BOTTOM: The stones and mud brick of the outer western edge of the Seila Pyramid PHOTOS: KERRY MUHLESTEIN

American University in Cairo

AUC Egyptology has had a busy time in the field and in the University. This fall we welcomed a new batch of MA students from Egypt, Portugal, Spain, and the U.S. Field work has been continuing, with Salima Ikram, director of the Amenmesses Project KV10-KV63, conducting a study season in the field in order to prepare the materials for publication, as well as joining Mohammed Megahed's team at the pyramid of Djedkare Isesi, and working on the Egyptian Musem Bioarchaeological Curatorship Project.

Mariam Ayad has continued her work on the Opening of the Mouth ritual in Medinet Habu as well as with Elena Pischikova's South Asasif Conservation Project, which is affiliated with AUC. Ikram also worked on a series of mummies found in a tomb that was newly discovered by Pischikova and her team, as well as working on a deposit of carnivore remains found in one of the tombs. Anne-Claire Salmas continues to work on the publication of the tomb of Khabekhnet (TT2) at Deir el-Medina, and Lisa Sabbahy is enjoying reaping the rewards of her latest publication, *Kingship, Power, and Legitimacy in Ancient Egypt*.

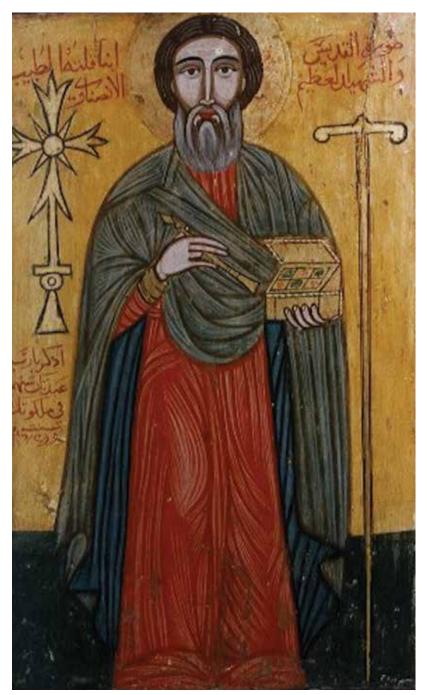
AUC teamed up with ARCE to host the Exalted Spirits: Ancestral Veneration in Egypt Through the Ages exhibition at The Egyptian Museum in Cairo and the affiliated conference held at AUC. New publications by AUC professors include Ikram et al.'s Ancient Egypt and the Natural World, and The World History of Egyptology. The AUC Press continues to publish Egyptological works, and anyone who is interested in publishing with the Press should get in touch with Salima Ikram: salima@ aucegypt.edu.

Harvard University As part of KMT's centennial countdown, Dr. Peter Der Manuelian published "Six Feet from Tutankhamun. The Near Miss of 1914" that explores how Howard Carter utilized the findings of Theodore M. Davis to narrow down the location of Tutankhamun's tomb. The article is available in KMT Volume 32, Number 4 (Winter 2021-22), on pages 44-52. **To read it online, visit this link:** *https://bit.ly/3EQ259W*.

Conversations with ARCE fellows past and present

Coptic Icons: Miraculous Art

BY ANDREW HENRY, COPTIC ICONS POSTDOCTORAL FELLOW AT ARCE



he History of the Patriarchs of Alexandria records a curious story from the 11th century about the miraculous healing of a bishop named Mercurius. Suffering from leprosy and desperate for a cure, Mercurius entered the Church of the Holy Virgin in the village of Tima to pray before an icon of Mary. Over the course of three days, he begged her to remove the leprosy from his body, but during his prayer marathon he started to grow weary. Dazed and exhausted from fasting, he fell asleep against the wall by the icon. But this turned out to be a fortuitous nap. While he slept, the text says that Mary reached out of the icon, wiped his body, and he awoke cured!

Stories of miracle-working icons such as this are common in Coptic Orthodox literature. The History of the Patriarchs alone contains stories of icons striking enemies with paralysis, weeping with grief when the Christian communities of Egypt go astray, or glowing with divine light. The subjects of icons lash out when insulted or even leave their frames entirely to wander around. Other times, icons provide beneficial by-products for local communities to use. One story from the 9th century says that the monks at the monastery of Saint Mercurius witnessed an icon of Jesus Christ suddenly start bleeding from his side. The story says that members of the local community then collected the blood and used it to cure all manner of diseases.

