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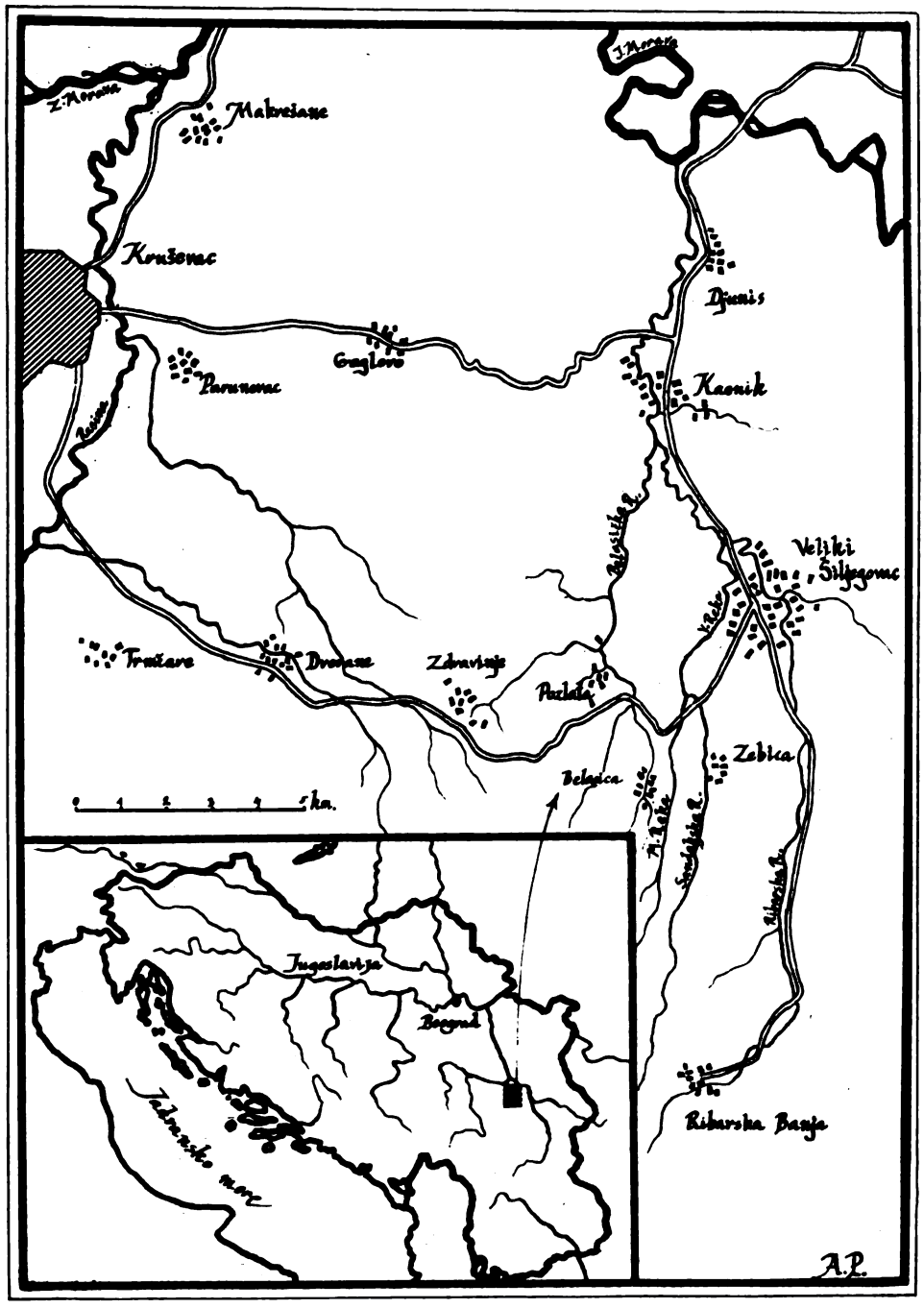
PREHISTORIC SETTLEMENTS IN THE RIBARSKA REKA MICROREGION NEAR KRUŠEVAC

I. INTRODUCTION

This text represents a theoretical framework and a concept model of the project of prehistoric settlement location choice in the Ribarska Reka microregion near Kruševac. It is actually part of a larger project of the Institute for Balkan Studies *Preroman Dardania in the light of archaeological evidence.* During the works on this project a site survey of the hypothetical northern border of the pre-roman Dardania was done. The results of the analysis in Kruševac area suggested more valuable information from a more detailed study of the prehistoric settlement of this region. This study would probably shed more light on the problems of site location, relationship of landscape and archaeological site, as well as some aspects of prehistoric economy so that it could eventually contribute to better knowledge of the cultural dinamics of paleobalkanic preoples in prehistory.

