

Fig. 1. Excavations carried out by the State Historical Museum, Moscow, at Shagara II, a Volosovo settlement in the Oka river basin.

Fig. 2. Extent of the Volosovo culture in the 3rd and 2nd millennia BC.

## Forest Hunters of Eurasia

by Alexander Emel'yanov

The forest zone of central Eurasia is a territory of continental climates (cold winters and warm summers), with dense temperate forests punctuated by grasslands and many rivers and lakes. The rich natural resources allowed early 3rd and 2nd millennium BC populations to base their economies on foraging—hunting, fishing, and gathering—while participating in economic relationships with more “advanced” economies in the regions to the south. Not until the end of the 2nd millennium BC were metal objects used in this forest zone, and iron use and local metal production did not appear until the 1st millennium BC with the beginnings of farming in the broad temperate zone.

Excavations in the central Russian part of the forest zone have been carried out from the 1950s to the present, focusing on the Oka river basin (Krisnova 1993; Fig. 1). This region bor-

ders the forest-steppe and steppe zones to the south and is crosscut by major river systems that ultimately flow south (the Volga, Don, and Dnepr systems). The river basin has a great density and diversity of archaeological sites (Fig. 2) which document land use from the Mesolithic through medieval times, making it a key region for comparing its specialized adaptation to a forest environment with those of neighboring regions. It clearly played a role in interregional interaction, and yet maintained its distinctive economy and way of life through time.

### VOLOSOVO FORAGING CULTURE

In the second half of the 3rd millennium and the beginning of the 2nd millennium BC (2500–1800 BC), people living in the Oka and Volga drainage basins had a highly organized,

sedentary foraging economy (Kraynov 1987). This type of economy is described in the literature as "Late Neolithic–Eneolithic," indicating that the people used stone tools instead of metal ones, although metal was known. Numerous crafts and art objects from this culture have been documented from large-scale excavations at the sites of Volodary, Volosovo, Iberdus, Chernaya Gora, Vladychino, Shagara II; Volosovo's characteristic artistic style gave its name to this early forest culture.

Volosovo settlements are closely linked to water resources. Sites are almost invariably located along lake shores, near the estuaries of small rivers and streams or the isthmuses of lakes and channels, along old river beds—anywhere open water supported abundant fish and water birds (Fig. 3).

Unlike many other hunting and gathering societies, the forest Volosovo culture had large settlements that were occupied year-round and over long periods of time. The settlements were each 3000–5000 square meters in area and comprised 5 to 10 houses linked to each other by narrow passages. The houses were rectangular wooden structures, measuring 50 by 100 square meters. While the wood has not been preserved, postholes show that the houses were semi-subterranean—sunk one meter into the ground—with wood frames and superstructures. At the entrances to the houses, large pits (0.5–0.8 m in diameter and 0.4–0.7 m deep) filled with ash and charcoal indicate an ancient heating system: the pits appear to have been filled with red-hot coals which were then covered with soil to heat the structure. We estimate that 10 to 15 family members lived in each house, and the large houses appear to have been built as components of a community structure. Linear posthole constructions indicate connecting passages that were most likely covered, allowing for easy movement between houses even in winter (Fig. 4).

#### CRAFT PRODUCTION

Most categories of artifacts were produced in individual households, despite the corporate village organization. Evidence for the manufacture

of goods is found in almost every house. Just as in the cultures to the south, the Volosovo culture used pottery for preparing and preserving foods. The pottery was all locally produced—the large, thick-walled vessels were coil-built out of the local dark clay tempered with shells and chaff. The vessels are richly decorated on the exterior, sometimes with gouged and linear impressions, but more frequently with impressions from bone and stone stamps of various forms (Fig. 5).

Numerous flint tools with very fine retouch give us an insight into the primary production of the region: wooden objects. Unfortunately, almost no such objects were preserved. However, traceware analysis indicates that cutting tools such as axes, polished stone adzes with straight and grooved blades, flint knives, scrapers, drills, bone adzes, and chisels (Fig. 6) were used to produce large wooden items such as boats, skis, bows, oars, and spades. Composite flint tools such as scrapers, drills, and other tools with burnishing and carving capabilities were used to make small, finely crafted wooden objects.