These stories about weeping, bleeding, traveling, and glowing icons give us a glimpse into a world of Christian belief and practice concerning miracle-working iconography. When it comes to the sacred image of a saint, a painting is never simply a painting. While we might appreciate icons for their artistic merit, throughout Christian history, these artistic objects were viewed and ritually treated as something more-than-art. Anthropologists of religion have noted that icons are thought to embody the represented saint. Icons are thus a means by which devotees can seek to interact with the saints and gain access to their divine power, as Bishop Mercurius is said to have done before an

icon of the Virgin Mary.

Saint Colluthus, Location: St. Mercurius Church (Abu Saifain), Old Cairo The art historian Bissera Pentcheva uses the Greek word "empsychos," translated as "inspirited" or "animated," to refer to these more vivid



aspects of icons in Christian belief and practice. This theoretical framework has guided some of the latest research into Christian iconography in recent years, focusing on how audiences ritually interact with icons. For example, the religious studies scholar Monica Mitri has argued that stories from The History of the Patriarchs of Alexandria about aggressive holy images lashing out against people who have insulted the image were used as instructive polemics to help shape Coptic identity during times of Muslim and Christian strife in the 8th century. In these cases, the "animated" icon is viewed as an active participant in Christian communities, encouraging or chastising the community at different times.

These beliefs and practices concerning "animated" icons stretch back to the early centuries of Christian history and were widespread across the ancient Mediterranean world. The iconography of the Saints Cosmas and Damian in particular stands out as a vivid example in ancient Christian history. According to Christian tradition, Cosmas and Damian were medical saints. During Roman rule, while living in their base of operations in Syria, the two Arab physicians rose to fame for healing people from all kinds of maladies. Because they refused payment for their medical services, Cosmas and Damian earned the name the "Unmercenary Physicians." They suffered martyrdom at the hands of Emperor Diocletian during the persecution of the early 4th century.

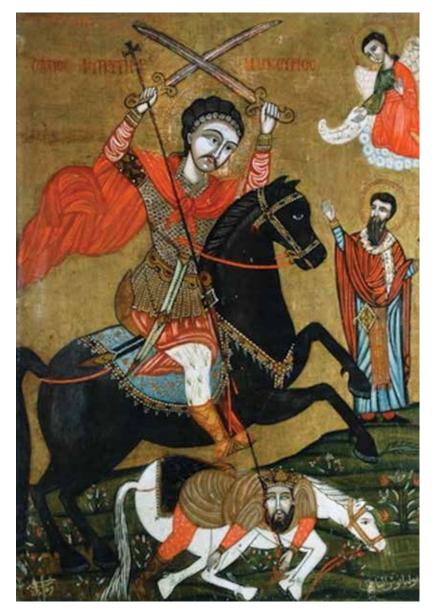


But their medical mission did not end with their martyrdom. In the following centuries, Christians reported Cosmas and Damian continuing to heal people from beyond the grave, but now, the healing powers of the two saints were administered not via human hands. Rather, they healed via their icons. A dramatic example occurs in the Miracles of Saints Cosmas and Damian, a collection of miracle stories dating to the 6th and 7th centuries CE. According to the story, there once was a woman who was a devotee of Cosmas and Damian. She was so devoted that she displayed icons of the saints on "all the walls of her house" at all times. One day, she was home alone suffering from a bad case of colic. Wracked with pain, the text says "she crawled out of bed and, upon reaching the place where the most wise Saints [Cosmas and Damian] were depicted on the wall...she scraped off with her fingernails some plaster." She then mixed this saintly plaster with some water and drank the mixture. Immediately, the saints healed her.

Another story from the Miracles of Saints Cosmas and Damian tells of a soldier named Constantine **LEFT:** Virgin Mary and the Child, Location: Al-Damsharia, Old Cairo PHOTO: ASHRAF FARES

RIGHT: Saint Mercurius, Location: St. Mercurius Church (Abu Saifain), Old Cairo

Conversations with ARCE fellows past and present



who had a habit of carrying around a miniature image of the saints in his wallet. One day, his wife developed severe pain in her jaw. While she slept the following night, she saw Cosmas and Damian stand by her bed, assuring her not to worry. The next morning, when she told her husband about the apparition, they both realized that the image of the saints in his wallet meant that "the Saints were present with them as they had said."

