Obsidian Sourcing at Körtik Tepe (Turkey)

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(1) Introduction
Located on the Upper Tigris (Fig. 1), Körtik Tepe is one of the earliest Pre-Pottery Neolithic A (PPNA) sedentary settlements in the Anatolian part of the Fertile Crescent, dated to the early 10th millennium BC. The site contributes to the definition of an Upper Tigris regional tradition, with parallels drawn between the architecture, material culture and iconography of Körtik Tepe and the nearby Epi-Palaeolithic sites of Hallan Çemi and Diminiyk and PPNA Çuğunları. Recent faunal and archaeobotanical studies indicate “a mosaic of exploitation strategies” amongst the earliest Neolithic communities of the Fertile Crescent (Arbusclc and Özkaya 2006: 114, see also Asouti 2010).

Do obsidian procurement and technical choices also reflect such local contingencies, or is there evidence for common modes of consumption over wide areas?

It is this theme of defining local and supra-regional cultural practices in the context of ‘Neolithization’ that forms this study’s point of departure.

We aimed to source these artefacts’ raw materials via elemental characterization, part of a larger study on obsidian consumption by prehistoric communities in the Eastern Mediterranean.

(2) The Körtik Tepe obsidian

Preliminary reports by Karrt suggest that the Körtik Tepe obsidian has more in common with the local Epi-Palaeolithic traditions, as best evidenced at nearby Hallan Çemi (late 11th/early 10th mill. BC) (Özkaya 2009: 63).

It is dominated by blade and microblade production, with geometric microblades, tongue scrapers, backed blades and various points (Özkaya 2009: 6; Özkaya et al. 2008: 99-95).

Our study involved the analysis of 120 artifacts, the material was selected by Karrt and Özkaya to examine initially: 1) the relation between visual distinctions in raw materials and sources (Figs. 2-3); 2) the potential variance of raw material consumption within the community (Fig. 4).

With the selection process biased towards non-museum-quality finds, the bulk of the artefacts comprise relatively undiagnostic flake debris.

(3) The Elemental Characterization

120 artifacts were analyzed whole and non-destructively at the MAX Lab by a Thermo Quanta X energy-dispersive x-ray fluorescence spectrometer (EDXRF), recording Ti, Fe, Ni, Cu, Zn, Br, Se, 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.

In a Zr vs. Sr contents plot, the 120 artefacts are clearly discriminated into two groups, plus a single outlier (Fig. 5).

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

The dominant group (n=67) is a brown/greenish black with a chemical signature of low Zr and high Sr content that matches the calc-alkaline outcrops of the Bingöl B source, 135-150 km due north.

The artefacts with the high Zr is a highly distinctive green peralkaline obsidian (n=52), whose signature matches those of products from Bingöl A and/or Nemrut Dağ.

The final artefact we tentatively assign to the Muğ / Merço[makale] source (Fig. 6). All the sources are approximately the same distances from the site.

(4) Discussion

The Bingöl A and/or Nemrut Dağ artefacts include blanks from an entire reduction sequence related to unipolar percussion blades and microblades (Fig 3).

Conversely, the Bingöl B sample does not include cortical debris, tentatively suggesting a subtly different form of procurement, the material is otherwise very similar.

The community’s reliance upon these raw materials mirrors that of Epi-Palaeolithic Hallan Çemi and PPNA Çuğunları, evidence for an Upper Tigris cultural tradition.

This is distinct to the Ural region and Middle Euphrates, where people also accessed Cappadocian obsidian (Chataigner 1998).

This is the first evidence for the use of the Muğ / Merço[makale] source.

(5) Conclusion and future directions

Our next analyses will aim to a) more fully integrate our sourcing data with Karrt’s techno-typological studies to gain a detailed insight into the community’s traditions, b) to examine these practices phase-by-phase, c) to compare two or more contemporary household assemblages (Fig. 4).

We need to make detailed comparisons with assemblages from other sites who also used these eastern Anatolian obsidians shared raw materials do not necessarily mean common traditions.

References


(7) Acknowledgements

This study was funded by a Standard Research Grant of the Social Sciences and Humanities Research Council, Canada (T. Carter).

We are extremely grateful to the Turkish Ministry of Culture and Tourism for permission to export the artefacts for analysis.

Many thanks also to Dursun Mihalkic for the artefact illustrations.

For further information about the project and the MAX Lab, contact Dr T. Carter at t.carter@mcmaster.ca.