Traceware analysis also provides insight into the treatment of hides and furs. Flint and bone scrapers were used for defleshing hides, blunt bone blades were used to scrape off hair, and bone polishers were used for burnishing and rubbing the pelts (Fig. 7). Bone awls and needles made of large fish bones with narrow drilled eyes were used in stitching pieces of hide. Traces of netting impressed on ceramics suggest that nettle and hemp fibers were used for making string and laces. Such laces, thin leather thongs, or sinew could have served to join seams. Bone pins for fastening clothing and curved bone awls for braiding footwear have also been found.

During the late Volosovo period, people began to mass-produce items, a shift away from individual household production. At the late Volosovo site of Volodary, one semi-subterranean structure appears to be a specialized workshop for stone tools. Its floor is covered with numerous flint flakes, blanks, cores, and tool fragments. Similar shops have been found in the late Volosovo sites of the Upper Volga to the north (Kraynov 1987), suggesting that a widespread change to specialized production oc-

curred just before the advent of iron production and early agriculture.

#### THE EARLY FOREST ECONOMY

The evidence for permanent, heated dwellings strongly suggests that the Volosovo people were sedentary practically year-round. Yet the diversity of hunting and fishing weapons and domestic tools reflects a highly specialized economy that did not involve agriculture or herding of any sort. This was made possible by a complex system of foraging in which hunting was supplemented by fishing. Layers of stratified mollusk shells and nut shells found in settlements point to a gathering economy based on locally available mushrooms, berries, nuts, edible plants, and river shellfish.

The occupation layers in Volosovo settlements of the Oka region contain many bones of animals, birds, and fish. Faunal analysis indicates that elk and marten were the principal mammal species hunted and that game was mostly hunted in the fall and winter. Beaver, red deer, wild boar, fox, bear, badger, hare, otter, polecat, roe deer, and even wolf were hunted. Birds were also caught, mostly water fowl (goose, duck, swan), but also marsh birds (wood-grouse, black-grouse, partridge). Bone hunting whistles or *manki*, used to attract birds, were found at some sites. Numerous finds of flint and bone arrowheads suggest the bow and arrow was the main hunting weapon. These arrowheads have diverse shapes and sizes that reflect hunting specialization (Fig. 8). The larger flint arrowheads were capable of piercing a thick hide with their sharp edges. Needle-shaped bone arrowheads could burrow deep into the body of an animal. Bone arrowheads with a blunted point were widespread and were used to hunt fur animals and forest birds. Spears and darts were also equipped with large arrowheads.

Even with abundant resources, hunting alone could not provide a large settlement with sufficient food for year-round occupation; in the spring and summer months fishing played a significant role. People ate a diversity of common river and lake fish of the region: pike,

ide (carp), bream, crucian carp, perch, roach, sheat-fish, sturgeon, and sterlet. Fishing rods must have been employed, and worked stones appear to have been used as sinkers. Composite and one-piece bone fishing hooks have been found in settlements of the Oka region. Most were composed of two carved bone pieces lashed together to form a sharp hook. One-piece hooks were shaped like modern metal ones, some having delicate and sharp barbs carved into the hook. Some of the hooks were enormous, but most were similar to medium-sized modern hooks designed to catch small fish.

Harpooning or spearing was another common method of fishing. Both small and large (up to 20 cm) spear or harpoon heads are typical for Volosovo sites. The upper parts of most of these weapons have notches or round channels, typically with two to four clearly cut stone flakes, beak-shaped and sparsely placed. Worked stone flakes were fixed to a wooden rod using vegetable fibers and resin. It appears that the heads were securely fastened to the rod, unlike classic harpoon heads that separate from the rod after hitting the target.

