NATURAL SCIENCES AND CULTURAL HERITAGE: SOME APPLICATIONS ON ANCIENT EGYPTIAN POTTERY

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Bridging Natural Science and Heritage in the Middle East: German Institutions, Archaeology, Artefacts, and SESAME

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EGYPTOLOGY AS A SCIENCE

Technically started with Napoleon (1798)

https://www.posterlounge.com/p/705733.html

POTTERY AS A SCIENCE

Petrie discovered a vast cemetery and used pottery to date it from the oldest to the youngest (late 19th Century)

Sequence Dating: relative dating

https://profjoecain.net/should-ucl-de-name-petrie-museum-of-egyptian-archaeology/

ARCHAEOLOGY:

“the study of the material remains of past cultures within their excavated contexts, and as such it deals with evidence which is fragmentary and incompletely preserved. But ancient Egypt is rich in different forms of evidence which convey information—archaeological, architectural, textual and pictorial—and a synthesis of all forms of evidence is needed in order to better understand this remarkable civilization in all its complexities”.

Kathryn A. Bard, 1999. Encyclopedia of the Archaeology of Ancient Egypt. Routledge, London and New York.

“While nineteenth- and early twentieth century excavations were aimed at finding (and often then stealing) valuable treasure from tombs or ancient cities, most archaeologists today find more value in broken bits of pottery, ratty stone tools, and old floor surfaces or foundations because these offer insights into habitual practices and daily life”.

Reeves 2000, Ancient Egypt. The Great Discoveries

Frieman, Catherine J. 2023. Archaeology as History. Teeling Stories from a Fragmented Past. Cambridge Elements. Cambridge University Press.

"Potsherds (broken pieces of pots) are important sources of information because pottery styles tend to change rapidly through time and are generally culture specific. Potsherds are useful for classifying late prehistoric as well as Dynastic sites by period and/or culture; sometimes imported, foreign pots are also identified at Egyptian sites".

Bard, K.A. 2007. An Introduction to the Archaeology of Ancient Egypt. Blackwell publishing: Malden.

WHY POTTERY?

- Large assemblages
- Various contexts
- Change over time
- Lack of texts
- Scarcity of other grave goods
- Non-perishable material

The real goal of most archaeology is not to dig holes, order objects, or develop chronologies; it is to understand better the lives, societies, and worlds of past people.

Reconstructing all these processes is necessary in order to understand the development of a given archaeological site, the materials we would expect to see preserved, and how best to interpret what we do find. This typically entails considerable interdisciplinary collaboration.

Today, archaeology is a team sport, requiring collaboration among a host of highly trained specialists and often motivated and shaped by close collaboration with local and descendant communities.

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Present-day scholars of ancient Egypt come from a variety of disciplines, which frequently overlap in practice.

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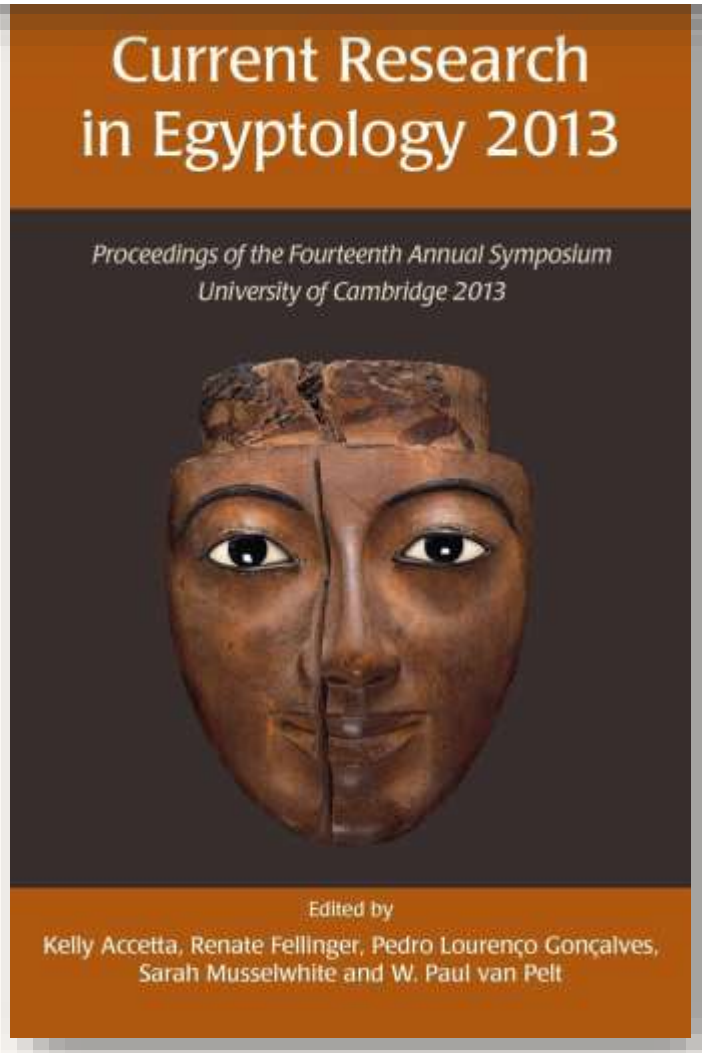
Frieman, Catherine J. 2023. Archaeology as History. Teeling Stories from a Fragmented Past. Cambridge Elements. Cambridge University Press.

