Paleoecology of ancient man (hominids) of Kazakhstan

On the vast Eurasian territory over the last fifteen to twenty years, a number of sites of the Stone Age have been discovered. Chronological dating for these sites indicates the period from the Pliocene to the Holocene Periods.

The surface of Eurasian arid zone consists of various forms of relief, from high mountain peaks and table lands to low-lying deserts. Naturally this great variety of relief and landscape in the arid zone caused not only differences but similarities in the conditions influencing the settlement of early hominids. The stages of Paleolithic development and the length of its duration, particular conditions of the first stages of human settlement of the region, as well as the origin and evolution of hominids are similar to that in other arid regions. However, the arid zone has one characteristic for hominid settlement, the predominance of open sites over cave or rock-shelter sites. Many of these open sites are complex and have: indications of very long occupations of the early hominids at the same topographical landscapes, sometimes lasting for hundreds of thousands of years.

Kazakhstan may serve as a model for the study of the Paleolithic Period in the Eurasian arid Zone because of the particular geographical location of the arid zone in Kazakhstan, the immense size of the region, variety of natural landscape zones and large number of relief forms. Kazakhstan has the following large topographical and environmental zones:

1. Turphans and the Caspian region deserts.
2. Sary-Arқa Plain and the small hills of Eastern Kazakhstan.
3. The mountain region (Northern Tian-Shan and Altai).
4. The low-lying plains of Northern and Northeastern Kazakhstan and the Western Siberian lowland zone found within the borders of Kazakhstan.

The number of sites and their concentration in these various zones are highly variable due to the factors of the geological-geomorphological situation determining the location of the sites, the habitat conditions, and the possibility of seasonal and other types of migrations due to climatic fluctuations and different landscape situations.

The second half of the Pliocene is the transitional period and the most important moment in the early human history of Kazakhstan, in which preconditions for the appearance of the first hominids in Kazakhstan first took place. The evidence of the earliest hominids was found in the large territory of Siberia where numerous horns in id sites have been recorded. (The question of hominid origins is not discussed here.) Now it is clear that as- far back as 1.5 to 1 million years ago in the open territories of Caspian region and Turanskii deserts, in Mongolia and Northern China, hominid sites already existed. The paleogeographical conditions of the Pliocene provide scientists with the chance to examine the rapid migration from the plains of Asia with relatively low mountains and favorable climate into Northern regions. Sites in Kazakhstan, Mongolia, and Northern China appear to represent the first stages of hominid settlement suggesting that these are the very northern regions of Oykumena.

At the end of the Pliocene and the Quaternary time the situation changed due to radical environmental changes. Gindukush, Himalaya, Karakoram Tian Chan and Altai ranges were insurmountable barriers, not only to monsoons, but in the transformation of Pleistocene landscapes. These mountain ranges, covered by glaciers, were an important factor in the mosaic of landscapes during the Paleolithic Period. Climatic fluctuations such as the directions, of monsoons, cyclones, and the increase of warm climates in the arid zone resulted in the

desertification of vast territories. The four major regions of Kazakhstan responded to these climatic conditions differently.

1. The Turan and Prikaspii deserts represent the most stabile late Pliocene conditions. There are numerous sites of the Paleolithic and Neolithic Periods indicating an uninterrupted and stable development of human settlements in these regions. The Prikaspii and Usturt Paleolithic Period is identified by the usage of flint source materials. The stability of the paleogeographical conditions (favorable climate, abundance of wild animals for hunting and variety of natural habitats as well as unlimited quantity of raw materials and fresh water) were the basis of the long period of human occupation on the Caspian coastline and Usturt Plateau: the Paleolithic chronological sequence of Usturt Plateau has small gaps. The topography along the coastline has changed somewhat, and this is apparent from the current stratigraphic locations of these Paleolithic sites.

