Copying the Sarcophagus

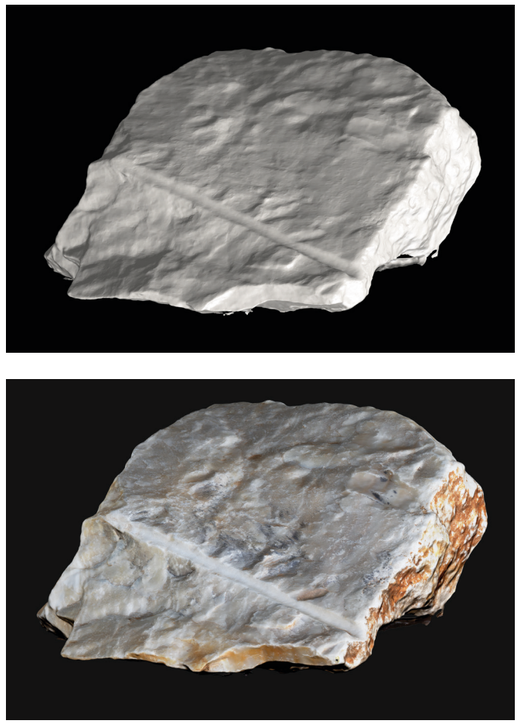
Adam Lowe

The suggestion of decay and change is inherent in the idea of a sarcophagus: the name conjours a flesh-eating stone container that protects the body and soul during its most vunlerable transformation.

The Sarcophagus of Seti I, one of the star objects in Sir John Soane's collection, contains the protective figure of the goddess Nut on the base and a copy of the text of the *Book of Gates* on the outside and inside. The *Book of Gates* is one of a group of texts, along with the *Amduat* and the *Book of Caverns* that focus on the Sun-God's complex journey through the 'dark hours of the sun' and his rejuvenation each morning. Metaphorically the sarcophagus is the container that 'consumes' its contents, protecting the original as it decays while ensuring the original can live again. Could this be a metaphor for our relationship with the past in general and the ways in which we protect and preserve its memory and the information it carries?

Historically accepted methods of preservation are now undergoing reinvention and re-evaluation themselves. In March 2016 the sarcophagus of Seti I was the subject of a high-resolution photographic recording in colour and three dimensions. The recording did not involve touching the sarcophagus but it provided data that can be studied with forensic accuracy which will hopefully lead to a deeper and more intimate understanding of this enigmatic object.

It is certainly not the first time it has been copied. On 17 June 1840 a letter from John Williams was read to the Trustees of Sir John Soane's Museum in which he requested permission to take a copy of the Egyptian Sarcophagus using a mechanical process he had invented and which he claimed to have used with success in the British Museum. The Trustees granted him permission to copy the hieroglyphs on condition that his method 'will not be in any way injurious to the Sarcophagus'. Some time between June and October that year Mr Williams carried out the recording using his specially designed mechanical process. We are not sure of the exact details of the process but it was probably a variation on a pantograph or a system using an array of metal pins that could be pressed against the surface to fix an impression of the relief. In 1853 the Crystal Palace Company also requested permission to make a cast. This request was denied and fortunately a direct plaster cast was never made. A plaster cast of a fragile alabaster object with Egyptian blue inlay would have had a negative impact on its condition. The mid-19th century was the era of casting and copying and



Above: 3D Data recorded from a block of alabaster as a test.
Below: 3D + Colour rendering of the same block of alabaster.
Photos: Factum Arte
Right: The Tomb of Seti I in 2010. Problematic restoration (the central square) is cracking

2017, the year of the 200th anniversary of the discovery of the tomb of Seti I by Giovanni Battista Belzoni, is also the 150th anniversary of the signing of the *Convention for the Reproduction of Universal Artworks*.

In 1867 the Victoria and Albert Museum's first Director, Henry Cole established this convention as an agreement between the museums of Europe that allowed the reproduction and circulation of casts of important sculptures and architectural elements. Cole's illustrious career began in the Public Record Office and reflected the Victorian age's ambition to catalogue and make accessible the arts of the world. The Cast Courts in the V&A stand as a testament to the scale and success of his vision. But they also reveal a more complex story, one that brings into

