

**CHAPTER FOUR**  
**Methods of Interpreting Bronze Age Vessel Residues:**  
**Discussion, Correlation and the Verification of Data**  
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Food is an important element of any material culture and is closely linked with economy. Changes in climate or economy, or the spread of new technologies will have its impact on existing dietary systems. The use of different products and their specific combinations depend on regional peculiarities, trade exchange, seasonality of the economical cycle, welfare of the population and way of life as well as psychological and religious arrangements (Arutyunov et al. 1995). The identification of these dietary systems may provide additional information on the nature of the adaptation of a nomadic steppe population, such as the Majkop, Catacomb, Yamnaya and Srubnaya Culture period population of the Caspian steppe during the Bronze Age (3800-1550 BCE), to ecological niches as well as the nature of human dependence on the environment.

Many techniques can be used to reconstruct dietary systems. In this chapter special attention is given to the identification of vessel residues, which can provide direct evidence of the type of food used (Schoeninger and Moore 1992; Demkin 1997; Demkin and Demkina 2000; Demkin et al. 2000). A similar approach, pollen and phytoliths analyses, was used to identify residues from in pottery from ancient Peru (Jones 1993). Our work aimed to identify vessel residues using different methods. The accuracy of each technique was assessed by correlating the results of two or three different methods.

One of our methods assumed that after death the remains of the 'last meal' remains in the stomach of the deceased and is later deposited in the abdominal cavity of the skeleton. The composition of the last meal can verify, or falsify, the results of vessel residue analysis. Similar research has been done previously at other archeological sites (Shishlina 2001a; Berg 2002).

### **Cultural Context**

The area of our research is the northwestern Caspian steppe (Figure 1). This region has many Bronze Age 'kurgans' (burial grounds) dating to the Majkop (3800-

3200 BCE), Yamnaya (3000-2500 BCE), Early Catacomb (2600-2300 BCE), Catacomb (2500-2100 BCE) and Srubnaya (1800-1550 BCE) periods. Paleoenvironmental research of the area identified climatic changes and links between these changes and the pastoral economy (Shishlina 2001b). During the Majkop Culture Period the area experienced a relatively mild and humid climate. The local economy was based on raising animals in spring and summer. Yamnaya Culture Period groups were the first to occupy the entire territory along the low lying river valleys and lake shores, as well as on the nearby watershed plateaus. Their seasonal economy was based on raising domesticated animals and short distance pasture routes. Around 2400-2000 BCE (calibrated) the climate became more arid which led to the exploitation of all ecological niches by the Catacomb Culture Period population. Their seasonal routes extended several hundred km. The Srubnaya Culture Period people were pastoralists as well and their economy closely resembled that of the Catacomb Culture Period.

All the above cultures are characterized by the vessels placed into their graves during funerary rituals. Many types of such vessels have been recognized: pots with a high neck, jugs with one or two handles, bowls as well as relatively simple vessels (Figure 2-2, 3, 5). Ethnographic comparisons with modern Eurasian steppe nomads, the Kazakhs, Kalmyks and Mongols (Zhitetsky 1893; Zhukovskaya 1988; Tomilov and Kadyrova 1997) show that usually a vessel with ritual food is placed into a grave. This can contain porridge, milk products, soft drinks or a clear meat soup. The main purpose of our research was to identify the residues in Bronze Age grave vessels using several approaches, to propose an algorithm of processing samples, to reconstruct ancient recipes and to compare the data results with data on the gender and age of the deceased.

