An Approach to 'Archaeology as Natural Science': The Case of El-Zayyan Temple, Egypt

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For the first memorial session of 'Geo-Archaeology' which explores solutions for symbiosis between nature and developing civilization, the studies of Ancient Egypt, one of the great civilization in the past, may contribute here as a case study. The ancient Egyptian symbolism represented in Hieroglyphics, Art, and Architecture all indicates the close relationship between people and nature in ancient times and that was perhaps one of the very reasons to develop an outstanding long-time society in human history.

Currently the focus of our research lies on the largest oasis in Egypt, Kharga, where countless people came and went in ancient times. The fact that this oasis was also regarded as a country border of such foreign civilizations as Persia, Greece (Macedonia), and Rome means studies of this area would be also useful to discern the various patterns of effective land uses by different residents.

After the successful results of Ground Penetrating Radar (GPR) since 2001, our excavation continues beside a Ptolemaic temple called 'El-Zayyan.' Like Pyramids, temples were central of the ancient Egyptian society in each nomes (town) and now we are trying to clarify the role of such institution in a peculiar environment like oasis. Interestingly this sandstone temple exists at the lowest level in the Kharga region and the ancient Greek name of the temple, 'Tchonemyris (A Great Well)' indicates that there was plenty of water around the precinct in those days. The restoration of the temple by a Roman emperor Anthoninus Pius in 140 AD also proves the importance of this monument as crossroads between other oases and countries.

Our excavation has already revealed the existence of a relatively large kiln-like structure beside the temple and further research has been carried out to clarify the whole remains of the structure. Until now various types of pottery were unearthed from the site and some of them were in almost perfect condition. Such diversity in the pottery group seems to indicate the existence of a workshop attached to the temple in late Roman period, a quite rare example throughout Egyptian sites.

As given in the title of this 'Geo-Archaeology' session, the aim of our research is to integrate research fields of various disciplines and to establish a new method of archaeological research based on the standpoint of 'Archaeology as Natural Science.' The fields of current research member and their specialty are as follows:

1. Archaeological Prospection: Detecting Possible Archaeological Site using Ground Penetrating Radar, etc.
2. Archaeology: Excavation and Recording the Site and Finds, Establishing a Chronology for the Sites of Similar Periods
3. Egyptology: Reading Inscriptions and Evaluating the Site and Finds in the Context of the Studies of the Civilization
4. Palaeo-environment: Reconstructing the Past Environment and Evaluating Its Relationship with the Temple Complex
5. Conservation and Restoration: Keeping the Finds for Future Generation and Study

Reflecting this unique composition of the team, variety of scientific approaches has been already introduced to have a better understanding of this remarkable site: attachment of a new world-minimum size IC tag (a 0.4 mm square) called 'mu-Chip' to each pottery shard for collecting the artifact information more efficiently; recording three-dimensional digital modeling of the temple for future preservation and restoration; analysis of old soil for reconstructing past environment of the area, etc. Furthermore, monitoring meteorological environment has recently started: thermo-recorders and a weather station to investigate influences of temperature, humidity, and wind throughout the year around the site area.

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