The Institute for Balkan Studies started the realization of this project with the cooperation of the National Museum of Kruševac and Brooklyn College CUNY. A uniform system of documentation has been worked out both for the site survey and excavation, and a computer program will provide the most flexibile and comprehensive data base. Preliminary field testing of survey methods was begun during the summer of 1985 in the Kruševac study area (supported by funding from the Republic Scientific Commission [Republička zajednica nauke Srbije] and the International Research and Exchanges Board New Collaborative Project Program). The testing was purposely limited in scope and design, and focused on delineating the types of problems likely



to be encountered in the course of such a project, the alternative survey approaches available (aerial photography, quadrat survey, transect survey, informant interviewing), and the probable results of each. Soil, erosion, and hydrological maps and data have been assembled for both study areas, and the utility of magnetometric survey for confirming the existence and shape of unexcavated features was shown.

Preliminary field testing raised a number of questions and a need for a general model of cultural change which should be tested against local and regional information. Evaluation of these models depends heavily on the collection of new, quantified data and, where possible, the restudy of already existing collection. In approaching the archaeological problems of a region, it seems obvious that selection of the problems for investigation is inevitable and should be made explicit. There are four basic questions to which survey can provide at least partial answers:

a) the number of sites in the area

b) the number of sites by period and function

c) the relationship between archaeological sites and environmental variables

d) the interrelationship between archaeological sites.

After evaluating the goals and achivments of this project it was decided that an intensive survey of one microregion should be conducted and analysed by computer, and that a precise general model should be formed. This project is arranged in the following sections:

II. Background: Regional Archaeology in Yugoslavia, 1945—1985

III. Geography

IV. Data for Hypothesis Building

V. Operations

VI. References

II. BACKGROUND: REGIONAL ARCHAEOLOGY IN YUGOSLAVIA, 1945—1985

The use of a geographic or ecological region as the basic unit for the study of prehistoric change has a long history in Yugoslav archaeology (see Tasić 1983a and Garašanin 1983a: 11—19 for references). Immediately following World War II, efforts were made to produce systematic regional catalogues of sites known through survey, chance discovery, and excavation (Garašanin and Garašanin 1951; Bošković 1953, 1956), but emphasis soon shifted to the solution of problems of chronology and cultural develop-

ment through the excavations of single sites such as Bubanj, Židovar, Gomolava, and Bosutska Gradina. The large sites of the later neolithic period, like Predionica, Pločnik, Fafos, and Selevac, especially saw intensive investigation (cf. Bošković 1983 for a more detailed archaeological history of the post-war period). Such excavations produced large assemblages of artifacts for study and exhibit, faunal and floral samples for a general reconstruction of the prehistoric settlement economy, and often architectural remains that gave some data for assumptions concerning settlement layout with concomitant inferential statements about social structure, and in some instances clarified the relative and sometimes absolute chronological sequences. Sites were inductively and comparatively related to a regional environmental and cultural framework by reference to their topographic position or similarities and differences from other known sites in the same or other regions. Single sites were never explicitly investigated as part of a previously-designed deductive model which sought to explain the settlement choices and possibilities within a region.

With the construction of two large hydroelectric dams on the Danube (Đerdap I in 1959—1970 and Đerdap II in 1979—1983) and the resultant need for a massive salvage archeology project, archeology in Serbia became focused on the Danube banks region. Unfortunately, despite the availability of funding and the possibility of prior project design, a true regional project (in the sense of Binford 1964 or Thomas 1969) never materialized. The exigencies of salvage took precedence over the development of a problem orientation which could more profitably have organized such a project (cf. Watson 1973: 122—123). Survey and excavation techniques lacked the representative sampling methods which would have enabled statistically trustworthy statements to be made about the study area. Jurisdictional rivalries and divisions among the institutions involved produced a patchwork of largely non-comparable results. The lack of an explicitly defined problem orientation, or indeed, of any prior theoretical framework, affected the usefulness of the results for general regional settlement studies.

Other regions or microregions which have been investigated (Fruška Gora, Šabac [Trbuhović and Vasiljević 1976, 1983]) or are currently being surveyed (e.g. Kragujevac, Ćuprija [cf. Madas 1984]) have tended to follow similar „salvage project" lines, in which archaeologists locate and trench as many sites as possible, usually through non-random and non-representative methods of surveying both the regions and the sites. Exceptions to this generalization are new planned regional survey projects in Dalmatia (Chapman and Batović n.d.) and Slovenia (B. Slapšak pers. comm.), where explicitly-stated prior survey designs attempt to relate settlement locations to ecological factors. No comparable projects exist in Serbia, the central Balkan part of Yugoslavia.

