

Lake Nasser
A Unique Opportunity for the Study of Submerged
Terrestrial Sites

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Introduction

Situated 800km inland from the Mediterranean and 250km from the Red Sea coast, Lake Nasser encompasses an area of some 5300sq km on the border of Egypt and the Sudan, and it may be the densest concentration of deep-water submerged terrestrial sites in the world. There are several ways in which an archaeological site can become inundated. There are, of course, shipwrecks, fluctuations in sea level over time, natural disasters, and rises in water tables that cause earlier strata to 'flood'. Another way, and perhaps the most threatening in our present day, is the submersion of sites due to the construction of reservoirs. It is on this that I would like to focus this presentation specifically on opportunities that Lake Nasser has to offer for archaeological investigation in this regard.

Egyptian Archaeology lost a host of valuable material when Lake Nasser was constructed in the 1960's. With the completion of the Aswan High Dam, the entire Nile Valley from the first to the second cataract, some 500 kilometers, was inundated and the entirety of Lower Nubia, what the ancient Egyptians knew as 'Wawat', was lost beneath the reservoir. Preceding the construction of the dam, archaeologists scrambled to record as much as possible from numerous known sites and removed some of the more prominent monuments to upland locations. As a result, Lower Nubia is one of the most extensively documented archaeological regions in the world. With donations from countries around the world to the Egyptian government and the assistance of UNESCO, salvage crews were able to move several large stone monuments to higher ground, the most famous being the temple of Ramesses II at Abu Simbel. However, *tells* hiding stratum after stratum of towns, cemeteries, and forts, covering thousands of years of occupation were left to the rising waters, each with but a small fraction of the archaeological potential exploited. The reservoir now hides hundreds of known and unknown sites, at depths up to 161m, that have been declared lost to archaeology forever.

Benefits of Archaeological Exploration

This scenario is a unique situation for both Egyptian archaeology and for archaeology as a scientific discipline, and exploration beneath the lake would be beneficial in several ways. Most obvious, and most important to Egyptologists, is that excavation would attend to several Egyptological problems associated with this area, particularly the confusing developments at the end of the Pharaonic period. Secondly, it would be an opportunity to further develop submerged terrestrial site methodologies in a region wealthy in a large variety of archaeological situations covering thousands of years of human development. Finally, the most unique and most important benefit to archaeology as a scientific discipline is this: Because many of the sites have *not only* been surveyed but have been excavated prior to their inundation, we have an opportunity to compare the data collected before the reservoir was built to data that we can collect now in order to provide a model for *submerged* terrestrial sites, a paradigm which would take into account the effects of factors such as deep water inundation, sedimentation, current and tides, and biological activity.

The Archaeological Problem of the “Dark Age”

Despite the fact that Lower Nubia was investigated somewhat intensely by archaeologists before the rising of the flood waters, several very important questions remain unanswered, and the nature of the data previously sought in those excavations has left Egyptology with a “Dark Age.” The age in question begins around 1075bce with the beginning of a tumultuous time of non-centralized administration known as the Third Intermediate Period. Historians mark the end of this age by the conquest of Piankhy, the king of the Napatean Kingdom in Upper Nubia, and the reunification of Egypt under his centralized administration around 735bce.

At the end of the New Kingdom period, the Egyptian empire faced not only internal degradation of royal power, but external pressures from Libyan tribes, Sea Peoples, and the new Assyrian empire. As a result, the king had to release his suzerainties in Palestine and suffer the loss of his farthest holdings in the south, which until that time had

extended as far as the fifth cataract. The beginning of scholarly confusion about the Dark Age in Nubia begins at this very time, when an unknown individual usurped the office of High Priest of Amun, the office that held supreme power in the southern province of Thebes. The governor of Nubia, Panehesy, ostensibly subordinate to the former High Priest, formed an army of Nubians to oppose the usurper, but the epigraphic records become very confusing at this point. In broad terms, the subsequent political reality is that a new ruler was calling himself Pharaoh in the north, a new High Priest had taken control of Thebes in the south, and Panehesy had control of an ill-defined region in Nubia.