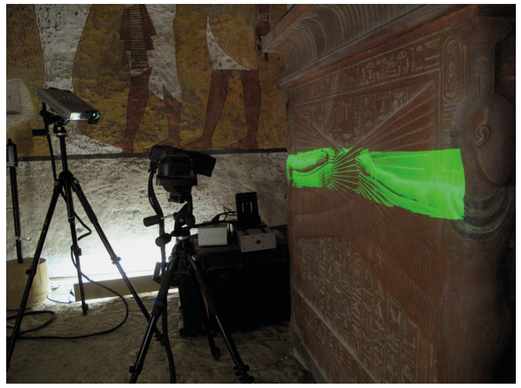
focus the question of how we care for, value and preserve our cultural heritage. The mould-making process posed a significant threat to the integrity of the original but as a result of communicating their importance it bestowed value on sculptures and architectural façades which helped to ensure their preservation. This was in the age before mass tourism. If the people could not be brought to the works of art then the works of art had to be brought to the people. The damage this caused was one reason the obsession with three-dimensional copying started to fade. Another was the arrival of photography. It was easier and cheaper to record an object in two dimensions and the results presented fewer problems in terms of archiving and dissemination. The physicality of the cast was replaced with the tonality of the black and white photograph.

Recently photography itself has been undergoing a revolution. The principles of photographic image capture have always had the potential to record form as three-dimensional information but in the 21st century the pencil of nature is becoming a chisel. With the current conditions of exponentially increasing digital potential, high-resolution composite photography is opening the door on to a new world of triangulated polygons and point clouds. Photogrammetry is the name given to the science of taking measurements from photographs. In this environment it is not only the relationship between two and three dimensions that is being addressed but the relationship between originality and authenticity is rapidly being questioned and renegotiated.

Digital recording technologies are leading to a deeper understanding of works of art in which their originality is understood to be dynamic and constantly changing rather than fixed in an idealised state. We can now study the way things have aged and changed with time and consider the interventions that have been made for different reasons at different times and in different places. The use of technology is resulting in a deeper understanding of the reasons things look as they do. This new type of connoisseurship helps to reveal the complex history of an object and allows it to be read and engaged with in new ways. The tomb and sarcophagus of Seti I reveal how things change with time and as a result of the care and attention they receive.

Continuing the trajectory of the artefact and its preservation, the new recording of the Sarcophagus of Seti I was carried out by a team from Factum Arte supported

A team from Factum Arte scanning the Seti I Sarcophagus at Sir John Soane's Museum in London, March 2016. Photo: Lewis Bush



Scanning Tutankhamun's Tomb in Luxor, 2009.
The walls of Tutankamun's tomb were recorded at resolutions of 200, 400 and 700 microns using a NUB3D structured light system.
Photo: Factum Arte

by the Factum Foundation for Digital Technology in Conservation thanks to a generous donation from Jeffrey and Veronica Berman. Documentation, considered by most to be a repetitive, time-consuming job for technicians has again become a technically innovative challenge requiring curiosity, ingenuity and action. The recording work that was carried out by Factum Arte's team in 2009 in the tomb of Tutankhamun has proved to be a turning point in this approach to documenting and preserving the past through the application of new technologies. Capturing the colour, shape and surface of an artefact that can, if desired be re-materialised as a physical object using a range of ingenious techniques presents technical challenges. In this environment our understanding of originality and authenticity is changing - the relic and the replica are re-negotiating their relationship.

There is a popular phrase that Egypt is the land of infinite impossibility. The recording of the tomb of Tutankhamun was the result of a long and complex story that actually began in the tomb of Seti I in 2001 and in Sir John Soane's Museum in 2002. The first attempt to scan the alabaster sarcophagus using a hand-held laser scanner was not successful due to the transparency of the stone. But the recording of 16 square metres of relief carving in the Tomb of Seti I exceeded all expectations and resulted in a conference at the Museum and the Hunterian Institute on 17 July 2002 attended by many leading Egyptologists.

Factum Arte's facsimile of the tomb of Tutankhamun was installed next to Howard Carter's house in 2014 where it has become a new visitor attraction in the Valley of the Kings and has met with great press and public acclaim as an important preservation initiative. The aim is to help the visitors understand the challenges involved in protecting a site that was built to last for eternity but never intended to be visited.

Following the overwhelmingly positive public and academic reaction to the facsimile of Tutankhamun's tomb, permission has now been granted to create the infrastructure for sustainable heritage management that uses the justified fame of the Theban necropolis, the visitor numbers and public interest in preservation to create a long-term, self-financing structure – a new model for heritage management. Work will start on the complete recording of Belzoni's tomb - the Tomb of Seti I which has been closed to the public since part of the celestial ceiling collapsed in the 1980s.

The tombs in the Valley of the Kings have endured more damage in the last two hundred years than in their previous lifetime of thousands. Now more than ever before it is necessary to document and preserve this important part of Egyptian heritage using the best technologies available. Factum Arte and the Factum Foundation for Digital Technology in Conservation in collaboration with the University of Basel will work together under the supervision of the Egyptian Ministry of Antiquities to ensure this work is done as well as possible.