III. GEOGRAPHY

The Kruševac study area, (MAP 1) lies at the important junction of the Southern and Western Morava rivers. Bordered on the south by the Jastrebac range of the Central Balkans, and to the north by the junction of the two rivers, the area forms a self-contained triangular geographical unit of about 300 square kilometers. The Jastrebac is the first range of the Central Balkan mountain massif south of the Morava valley. Reaching to a height of 1492 meters above sea level south of Ribarska Banja, this range effectively limits southward communication from this area to a route along the Southern Morava. Typical of the Rhodope mountain chain of which it is a part, the Jastrebac is composed of underlying schists, gneiss, and granites. It is out by streams with clear dendritic drainage systems, along whose valleys most of the present-day population is concentrated. The landscape directly to the north of the mountains was formed as the border of the former Pannonian Lake, and is characterized by low lake terraces which are covered with sandy and clayey subsoils of lacustrine origin (Cvijić 1922: 62), above which lies a thick surface layer of gajnjača/smonica and skeleton forest soils (Pedološka Karta SFRJ). The relief falls some 300 meters, from the northern ridges of the Jastrebac at ca. 450 meters above sea level at Ribarska Banja to the Morava valley itself, at ca. 150 meters. Mountain slopes are heavily eroded, and there is alluvial deposit in the river valleys (Karta Erozije SFRJ).

The area is drained by two major river systems: the Rasina, a Western Morava tributary, and the Ribarska, a Southern Morava tributary. Both rise in the northern Jastrebac, have numerous smaller tributary streams, and widen into alluvial valleys some 500—1000 meters wide along their middle and lower courses. The climate of the Morava valley as a whole is temperate, with rainfall evenly distributed throughout the year (Cvijić 1922: 64; Tanasijević 1965), characterized by long mild fall weather and shorter cold dry windy spells during a generally moist winter. Modern ground cover varies from mixed oak temperate forests on the slopes to cleared field and pasture in the river valleys. The land is used primarily for agriculture, with grazing secondary. The study area currently supports a population of approximately 10,000, concentrated in 15 villages.

Since a regional approach relates primarily to the spatial integration of sites within the region, the study area should be large enough to permit study of all the seasonal movements and exchanges of goods and services that are assential to the cultural system in question. Logic suggests a research design focused on one of the abovementioned two larger river systems, which would contain both enough area and a varied enough landscape to satisfy the argument of Binford's (1964) definition of a regional

project. Regional analysis provides a perspective not only on period-by-period site distribution, but also on the variability of human behavior across different ecological zones within the region (Chapman and Batović n.d.). The Ribarska River drainage area has been selected for study for the following reasons:

a) it is smaller than the drainage of the Rasina, taking in a 200 square kilometer area that is more easily suveyed;
b) the landforms of the Ribarska drainage are more varied than those of the Rasina;
c) the Ribarska drains an area peripheral to several cultural and geographical units, but at the same time forms a cohesive entity (although not a „closed system");
d) a preliminary archaeological survey of approximately one-third of the Ribarska drainage was conducted by A. Palavestra in 1981 and continued in 1985;
e) the drainage system falls entirely within the jurisdiction of a single museum (Narodni Muzej Kruševac).

The study area may have had value not only for its agricultural potential, but also as either primary production areas or intermediate area through which upland resources were supplied to the more lowland prehistoric populations of the Morava valley and regions to the north. Preliminary survey in the Kruševac area has indicated at least one early neolithic site at which metamorphic river stones were processed into metates.

IV. DATA FOR HYPOTHESIS BUILDING

The ethnographic data on pre-industrial rural life in the Morava valley provide us with a picture of how human groups made use of this landscape. This is, of course, not the only possible picture, for not all possible socioeconomic systems need be or can be represented by known ethnographic data. Some of the cultural patterns known ethnographically from this region are certainly the products of unique historical events such as the centuries of Turkish domination, which did not occur in prehistory and therefore would be invalid as analogues (Ascher 1961). Other factors, such as New World crops, are modern additions to the cultural inventory of the region. However, the ethnographic data can be used to develop hypotheses and to flesh out a model for testing archaeologically with survey data.

The suggestion that the pre-modern economic structure of the Moravo-Danubian area reflects a heritage derived from neolithic times was first explicitly made by Fewkes (1936: 8—9), although it is implicit in earlier archaeological works (cf. Childe 1929). As Halpern (1956: 42—3) points out, „... a direct tradition

would be hard to trace. Probably what is meant is the general basis of the peasant economy, a combination of sedentary agriculture, stockbreeding, hunting and fishing (near the larger rivers, especially the Danube), which was the basic economy at Vinča." This idea of the general continuity of the economic basis of peasant life is implicit in the Yugoslav ethnographic sources and archaeological syntheses. It is our goal in this section to propose a model for the simulation of settlement choices in prehistory which is suggested by this observation and can be tested by survey data.