Both the extent of Panehesy's control and the retracted extent of the Egyptian border in his time are difficult to ascertain. Perhaps all of Lower Nubia was under his control. Of the regions where he had no control, what was the situation with the local native population? We know from papyrus documents from Thebes mentioning his opposition to the usurping High Priest that Panehesy commanded numerous Nubian soldiers, who would have required substantial nonmilitary settlements for support. For at least ten years, Panehesy ruled in Nubia, controlling the fort at Kubban as his base. His tomb was found undisturbed at Aniba in Lower Nubia, suggesting that the realm was not taken from him before his death, but we do not know what happened after his death. Interestingly, the High Priest of Amun at Thebes, during the lifetime of Panehesy and afterward, continued to adopt the traditional title, "Viceroy of Kush," which had been reserved for the governor of all of Nubia.

The excavated evidence for Lower Nubia during this period is virtually nonexistent. For around 300 years from c 1070bce to the Nubian conquest of Egypt by Piankhy in 735bce, both the archaeological and epigraphic records are silent. Between Panehesy and Piankhy, the origin and development of the latter's kingdom, Napata, is ambiguous, as its roots undoubtedly stem from the currently invisible political situation of Dark Age Nubia. Our understanding of the rise of the Napatean kingdom relies heavily on our understanding of the situation in Lower Nubia because the boundaries of that kingdom at the beginning of Piankhy's reign were entirely within the boundaries of Egypt just before

our information goes silent at the beginning of the Dark Age. Further investigation of the Dark Age material in Lower Nubia is restricted because of the inundation of the Nile Valley between the First Cataract and Semna, some 50 kilometers south of the Second Cataract. We are forced to piece together the history of this region from archaeological data collected before the flooding of the Nasser reservoir, obscure textual references, a lone archaeological site situated high enough to escape most of the rising waters, and assumptions based on excavations south of the flooded area.

Because of decentralized administration during this Dark Age, the archaeological material from this period is exceedingly more difficult to trace especially given the nature of the discipline prior to the construction of the dam. Archaeologists were primarily interested in the major monuments, and the relatively hurried excavations placed little of the required effort on the investigation into this time period. Without the backing of a state such as Egypt during the New Kingdom or Napata during the Napatean Period, the means of survival in day to day life for the inhabitants of Lower Nubia would have shifted from highly structured and state assisted to self-reliant, likely more tribal, and less sedentary in organization. In dealing with a period where there may not have been state control, such as our Dark Age, archaeological strategy must change drastically. Evidence for the occupation of sites such as temple building or renovation, construction of city walls, and large scale irrigation works are archaeologically obvious. However, they are not possible without state sponsorship, and the absence of such finds is not necessarily an indication of population abandonment, which has been the most commonly proposed reason for our lack of archaeological material.

Since the creation of the reservoir in the 1960's, advances in anthropological archaeology have changed the type of data we consider important and technical advances have changed the way we collect and interpret that data. These recent innovations include a whole slew of new technologies that allow us to collect data from materials and locales previously inaccessible. Innovations in Underwater Archaeology and submersible robotics have provided us with ways to excavate in deep water, advances in computers allow us to store and analyze data quickly and more thoroughly, developments in spatial

analysis and geography allow us to find patterns in variables over space and time, significant advancements in paleozoology and paleobotany have been important for getting good pictures of ancient society and economy, and improvements in classic archaeological techniques such as Carbon-14 dating and Electromagnetic Resonance allow us to collect more accurate data.

Applying these advances in technology and theory to the reassessment and excavation of a region so wealthy in diverse types of submerged sites will permit us not only to come up with new answers to the “Dark Age” questions, but to develop new techniques in deep water and submerged terrestrial site archaeology.

Towards A Paradigm for Submerged Terrestrial Sites

Currently, the construction of reservoirs is the single most serious threat to archaeological remains. Like the situation at Lake Nasser, archaeological sites in Turkey have recently been subject to massive reservoir submersion. Over a decade ago, the waters building up behind the Atatürk Dam on the Euphrates consumed the remains of hundreds of sites, including the ancient city of Samosata, sometime capital of the Seleucid Empire. The Birecik dam on the same river but downstream was completed two years ago. The dam has created a reservoir which has now drowned much of an area rich in archaeological sites, for example Zeugma, a Hellenistic era city on both sides of the Euphrates. During several centuries of Greek and then Roman rule, Zeugma boasted the first and only permanent bridge over the Euphrates. That in itself made the twin cities of Seleucia and Apamea at either end of the bridge very important. This is just a small example of the thousands of sites around the world submerged by reservoir waters.

