**From local to long-distance: Neolithic and Bronze Age ceramic networks in north-western China**

Andrew Womack1\*, Xinwei Li2, Zhiwei Guo2, Hui Wang3, Jing Zhou4, Rowan Flad5

1 Department of Asian Studies and Anthropology Program, Furman University, Greenville, USA

2 Institute of Archaeology, Chinese Academy of Social Sciences, Beijing, P.R. China

3 Department of Cultural Heritage and Museology, Fudan University, Shanghai, P.R. China

4 Gansu Institute of Archaeology and Cultural Relics, Lanzhou, Gansu Province, P.R. China

5 Department of Anthropology, Harvard University, Cambridge, USA

\*Author for correspondence ✉ andrew.womack@furman.edu

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**Sampling strategies and analysis techniques**

Thin sectioning of the selected samples was carried out at the China Geology Museum’s Ceramic Petrography Workshop in Beijing. Analysis and point counting of the Siwashan samples took place at the Shandong University Ceramic Analysis Laboratory using a transmitted light microscope and manual point counting stage, while the same analysis techniques were applied to the Majiayao site samples at the Stanford University Ceramic Analysis Laboratory using a similar microscope and a Petrog Automatic Point Counting Stage. Point counting took place following techniques described by Stoltman (1989, 1991, 2001), while qualitative analysis followed methodology laid out in Quinn 2013.

For the Siwashan samples, between 150 and 250 points were counted at 1 mm increments, with variation depending on the physical size of the sample. For the Majiayao sherds, two hundred points were counted on each sample along a grid auto-produced by the Petrog software suite. In both analysis methods, no point was counted twice. Generally, the samples contained homogeneous distributions of inclusions, and thus 200 points were seen as a suitable median of Stoltman’s suggested 100-300 points per sample (Stoltman 2001). Each point was recorded as either matrix, inclusion, or void, with void type and size as well as inclusions size, roundedness, and type being recorded (see Figure 3). Paste groups were developed based on these metrics, with group names relating to the dominant inclusions. Raw data and images from this analysis will be housed on the opensource China Ceramic Petrography Database (Womack & Hein 2018).

Raw data was formatted and analysed in Microsoft Excel, with grain sizes being classified according to the suggested categories of silt (<0.0625 mm), fine sand (0.0625–0.25 mm), medium sand (0.25–0.5 mm); coarse sand (0.5–1.0 mm), and very coarse sand (>1.0 mm) (Stoltman 2001). Analysis of local clay and sand revealed the presence of both naturally occurring clay pellets and carbonate inclusions in some samples, as well as angular quartz and feldspar inclusions in other samples (Womack 2017; Dammer 2021); thus, we were unable to determine whether such inclusions in ceramic samples were natural features of the clay or whether they were intentionally added. Accordingly, we did not separate inclusions above 0.0625 mm based on whether we thought they were natural, or human added. Finally, all quantitative data was imported into the JMP software suite for analysis and visualization.

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Table S1: Petrographic sample information.

