Networking in the Neolithic: Obsidian Sourcing at Abu Hureyra (N. Syria)

Kelly Brown and Tristan Carter[1]

[1] *Department of Anthropology, McMaster University / McMaster Archaeological XRF Laboratory [MAX Lab]*

(1) Introduction

Located on the Middle Euphrates in N. Syria (**Fig. 1**), Abu Hureyra provides an important insight to the transition from hunter-gatherer to farming economies in SW Asia (Moore *et al* 2000).

The focus of our study are 171 obsidian artefacts from Trench E (**Fig. 2-3**), derived from *period* Abu Hureyra 2, *phases* 6-9, Pre-Pottery Neolithic C – Early Pottery Neolithic in regional terms (8000 – 7000 BP).

While obsidian only comprises <0.1% of the Abu Hureyra chipped stone (Olszewski 2000: 148-49), our ability to source the raw material(s) makes this an important data-set for studying inter-community relations.

(2) The Abu Hureyra Obsidian Study

Our aim is to map common traditions of consumption as a means of reconstructing the interaction networks that produced the ways of life we refer to as 'the Neolithic'.

Obsidian was an exotic resource for the community, the nearest sources being located in eastern and central Anatolia, at linear distances of 390 – 450 km (**Fig. 1**).

A prior analysis of 100 artefacts from Trench B (AH2) indicated the use of three sources in these regions, but gave little detail as to the nature of the products (McDaniels *et al* 1976).

Our study aims to provide a more detailed characterisation of the assemblage, integrating sourcing data with techno-typological studies and an appreciation of their archaeological context.

This work forms part of a larger study on the use of obsidian by people in SW Asia / Anatolia, from the Epi-Palaeolithic to Bronze Age.

(3) The Elemental Characterization

Each artefact was analyzed whole and *non-destructively* at the MAX Lab by a Thermo *Quant'X* energy-dispersive x-ray fluorescence spectrometer [EDXRF], recording Ti, Mn, Fe, Ni, Cu, Zn, Ga, Rb, Sr, Y, Zr, Nb, Ba, Pb and Th.

Trace element intensities were converted to concentration estimates through reference to various standards, including those certified by NIST and USGS.

Source assignment was achieved through comparing the artefact chemical signatures with those of eastern Anatolian source samples run by the lab and/or published elsewhere (Poidevin 1998).

Fig. 1. *Map of major sources and sites mentioned in text*

Fig. 2. *Plan of the Abu Hureyra excavations*

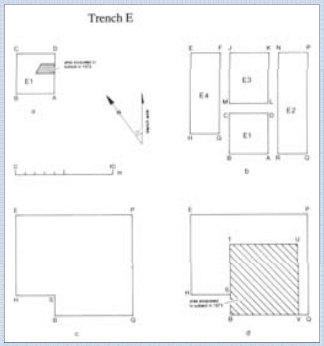

Fig. 3. *Plan of the Trench E excavation*

(4) Results

In a bivariate Sr *vs.* Zr contents plot, the artefacts are discriminated into four groups (**Fig. 4**).

One group's signature matches that of the **East Göllü Dağ** 'source' in central Anatolia (n=36), while 33 pieces with the high Zr content and distinctive green colour matches our peralkaline products of the **Bingöl A / Nemrut Dağ** flows in east Anatolia (**Fig. 1**).

Our largest set of artefacts (n=98) matches the **Bingöl B** calc-alkaline source, while four blades can be associated with the '**Group 3a**' source of Renfrew *et al* (1966), whose location is currently unknown, though possibly in NE Anatolia / Iran.

(5) Discussion

Our eastern and central Anatolian source data mirrors the results of the previous study and those from such nearby contemporary sites, such as Tell Kosak Shamali and El Kowm (Chataigner 1998).

The four pieces of obsidian from *Phase 7-8* assigned to the 'Group 3a' source represent the earliest evidence for the use of this raw material.

There is a gradual increase in the relative proportion of East Göllü Dag products through time, with a concomitant decrease in Bingöl B obsidian (**Fig. 5**).

In contrast, this raw material largely disappears from circulation amongst communities to the north at this time, as evidenced by MAX Lab analyses of obsidian from Gürcütepe (Urfa region).

There is little if any evidence for the working of obsidian in Trench E, with each assemblage dominated by unipolar pressure-flaked blade end-products (**Fig. 6**).

These blades' shared modes of preparation and scale does however suggest a common centre of production, elsewhere on site or nearby.

(6) Future Directions

The next stage is to move away from discussing the circulation of raw materials *per se* and to consider their specific modes of consumption amongst these Neolithic communities.

For example, the preferential manufacture of 'corner thinned blades' (Nishiaki 2000: 198) on east Anatolian obsidians at Abu Hureyra **(Fig 6, a & j)** is something we also witness at contemporary Gürcütepe.

It is this elucidation of such closely shared practices that is our major objective.

These traditions reflect close levels of community interaction - perhaps part-articulated via inter-marriage - and by extent the social networks that underpinned the construction and reproduction of these Neolithic societies.

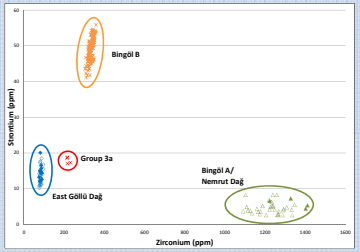

Fig. 4. *Bivariate contents plot of Sr vs Zr (solid symbols - source samples)*

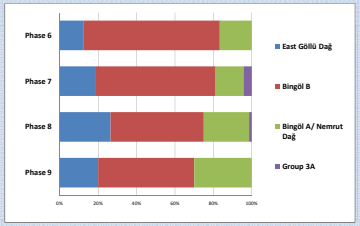

Fig. 5. *Relative proportions of raw materials through time*

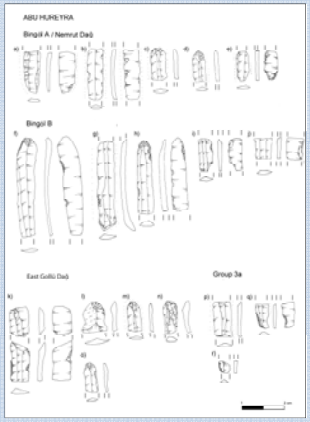

Fig. 6. *Selection of obsidian artefacts by source (D. Mihailović)*

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For more information on this project or the MAX Lab please contact Dr. Tristan Carter at **stringy@mcmaster.ca**