

Meet the Researcher

Juan Aguilar

Marvelling at the enormous reconstructed Barosaurus skeleton in the main entrance hall of the Museum of Natural History in New York City, my godmother asked me if I had ever heard of archaeology. I had just turned 11 and I knew a lot about dinosaurs and palaeontology, but archaeology? Back in Luxembourg, she gifted me a book. It was not really on archaeology, but rather on the Ancient Astronaut theory which stated that, in the past, humans had contact with extra-terrestrials and learned from them. I quickly was thrilled about aliens, but at the same time an interest in ancient societies was sparked. The author apparently found evidence for his theory everywhere around the world: in Egypt, China, Central America, West Asia... And reading about all the buildings, artefacts, and religions these peoples (or aliens) had brought forth deeply fascinated me. The dinosaurs were yet again eliminated by something from outer space and archaeology became my new passion.

Decades later, my enthusiasm for ancient aliens was gone. And so was sadly almost everything what made the city of Mosul in Iraq beautiful and unique. Having worked on archaeological projects in Syria, Iraqi Kurdistan, Iran, Mexico, Nicaragua, and Italy, I knew what the deliberated destruction of cultural heritage carried out by looters looked like. But what I saw in Mosul in April 2018 a few months after the city was liberated from the so-called Islamic State (IS) was on another level. The Nebi Yunus Mausoleum, a centuries-old Muslim pilgrimage site containing the presumed tomb of the Prophet Jonah or Nebi Yunus, was blown up in 2014. IS members then gained access to a 2,700-year-old Assyrian palace which was buried under the mausoleum and began digging hundreds of metres of tunnels under the ruins, carefully following the palace's walls and floors to find precious Assyrian artefacts which they certainly sold on the black market. Being part of a small team of archaeologists from Heidelberg University to investigate these tunnels, I understood that nothing in my archaeology studies had prepared me for such a situation: exploring the remains of a buried Assyrian palace through an illegally dug maze of pitch-black tunnels was a completely new challenge and it was up to me to find a solution.

I also hoped that, later, any romanticised Indiana Jones-like vision of archaeologists 'discovering lost temples and hidden treasures to unravel the mysteries of the past' would also be questioned by the reality of working in a post-conflict zone. In this environment, the goal was to document buildings and artefacts of cultural importance as swiftly as possible. Keeping this in mind, digital archaeology, in contrast to traditional archaeology, offered many adequate solutions like having all data in digital format right from the beginning and later being able to analyse larger



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amounts of data in 3D. In addition to two-dimensional hand-drawn maps and written descriptions of archaeological sites, 3D scans can provide more accurate and less subjective information. I decided to scan this underground network in 3D by using a technique called digital photogrammetry. With a 3D model of the tunnels on my computer, I may investigate what was left of the Assyrian palace from a new perspective without having to return to the site.

Before I could start 3D scanning, my team of Iraqi archaeologists and workers and I had to thoroughly clean the tunnels. Some tunnels following palace walls, floors and gates had collapsed since the digging started in 2014 and all these architectural features had to be made visible again, so that the 3D scan would contain a maximum of information. At the same time, special markers were placed inside the tunnels of which geographic coordinates were taken. These markers would allow me to 'tell' the 3D model where up, down, and north is, and to add a scale to it. By doing this for each scanned tunnel, a 3D modelling software would place all tunnels correctly to one another in virtual space with millimetre accuracy and create a base for 3D reconstruction. In case I would identify a same wall in two different tunnels, I could manually reconstruct the part of the wall on the computer, which was not unearthed by a tunnel, but which I assume is there.

This may be one of digital archaeology's strengths: reconstructing and showing in 3D what the palace may have looked like in comparison to other Assyrian palaces, before the mausoleum was built on top of it and before the IS dug through its walls. And this can also be done for the mausoleum with its many beautiful architectural features from the Ottoman period. Like the reconstructed Barosaurus skeleton intimidatingly standing on its hind legs in New York City, reconstructions can give us an idea of the past, of what humans were able to create (without the help of aliens) and, in the case of Mosul, bring back something which was believed to be lost. ♦

Juan Aguilar received a BA in Assyriology and Religious Studies from Heidelberg University and an MA in Anthropology of the Americas from the University of Bonn. He has also been active as an independent filmmaker and taught Ethnographic Filmmaking for one semester at the University of California, Los Angeles. He is currently working on his PhD project, the Nebi Yunus Digital Archaeological Project (NYDAP), at the University of Luxembourg and Heidelberg University, with the financial support from the Institute for Advanced Studies (IAS) Luxembourg.