





Above, from top: the tomb in 1923 during a visit by Queen Elisabeth of the Belgians; construction of the replica tomb, Luxor

n November 1922, Howard Carter, a British archaeologist who had spent all his adult life in Egypt, made the discovery that resonated throughout an incredulous world, and continues, even in the age of cinematic blockbuster and virtual-reality-on-demand, to enthral us. Carter was a man who combined practical ingenuity and a vivid sense of romance: he had spent five years, supported by his patron, Lord Carnarvon, excavating in the Valley of the Kings in Thebes (modern-day Luxor), conducting a passionate and well-planned search for the royal tombs of ancient Egypt. But the results were discouraging. This was to be his final dig. One day, after exposing the bases of some of the workmen's huts, he found a step that had been carved into the rock. He intensified his efforts and days later was joined by his sponsor. Lord Carnarvon was standing by him when Carter made a small breach in the corner of a sealed door. He inserted a candle to shed light on his investigation.

He described what happened next in his account of the dig: "At first I could see nothing, the hot air escaping from the chamber causing the candle flame to flicker, but presently, as my eyes grew accustomed to the light, details of the room within emerged slowly from the mist, strange animals, statues, and gold – everywhere the glint of gold. For the moment – an eternity it must have seemed to the others standing by –I was struck dumb with

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Adam Lowe, Factum Arte

amazement, and when Lord Carnarvon, unable to stand the suspense any longer, inquired anxiously, 'Can you see anything?' it was all I could do to get out the words, 'Yes, wonderful things'."

The wonderful things, seen by millions since that day, were the contents of the antechamber of the tomb of Tutankhamun, in a state, Carter said, of "organised chaos". Weeks later, he entered into the boy king's burial chamber itself, almost completely filled with a 16ft-high shrine, an enormous casket, the walls of which were made of gilded wood, inlaid with a brilliant blue porcelain. Inside were three smaller shrines protecting the sarcophagus, and inside that, three coffins, the last of which held the mummified body of Tutankhamun. Carter's mood of triumphalism was tempered by the sheer scale and import of his finds. "The thing was outside all experience, bewildering," he wrote, "and for the moment it seemed as though there were more to be done than any human agency could accomplish."

They were prophetic words. For the 3,245 years that the tomb of Tutankhamun was hidden from human eyes, it remained in immaculate condition. The pharaonic craftsmen had done their job with diligence and great skill. But with the exposure of the tomb, its troubles were only just beginning. The impact of Carter's discovery was immediate, widespread and profound. Songs were written about King Tut; horror movies featured mummies lurching after glamorous heroines; US President Herbert Hoover named his dog after the boy king. Most of all, everyone wanted to visit the magical place made famous by Carter's endeavours.

Today, the tomb of Tutankhamun has become one of the most publicised examples of a cultural phenomenon that is being killed by its own success. The small space, about 60 sq m, receives up to 1,000 visitors a day, with disastrous effects on the temperature, humidity and dust in the chamber. Well-meaning restoration and conservation projects have inadvertently exacerbated the problems. Poor King Tut: the stronger his grasp on the public imagination, the greater the danger to his magnificent resting place.

But later this month, help is at hand. April 30 sees the unveiling, in the very same Valley of the Kings, of a new version of Tutankhamun's tomb: an exact facsimile of the chamber discovered 92 years ago by Carter. It will form the core of a new visitor centre, situated next to Carter's old house, which may just help revolutionise cultural tourism. In a world where increasing numbers of people want to see objects that become more and more fragile due to their very exposure, the use of









Top: facsimile of Tutankhamun flanked by Anubis (left) and Hathor on the south wall of the tomb. Bottom: facsimile wall

and tomb details, reflecting both the quality of the original draftsmanship and the extent of the damage caused by bacteria





Top: the facsimile of the sarcophagus arrives to be installed in Luxor. Above: a laser scanner recording the real sarcophagus in 3D.