We find imprints of small-celled nets on some Volosovo ceramics, although the nets proper have almost never been preserved. Sinkers for these nets have been found in some Neolithic sites: these are stones wrapped in birch bark or with holes or channels for fastening. Floats were cut out of wood or spruce bark, sometimes of birch bark. In addition, excavations in peaty deposits of old river beds near Volosovo sites revealed wooden pillars and pickets intertwined with tree branches which apparently served as fish-traps (Kraynov 1991).

The appearance of long-term settlements in the forest zone of Eurasia appears to be linked with the development of freshwater and sea fishing to the north (Oshibkina 1996). Use of water craft enabled further exploitation of rivers and lakes in the forest region, which opened the potential for economically important fishing and for interregional contacts from the Black Sea north to the White Sea.

Remains of boats and oars have been found at settlements of the Oka region and other forest



Fig. 3. The location of the site of Shagara II, near a small lake, is typical of Volosovo settlements.

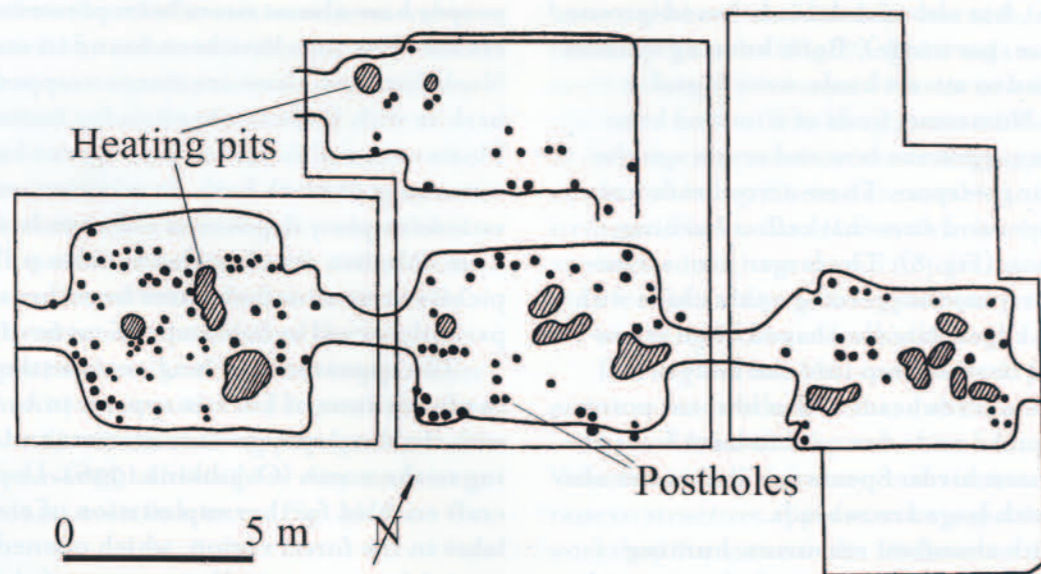


Fig. 4. Plan of excavations at the Volosovo site of Akhmylovskii II, to the east of the site of Volosovo itself.

regions to the north (see, for example, Oshibkina 1996). Dugouts with distinctive raised prows were cut out of logs. It is mostly remains of oak boats that have been preserved, but no doubt softer trees were used too. Similar water craft from Onega Lake and the White Sea were decorated with images of hunted marine mammals (Savvateyev 1991). Northern petroglyphs depict large boats with crews of from 12 to 24 persons, but scholars disagree as to whether these drawings reflect boats used for transportation purposes, hunting and fishing, or ritual. The discovery of similar boat remains in the southern forests suggests the possible exchange of ideas, goods, and technologies by way of rivers.

Interregional interaction is clearly revealed in various shared technologies and rituals found along Eurasia's north-south axis. For example, occasional copper objects have been found in the Oka basin Volosovo sites. Most of the finds have been small fragments of artifacts, but include locally used objects such as a copper awl in a bone handle from the Shagara II settlement. The earliest copper goods came to the Oka river basin from the south through exchange. While they were valued highly, they did not replace their bone and stone counterparts; thus the Volosovo culture maintained and in many ways intensified its local adaptations. During the late Volosovo, people began to exploit local copper sands as the raw material for metal working (Chernykh and Kuzminykh 1977); small ingots and crucibles with remains of copper drops have been found.

