Painted by fire:
experimental archaeology and Predynastic black-topped pottery

Meredith Stewart – MRes candidate
Macquarie University
Supervisor: Dr Karin Sowada

Research Question

What was the manufacturing process of black-topped ware (*chaîne opératoire)* and how does this contribute to our understanding of early technological complexity and craft specialisation?

NM00.24 - clear transition zone between black and red. The passage of the flames painted the pot as they permanently transformed the clay.

Black-topped pottery – more than a dating tool

- Predynastic Egyptian black-topped pottery, is considered a marker for the Naqada I and II cultures, dating from 4500 - 3200 BCE
- Hand-made from Nile silt, characterised by a burnished red surface with the rim blackened during the firing process
- Evidence of early craft specialisation
- Often included in burial assemblages to accompany the deceased into the afterlife
- Since their modern rediscovery, there have been many competing ideas about how it was created, how the top became black, and whether the firing was completed in one step or two.
- Black-topped pottery is evidence for the continuing development of kiln technologies that produced increasingly higher fired ceramics. Improvements in kiln design to produce higher temperatures eventually resulted in a decline of black-topped pottery production.

Object Dataset and Material Analysis

- A Bruker Tracer 5i portable X-Ray Flourescence (XRF) spectrometer was used to analyse a sample of artefacts from the Chau Chak Wing Museum.
- Understanding the nature and origin of clay bodies and slips chosen by Predynastic potters will reveal an important part of the *chaîne opératoire.*
- Preliminary results show that the clay is uniform, and that the slip contains more iron than the clay; this would enhance the colour response to the fire.
- Another sample of artefacts will be analysed by vibrational spectroscopy to search for coatings such as beeswax or lacquer. Beeswax may have been used by Predynastic people to help seal the pot and give a shiny finish. Beeswax may also have been used in modern times. Lacquers are known to have been used by museums on pottery to increase the shine of the burnished pot.
- XRF and vibrational spectroscopy are non-destructive and have not been used with black-topped pottery before.

Archaeological Experiments: from a hole in the ground to an updraft kiln

- Several previous experimental archaeology projects have been employed to understand firing techniques for black-topped pottery.
- Past firing experiments have generally been completed with use of modern equipment, including pottery wheels and electric kilns.
- This research conducts experimental firings to reproduce black-topped pottery using production methods, equipment, and tools that were available to Predynastic people, aiming to authentically replicate their techniques.
- Experimental pottery is built by hand and finished on a solid fuel fire to replicate Predynastic processes, thus following the original *chaîne opératoire* as faithfully as possible.
- Experiments start from a simple pit firing, then extend to test possible designs for early kiln technology.
- Test how red-polished wares could be stacked above black-topped pots in the same firing, an untested technique hypothesised by several archaeologists.
- The research aims to understand the technology and methods employed by Predynastic potters who created enduringly beautiful artefacts that functioned for their developing society both in daily life and the afterlife.

Results from the first experimental firing show a clear colour response with a transitional zone, demonstrating reduction firing at the rim.

Bibliography and Thanks
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All photos by M Stewart