Right, from left: a photograph of the burial chamber taken during the original dig and the replica in the Factum Arte workshop, Madrid





From top: Factum Arte's Michael Roberts and Javi Barreno put the finishing touches to the tomb facsimile



◀ facsimiles looks like being the most promising way forward for sustainable tourism.

What has made this possible are the advances in digital technology since the turn of the millennium. The company which has developed the required techniques for high-resolution facsimile manufacture is Madrid-based Factum Arte, which uses an array of 3D laser scanners, photographic equipment and printers to produce objects and images that are, for most naked eyes, identical to the originals. The Tutankhamun project, which has been largely funded by foundations and organisations outside Egypt, has been supported by Egypt's Supreme Council for Antiquities, which sees a way out of a dilemma.

Adam Lowe, the director of Factum Arte, reels off the statistics that underlie the project: mind-boggling resolution figures, exacting standards of information retrieval and reproduction. The material, he says, is essentially "dematerialised" and then recreated. It brings to mind a certain science-fiction series. "The 'Beam me up, Scotty' metaphor is one we use a lot," he confesses.

There has been a clear attempt to replicate the space. "We are not falsely ageing the antechamber," Lowe explains, "but it will feel authentic. The burial chamber is the part that is an exact facsimile. It has the same floor, ceiling, walls, modern metal gate, lights, sarcophagus and sarcophagus lid. The floors have been made by the carpenter who made the [contemporary] wooden floor in the original tomb. The metal gates are made by the iron-worker who makes the doors for the Antiquities department. The temperature will be similar, as will the humidity caused by the visitors – though this is not yet scientifically exact."

So far they have done nothing with smell. "The most important thing is really sound," Lowe says. "We have tried to ensure that the acoustics are

Tut and tourism

By Heba Saleh in Cairo

There was a time when tourist guides had to shout to be heard above the din made by busloads of foreign visitors thronging the halls of the Egyptian Museum in Cairo to admire treasures such as the mask of Tutankhamun and the other gilded artefacts found in the tomb of the boy king.

Nowadays, there are few tourists and hardly any noise and bustle inside the pink neo-classical building in Tahrir Square, the epicentre of the 2011 revolution that ended the authoritarian rule of President Hosni Mubarak and plunged the country into three years of periodically violent instability.

Egypt's tourism industry has been one of the biggest casualties of the turmoil. Tourism revenue plunged to \$5.9bn last year, a 41 per cent drop over the year before, and a long way from its peak of \$12.5bn in 2010 when 14.7 million visitors came to Egypt.

The country has attractions to suit almost every taste: in addition to its wealth of pharaonic monuments, historic churches and mosques, Egypt boasts numerous beach resorts dotted on its Red Sea and Sinai coasts. It offers desert safaris to remote oases, diving holidays in coral-rich waters and Nile boat cruises between Aswan and Luxor, where a third of the world's antiquities are located.

Business at all these destinations has been badly affected. But worst .it is "cultural tourism" to Cairo, Luxor and Aswan. There has been no political unrest in southern Egypt but because most cultural tours start in Cairo, the scene of frequent demonstrations and clashes between protesters and police, the region has suffered a sharp drop in visitor numbers.

Egypt's tourism industry received another blow in February when Islamic radicals carried out a bomb attack on a tourist bus in the southern Sinai, killing three Korean visitors and their Egyptian driver. Red Sea and Sinai resorts, which account for 75 per cent of visitors to Egypt, had been limping along since the revolution, having slashed their prices to attract sun and sea tourists mostly from Russia. But the latest violence has meant a further setback, leading to yet another flurry of cancellations.

In recent weeks Hisham Zaazou, the tourism minister, has been hard at work lobbying European countries to lift or ease travel warnings, especially those affecting Sharm el-Sheikh, the main resort in southern Sinai. He told travel industry representatives at a Berlin conference last month that Cairo would reduce flight costs and launch a new advertising blitz to lure back visitors.

