

Discrimination of Nile clay ceramic ware by geochemistry: Three case studies from Sai Island (Northern Sudan)

J. Budka^{1,2}, G. D'Ercole¹, E.A.A. Garcea³, J.H. Sterba⁴

¹ERC Project AcrossBorders, OREA, Austrian Academy of Sciences, Vienna, Austria

²Institute for Egyptology, Ludwig Maximilians University Munich, Katharina-von-Bora-Str. 10, 80333 München, Germany. jubudka@yahoo.de; giuliadercole9@gmail.com

³Department of Letters and Philosophy, University of Cassino and Southern Latium, Via Zamosh 43, Cassino 03043, Italy. egarcea@fastwebnet.it

⁴Atominstitut, Vienna University of Technology, Stadionallee 2, 1020 Vienna, Austria. jsterba@ati.ac.at

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The procurement of raw material and the preparation of clay are two of the most important steps in the manufacturing sequence of pottery. These aspects allow for addressing essential cultural and geo-environmental questions, such as the variability and availability of the clay, raw material and tempers, the technological expertise of the potters and their manufacturing traditions. Furthermore, the provenance of the raw clay material and tempers may reveal aspects of goods exchange and trading routes between diverse cultural groups and social entities.

This paper presents three patterns of variability recognized in the composition of both raw clay material and tempers in Nile clay ceramics from Sai Island (Northern Sudan), by means of chemical (INAA) and petrographic (OM) analyses.

The examined samples consist of a large set of potsherds dating from the Early-middle Holocene (Khartoum Variant horizon: c. 7000-5000 BC) to the Middle Holocene (Abkan and Pre-Kerma horizons: c. 5000-4000 BC and c. 3300-2500 BC), as well as the New Kingdom (c. 1539-1077 BC). During the New Kingdom, when Sai Island was integrated into Egyptian Nubia and functioned as one of the key Pharaonic sites, Egyptian wheel-made ware, comprising both locally produced vessels and real imports from Egypt, coexisted with the indigenous handmade Nubian-style ware.

The results indicate that the combined use of INAA with petrography for discriminating diverse stylistic groups and macro-fabrics was successful. Despite the general homogeneity of Nile clay alluvia, the Iron (Fe) and Scandium (Sc) content corresponds with a locally made Egyptian-style and Nubian-style ware. Finally, Ytterbium (Yb) seems to be a potential marker for geographically discriminating the local variants from the real Egyptian ware imported from the North. Chronological separation between the samples, showing a linear increase in Fe and Sc values the younger the samples are. Potassium (K) allows a separation between the New Kingdom