This idea (let us call it „peasant continuity") is based on the assumption of economic rationality in both prehistoric and historic periods. It depends (implicitly in the above sources) on a model of culture as an adaptive mechanism, specifically relating human activity to the environment, which operates irrespective of the ethnic composition of the population (admittedly different since prehistoric times). As used in the Yugoslav ethnographic and archaeological literature, it is essentially a deterministic model. „Environment" (defined loosely as those natural resources crucial for the optimization of success in subsistence agriculture such as soil, water, woodland or pasturage) is clearly the independent variable in this model, with „peasant lifestyle" dependent. A corollary („pre-modern peasant life is an optimal adaptation to the Balkan environment [at a certain level of technology] which was achieved very early and has remained stable since") implies that the environment has not changed significantly since neolithic times (since peasant life has not changed significantly). Another is that pre-modern peasant technology was basically identical to that available to the neolithic farmers in this region.

Actually, as Franklin (1962: 4—5) recognizes, „archaic elements are more likely to survive within a peasant group and to remain integral parts of the culture, but it is unlikely that during the last 150 years many peasant societies have failed to experience important and perhaps significant changes . . ." These changes include „the partial incorporation of the peasantry within a market economy, the greater use of money, the appearance of usury and middlemen, the rise in rents following the increased competition for land, the weakening of communal bonds and the passing of traditional responsibilities" (Franklin 1962: 9).

One might question the use of „peasant" analogies in the context of a prehistoric model. Anthropologists and economists differ on the definition of „peasant", the former stressing the cultural and economic dependence on urban centers or extra-village authority (Kroeber 1948: 284; Foster 1967: 6; Wolf 1966: 11; Redfield 1955), while the latter concentrate on the economics of peasant farming (Edwards and Rees 1964: 73; Franklin 1965) (in Henshall's phrase, „way of life" versus „way of earning a living" [1967: 431]). It is noteworthy that the anthropologists focus on

those aspects of peasant life which seem to be connected with the „agriculturalization of peasantry" noted by Franklin over the past 150 years. Both the economic and social aspects of peasant society contribute to the technological and social conservatism often noted about the peasant lifestyle. The emphases of the economists seem more relevant to the examination of the relatationships between settlement location choices and economic/ecological variables. A sharp division between „peasant" and „non-peasant" may be artificial (Orlove 1977). For the initial survey, then, we assume that the economics of „the peasant way of earning a living" (if not „the peasant way of life") can indeed be applied to prehistory and can be a valuable tool for hypothesis formation.

Obviously, the implied environmental determinism of the „peasant continuity" model is too simplistic. There is strong evidence that people do behave rationally in a real economic sense, tending not to depart very far from relatively efficient strategies (Watson, Le Blanc, and Redman 1984: 152). However, testing models of human rationality is a matter for empirical research, rather than a mater of fact. Some human decisions at any time will be affected by or result from non-economic considerations (Henshall 1967: 446). The concept of culture as an adaptive system has a long history in anthropological archaeology from Steward and Childe to Binford. Treating culture as a system of adaptive information facilitates its modelling in systems theoretical terms and the decisions made by people in given circumstances in terms of game theory (Clarke 1968; 1972: 37; Jarman 1972).

The assumptions that the environment has not changed, or not changed significantly (i.e. that economic activities potentially at risk would not have been near critical environmental thresholds [cf. Whittle 1982]), and that agricultural tools have not essentially changed since the Roman Iron Age (cf. Rees 1981: 72) are simplifying assumptions for this model (Gibbon 1984: 120—122). Although cooler and wetter than the previous Atlantic, the Sub-Boreal climate of the final three millenia BC would have only marginally affected the agricultural and stockraising potential of the area, except in the higher altitudes which were most likely used primarily by summer transhumants.

The amount of forest cover in the past cannot be assumed on the basis of the present (or even pre-modern) forest distribution. While climatic change may not have affected many of the constraints on settlement location (of. Bankoff and Greenfield in press; Whittle 1982; also Bouzek 1982 for an opposing view), the medieval and modern ground cover is certainly the end product of approximately seven millenia of human manipulation for agriculture (Nandris 1976) and intermittent periods of depopulation. The assumption that Šumadija was heavily, or even predominantly,

wooded must be tested for each period. Early Bronze Age floral spectra from Novačka Ćuprija indicate a mixed deciduous forest cover, but Roman contexts from the same site show a marked decline in trees other than oak (cf. Willcox in press), whether due to differential clearing, preferential use of oak, or other factors. The name „Šumadija" („forested place") for the hills bordering the Morava valley to the west dates only to the eighteenth century (Halpern 1956: 46). Large-scale population fluctuations, historically documented from the fourteenth century onwards (Drobnjaković 1932), also imply a complex history of repeated agricultural clearance and forest regrowth. The soil erosion and sedimentation history is affected by the ground cover (Butzer 1982: 129—135), as well as by land use (Bell 1982), and can be used to provide valuable clues for reconstruction of forested or open zones. The survey strategy is to use such pedological data for evidences of prior forestation rather than present ground cover.