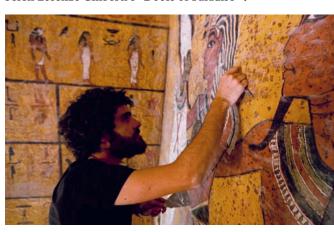
Heba Saleh is the FT's Cairo correspondent

similar – I have an acoustic archaeologist in my team – but this area of work needs more attention."

The proof of all this, soon, will be in the pudding. Although the closure of the original tomb of Tutankhamun was announced by the Egyptian authorities in 2010, it will remain open for a while, in tandem with the facsimile. "I want people to come in and actually say, 'My goodness, I can't tell the difference!" Lowe says. More importantly, those lucky enough to be able to compare the two versions will be able to pronounce on what is becoming a controversial issue: can any imitation hope to capture the spirit and magic of an original experience? And indeed, can it be called an imitation at all when it so closely resembles the original that no one can tell the difference?

e have been here before: in the 1820s, the Italian adventurer and archaeologist Giovanni Battista Belzoni exhibited facsimiles from the tomb of Seti I in a hugely popular exhibition in London's Egyptian Hall in Piccadilly. The show was one of the first "blockbuster" exhibitions, and sparked a craze for Egyptology among the public. The trouble was that in making the wax casts he pulled off some of the plaster from the original walls, causing a vast amount of damage.

Back in the early 19th century, nobody expected the real thing, and visitors seemed happy to be afforded a glimpse of Belzoni's copies. Even the idea of creating replicas to help protect originals is not a new one: Michelangelo's "David" was moved into the Accademia gallery in Florence in 1873 following concerns over its welfare; a replica was duly placed in the Piazza della Signoria in 1910. A similar fate befell Lorenzo Ghiberti's "Doors of Paradise"



'We have this deep instinct to touch "the real thing" when we see it – but if everyone does it, it is destroyed'

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Factum Arte director Adam Lowe (below) in the house once occupied by archaeologist Howard Carter, pictured (bottom) examining Tutankhamun's casket

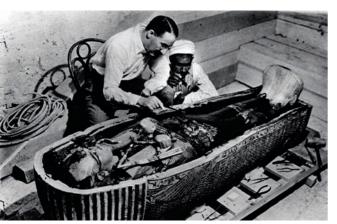
◀ for Florence's Baptistery, replaced by shining copies in 1990 while the originals moved indoors.

But these facsimiles, created with varying degrees of skill, have never pretended to replicate the originals with the precision that is claimed by the scientists of Factum Arte. They were measures taken in good faith. But with the advent of mass tourism, a more discriminating public began to worry about what they were seeing. They expected the real thing. It was not enough to gain a vague impression of the cultural phenomenon at hand: the experience had to be authentic.

It is this cult of authenticity that needs to be rethought, Lowe says. "People need to start separating the idea of authenticity from that of originality," he says. "It is a very important moment. We are living in an era of anti-ageing: we are busy injecting and sculpting our very faces. Our whole notion of originality is in flux, and a lot of intellectual work is needed to help us redefine it." Mass cultural tourism as it has developed over the last half-century is no longer an option. "We have to understand: these are things that were built to last for eternity, but never meant to be visited."

A turning point, he says, came when he and his team were tasked with creating a facsimile of Paolo Veronese's "The Wedding at Cana", one of the great monumental paintings of the Renaissance. The painting hung in the Benedictine Monastery of San Giorgio Maggiore in Venice for 235 years until it was plundered by Napoleon and shipped to France. Today it still hangs in the Louvre.

The facsimile was commissioned by Venice's Giorgio Cini Foundation in 2007 so that it could hang in the monastery's refectory, recreating the original context of the artwork. "I was incredibly nervous," Lowe says, recalling the day of its unveiling. "But when it was finally shown, I would say



'I was struck dumb with amazement... The thing was outside all experience, bewildering'

Howard Carter



about 30 per cent of the people there just burst into tears. Here were a lot of cultured people who knew their history, who knew what they were looking at, and who felt a strong emotional reaction at something which they knew to be a copy.

