

## Mesolithization of the Lower Dniester-Pivdennyi Bug region: an environmental interpretation

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### Introduction

The Mesolithic is traditionally regarded as one of the most fascinating archaeological periods, strict criteria of which still remain the subject of sharp discussion for over a century. Nowadays, one can distinguish at least 3 basic versions of Mesolithic interpretation: environmental, technological, and procurative, which are successfully converging in the contemporary archaeology of the Stone Age. Recent studies of Black Sea level dynamics at the Pleistocene-Holocene boundary open new horizons for the development of an environmental interpretation of the transition to the Mesolithic on the Lower Dniester-Pivdennyi Bug interfluve.

### Paleogeography

The Lower Dniester-Pivdennyi Bug interfluve embodies most of the specific features of the Northwestern Black Sea regional paleoecology of the Dryas III to Preboreal interval. According to the results of palynological analysis of Quaternary sediments at Murafske swamp (Shargorodsky district, Vinnitsa region) as well as those of Kuyalnik estuary sediments (village Luzanivka, Odessa region), steppe landscape absolutely dominated in this region during that time. The proportion of herbaceous vegetation in some cases was as high as 94%; *Chenopodiaceae*, *Artemisiae*, and *Graminae* prevailed over other species. Arboreal vegetation was represented here by pine (*Pinus silvestris*) up to 100%, and by birch (*Betula*) and alder (*Alnus*) species less than 8% (Artushenko, 1970: 49, 90). The palynological complex of Troitske swamp situated in the floodplain of Pivdennyi Bug River indicates that isolated remains of Alleröd boreal vegetation were preserved only in traditional steppe zone refuges situated mainly on the banks of large rivers since the Last Glacial Maximum. Even there, the proportion of deciduous species such as oak (*Quercus*), hornbeam (*Carpinus*), ash (*Fraxinus*), lime tree (*Tilia*) and elm (*Ulmus*) taken together did not exceed 15% (Neishtadt, 1957: 69–71). So, the Early Mesolithic flora of the Dniester and Dnieper interfluve should be estimated in general as unpretentious, drought-afflicted, and xerophilous. Such vegetation characteristics make it possible to interpret the climate of the region under study as arid and strictly continental.

This interpretation corresponds well with the relatively poor faunal remains from layers 1 and 2 of Vladimirovka settlement, which is referred to the end of Dryas III. The major part of the fauna consisted of bones from animals adapted to cool, drought-afflicted climatic conditions: bison (*Bison priscus*), wild horse (*Equus ferus*), and reindeer (*Rangifer tarandus*). For the latest phases of the Paleolithic, such a faunal complex was defined by V.I. Bibikova and N.G. Belan as specific Middle-Bugian group within the framework of the *Rangifer-Equidae-Mammuthus primigenius* faunal variant typical for the Volyn region as well as for the Dniester and Bug basins (Bibikova and Belan, 1979). Faunal remains referred to the Preboreal period of the Holocene are currently unknown in the region under study.

The composition of vegetation and fauna of the region does not provide any basis for connecting their changes with the general rise in the level of the Black Sea, which is well documented by marine geologists. Most probably, shoreline changes were long-term and gradual and did not reflect on general features of paleogeography in the region under study.

### Population density, settlement pattern and subsistence strategy

During the Dryas III-Preboreal period of the Holocene, the Dniester-Pivdennyi Bug interfluve was characterized by the lowest population density in the Northwestern Black Sea region. This could be explained, first of all, by the general diminution of vegetation and animal biomass per unit of territory. Shortages in food supplies had forced several groups from the local population to go north looking for

new foraging territories already during Dryas II. This process could be illustrated by data from sites of Zagay type situated in the Kievan Dnieper basin (Savchuk, 1975; Stanko, 1991).

This migration was followed by a reduction in population pressure on the foraging territory, which improved the chances of survival for those who had remained in the Pivdennyi Bug basin. Consequently, the resource base and local population potential of this territory and of its utilization did not provide the opportunity to organize large and relatively sedentary settlements like the well-known Late Paleolithic ones. The tendency toward frequent changes of daily and seasonal territory became a characteristic feature of their mode of living space exploitation during the Dryas III-Preboreal period. Among the sites, of which the number does not exceed ten, ephemeral ones without a clearly expressed cultural layer and represented mainly by surface finds predominate. Hearths accompanied by *Unio* mollusks and ocher are revealed only in the context of the Final Paleolithic settlement of layer 1 at Vladymirivka (Chernysh, 1953:47).