2. Sary-Arka is the ancient peneplain, with typical combination of small hills and plains with wide flat-bottomed valleys. From a geomorphological perspective this is the most stable region. The Paleolithic development began at the ilate stage of the Acheul'ian sequence and was interrupted in the Late Paileolithic Period. The long hiatus correlates to degradation of hydrosystem (rainfall? watershed?) until the Neolithic Period. Variety of topographical locations of the Stone Age sites indicates a possible early hominid migration route from the main watershed of Sary-Arka to the later settlement in the region of Northern Balkhash area. The factors which contributed to the long periods of occupations at the same site locations by Paleolithic, people included the relatively stable paleogeographical conditions, established and stable migration routes for humans, wild animals, and birds, numerous raw material sources, the regular water sources (springs, rivers), and grains of the output cone on the banks of rivers near the deep reach or the springs with fresh water.

On the extreme conditions at the end of the Upper Pleistocene, when it was very cold and dry, and the hydro-system was degraded, did the numbers of human settlements decline. At this term in ail period, frozen ground in different areas of Sary-Arka affected the migration routes and. At this time, the hominids abandoned many occupation sites.

3. On the other hand, the region of the Tian-Shan mountain range, represent the most extreme conditions for human settlement at high elevations during the Paleolithic Period. In the coldest geologic ail epoch, there were glaciers in this mountain range. On the other hand, this region also divides the whole territory into large-scale regions: the sandy deserts of Central Asia and the clayey deserts off Betpakdala.

In contrast to the Tian-Shan range, the Karatau mountain range has exceptionally favorable climatic conditions. These favorable climatic conditions occurred over a long period of time from the Upper Pleistocene onwards. The numerous relic plants and animals, preserved from the Neogene are clear evidence of the continuation of favorable climatic conditions in me Karatau mountains, on the other hand, the geographical location of the Karatau mountains at the edge of the desert zone is geologically important in the development of large deposits of sand and loess (in the Hollows). The geological formation of many regions of the Karatau mountain range were favorable to the continued existence of numerous herd animals in this area. The remains of such herd animals have been found from many locations in the Karatau range. And for that reason alone, it is not finding that ancient hominids dwelt here getting an abundance of wilderness and good water sources. The human settlements are situated on the river banks and forest regions.

The specific conditions of the Karatau range as a borderland region is the fragmentation and mosaic of climatic and environmental conditions. This contributes to the Paleolithic sequence of at least two (or three) separate cultural traditions.

The second cultural tradition, identified by the light-gray flints, which have better physical characteristics and are more easily flaked during the stages of tool production. The main type site has been named by Ch.Valikhanov. The unique characteristic of this site is the geological history of the landscape where it is situated. Massive plateau where the site is located has been eroded by rivers, cutting through forest regions and resulting in Cenozoic deposits. Perhaps the development of the "Valikhanov Paleolithic" sequence can be traced back to the Paleolithic sequence of conglomerate source materials found at the Budenyi settlement. A. Medoev named this Paleolithic sequence as Arystandinskaia culture.

We also have evidence for a third cultural tradition in the geological regions of sedimentary rocks (sandstones). According to the data collected by B. Aubekerov, there were several examples of the Late Paleolithic sequence (following Medoev's definition), similar to that of the Saiakskaia culture of the Sary-Arka.

The mountain regions of Kazakhstan are the least explored territories. The difficulties of the climate such as- this rapid-accumulation of rain and snow and the very difficult terrain inhibit surveying this area for Paleolithic sites.

The rapid accumulation of precipitation in the Sary-Arka valley is determined by the total amount of erosional movement of deposits of 10 to 20 meters (data collected by N. Kostenko, B. Aubekerov etc.). In the mountains the thickness of Quaternary deposits is estimated at 100 m. or more. We have evidence of the rapid movement of these landscape relief forms (terraces, races, konus or vynos). The first finds of the Aecheulian Period (B. Aubekerov) in the Charyn river canyon, a well-known Altai Paleolithic site, provides us with the possibility for developing a wider perspective of Paleolithic developments in the Kazakh mountain regions.