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Investigating microscopic traces of Neolithic life in the Konya plain

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I first heard of the ancient town of Çatalhöyük during my first term at university, almost ten years ago. The social and symbolic complexity of the site fascinated me, and, although I later decided to direct my career towards the study of Pleistocene hunter-gatherer lifestyles, I remained haunted by this exceptionally-preserved agricultural settlement. This might be the reason why, when it was proposed that I conduct research on local developments in sedentism and site networks in central Anatolia during the Neolithic period, I did not hesitate to accept the challenge.

Having already spent one year committed to this project, I do not regret my decision. The UNESCO World Heritage site of Çatalhöyük is a key settlement for the understanding of the development of early agricultural societies in the region. Since the initial excavations by James Mellaart in the 1960s it has become recognised as an internationally significant site due to the exceptional preservation of its wall art and the richness of its bioarchaeological assemblage. These characteristics have made the settlement a unique site within the Neolithic of Turkey and have served to promote the view of Çatalhöyük as a self-defined entity, not always taking into account how it relates to the broader regional picture.

My research is currently focused on the geoarchaeological study of buildings, middens and open areas at the Neolithic sites of Boncuklu (ninth to eighth millennium BC uncal.), Çatalhöyük (eighth to sixth millennium BC cal.) and Pınarbaşı (ninth to seventh millennium BC cal.). The well-defined architectural units at these three sites provide rigorous contextual data for the geoarchaeological analysis of variations in their depositional sequences and traces of activities. This research aims not only to place the large community at Çatalhöyük in regional perspective by comparing records of ecology, resources and social strategies between these chronologically spaced settlements, but also to shed light on to the claimed persistent egalitarian ethos at Çatalhöyük by studying contemporary sequences from several neighbouring buildings and the ecological strategies and networks they represent.

To achieve these goals, an approach that integrates the microarchaeological record with the macroarchaeology has been adopted. This involves, first, the development of a micro-excavation strategy that allows for a better identification, documentation and understanding of the information present in the individual micro-layers (between 2 and 5mm thick) that constitute a great part of the Çatalhöyük sequence.

This strategy has been tested during the 2013 field season. This past summer, Building 114, in the North Area of Çatalhöyük, was carefully excavated in vertical 'slices', in a similar fashion to the way we cut a cake, leaving at least one section exposed during the process. The sections provided great insight into the depositional histories of the building and enabled the application of a range of field and laboratory sedimentological characterisations, such as pXRF and micromorphology. In addition to this, the sequence of this small building (ca. 4m by 1.5m), which shows the whole range of features that we see in larger buildings, including wall paintings, plastered platforms and several human burials, has proven to be of value to the investigation of the function of these small but independent buildings and the social strategies they represent within the wider organisation of the settlement.

In a second stage, the geoarchaeological samples collected during the field seasons at the three study sites are processed for micro-analyses. At the heart of this methodological approach lies thin-section micromorphology, a technique that enables the microscopic study and identification of the nature, deposition and periodicity of specific components indicating particular human activities, such as storage, food procurement and cooking practices. For the purpose of this research several geochemical techniques comprising SEM-EDX, μXRF, FTIR and analysis of organic matter are being integrated with micromorphology to enable the characterisation of specific deposits and elements related to variations caused by human activities. This methodological approach, possible thanks to a generous study grant awarded by the BIAA, provides links between macroscopic observations in the field and the information gathered through micro-analytical techniques, and results in a better understanding of the whole archaeological record.

The conclusions of this research will permit us to address the relationship between, as well as within, Neolithic communities and their environments, contributing to the understanding of the full range of landscape exploitation strategies used by early farmers in the wetland/dryland setting in which these sites existed. This is essential in order to confirm the paths to sedentism, cultivation and herding that scholars are currently positing for central Anatolia and current models for local diversity more widely.

Building 114 under excavation, North Area, Çatalhöyük