Crumbling splendor.

ARCHEOLOGY

Rising Water Poses Threat to Egypt's Antiquities

Crop irrigation and inadequate sewers may sink Egypt’s famed ancient temples and burial sites into a watery grave.

LUXOR, EGYPT—The god Amun created the first solid ground, pushing back the waters of the primeval sea, according to Egyptian mythology. But his formidable powers may not be enough to save his own temple and other famous archaeological sites from rising waters along the Nile River. Amun’s temple complex of Medinet Habu, which has survived 21 centuries in the desert, is now threatened by salty groundwater eating away at its foundations. “See this deterioration?” says University of Chicago epigraphist Brett McClain, pointing at flaking stone along the base of a temple wall. “This was not happening a few years ago.”

Although officials disagree about the prime culprit, a combination of agricultural practices and inadequate sewers have combined to raise the water table several meters around Luxor, posing a silent threat to scores of temples and tombs critical to scholars such as McClain as well as to the tourism industry. “When I found out that the Temple of Luxor and the Temple of Karnak were going to completely fall apart because of the rising water table, I was shocked,” says Zahi Hawass, director of Egypt’s Supreme Council of Antiquities.

Hawass is overseeing efforts to reduce the damage, including digging huge channels around the threatened monuments. “Because the rising water table can damage everything, this project is my top priority,” he says. But bureaucratic insensitivity may stall long-term solutions, such as convincing nearby farmers to switch crops.

In 2004, as damage reports came in from sites such as Medinet Habu, Hawass commissioned SWECO, an engineering firm based in Stockholm, to come up with a plan to protect the Luxor region. Luxor, an important religious and political center in ancient Egypt, is the source of thousands of inscriptions and images—many with their original paint still intact—that reveal the details of Egyptian life 3 millennia ago. The area also is critical for generating tourism revenue for Hawass’ organization; it is second only to the Giza pyramids in popularity among visitors.

The study found that the temples’ soft sandstone is absorbing rising groundwater, and with it, high levels of salt. When the water evaporates, the salt crystallizes, filling

ARCHAEOLOGICAL PHARAOH SETS DETERMINED COURSE FOR EGYPT

Zahi Hawass is arguably the most famous archaeologist in the world, as well as one of the busiest. Trained in his native Egypt and at the University of Pennsylvania in Philadelphia, the 58-year-old Hawass took over as secretary general of Egypt’s Supreme Council of Antiquities in 2002. But he has been the public face of Egyptian archaeology for years, appearing in dozens of documentaries in his trademark Indiana Jones—style hat to lead viewers into dusty tombs.

Behind the scenes, he controls access to thousands of archaeological sites and also keeps his hand in several excavations; he administers $5.2 million to $7 million in tourist revenues annually. With 37 years in the field and a Western Ph.D., Hawass is reshaping Egyptian archaeology, raising standards and demanding respect from outsiders. Unlike many of his predecessors, Hawass drives a hard bargain with foreign researchers and museum officials, forcing excavators to publish promptly, pressuring museums not to buy looted antiquities, and demanding hefty fees for traveling exhibits.

While taking phone calls, signing documents, and joking with a visiting archaeologist in his Cairo office, Hawass recently spoke in his rapid-fire manner about his strategy for Egypt’s archaeological future.

Q: How do you reconcile tourism—and the need for revenue—with archaeology?

We put the monuments first. We stopped the proposed ring road by the pyramids. We stopped the western paved road that was going to Abydos. And we have a program to close the pyramids at Giza—a different one every year [for restoration]. We plan to limit tourists to a certain number [to limit damage to sites].

Q: Are you placing tighter controls on archaeological work?

For the first time, we are applying very strict rules. Egypt used to be a place where foreigners and Egyptians could do anything at anytime. Now for the first time, you cannot discover anything without restoring it. Number two, no one can excavate anything new in upper Egypt at all. You can only do restoration, conservation, GIS [Geographic Information Systems], and epigraphy. If you want to excavate, you go to the Delta, because the water and agriculture are damaging critical sites, and to the desert, because no one knows what is there.

Also, [archaeologists] have to publish a report 3 months after finishing [a season]. Every 5 years, if you don’t have a final publication, you will be stopped. We stopped 35 expeditions run by amateurs. After a French expedition at Saqqara that had been working for 10 years excavating tombs but with no publications.
the porous rock. For an immediate fix, a Cairo-based firm, Egyeco, is building drainage canals around both temples to drain the water west to the Nile; the project is under SWECO’s supervision and uses $7 million in funding from the U.S. Agency for International Development (USAID). The work began a year ago and is due for completion this summer, says USAID official James Harmon. The projects should lower the groundwater around both temples by 2 meters or so, protecting the massive foundations that support thousands of tons of stone.

Hawass blames most of the groundwater problem on inadequate sewers, particularly on the crowded East Bank near the temples of Luxor and Karnak. A new sewage system at Karnak has led to a half-meter drop in groundwater levels, agrees Raymond Johnson, field director at the University of Chicago’s center in Luxor. But Johnson and others point to the cultivation of sugar cane as the prime culprit, especially on the West Bank, home to Medinet Habu and a host of other temples and tombs. There, irrigation canals suck water from the Nile into what was once desert. Johnson notes that farmers regularly flood fields to speed the growth of sugar cane, thus keeping the ground saturated. “The canals never dry out, so the groundwater remains high,” he says.

Johnson and other foreign experts argue that the best solution is to stop growing sugar cane near monuments. “Plant beans or flowers instead—something which uses less water—

Q: Are you seeking to have artifacts that were taken illegally returned? When I came to this position, I opened a new department called the department for the return of stolen artifacts. We actually stopped [artefact sales at] auctions in England and New York. And if you buy [stolen] artifacts, you will never be permitted to work in Egypt.

We are restoring the tomb of Amenhotep III [in Luxor]. We discovered the head of the king’s statue is in five locations, all taken out of the country in the last century. The director of the Louvre refused to return their piece. How can we cooperate with them in the future? If you don’t want to help us, we won’t help you. I’m not asking for all artifacts to come back, just the unique ones which should be in their homeland.

Q: Some argue that Egypt can’t keep track of the artifacts it has, such as in the basement of the Egyptian Museum in Cairo.

This was the past. We are building 13 museums now. I cannot find the artifacts to go into these museums. Sure, the basement of the Cairo Museum is full of thousands of artifacts—such as stone vases, things that cannot be displayed. And within a year, the basement of the Cairo Museum will be better than any museum in the world. We started a database 6 months ago to record every piece. Renovation of the basement is under way.

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