#### FOREST IDEOLOGY

The Volosovo culture expressed itself artistically through elaborate figures made of chipped stone, and carved and engraved bone and other materials. Most ornaments were found in the occupational layers of the sites, suggesting that they were lost while being worn or carried. Other finely made ornaments and sculpted objects are found in "hoards" or ritual burials at cemeteries; these assemblages include some of the most elaborate examples of forest art. In rare instances, ornaments have been discovered in situ in burials, indicating placement on clothing, headwear, and footwear.

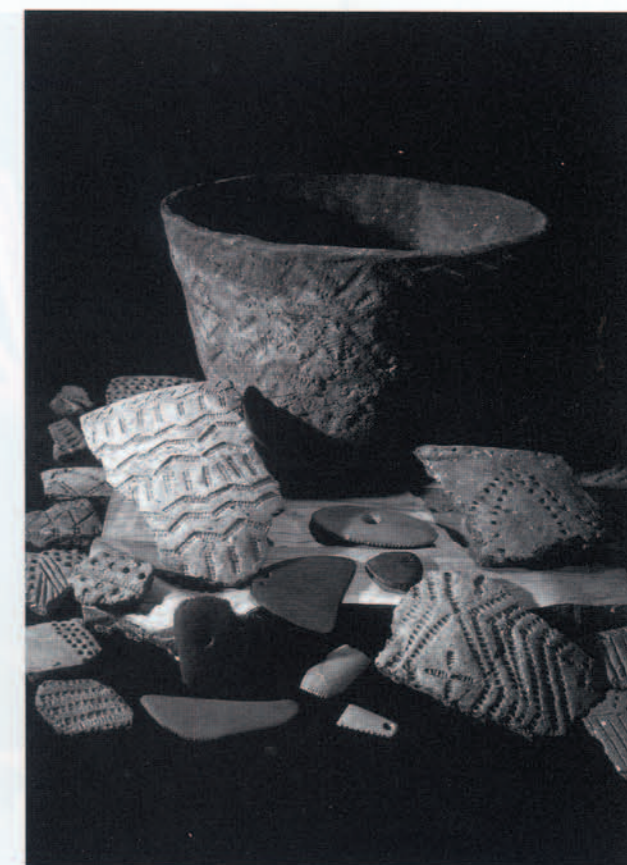


Fig. 5. Bone and stone stamps were used to produce diverse patterns on Volosovo handmade ceramics. Motifs include net patterns, horizontal herringbones, zigzags, diamonds, crosses, and triangular motifs.

Most ornaments depict realistic forms of bears, wild boars, beavers, water birds, birds of prey, and fish (Figs. 9, 10). Overall, the art of the forest Volosovo culture depicts hunted prey. This artistic emphasis, plus articulated skeletal parts of hunted animals found in ritual areas of settlements and burials, suggests the ideological as well as economic importance of the hunting and fishing way of life. In contrast, images of humans in the Oka Volosovo sites are unusual and are very generalized; they look like cookie cutouts with a distinct head and outstretched arms and legs.

In some cases large flint pieces were chipped into silhouettes of animals. Details of the figures are not clear-cut, but in most cases there is no doubt as to what animal the craftsman wanted to depict. Small, carved bone sculptures with remarkably accurate features typically depict



Fig. 6. While few wooden objects have been preserved from Volosovo sites, trace-ware analysis on these tools indicates that most of the stone and bone tools found were used to produce wooden objects. Ground stone axes, flint piercers and drills, and composite tools of stone and bone represent the diverse implements which the ancient woodworkers used.



Fig. 7. Scrapers and awls of flint and bone were used for hide preparation, while perforators made of bone and flint, bone awls, and needles made of large fish bones with finely drilled eyes were used in stitching hides and possibly textiles.