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| **Sherd ID** | **Site** | **Cultural Period** | **Sample Number** | **Location** | **Sherd Type** | **Surface Treatment** | **Paste Group** |  |  |  |  |  |  |  |  |  |  |  |
| AA001 | Siwashan | Majiayao | 1 | 15LS-V-H1 | Body  | Polished+Slip+Black Paint | Fine Paste  |  |  |  |  |  |  |  |  |  |  |  |
| AA002 | Siwashan | Majiayao | 2 | 15LS-V-H1 | Rim | Polished+Slip+Black Paint | Fine Paste  |  |  |  |  |  |  |  |  |  |  |  |
| AA003 | Siwashan | Majiayao | 3 | 15LS-V-H1 | Body  | Cord Mark | Feldspar-Quartz  |  |  |  |  |  |  |  |  |  |  |  |
| AB002 | Siwashan | Majiayao | 4 | 15LS-V-H2 | Body  | Crossed Cord | Feldspar-Pellet  |  |  |  |  |  |  |  |  |  |  |  |
| AB005 | Siwashan | Majiayao | 5 | 15LS-V-H2 | Body  | Crossed Cord | Feldspar-Quartz-Biotite |  |  |  |  |  |  |  |  |  |  |  |
| AB006 | Siwashan | Majiayao | 6 | 15LS-V-H2 | Body  | Polished+Slip+Black Paint | Fine Paste  |  |  |  |  |  |  |  |  |  |  |  |
| AC003 | Siwashan | Majiayao | 7 | 15LS-V-H3 | Body  | Polished+Slip | Clay Pellet  |  |  |  |  |  |  |  |  |  |  |  |
| AC009 | Siwashan | Majiayao | 8 | 15LS-V-H3  | Body  | Cord Mark | Feldspar-Pellet  |  |  |  |  |  |  |  |  |  |  |  |
| AC013 | Siwashan | Majiayao | 9 | 15LS-V-H3 | Body  | Cord Mark+Applique | Feldspar-Quartz-Biotite |  |  |  |  |  |  |  |  |  |  |  |
| AC014 | Siwashan | Majiayao | 10 | 15LS-V-H3 | Body  | Cord Mark+Applique | Feldspar-Quartz  |  |  |  |  |  |  |  |  |  |  |  |
|   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-001 | Majiayao | Qijia | 1 | 2015GLM-H5-2上午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-002 | Majiayao | Qijia | 2 | 2015GLM-H5-2上午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-003 | Majiayao | Qijia | 3 | 2015GLM-H5-2上午 | Body  | Basket Marks | Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-004 | Majiayao | Qijia | 4 | 2015GLM-H5-2上午 | Body  | Basket Marks | Fine Paste |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-005 | Majiayao | Qijia | 5 | 2015GLM-H5-2上午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-006 | Majiayao | Qijia | 6 | 2015GLM-H5-2上午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-007 | Majiayao | Qijia | 7 | 2015GLM-H5-2上午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-008 | Majiayao | Qijia | 8 | 2015GLM-H5-2上午 | Rim | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz-Amphibole-Biotite |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-009 | Majiayao | Qijia | 9 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-010 | Majiayao | Qijia | 10 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Schist-Carbonate-Quartz-Feldspar |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-011 | Majiayao | Qijia | 11 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-012 | Majiayao | Qijia | 12 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz-Biotite-Calcite |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-013 | Majiayao | Qijia | 13 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-014 | Majiayao | Qijia | 14 | 2015GLM-H5-2上午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz-Biotite-Calcite |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-015 | Majiayao | Qijia | 15 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-016 | Majiayao | Qijia | 16 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-017 | Majiayao | Qijia | 17 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-018 | Majiayao | Qijia | 18 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-019 | Majiayao | Qijia | 19 | 2015GLM-H5-2下午 | Rim | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-020 | Majiayao | Qijia | 20 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz-Amphibole-Biotite |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-021 | Majiayao | Qijia | 21 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-022 | Majiayao | Qijia | 22 | 2015GLM-H5-2下午 | Rim | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-023 | Majiayao | Qijia | 23 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Schist-Carbonate-Quartz-Feldspar |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-024 | Majiayao | Qijia | 24 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-025 | Majiayao | Qijia | 25 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-026 | Majiayao | Qijia | 26 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-027 | Majiayao | Qijia | 27 | 2015GLM-H5-2下午 | Body  | Fiber Point Cord Mark | Carbonate-Feldspar-Quartz-Amphibole-Biotite |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-028 | Majiayao | Qijia | 28 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-029 | Majiayao | Qijia | 29 | 2015GLM-H5-2下午 | Body  | Basket Marks | Carbonate-Feldspar-Quartz |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-030 | Majiayao | Qijia | 30 | 2015GLM-H5-2下午 | Body  | Basket Marks | Fine Paste |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-031 | Majiayao | Qijia | 31 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
| H5-2-032 | Majiayao | Qijia | 32 | 2015GLM-H5-2下午 | Body  | Basket Marks | Clay Pellet |  |  |  |  |  |  |  |  |  |  |  |
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