"It marked a real change in attitude. It was difficult to argue that this was less authentic than the heavily restored version which was hanging at the wrong height, in the wrong light, and in the wrong city. This was a painting that was created in dialogue with the building [in which it was housed]. They talk to each other.

"I love it when certain people – and it is a typical response of the English upper middle classes – say they don't want to come to Venice and see it filled with copies. One of my responses is: do they know that the horses outside St Mark's are copies? Do they know the Campanile is a copy?" That kind of snobbery, he believes, is beginning to be tempered, thanks to the precision of digitally measured facsimiles and a wider appreciation of the effects of mass tourism.

ichael Daley is the director of ArtWatch UK, a pressure group which acts as a watchdog over various attempts at conservation and restoration, publicising what it perceives to be any threat to the "integrity" of works of art and architecture. He describes the new age of facsimile tourism as a "fascinating phenomenon".

"What is intriguing about [Factum Arte] is that they are absolutely frank and explicit about the nature of their venture, and they are making a positive and valuable contribution towards diverting the real threats to works which can no longer withstand the pressure of mass tourism and environmental pollution," he says. This, Daley adds, is in contrast to the efforts of many restorers who are "turning unique and irreplaceable artworks into facsimiles of their supposed original selves". He cites as an example a proposed scientific project to reshow a group of badly faded Mark Rothko paintings from Harvard University's Holyoke Center, using computergenerated lighting effects to simulate what are thought to be the paintings' original colours.

Daley also laments the "snobbery" that continues to exist over reproductions and facsimiles, which he says is "unwarranted". "There is this superstitious feeling about 'the real thing'. We have this very deep instinct to want to touch it when we see it – but if everyone does it, it is destroyed. Unless we are prepared to bite the bullet, we will go back to the state where only the most privileged people will be able to see great works of art."

The technology used by Factum Arte is not only aimed at replication: it is also helping to create things that have never existed. At London's Sir John Soane's Museum, a current exhibition on the Italian designer and architect Giovanni Battista Piranesi has used 3D scanning techniques to make full-scale physical reproductions of the artist's hitherto unrealised designs.

More projects are in the pipeline: back in the Valley of the Kings, where work is proposed to produce facsimiles of the tombs of Seti I and Queen Nefertari, both of which are currently closed to the public; and wider afield, too. One of these is to "reunite" the various panels of the Griffoni chapel of the Basilica of San Petronio in Bologna, spread today all over the world's galleries.

There is, in all these ventures, a philosophical shift in the air. What was once regarded as an essentially kitsch idea is gaining currency. First, because of the sophistication of the technology; second, because there is no better alternative for saving fragile works of art from the effects of mass tourism; and finally, because it helps solve some of the ethical dilemmas around the subject of where a work of art actually belongs. I ask Lowe if he thinks he could usefully apply his attentions to the Parthenon Marbles, the most contentious such issue in today's cultural world. "I would love to be asked to make copies of all the Marbles," he replies. "And then put them side by side with the originals, ask the ministers of culture from Greece and Britain to come, and alternately pick from them." He knows that is something of a fantasy, but can't resist a wistful pitch. "It would be a brilliant project. And very possible." **FT**

Peter Aspden is the FT's arts writer. To comment on this article, email magazineletters@ft.com Carter's House and the Replica of the Tomb of Tutankhamun will open officially on April 30 during a one-day event organised by the Ministry of Tourism, the Ministry of Antiquities and the EU ambassador to Egypt. It will be open to the public from May 1. A "Travel Show Special" will feature the story behind the replica on BBC2, May 2, at 10.35am. To find out more about Factum Arte, go to factum-arte.com and factumfoundation.org