In this story, the image of the saints was interpreted as evidence of the saints' physical presence in the room. In the former story about the woman suffering Cosmas and Damian, location: the Hanging Church, Old Cairo PHOTO: EMAD NASR from colic, the icon of Sts. Cosmas and Damian served as the raw material for her miraculous cure. The icon functioned not as an image, but as a medicinal substance! These stories helped to solidify the reputations of Cosmas and Damian as miracle-working saints in the minds of Christians across the Mediterranean world, including Egypt. By the 5th century CE, veneration of Cosmas and Damian was flourishing in Egypt. One of the oldest representations of these saints was discovered painted on the wall of a monastery of Wadi Sarga near Asyut. The two men are portrayed holding their medical implements. Their relics are said to rest in their church located in Manyal Shiha south of Giza. For centuries, this stood as a pilgrimage destination for people suffering from nervous system disorders. Devotees would make a pilgrimage to the church to find miraculous healing from the saints.

These traditions reveal that icons are somewhat of a paradox. On one hand, throughout Christian history, they are viewed as miracle-working agents. But on the other hand, they are objects of art created by human hands. This raises interesting questions about the role of the iconographer in Christian communities. What does it mean for an artist to not simply create works of art, but specifically, create works of art that are viewed as a site where one can interact with a holy person?

For a case study, consider the men Ibrahim al-Nasikh and Yuhanna al-Armani al-Qudsi, the two most prolific iconographers of the 18th century. Ibrahim al-Nasikh was a Coptic scribe living in Cairo. Yuhanna al-Armani was an Armenian from a family who had emigrated to Cairo from Jerusalem. Together, Yuhanna al-Armani and Ibrahim al-Nasikh ran a workshop that was at the forefront of a dramatic renaissance in Coptic iconography during the Ottoman period. Icons found in the churches of Cairo and the Coptic Museum indicate that they were active between 1745 until the early 1780s. And they were extremely prolific artists! According to one tabulation, Yuhanna al-Armani painted 148 icons, 33 of which in collaboration with Ibrahim al-Nasikh. An additional 184 unsigned icons probably should be attributed to one or both of these artists too, but scholars cannot confirm this with certainty. If these latter icons were indeed produced by their workshop, Ibrahim al-Nasikh and Yuhanna al-Armani were responsible for over 300 icons!

What are the implications of a single workshop dominating an artistic sphere for half of a century?And not just any artistic sphere, but that of Christian icons? From one perspective, these men were both iconographic trendsetters and caretakers of their time. They were trendsetters insofar as they pioneered new styles of iconography with a strong focus on narrativity. Yuhanna and Ibrahim's icons often tell an entire hagiographical story about a saint in a single image, almost like a single-panel cartoon. But they were also caretakers insofar as they continued age-old motifs seen in older icons. Saint George is always depicted spearing a serpent or dragon. Saint Mercurius is always depicted astride a horse, raising two swords above him (earning his other name: Abu Saifain). Iconographers such as Yuhanna and Ibrahim thus work to maintain and propagate a shared vocabulary for the Christian communities of Ottoman-era Egypt.

But remember that icons, throughout Christian history, have been viewed as animated and interactive objects. Thus, there are even more provocative implications than being trendsetters. By painting so many icons, Ibrahim al-Nasikh and Yuhanna al-Armani affected how Coptic Orthodox Christians in Egypt experienced saints and ecclesiastical space even hundreds of years after their workshop ceased production. Walking into the Hanging Church today in Old Cairo, a visitor will see as many as 65 icons there made by Ibrahim and Yuhanna! As far as we know, neither of these men were particularly wealthy or powerful. They didn't leave behind writings for historians to study. But nevertheless, through their artistic production of hundreds of icons, they not only shaped Coptic iconographic art during the 18th century and beyond, but they continue to affect devotees' experience of the saints to this day. 👽



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Statement of Financial Position

