10 GEOGRAPHICAL AND GEOLOGICAL FEATURES OF THE LOCALITY

GEOGRAPHICAL FEATURES

Eastern Croatia has recognizable geographical specificities, which have resulted in its division into the regions of the East-Croatian plain, and the Slavonian Sava Basin with the Požega Valley. This open lowland consists mostly of young fluvial deposits and loess sediments (Sić 1975: 123–125).

A detailed geographical division of the East-Croatian plain into six geographical units puts Vinkovci and Stari Mikanovci in the geographical area of the Bosut Valley – a naturally well-delimited and distinct section of the East-Croatian plain (*Fig. 38, p. 93*). It is closed off to the north by the marked edges of the Đakovo-Vukovar loess plateau, and to the south by the River Sava. On the western side, it is bounded by the central Sava Basin and its narrow valley along the River Sava with the hilly hinterland, while its eastern boundary is the lowland part of the Fruška Gora region in Syrmia.

The Bosut Valley covers an area of 2355 km² – and, in view of the structure of its landscape, it is a homogeneous unit. The largest part of this prominently lowland region is covered by woods, with an occasional wetland. Such wood-and-marsh landscape functions as an isolator, limiting human settlement to the peripheral parts of the plateau. Within the large network of watercourses, the most important role is played by the Bosut: together with its tributary, the Bić, it extends over 186 km, and its basin covers 3025 km², much more than the surface of its valley. A direct link between the Sava Basin (the Bosut catchment area) and the Drava-Danube Basin (the Vuka catchment area) went along the Ervenica brook (Barica) (Bognar 1994: 25–48). The Bić-Bosut and other significant watercourses had very small gradients, and they were winding and shallow, which contributed to their flooding the surrounding area at times of high water, and forming natural distributaries. The same is known to have happened at the bifurcation of the Bosut and Vuka across the Ervenica brook, filled in by later works.

The great importance of water has been reflected in the features of vegetation and land, while the environmental circumstances have influenced the development and strong expansion of humid lowland woods of pedunculate oak in the Bosut Valley. It is generally believed that this region contains the largest surface area covered by such wodland in Croatia, and probably also in Europe (Sić 1975: 175–180).

This specific geographical background was originally an inhospitable space, due to its marshland and frequent flooding. Today's Bosut Valley, like all of the landscape around us, is very different from what it was in prehistoric times. This is particularly true if we take modern infrastructure and roads into consideration, and the plains, woods and marshes which were hardly passable prior to modern-day melioration. Geographical maps of Croatia, produced by the Austro-Hungarian Empire in the 18th and 19th centuries, which feature all the details such as roads, bridges, brooks, plains, swamps and forests, can give us an idea of what the landscape looked like, at least several centuries ago. In those maps, distances are marked in hours of walking, based on the assumption that it takes 1 hour to make 6000 paces (Buczynski et al. 1999: 7–8). Thus, Vinkovci is 2 hours and 15 minutes away from Ivankovo, 45 minutes from Mirkovci, one hour from

Cerić and Nuštar, one hour and 15 minutes from Jarmina, two-and-a-half hours from Privlaka. A wooden bridge led across the Bosut, and in this part the river was winding and it was 80–90 paces wide. It was possible to ford it only in summer, and only in certain places. The brook of *Erbenica* came down through the forest and ran into the Bosut. In the vicinity of the town, where the banks were higher, the river was 50–85 paces wide. There, it was 5–6 feet deep, while in other areas its depth was 2–3 feet. Its bottom was silty along most of its course, and it could only be crossed over two wooden bridges.

Another brook flowing into the Bosut is called *Nijerkuša*, and it runs from the marsh of *Ivankovački Rit*. This brook was not fordable either, and its bottom was also silty. The water from the Bosut and these two brooks could only be used for watering livestock (Buczynski et al. 1999: 110–111, Section 17). The town of Vinkovci was surrounded by woods, with several additional woody areas in their immediate vicinity (*Topolovica* and *Crni Gaj*). Ponds surrounding Ivankovački Rit, which extends through to the area of Vinkovci, would occasionally dry off and thus become passable, but the marsh itself was never passable.