Fig. 8. Hunting was one of the major subsistence activities. Both bone and stone (shown here) points were used for hunting. Petroglyphs dating to the 3rd millennium bc from the Russian forest zone provide a background to illustrate the major quarry—elk and deer.



Fig. 9. Flintknapping took on the characteristics of art in the small, carefully crafted figurines of animals and humans found at Volosovo sites. A beautifully carved elk head is made of bone. The central figurines are 5 cm in length.



Fig. 10. Waterfowl are depicted in realistically carved bone and stone pendants. The pierced objects probably adorned clothing. The central bird figurine is 3 cm in length.



Fig. 11. Neckrings were made of wild boar tusks. Pendants from burials were found adorning individuals' necks. The bone pin with the image of an elk head is one of the masterpieces of Volosovo art.

waterfowl with delicate heads on long necks (Fig. 10). Eyes are engraved and particular attention given to the form and shape of the beak. Images of eagles, wood-grouse, and ducks were also carved. Other animals were less commonly depicted but appear to have particular importance: a small bear head carved on a bone was found in the Chernaya Gora settlement; a large bone figure of an elk's head apparently was made as a mace head; and a small sculptural depiction of an elk's head crowns an exquisite bone pin.

Most ornaments are pendants made of the incisors and canine teeth of large animals—bear, wild boar, and elk. An ornament made of a large bear canine perhaps singled out a successful and strong hunter among his tribesmen. Particularly distinctive are the boar tusks worn as neckrings (Fig. 11). Such worked tusks have been found in settlement contexts at Vladychino, Chernaya Gora, Iberdus, and Shagara II. Other small flat pendants of diverse shapes were usually made of bone and shale. Rectangular bone "badges" with two holes near the edge appear to have been sewn onto clothing. Round buttons were made of bone with a shank for securing them. Other ornament types include short tubular beads made of bird bone, and pendants made of bear phalanges. All these objects were carefully ground and polished.

Burials provide insight into Volosovo ritual life. No separate cemeteries have been found in the region under consideration; burials were placed among the houses or in the houses themselves, in pits dug in the floor. Most of the bodies were placed in an extended supine posture, more rarely, face down. Incomplete skeletons missing a skull or leg bones or some other parts have been found; however, no traces of forced death have been identified on the bones. Jaw and skull fragments of elk and bear were often placed near the dead, and red ocher was spread over the burials, a tradition that is best paralleled on the steppe and in agricultural regions to the south. In contrast to agricultural or pastoral cultures, no pottery was included in the burials and, in fact, funeral goods are scarce in the Volosovo culture.

A reburial tradition has been documented at several Volosovo sites: Chernaya Gora, Vladychino, Volodary, and Shagara II. For example,

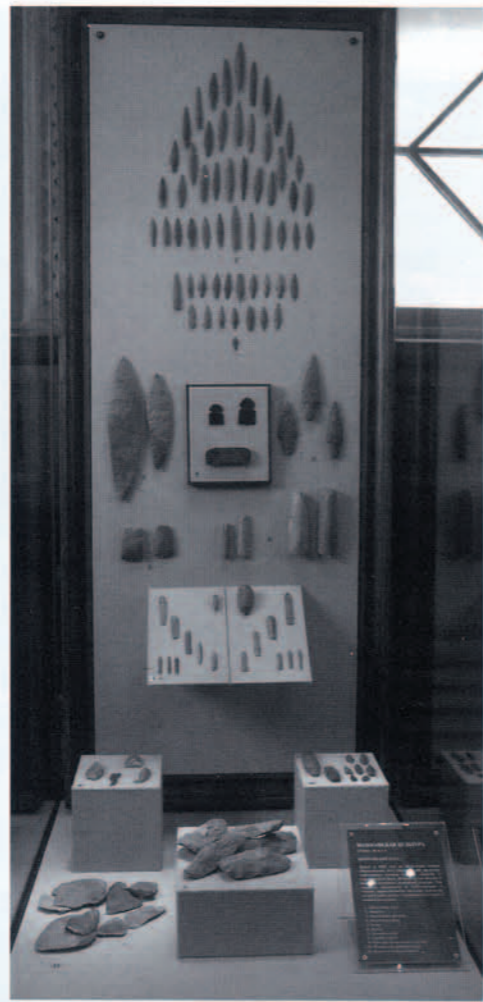


Fig. 12. The Volosovo treasure dates to almost the same time period as the Borodino treasure (see Hiebert, this issue). It was found as a hoard, covered in red ocher, similar to the contemporary herder burials on the steppe (see Shishlina, this issue).