Crossing Boundaries in Ceramic Studies: Applying Chemical Residue-analysis to Predynastic Sherds from Hierakonpolis

Eman Khalifa



Concept: each plant or animal product has specific quantities of specific organic compounds, which get trapped in the pores of material fabrics that are not easily contaminated by the surrounding soil (Deal and Silk 1988; Eerkens 2005; Heron *et al.* 1991) .

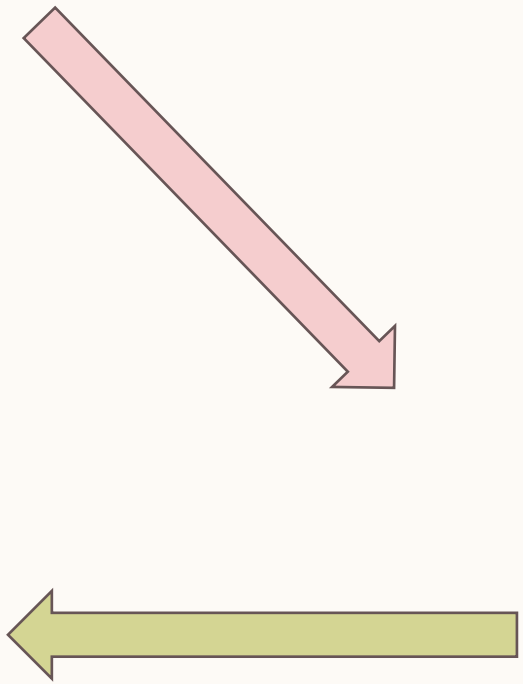
Egypt's climate is dry.

Ancient Egyptian pottery is not glazed.

WHERE DO I STAND?

Archaeology is the study of the material remains of past cultures, from stone tools to stone pyramids, within their excavated contexts.

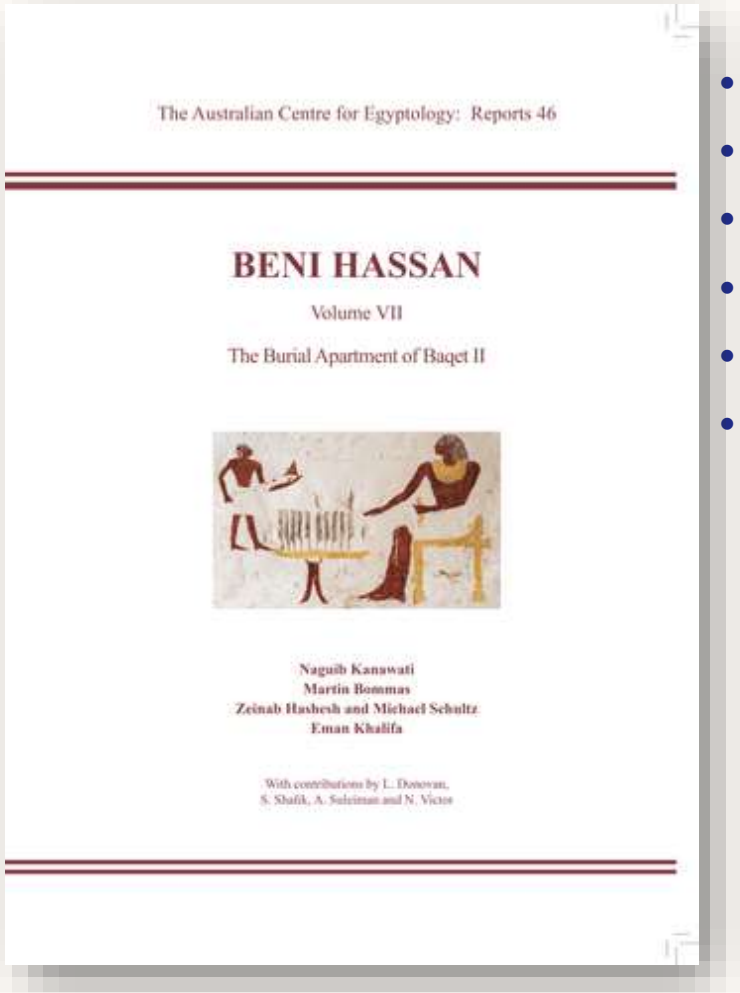
Unlike the hard sciences, such as physics or chemistry, there are no laws in archaeology. Whereas science is concerned with studying regularities that can be observed and tested through experiment, and then verified by repeating the experiment, archaeology has no such system of proof.



The public – museum visitors ….

Bard, K.A. 2007. An Introduction to the Archaeology of Ancient Egypt. Blackwell publishing: Malden, p.3.