The first phase involves the restoration of Stoppelaere's house by the Tarek Waly Center for Architecture and Heritage. This domed mud-brick building by the great 20th-century Egyptian architect Hassan Fathy wil become the scanning and training centre. Everyone who enters and leaves the Valley by road sees this building. It will become a visible statement of intent in Egypt's work to preserve its heritage.

The exterior of the facsimile of Tutankhamun's tomb being worked on with Hassan Fathy's vernacular architecture in the background.
Photo: Factum Arte

The second phase involves the transfer of the skills and technologies required to fully document the Tomb of Seti I (and by extension other tombs) in colour and three-dimensions. The fully equipped 3D scanning and training centre will ensure that future work can be carried out locally and for the benefit of the community. This centre will be established in Stoppelaere's house and a number of people from the community will be trained in skills relating to 3D recording, including composite photography, laser scanning, data processing, data storage, and archiving and creating metadata. Following the training period, it is expected that there will be five teams of two people who will have all the skills required to scan the 3,000 square metres of relief decorated carvings and painted ceilings in the tomb of Seti I. Aliaa Ismael, a graduate of AUC has already completed one year of training in Madrid and will run the centre along with specialists from Factum Arte.

The work to record the tomb will start in the spring in the room that contains the text for the Book of Gates. It also contains one of the most significant paintings in the Valley of the Kings, the depiction of Isis and Osiris welcoming Seti I into the afterlife. Seti is guided by Horus, the son of Osiris and Isis.

The final and most ambitious phase of the project will follow as the finances are available and will involve the transfer of all the skills and technologies necessary to buid the facsimile locally and install it on to the scarp slope below Stoppelaere House. This work will be done in practical workshops that also function as a visitor centre in which the public can learn about non-contact approaches to conservation and about the exciting technical innovations that go into documenting cultural heritage.

The project will conclude with the installation of the facsimile in Luxor and with an online viewer combining all recorded information for easy visualisation. For the first time in many years the tomb of Seti I will be accessible to millions, to the visiting public and for research. The continuing existence of the tomb, however, will not be threatened – on the contrary, the facsimile will contain fragments dispersed in collections around the world. The University of Basel will be leading an academic research project to identify the location of almost 2,000 fragments that are now known to exist. Some of these were removed in the 19th century and others have fallen from the wall and were salvaged from the rubble cleared from the tomb.

It was only through fate and as a result of Dr Zahi Hawass's excavations in the tomb of Seti I that Factum Arte's team was asked to record the Tomb of Tutankhamun. In the summer of 2015 archaeologist Nicholas Reeves used this information

The scarab of the morning light is illuminated by the midday sun before the last roof panels of the Facsimile of the Tomb of Tutankhamun are in place. Photo: Factum Arte

to inform the ideas he published in his painstakingly detailed observations of the surface of the walls of the burial chamber. His thesis is clear - he has identified the traces of two sealed doors that he believes will lead to the undiscovered tomb of Nefertiti. His idea immediately captured the imagination of millions around the world. It is clear proof of the importance of close-range high-resolution scanning. Without a detailed recording of the surface of the tomb with the relief renderings and the colour images presented in separate layers his observations would not have been possible. The fact that Nicholas Reeves was able to spend many hours over several years studying the data with forensic accuracy has been essential for his work.

In early November 2015 thermal tomography tests carried out by the Ministry of Antiquities appeared to confirm Dr Reeves' theory. Whatever the results of the tests that are being carried out a simple fact remains – the tombs were built to last for eternity by highly-skilled craftsmen who understood the materials they worked with and the conditions that were created when they sealed the underground chambers.

When the recording of the Sarcophagus is complete it is hoped that we will be able to precisely recreate the sarcophagus, as it would have have looked when Sir John Soane bought it: a translucent white alabaster object with Egyptian blue hieroglyphs. The aim is to send this recreated sarcophagus to Egypt where it can take its place in a facsimile of the Seti tomb as part of the regeneration of the area and a statement about how to perserve the past in an age of mass tourism. In other words, in the spirit of the original purpose of the tomb and sarcophagus, Seti's image will be preserved while his fame and glory is made accessible and will continue to spread.

Above: A view from the North West corner of the tomb looking towards the exhibition area. The gated door to the treasury can be seen on the left behind the lid of the Sarcophagus that lies on the floor.

Below: The Sepulchral Chamber and Sarcophagus of Seti I lit by candlelight. Photo: Gareth Gardner