AT JUNE 30, 2021 AND JUNE 30, 2020

| All amounts in U.S. Dollars | 2021 | 2020 |
|---|-------------|------------|
| ASSETS | 1 | |
| Cash and cash equivalents | 2,448,174 | 1,869,576 |
| Short-Term Investment | 5,227,883 | 4,209,506 |
| Other receivables and prepaid expenses | 90,728 | 98,893 |
| Pledge receivable | 107,441 | 78,941 |
| Grants receivable | 117,414 | 77,100 |
| Deferred sub-grants - AEF | 1,344,321 | 1,108,510 |
| Investments at quoted fair value | 99,667,274 | 82,024,537 |
| Property, Plant and equipment, net | 66,590 | 49,995 |
| Intagilble Assets, Net | 152,335 | 170,778 |
| Library collection | 835,440 | 835,440 |
| Total Assets | 110,057,600 | 90,523,276 |
| LIABILITIES | | |
| Provisions | 1,098,343 | 1,171,931 |
| Accounts payable and accrued expenses | 210,359 | 153,721 |
| Grants payable - AEF | 863,849 | 392,322 |
| Refundable advances and custodial funds | 14,597 | 43,597 |
| Deferred revenue | 147,003 | 109,835 |
| Assets held in trust for others | 17,751,494 | 14,619,587 |
| Employee benefit plan obligation | 52,403 | 2,788 |
| Total Liabilities | 20,138,048 | 16,493,780 |
| Total Liabilities | 20,130,040 | 10,493,700 |
| NET ASSETS | | |
| Without Donor Restriction | 4,914,972 | 3,405,839 |
| With Donor Restriction | 85,004,580 | 70,623,657 |
| Total Net Assets | 89,919,552 | 74,029,496 |
| TOTAL LIABILITIES AND NET ASSETS | 110,057,600 | 90,523,276 |

Statement of Activities

FOR THE YEAR ENDED JUNE 30, 2021

| All amounts in U.S Dollars | WITHOUT DONOR RESTRICTIONS | WITH DONOR RESTRICTIONS | TOTAL |
|---|-------------------------------|----------------------------|------------|
| REVENUES AND SUPPORTS | | | |
| Grants | 260,356 | | 260,356 |
| Membership dues | 144,658 | | 144,658 |
| Contributions | 185,169 | | 185,169 |
| Meetings, lectures and publications | 50,340 | | 50,340 |
| Investment income | 1,267,688 | | 1,267,688 |
| Net unrealized and realized gain / (loss) on investments | 930,286 | 16,476,981 | 17,407,267 |
| Other | 200,004 | | 200,004 |
| Total Revenues and Supports | 3,038,501 | 16,476,981 | 19,515,482 |
| NET ASSETS RELEASED FROM RESTRICTIONS | | | |
| Satisfactions of grants released from restrictions | | | |
| Satisfactions of investment income released from restrictions | 2,096,058 | (2,096,058) | - 0 |
| | 2,096,058 | (2,096,058) | - 0 |
| Total Revenues and Other Support | 5,134,559 | 14,380,923 | 19,515,482 |
| EXPENSES | | | |
| Program services: | | | |
| Conferences/seminars | 85,751 | | 85,751 |
| Fellowships | 200,515 | | 200,515 |
| Library | 55,934 | | 55,934 |
| Public education | 196,363 | | 196,363 |
| Publications | 76,653 | | 76,653 |
| Restoration and conservation | 772,950 | | 772,950 |
| Total program services | 1,388,166 | -0 | 1,388,166 |
| Supporting services: | | | |
| Management and general | 2,000,564 | | 2,000,564 |
| Membership development | 98,984 | | 98,984 |
| Fundraising | 120,594 | | 120,594 |
| Total supporting services | 2,220,142 | -0 | 2,220,142 |
| Total Expenses | 3,608,308 | - | 3,608,308 |
| CHANGE IN NET ASSETS BEFORE FOREIGN EXCHANGE | 1,526,251 | 14,380,923 | 15,907,174 |
| Foreign exchange (Loss) & gain | (17,118) | | (17,118) |
| CHANGE IN NET ASSETS | 1,509,133 | 14,380,923 | 15,890,056 |
| Net assets at beginning of year | 3,405,839 | 70,623,657 | 74,029,496 |
| NET ASSETS AT END OF YEAR | 4,914,972 | 85,004,580 | 89,919,552 |

The American Research Center in Egypt Thanks Our Donors Who Supported the King Tutankhamun Centennial Celebration & End of Year Fundraising Campaign

With special recognition of **Adina L. Savin** For Her Gift Benefiting the Restoration and Adaptive Reuse of Carter House

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