The archaeological record provides only a partially preserved agricultural toolkit (Harding 1976; Rees 1979, 1981; Clark 1952: 100, 110—112) and many of the activities necessary to agricultural life and the processing of agricultural products are extremely difficult to retrieve archaeologically (of. Hillman 1981; White 1967; Hartley 1979). However, with one exception, the major types of tools needed for farming in prehistoric times seem to be the same as those in use in pre-modern peasant contexts in southeastern Europe (cf. Harding 1976: 516—518). The exception is the scythe, whose use in Europe is not documented before the Iron Age, and whose introduction must have revolutionized hay harvesting (Steensberg 1943). Sickles, common in prehistoric Balkan contexts, were the implement used for grain harvesting (Hartley 1979: 175—177). Comparison of pre-modern peasant farming practices and techniques with those of medieval times indicates extreme conservatism, which we feel warranted in extending to prehistoric agriculture as well. The basic techniques of the temperate mixed farming complex, once established (Sherratt), changed very little in the Central Balkans.

Information on pre-industrial life in the southern part of the Morava valley and its surroundings are provided by Cvijić (1922), Antonijević (1982), Đorđević (1937 [1984]), and Novaković (1898), among others in the tradition of Yugoslav human geography. These sources clearly show that the region has supported at least two widely differing socioeconomic systems during medieval and early modern times: settled agriculture and long-range pastoral nomadism. In this section the ethnographic data pertinent to the settlement locational criteria of these two known systems are presented.

a) Sedentary agriculturalists: Pre-industrial agricultural villages in the Morava valley region practicing mixed farming without

transhumant pasturing of stock were usually situated at the boundary between two or more ecological/economic zones (Cvijić 1922: 323; Antonijević 1982: 88). This allows use of resources from several varying and complementary zones, a widely recognized archaeological occurrence (Flannery 1968; Vita-Finzi and Higgs 1970). The oldest historical villages (before the introduction of New World crops) are situated on the edges of terraces and slopes, and are much less commonly found on the river alluvium (Cvijić 1922: 64), which was usually marshy and wooded (Cvijić 1922: 320). Settlements on the lacustrine terraces usually occupy their higher edges, at the point where the terrace is cut by a small stream (Cvijić 1922: 323).

Almost all pre-industrial villages in Šumadija were of a dispersed „Starovlaški type" (Cvijić 1922: 333). Such villages were spread over 5—6 kilometers (approximately one hour's walk), with individual households distant from each other, although organized into rough clusters of related households at a distance of from 1—2 kilometers from the nearest neighboring cluster (Cvijić 1922: 332). These clusters (*zaseobak*) were based on related extended family groups *(zadruge).* Turkish tax records from the sixteenth century idicate that this village pattern need not be connected only with extended families; over forty percent of the *zadruge* did not have an extended family structure (Hammel). With the development of better communication and concomitant integration into a wider-scale economy in the nineteenth century, villages in the area became more compact, densely-settled, and extended linearly along the principal roads (Cvijić 1922: 333).

b) Pastoralists: In contrast to sedentary agriculture, primary economic dependence on stockraising necessitates seasonal movement of the herds and at least a majority of the population (Barth 1956; Hammond 1976; Wace and Thompson 1914 [1972]). Transhumant pastoralism (called „nomadic pastoralism" in the Yugoslav ethnographic literature) requiring long-distance herd movement is documented in southern Morava valley from antiquity to the beginning of the twentieth century (Antonijević 1982: 14—15; Đorđević 1937 [1984]: 98—108). Specialized ethnic groups (Sarakačani, Vlasi) engaged in long-distance transhumant movement of sheep and goat herds over a large area from the Black Sea to the Adriatic, as well as smaller seasonal rounds (vertical transhumance). In the Morava valley, these smaller seasonal transhumant routes went between the mountainous areas (e.g. Jastrebac, Crni Vrh, Juhor) and the Morava itself (Novaković 1898: 33). Largescale long-distance transhumant movement has been posited for prehistoric times as well (of. Barker 1981). Seasonal pastoralist settlements are not easily archaeologically recoverable. Whether tents with easily-movable furnishings, or poorly-built wooden cabins (Đorđević 1937 [1984]: 169—179), they are not permanent settlements. Summer pastoralist camps were

situated in the upland regions (above 500 meters above sea level) with access to cleared pastureland and water for shepherds and flocks. Winter camps moved down into the river valleys and coastal plain (Cvijić 1922: 280), again being situated so as to take advantage of necessary pasturage and water (Đorđević 1937 [1984]: 173).