A MULTIPLE ANALYSIS APPROACH



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- Archaeobotany
- Residue-analysis
- FT-IR
- XRD
- TG-DTA

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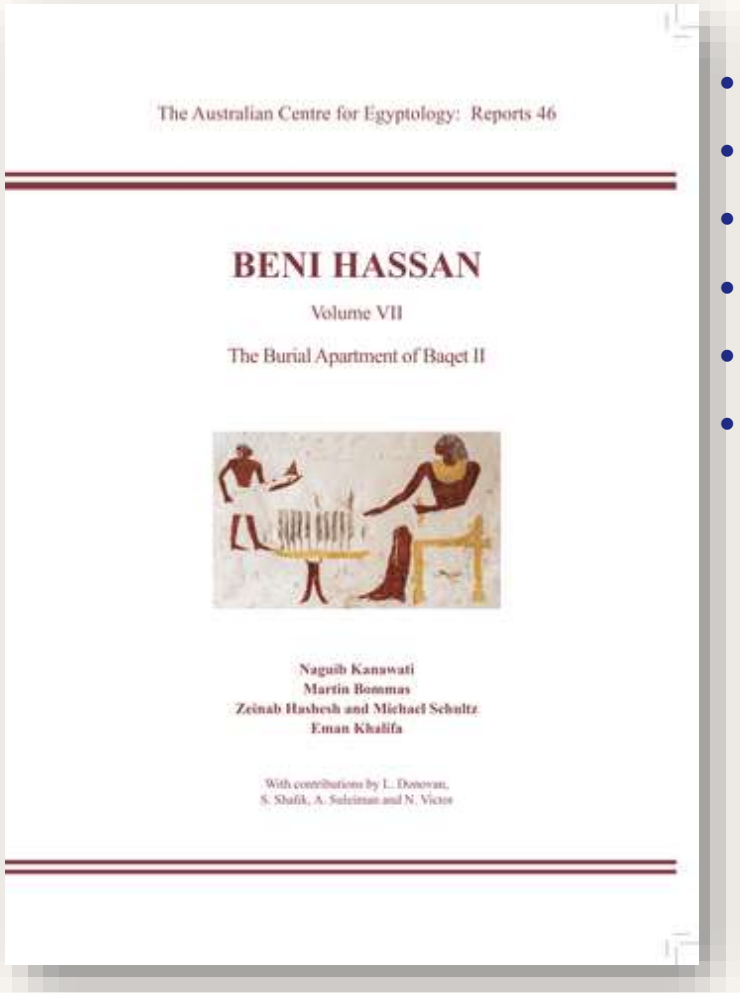

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QUBBET EL-HAWA RESEARCH PROJECT (QHRP)

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archaeometry

Archaeometry **62**, 6 (2020) 1115–1129 doi: 10.1111/arcm.12592

IDENTIFICATION OF VESSEL USE AND EXPLANATION OF CHANGE IN PRODUCTION TECHNIQUES FROM THE OLD TO THE MIDDLE KINGDOM: ORGANIC RESIDUE ANALYSIS, FABRIC AND THERMAL CHARACTERIZATION OF POT SHERDS FROM QUBBET EL-HAWA, ASWAN, EGYPT*

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For the first time, residue-analysis results of a red-rim bowl discovered at Qubbet el-Hawa in Aswan, Egypt, are discussed alongside the thermal characterization of unpublished pottery bowls of the Old and Middle Kingdoms from the same site. Scanning electron microscopy with energy-dispersive X-ray spectrometry (SEM-EDX) and X-ray diffraction (XRD) analysis were performed to provide fabric description of the bowls. The results show the presence of 4-heptenoic and 4-decenoic acids. The Old Kingdom bowl showed a firing temperature range of 800–850°C, while the Middle Kingdom example was fired to higher temperatures. This is a suggested explanation of the decrease in the use of red coating as a surface treatment after the Old Kingdom.

USING NATURAL SCIENCES TO ANSWER EGYPTOLOGICAL QUESTIONS

EXAMPLE: SHALE POTTERY

Marker of Sheikh Moftah culture at Dakhla oasis since its appearance in the 6th MBC until the 3rd M.

"Shale-tempered pottery appears as marker of a new local, but no more "ethnic", identity, blending two cultures".

L. Pantalacci, 'Local Contacts', in Bußmann et al., *Spuren der Altägyptischen Gesellschaft*, 2022.

Gatto, 'Beyond the Shale: Pottery and Cultures in the Prehistory of the Egyptian Western Desert', in Bagnall et al., *The Oasis Papers 6*.

“Egyptian archaeology today is studied in several academic disciplines”.

Kathryn A. Bard, 1999. Encyclopedia of the Archaeology of Ancient Egypt. Routledge, London and New York.

“If we let go of the idea that there is a singular truth to the past, we are free to embrace instead the more challenging idea that our models of the past are composed in the present through complex relationships between individual training, the communities of practitioners with whom we collaborate, longstanding (often regional) disciplinary traditions, and the material residue of past people’s lives and practice”.

“WITH AN UNCERTAIN FUTURE BEFORE US, THESE SORTS OF STORIES ARE MORE IMPORTANT THAN EVER”.

Frieman, Catherine J. 2023. Archaeology as History. Teeling Stories from a Fragmented Past. Cambridge Elements. Cambridge University Press.

THANK YOU

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