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Models for iron age agriculture and pastoralism in Kazakhstan

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Opinion

During the first millennium BCE the Saka (eastern variants of the Scythians) have been characterized as early nomadic confederacies or states. Recently there has been considerable discussion about the role of agro pastoralism in Eurasian prehistory, especially during the Bronze and Iron Ages (ca. 2500 BCE to 400/500 CE).[1-4] The term of agro pastoralism has become so widespread in archaeological literature as a catch-all term that the variations within and between dual economic systems of agriculture and mobile pastoralism have become obscured. In this brief essay I wish to discuss the ways in which agriculture articulated with pastoralism in ancient Iron Age cultures of Eurasia. While the assumption is that agro pastoralism represents a mutually symbiotic relationship between crop cultivation and grazing of herd animals, this may not always be the case. Furthermore, herders may belong not only to different occupational classes than farmers, but they often may represent different ethnic groups separate from farmers.[5] An example of this, might be the Andronovo herdsmen of Ojakly, who lived apart from the Bactrian-Margiana Archaeological Complex (BMAC) urban dwellers of Gonur Depe during the Bronze Age in the second millennium BCE.[6,7]

Iron Age developments in Eurasia, specifically in the area of Southeast Kazakhstan where I have conducted research since the mid-1990s, both agriculture and herding were integrated into a hamlet-village settlement system, although household members probably managed both both the cultivation of wheat, barley, and the two millets, and the vertical transhumance of sheep, goats, cattle, and horses.[8,9] This dual system of farming and herding probably was the foundation of a kin-based hierarchical ranked system within the regional nomadic confederacy. Historically Kazakh social organization depended on two distinctive groups: the White Bone, or aristocratic lineages/clans and the Black Bone or commoner lineages/clans. In the Iron Age, the lower ranked Scythians maintained a vassal-tribute relationship with the aristocratic elites.[10,11] It is possible to draw a comparison between historic Kazakh social organization and the ancient system of Iron Age nomadic social organization, while understanding that the Kazakhs were ethnically and in terms of chronology, distant from Iron Age nomads. Here are a number of questions/statements pertinent to developing models for agriculture and pastoralism in Iron Age contexts in Kazakhstan.

I. Is it possible to find evidence for the percentage of labor and commodity production relied upon the cultivation of cereals versus labor/commodity production of domesticated herds? As more archaeobotanical and zoo archaeological studies are conducted both on IA settlements and kurgans, archaeologists may be able to answer this economic question.

II. How was the division of labor between animal husbandry and crop cultivation managed in an ecological sense? It seems logical to assume that during the summer months there would be the greatest need for household members to participate in both crop cultivation activities (preparing soil, planting, weeding, watering, harvesting, and storing grain) and animal herding (tending animals, milking, butchering, traveling with herds, feeding and watering the herds). Were there community herds or individual household herds? To a large extent the ecology of a given territory determined the nature of labor management. Marginal, non-arable land was used for grazing territories in the summer, while in other months the stubble from crops and fields left in fodder could be grazed by herd animals. Rich grazing lands existed in the upland *jailau* pastures during the summer months, in the winter months herds could graze in harvested fields as well as marginal land.

III. What was the basis for property ownership of farming and grazing land? Did senior clan members or the aristocratic elite hold sovereignty over local lands? Or were rights to land, especially that used for grazing (mountain areas, grasslands, and meadows), dependent upon use-rights? Most likely highly ranked kinsmen and the aristocratic elite held sovereignty over both productive and territorial holdings. Did the herders and farmers pay tribute, taxes, or perform labor so that they could use land? All such questions are essential for a better understanding of the agro pastoral system extant in the Iron Age.

IV. How were small-holders or what is called in other parts of the world, "peasants" fit into the larger, ranked nomadic confederacy? The Saka and other nomadic groups were ranked in such an order: the charismatic leader, aristocratic elites, shamans, soldiers, "peasants" (farmers and herders), and slaves. We must wonder how the clan heads extracted surplus commodities of grain and animal products (meat, milk, wool, hair, cheese, leather) from farmers and herders. Were the simple small holders (farmers and pastoralists).[12] considered slaves as some Soviet period ethnographers suggested.[13] Also were the food producers (farmers and pastoralists) expected to offer tribute or taxes to the nomadic hierarchy?