We assume that these contrasting patterns of life, and the economic patterns related to them, were also found in the area in later prehistoric times. The locational criteria important to each of them would also have been important in prehistory, and would leave their imprint on the landscape of sites left from each period.

Serbian archaeology is rich in inductively-derived syntheses (Garašanin 1959, 1973, 1983b, 1983c; Srejović 1981; Tasić 1983b). Descriptions of settlement types and patterns, as well as the (often highly speculative) cultural dynamics of various prehistoric periods and typologies/definitions of cultural groups abound. Good as they are, such inductive generalizations afford certainty only about those cases upon which they are based (Watson, Le Blanc, and Redman 1971). These inductive syntheses also lack the mid-range theory to explicitly connect their statements about cultural change and ethnic development to the on-the-ground archaeological field operations. They may, however, provide sources for more testable models and hypotheses (cf. Thomas 1969; Williams, Thomas, and Bettinger 1973; Binford 1964).

Faced with similar problems, especially with regard to the relationship among economic/ecological variables and settlement location and the archaeology of large regional units, American archaeologists have developed a body of theory to help bridge the gap between the data and the explanatory syntheses (Chang 1968; Trigger 1968; Binford 1968: 1—4). One approach has been the development of expectations about the ways in which connections between sites and the economic systems of which they are relicts should be reflected in the archaeological record (cf. Binford 1982: 125—138). Other approaches use already adumbrated inductive models as the basis for deductive archaeological project design. An example of the latter is best provided by the Reese River Valley Survey (Thomas 1969, 1973, 1976). Here, Steward's inductive characterization of the distribution of prehistoric Shoshone Indian campsites and the activities which related to their seasonal cycles of food procurement was used by Thomas to deductively derive a series of hypotheses, later tested by regional survey (Thomas 1969; Williams, Thomas, and Bettinger 1973).

Just as the ethnographic data indicate the presence of at least two distinct ways of life in the recent past, the framework of cultural development outlined in the syntheses of Serbian prehistory implicitly posits several different lifestyles in the more

remote past (cf. Srejović 1981). Four of these are most easily distinguished, and should have interrelated with the environment in discrete, mutually exclusive ways, providing distinct relict landscapes. These are:

a) large, nucleated, supposedly kin-based horticultural villages (Srejović 1981: 23—24) of the final neolithic period (3800—3200 BC);

b) smaller, more dispersed (Bankoff and Greenfield in press) agricultural settlements (Sherrat 1972), with stockbreeding and local transhumant pastoral nomadism as a significant component of the economy in the Eneolithic and Early Bronze Age (ca. 3000—1700 BC);

c) more numerous permanent agricultural settlements, larger than those of the earlier Bronze Age and often enclosed (Stojić 1984), possibly living in settled symbiosis with specialized long-distance nomadic pastoral groups in the Late Bronze/Early Iron Age (first millenium BC). Such settlements and their associated cemeteries may contain indications of internal social differentiation and „entrepneurship" (Wels 1985).

d) farmsteads and villa rustica plantations of the Roman period.

Combining the ethnographic analogies with the cultural syntheses allows the following expectations of the settlement locational criteria for the various periods:

Vinča — Final Neolithic

The later Vinča settlement pattern (Final Neolithic in Srejović's [1981: 16] terms) has been characterized as „two-tiered" (Chapman 1981; of. Garašanin 1973: 65—139; Trbuhović and Vasiljević 1976, 1983), composed of both larger nucleated settlements and smaller sites in the Mortava valley, Medvednjak, Grivac kod Gruže (Gavela 1956—57), Selevac (Tringham et al. in press), Jablonica (Vasić 1902) and Lipovac kod Aranđelovca (Fewkes 1936), Divostin (McPherron and Srejović 1971), Supska (M. and D. Garašanin 1979), Mala Grabovica (M. Garašanin and Ivanović 1958), Crnokalačka Bara (Tasić and Tomić 1969), Vitoševac kod Kruševca (Grbić 1968: 71) and Varvarin (Grbić 1968: 71) are representative of the larger site stratum. Due to the lack of systematic survey, such smaller sites as exist have generally not been found or investigated (of. Chapman 1982). A representative survey should be able to recognize and locate the rural Vinča component in the study areas (cf. Trbuhović and Vasiljević 1976, 1983).