According to the faunal remains found in layers 1 and 2 of the Vladymirivka settlement, bison, horse, and reindeer hunting remained the principal economic base of the Anetivka population. It cannot be excluded that, since Dryas III, the importance of individuals hunting for small non-gregarious animals with the help of sighting devices was gradually increasing. This hypothesis is proved by tracological analysis of the Ivashkove VI and Serediny Gorb flint assemblages: all inserts there are non-geometric and are made of microblades (Sapozhnikova et al., 1995: Table V, VIII). The presence of harvesting knives in the Ivashkove VI flint tool collection indicates that wild cereal gathering was intensified during the period under study (Sapozhnikova et al., 1995: Table IX). Probably, it can be connected with the necessity of finding new food sources because of the drastic reduction of the main hunting species (principally, the bison populations) that happened at the Pleistocene-Holocene boundary.

### Flint assemblages

During the Dryas III-Preboreal period, the Lower Dniester-Pivdennyi Bug interfluvium was characterized by further developments in the local flint knapping tradition that formed here on the eve of the LGM—Anetivka flint knapping technology. Detailed examination of flint assemblages from the period under study has distinguished two stages in the evolution of this tradition.

The first one is represented by the Volodymirivka (layers 1 and 2), Serediny Gorb, Ivashkove VI, and Chervona Greblya flint assemblages, of which one can demonstrate no new features in comparison with the eponymous site Anetivka II, and which could be regarded as fully Later Paleolithic (Stanko, 1980a; Smolyaninova, 1990).

The sites Anetivka and Novoarchangelske are attributed to the second developmental stage of this flint knapping tradition. One can trace only slight changes in the shape and physical dimensions of flint artifacts caused by general improvement of the flint knapping technology.

During the entire period of the Anetivka flint knapping tradition, there was no transformation in the composition of its flint assemblages and processing technique; all observed changes could be explained within the framework of a gradual evolution of flint processing. This means that since the Last Glacial Maximum to the end of the Boreal period (i.e., during the Late Paleolithic, Mesolithic, and Early Neolithic), representatives of this tradition did not produce and use geometric microlithic artifacts: they successfully applied retouched blades to similar purposes.

This fact has become the principal point of long-lasting discussion between advocates of a Late Paleolithic (Boriskovsky and Kraskovsky, 1961; Telegin, 1982) and an Early Mesolithic (Stanko, 1980b; Smolyaninova, 1990) age for Anetivka. This discussion might potentially have no reasonable solution if it were to explore arguments about flint knapping technology only with no attention given to the environmental context of this technological development.

### Discussion and conclusions

The severe and marginal environmental situation that obtained within the Dniester-Pivdennyi Bug interfluvium during Dryas III-Preboreal times differed significantly from the more favorable conditions

with high biomass density that were typical for this territory during the Alleröd. The paleogeographic transformation forced the local population to transform its own mode of life and subsistence strategies in accordance with the new reality.

Large group segmentation, local population dispersion, increase in mobility, and decrease in population density became the effective measures that helped local populations—representatives of the Anetivka Late Paleolithic flint knapping technology—to survive and progressively evolve during the Dryas III-Preboreal interval with no substantial changes to their traditional tool production. Moreover, this adaptive strategy appeared to be so effective, that in the following stage (during the Boreal period), the population of Anetivka became the substrate for a new cultural development: the Kukrek tradition.

In fact, the history of the Lower Dniester-Pivdennyi Bug population during the Dryas III-Preboreal period provides a unique opportunity to detect a very curious model of the Late Paleolithic-Mesolithic transition, one not unknown in Europe: in a new environmental situation, local populations change their mode of life and subsistence strategies, preserving basic features of tool production in the process. So, the Mesolithic stage is marked environmentally and behaviorally, and these new features guarantee the survival and successful development of local populations.

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