at Chernaya Gora there were as many as four distinct interments, comprising up to 29 adults and children, in one burial location. These areas appear to be some sort of burial sanctuaries. At Volodary and Vladychino, large collective reburial sanctuaries made in and near abandoned houses consisted of large fire pits, patches of ocher, articulated mammal and bird skeletons, whole fish skeletons, and pits filled with fish scales. Hoards of jewelry, finely worked ground stone objects, numerous flint artifacts, and small pottery vessels were found in pits covered with ocher or on the surface. The hoard found in 1912 at Volosovo is the largest and most elaborate (Fig.

12). Seven such hoards have been found at the ritual site in the settlement of Volodary alone.

## CONCLUSIONS

The long duration of the Volosovo culture (2500–1800 BC) represents a specialized and remarkably stable adaptation to the forest environment contemporary with farming and herding cultures to the south. Interregional interaction is revealed in various technologies and rituals shared with cultures to the north and south.

The general pattern of Eurasian identity is seen in the Volosovo forest culture: sedentary lifestyle, permanent settlements, ocher-laced burials, ritual symbols of power, and economic specialization to local circumstances. This Eur-

asian identity is perhaps most clearly seen in seafaring, boating, and fishing interconnections between the White Sea in the north, and the Black Sea in the south. Within this context, the distinctive Volosovo culture of the 3rd and 2nd millennia BC demonstrates technological interconnections between the steppe, forest, and sea—though the regions maintained their distinct identities through time. ➤

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## BIBLIOGRAPHY

Chernykh, E.N., and S.V. Kuzminykh  
1977. "O khimicheskom sostave metalla u Volosovskikh poseleniya Verkhnego i Srednego Povolzhya." *Iz metodiki i kultury Volosovskikh i Annaninskikh plemen srednego Povolzhya*. Yishkar-Ola.

Kraynov, D.A.  
1987. "Volosovskaya kultura." *Arkhologiya SSSR, epokha bronzy lesnoy polosy SSSR*. Moscow: Nauka.

1991. "Rybolovstvo u neoliticheskikh plemen Verkhnego Povolzhya." *Rybolovstvo i morskoy promysel v epochu mezolita—rannego metalla*, ed. N.N. Gurinoy. Leningrad: Nauka.

Krisnova, Yu. A., ed.  
1993. *Arkhologicheskaya karta Rossii, Ryazanskaya Oblast*. Moscow: Nauka.

Oshibkina, S.V.  
1996. "Ponyatiye o neolite." *Arkhologiya SSSR, neolit severnoi Evrazii*. Moscow: Nauka.

Savvateyev, Yu. A.  
1991. "Rybolovstvo i morskoy promysel v Karelii." *Rybolovstvo i morskoy promysel v epochu mezolita—rannego metalla*, ed. N.N. Gurinoy. Leningrad: Nauka.

Tsvetkova, I.K.  
1953. "Volosovskiy neoliticheskiye plemena." *Trudy Gosudarstvennogo Istoricheskogo Muzeya* 12. Moscow: GIM.

1957. "Volosovskii klad." *Trudy Gosudarstvennogo Istoricheskogo Muzeya* 23. Moscow: GIM.



ALEXANDER EMEL'YANOV is a researcher and curator in the Archaeology department of the State Historical Museum, Moscow. For eight years he has led that Museum's expedition to the Oka region of central Russia. His research interests include the study of stone tools and hunting technology in the forest environment, tracewear analysis, and interregional trade and the development of production in this region. This research is supported by the State Historical Museum, Moscow, and the Russian State Scientific Foundation.