It has been hypothesized that the later Vinča period marks the transformation of the socioeconomic organization of the agriculturalists of southeast Europe, that at this time the household

emerged as the primary unit of social and economic organization (Tringham 1983a, 1983b, 1984). Tringham (1984: 9) suggests that Vinča sites, therefore, represent the nucleated settlements of sedentary horticulturalists whose households were established as the unit of social and economic cooperation. Supra-household kin groupings would have integrated the villages and provided the necessary labor force for cooperative horticultural work.

The ethnographic data suggest that Vinča sites should be found on the edges of the alluvium of the middle courses of the rivers, away from the Morava valley itself (Cvijić 1922: 333). Archaeological observations also support this hypothetical location (Glišić 1968: 24). The more easily-worked moister alluvial soils would have been preferred by horticultural societies lacking animal power (Sherratt 1973: 421—424). The lake terraces beyond the alluvium would have offered opportunities for hunting and gathering, as well as pasturing stock. There should be fewer late Vinča sites than those of the eneolithic and later periods; the sites should be areally larger and more readily recognizable than eneolithic and Early Bronze Age sites, due both to the more intensive occupation and the presence of burnt house remains.

The Eneolithic/Early Bronze Age

The settlements of the Eneolithic/Early Bronze Age period have a „three-tiered" typology (Tasić 1983b). In the Morava valley and Šumadija, both upland and lowland sites are known (see Garašanin 1973[1]: 293—396 for references). Sites do not approach the size of late Vinča settlements. The impression obtained from the archaeological syntheses (summarized in Garašanin 1983c and Srejović 1981) is of a more dispersed settlement pattern than that of the Final Neolithic, with less densely occupied but more numerous sites, each possibly only occupied for a short period. A commonly accepted explanation for these observed differences between the periods is that stockraising and therefore nomadism (although the two are by no means synonymous) increased. For our purposes, the question of ethnic continuity or discontinuity as dealt with by Tasić (1983b) or Gimbutas (1965, 1970) is irrelevant. An alternative hypothesis would connect this change in human-landscape relationships with the socioeconomic changes related to new farming and transport technology (Sherratt 1982, 1983). Briefly, agricultural intensification during the later neolithic period, perhaps spurred by the development of the household as the primary production/consumption unit (Tringham 1983), fostered the growth of large, densely-occupied late Vinča settlements (cf. Chapman 1981). Changes in agricultural and transport technology completed during the eneolithic period acted to accentuate the self-sufficiency of individual household

production/consumption units at the expense of larger (kin-based?) corporate groups. This was a major factor in producing the more dispersed population/small farmstead pattern typical of the Balkan Bronze Age (Bankoff and Greenfield in press), and represents a stable and successful European adaptation to temperate mixed farming (cf. Sherratt 1981).

Analysis of floral and faunal remains from the Lower Morava valley indicates that the Early Bronze Age farmers raised several different types of wheat (emmer, einkorn, and bread wheat) and six-rowed and possibly two-rowed barley. These were supplemented by legumes (especially lentils) and domestic (plum) and wild (blackberry, cornelian cherry) fruits (Willcox in press). The pattern of faunal exploitation at this time has been described by Greenfield (1985; in press). Cattle were the most frequent species found in eneolithic and Bronze Age contexts at Novačka Ćuprija, followed by sheep/goat, and pigs.

The ethnographic data suggest several possible expectable criteria for mixed farming settlements. Whether „farmsteads" or „villages", such settlements may be of less permanent, easily movable construction (Novaković 1898: 101—110). They may be of diffuse „Starovlaški" type (Cvijić 1922: 333). They should be more numerous on the upper course of streams and the middle altitudes above the lake terraces (Cvijić 1922: 332). Earlier surveys in the Morava valley (Palavestra personal comm.; Bankoff and Winter 1982) indicate that they are not limited to the alluvial soils, but may prefer the gajnjača and skeletoid forest soils.

Late Bronze Age/Early Iron Age

The Late Bronze Age/Early Iron Age cultures of the Morava valley also were dependent on stockraising and agriculture. A new feature of this period may have been the development of specialized pastoralist groups who provided further animal products for the larger sedentary agricultural population. The consequences of the development of such a symbiotic system, where the pastoralists practiced both long-distance horizontal movement and local vertical transhumance, are as follows:

a) at least two (and more probably three) types of settlements existed — summer pasturages in the uplands, winter or riverine lowland pasturages, and settled agricultural villages. The latter themselves may be hierarchically arranged (Stojić 1984; Wells 1985).

b) settled village sites will be more visible (Schiffer, Sullivan and Klinger 1978), and will be located on the now-cleared smonica soils at the edges of forested areas, on the boundary between two or more ecological zones (Cvijić 1922: 333; Antonijević 1982: 33);

c) villages will be more permanent than those of the earlier Bronze Age, containing more substantial architecture, possibly enclosed;

d) the observable settlement pattern will still be one of diffuse sites (Starovlaški type), but more spread along the main routes of communication (Šumadia type — Cvijić 1922: 333; Novaković 1898: 105).