V. Finally, it is important to establish the relationship between the rich mortuary complexes (kurgans) and the settlements of nomadic societies. Research conducted by Kazakhstani archaeologists such as the work of Arman Beisenov and his colleagues in Central Kazakhstan have established direct connections between Iron Age settlements and kurgan fields.[14,15] Using stable isotopes of human skeletal remains, Beisenov and his colleagues[15] using stable isotope analyses of human skeletal material were able to establish a correlation between the diets of elites and then actual archaeobotanic evidence for barley and millet in nearby Iron Age settlements. These studies which combine archaeological excavations with fine-grained laboratory analyses will be used to solve many of the questions posed above.

Therefore here are some examples of how Kazakhstani archaeologists and others have begun to research the agro pastoral economies of the Iron Age nomads.

In the mountainous regions such as the forest-steppe of the Altai (northern Kazakhstan), Zainolla Samashev and his colleagues have undertaken excavations at Ak Baur settlement (dating between 1100 – 900 BCE, which could be Final Bronze or the transitional phase to the Iron Age. Nearby are the splendid elite kurgans of Eleke Sazy, some dating to the 8th century BCE or the Early Saka period.[16] The appearance of grinding stones indicate that the Ak Baur residents were engaged in either wild food or cultivated food processing. Most likely the economy of Ak Baur and the Early Saka was based upon animal husbandry, foraging, fishing, and agricultural products. Of course, the cereal grains could have been imported from other areas of the Eurasian steppe. Yet it is important to consider whether or not crop cultivation was possible in these areas of the Altai. As previously mentioned, it is apparent that the Tasmola and Korgantas mortuary complexes of Saka from Central Kazakhstan appear to be tied directly to Iron Age settlements where both barley and millet were cultivated. The stable isotope analyses of human skeletal materials clearly indicate the consumption of C-4 pathway plants, presumably millets.[2,15]

At Tuzusai and the Talgar fan in Zhetisu, we already have evidence for the cultivation of wheat, barley, and the two millets and the herding of sheep/goats, cattle and horses.[8] In ancient Zhetisu or Semirech'ye (the Seven-Rivers of the Ili River Basin), rich river deltas and alluvial fans create pockets of fertile land that can be watered using simple channel systems and check dams as well as tilled for floodplain farming. Pastoralists could graze on fields after harvest, and travel to the summer *jailau* in the mountains where grass and water are plentiful for livestock. Within the Saka nomadic confederacies, ancient people practiced nomadic pastoralism to semi-sedentary agro pastoralism. The nomadic confederacies or nomadic state probably incorporated a variety of subsistence practices of both farming and herding; such practices were based upon the local geography and ecology of the forest-steppe, the arid and semi-arid deserts, the alluvial fans, and the upland mountain regions.

Summary and Conclusions

The latest research demonstrates that the Saka nomadic confederacies or early nomadic state was based on complementary subsistence strategies, not only nomadic pastoralism. Among many Iron Age nomadic people, there was a dual economy of both farming and animal husbandry. In addition, Iron Age people engaged in foraging, fishing, and hunting. In desert areas and in the deep forest-steppe at high altitudes where grain cultivation was impossible or difficult, no doubt that the nomadic pastoralists traded for agricultural commodities. And because Iron Age Saka practiced a variety of subsistence activities, the commoners and so-called "slaves" must have contributed tribute, taxes, or corvee labor to the aristocratic hierarchy.

In future years the study of Iron Age confederacies and the early state will incorporate these scientific advances: (1) tight chronological control using radiometric methods along with other dating techniques such as OSL; (2) geophysical prospecting, both to find mortuary complexes but also to find ancient settlements; (3) stable isotope studies of human and animal bones in order to determine ancient diet and possibly mobility: (4) a DNA studies as a way of tracing population movements using genomic sequences; (5) archaeobotany for tracing the origins and spread of wheat, barley, foxtail millet and broomcorn millet, as well as the spread of other plants (apples, peaches, grapes, hemp, cotton, flax, silk). Archaeologists will continue to rely upon the careful ethnographic studies conducted by Soviet and Post-Soviet ethnographers such as.[10,17] to provide us with theoretical models for pastoral societies.[18] who has incorporated his archaeological studies of the Xiongnu and other Mongolian pastoralists also provide some important directions for understanding the social evolution of nomadic pastoral societies of Eurasia. In spite of all the tremendous progress in the area of scientific studies, there is still the need for Kazakhstani and international researchers working in Kazakhstan to inventory archaeological sites, conduct careful excavations of settlements and mortuary grounds, and to aid in the preservation of a rich and important world heritage.

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Conflicts of interest

Author declare that there is no conflicts of interest.

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