A single reservoir can inundate hundreds, even thousands of archaeological sites. Ancient settlements were concentrated on riverbanks, precisely the topography that is consumed by reservoirs. In Egypt alone, more than 95% of sites are within the flood plain of the Nile. With the inundation of Lower Nubia, only one site escaped complete submersion, Qasir Ibrim, and even it sustains some flooding during the year. With this wide spread-threat, we cannot afford to depend on last-minute and cursory salvage

archaeology to answer our questions. We must develop new ways to reinforce and protect sites that will become inundated, and also learn satisfactory methods for working beneath the reservoirs with the same aptitude as terrestrial sites.

Lake Nasser is unique not only in the relatively recent submergence of its sites, but also in the level of investigation already conducted on many of its sites. The data gathered from a survey aimed at measuring, quantifying, and understanding the degradation of these underwater sites over the past 30 years would be incredibly valuable for the investigation of submerged sites that have never been excavated on *terra firma*, providing a paradigmatic tool for the archaeology of submerged terrestrial sites. In the late 1970's, an underwater survey conducted by May, Garrison, and Marquardt in the Table Rock Reservoir in Missouri reported specifically on the effects of pedoturbation on submerged sites. Lake Nasser is the ideal place to develop these techniques, to look broadly at the effects of inundation and depth on stratigraphy, exposed stone monuments, mud-brick architecture, and biological remains.

The benefits of such a study within Lake Nasser are at minimum two-fold: 1. Understanding the effects of inundation on terrestrial sites will help us to develop methods of conservation, reinforcement, and preservation when it is known that sites will be submerged by the construction of a reservoir and methods to excavate them properly once they are flooded. 2. Understanding how sites deteriorate in water will allow us to better interpret the excavation data from submerged sites *not* previously excavated.

A Survey Proposal

Before any survey work can begin, two things need to be done. The first is to assess the sedimentation within the reservoir for site selection. Using computer aided Hydrologic Streamflow Prediction-Fortran (HSPF) and Geographical Information Systems (GIS) to process cartographical and hydrological data, we can predict zones of sediment deposition within the reservoir and isolate regions of least sedimentation. HSPF allows us to combine data on water speed, stream load, and basin shape to project sedimentation within a river/reservoir/dam system, and create a hydrological model of Lake Nasser.

Isolation of regions in which sediment deposition is very low and bathymetric currents are mild, combined with a GIS of archaeological sites in the Lower Nubia region, created from pre-inundation archaeological reports, will give us a virtual “dig here” of sites that have been least susceptible to sedimentation.

The second necessity is to assess the biological situation of the reservoir. Because of the known viral and toxical problems in the lower portion of the Nile, an investigation of existing biological data on the reservoir must be completed in order to decide if it is safe to survey in SCUBA equipment. Based on the results of these two issues, we can then initiate the underwater survey of a selected site with the intent of comparing that survey data with pre-inundation reports of that site in order to establish a degree of degradation. That information can then be used for fieldwork design.

Conclusion

The project as a whole ventures in a direction of Egyptian archaeology that is really very new to the discipline. By bringing together the work of Egyptian archaeologists and underwater archaeologists, there is great opportunity for advancement in both disciplines. We have a unique opportunity to introduce new avenues of exploration for archaeologists who want to protect or investigate sites that have been inundated by reservoirs. At its minimum potential, this project opens up a new trajectory for the Egyptian archaeologist; it is an example of how data can be collected via the integration of methodologies from various other disciplines, in this case geology, hydrology, and underwater archaeology.

Given the reality and importance of reservoirs, it is unreasonable that we should not find ways to work in them archaeologically with some degree of satisfaction and scientific accuracy approaching that of terrestrial archaeology. For the time being, I’ve had to set this project aside to work on others, but it is my hope today that feedback and ideas from some of you may spark a dialogue that eventually leads to more work on submerged terrestrial sites. The sites beneath Lake Nasser are not lost, and neither are the thousands of other sites around the world that wait beneath the reservoirs for us to dive on them with the technology and theory to dig them properly despite their inundation.