The map indicates that Stari Mikanovci was half-an-hour away from Novi Mikanovci, two hours and 15 minutes from Đakovo, and just as much from Ivankovo. Several small brooks ran through this area in a southward direction, towards the nearby ponds of *Jelas*, *Grajensko* and *Kaluđer*. There were bridges across the brooks, but during normal water level they could also be forded in several places. With their water, the ponds filled a number of deep, muddy ditches which criss-crossed the large forest and emptied into the River Bić, which passed through the forest. Together with the Bić, those ditches could cause extensive flooding throughout the forest during the rainy season and in spring, when the snows melted (Buczynski et al. 1999: 104–105, Section 16). According to calculation by hours, the distance between Stari Mikanovci and Vinkovci was 4 hours on foot.

GEOLOGICAL FEATURES

The geological composition of the region undoubtedly played an important role in the selection of the location for settlement throughout prehistory. The structure of the relief consists primarily of river sediments (sand, gravel, clay and loam), and accumulations of loess and loess sediments (Roglić 1975: 18). These loess sediments are characteristic of the soil in the south-eastern part of the Pannonian Plain (Roglić 1975: 18), and loess and its derivatives cover 35.7% of the territory of Croatia (Galović et al. 2009). During the glaciations of the Middle and Late Pleistocene, strong north-western winds blew in dust from the Alpine region. The dust deposited on lake and river terraces formed loess and created loess plateaus, the main feature of the geography of eastern Croatia (Hećimović 2009).

In the Holocene, temperatures rose and the quantity of water gradually fell. Rivers began cutting their courses in the sediment, thus creating diverse fluvial forms (terraces, meanders etc.). The wider Vinkovci area is made of Quaternary sediments, which can be divided into those originating in the Pleistocene and those created in the Holocene. The Pleistocene sediments are represented by loess and pond-and-land loess, while those of the Holocene consist mainly of pond sediments (Hećimović 2009: 98; Basic Geological Map L 34–98). Loess is a non-stratified, unbound and porous sediment. The fauna shows that it was deposited in cold and dry climates, and also that the climate was variable during the last ice age (Würm). Based on its grain size,

loess is silt with admixtures of sand or clay. An important feature is its porosity, usually at a level of 40–60%. Its main mineral component is quartz, which can constitute up to 70% of its composition. In addition to quartz, loess also contains feldspar (up to 20%), muscovite, clay, chlorite, limonite etc. (Herak 1990). The loess layer thickness can vary, and is usually up to 20 m thick, but occasionally also as much as 50 m (the Erdut Hill).

The pond-loess sediments were deposited primarily in low areas, mostly on river terraces. The main mineral component of the pond loess is quartz (up to 60%), while the proportion of calcium carbonate varies (0–30%). Its thickness can be up to 10 m, and in markedly low parts of the terrain it can be as much as 30 m thick (Hećimović 2009: 98–99). Pond sediments were created in the Holocene, and they are tied to the earlier slow water flows or standing waters, which turned into marshland in the lowest areas. There, clays and clay silts were deposited, and those sediments are rich in organic content and up to 3 metres thick. Alluvial sediments were deposited in the valleys of today's rivers. They consist of gravel, sand, silts and clays, and their thickness can vary significantly, although it rarely exceeds10 m (Hećimović 2009: 100–101).

Besides settlements on hilltops, those erected on loess terraces represent a typical form of settlement of the Vučedol Culture. The loess elevations are actually plateaus, whose composition and somewhat higher altitude make them drier, naturally more fertile and environmentally more favourable. The Đakovo-Vinkovci loess plateau has remained between the Danube-Drava and the Sava catchment areas, with an altitude that is 10–15 m higher than the surrounding terrain. At its ends it spreads out, especially towards the slopes of the Fruška Gora mountain, where the thickness of the sediment is greater and can reach 20 m (Roglić 1975: 11–23). In the Bosut Valley, real dry or land loess can be found only in a few places (in the Vinkovci and Gradište surroundings, and between Otok and Nijemci).