## Theory and Practice of Archaeological Residue Analysis

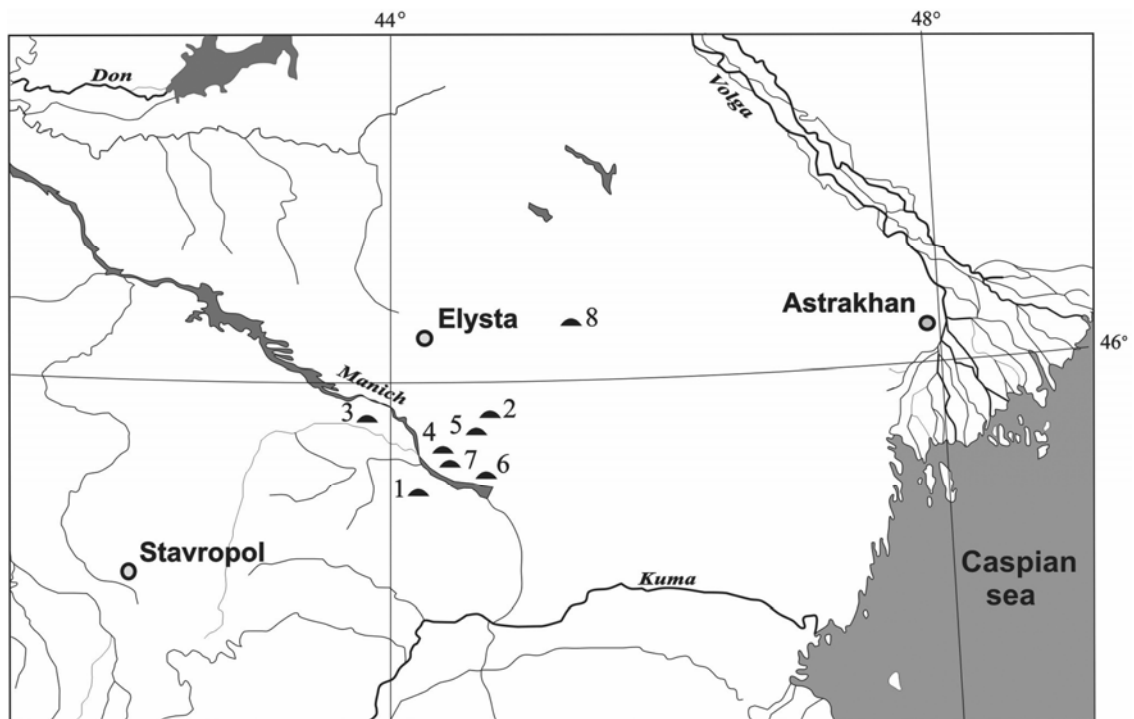


Figure 1: Map showing the location of the sites mentioned in the text. 1: Sharackhalsun; 2: Mandjikiny-1; 3: Baga-Burul; 4: Ostrovnoy; 5: Mu-Sharet 1 and 4; 6: Zunda-Tolga-1; 7: Zunda-Tolga-3; 8: Chilgir-1.

### Methodology

All vessels from ancient graves were full of soil when found. The lay-out of the actual graves, pits and catacombs, and their superstructure, made of wood and plant materials erected on the upper layers of the graves, or wooden doors (Figure 2-1, 4) indicates that after the funeral ceremony the grave remained free of soils for some time. Gradually the plant and wood ceiling rotted and soil poured into the grave, eventually filling the whole space including the vessels. Steppe animals, such as mice and ground squirrels also contributed to the filling of the pots. By that time the food would have been almost completely decomposed. But we suppose that different components of foodstuffs were left inside the pot, at the bottom and on the walls near the bottom. Sometimes a visible layer of dark-brown residue was preserved. In some way the soil from the upper parts of the grave appeared to have 'cured' the layer of food remains on the vessel bottom. During the excavation of the grave and the recovery of its contents, all vessels containing soil were carefully wrapped, to prevent pollen and other alien objects from contaminating the sample, and brought to a field laboratory. Contamination was a concern as our excavations were usually carried out in the spring or the summer, the period of blossoming flowers and trees. Cracked and broken vessels were

therefore excluded from the study. Soil samples were taken from the lower internal parts of the vessel using a wooden pallet knife and a rigid flat brush. A control sample was taken from the upper part of the vessel. The weight of each sample was 20-30 g. The rest of the soil in the vessels was subjected to archaeobotanical flotation.

The soil sample from the bottom of the vessels was analyzed to identify the composition of the food placed inside this pot during the funeral ceremony. It is possible that used vessels were entered into the graves and, if so, it could be that remains of the food consumed before the funeral ritual were also preserved inside such vessels. It is unclear if the pots were carefully cleaned and, if so, how often.

As part of the excavation of the skeletons sometimes a sample was taken from the stomach area, between the lumbar backbone and the lower ribs, with the help of a spoon. All skeletons were either supine or put to rest on their side. Analysis of the contents of such samples may identify the composition of the last meal of the deceased. Control soil samples were taken from under the skull of the skeleton and from the bottom of the grave. All soil samples were stored in paper bags.