The preceding section has summarized both the ethnographic and archaeological data available on the types of socioeconomic systems assumed to have been extant in the Morava valley in later prehistoric times. It provides a model for preliminary expectations of site distributions, which will be investigated as described below.

V. OPERATIONS

„Hypotheses about early subsistence activities in an area and their relationship to present-day activities would have a better basis, if the patterns of land use in that area were studied through later prehistoric and historic periods. A fruitful approach would be to conduct detailed surveys of sites in small areas so that the total site pattern could be related to the total soil pattern in each studied area. Excavation results at a number of sites and the results of site catchment analysis could be used together to reconstruct subsistence· acitivities and to suggest reasons for site locations. Computer simulation would be a valuable tool for testing such hypotheses. Given a soil pattern in an area, the location and spread of sites in that area could be simulated according to different hypotheses concerning economic strategies. The degree of similarity between the observed and simulated site patterns would be informative". (Hodder and Orton 1976: 236)

The first step of this phase of this project has been planned along the above lines. A transect surface survey of the study areas is proposed, beginning in 1986 and ending in 1990. The ethnographic data and experience from prior surveys in both study areas indicate that sites will be located with reference to factors other than simply soil type. The following natural zones have been defined to compose the sampling strata:

1. Altitude — four zones (100—200 asl, 200—300 asl, 300—500 asl, more than 500 asl)
2. Soil — five types (alluvium, smonica, gajnjača, skeletoid forest, other)
3. Drainage — Strata will be defined on the basis of a Shreve type system (Hagget and Chorley 1969: 9) that defines the magnitude or provides for the hierarchic ordering of a branching

network. This system applies arbitrary values to stream segments and drainage areas on the basis of their ranking within a dendritic system. Components of the river system are ranked in terms of the number of their tributary streams, with each individual rivulet segment receiving a value of 1. These combine in additive fashion. Based on such a system, there are four drainage zones (headwaters [0—10], upper courses [11—20], middle courses [21—40] and lower courses [over 40]).

These criteria have also been selected since they are easily quantified and the information is readily available on current maps. Ground cover in prehistoric and early historic times will initially be hypothesized on the basis of connection with soil types (see p. 31 above). Pedological analysis is planned as part of the project to determine the actual soil formation history of each major soil type and to test the soil/vegetation relationships (Butzer 1982: 60—62). Hydrological cores across selected river segments in each drainage zone will also provide data for paleoenvironmental reconstruction, as well as investigating the extent of alluviation and consequent masking of riverside sites.

The use of remote sensing techniques is under consideration, but the primary strategy of the survey will be pedestrian: field-walking the area under investigation in teams spread out at intervals across the landscape. Spacing between the walkers will ideally be 25 meters, particularly in those zones assumed to have been most heavily occupied. In the interests of time and labor, some of the zones assumed to have been of lower potential may be surveyed by teams spaced 50 meters apart. The obvious loss in precision will in each case be assessed in terms of gains in efficiency (Plog 1976). Initial transects, one kilometer wide, will crosscut all of the above zones, running across the grain of the country (cf. Chapman and Batović n.d.). The goal of the initial transects is to establish the relative density of settlement in each landscape zone or unit defined in terms of those zones by coverage of as many different zones as possible. Material will be collected and locations recorded as they are encountered, rather than collecting at fixed intervals. The collecting strategy described by Chapman and Batović (n.d.: 15—17) with modifications (cf. Bankoff et al. in press) will be used. Total artifact collection within randomly-placed quadrats (approximately 5 percent of the site area) will be done after mapping the site location and approximate edges. On the basis of artifact counts per quadrat, areas containing discard from some prior human activity will be classed as: a) monuments (tumuli, enclosed settlements, hillforts, or any site defined by standing remains or ditches, whether or not the site function is apparent); b) findspots (presence of a minimum of 4 artifacts within a 5×5 meter quadrat or equivalent); c) single find (1—3 artifacts within a 5×5 meter quadrat or it equivalent). These preliminary categorizations follow Chapman

and Batović. The numbers of „monuments", „findspots", and „single finds" per ecological zone (as defined above) per period will provide the first means of assessing the relative occupation and use of the landscape through time. The planned transects comprise approximately eight percent of the area of the Belica and sixteen percent of the area of the Ribarska drainages. Once a preliminary idea or estimate of site densities is established, further seasons will provide more intensive coverage for areas of more particular interest or importance. Planned for the initial survey stage are the following transects:

a) a 20 kilometer long transect from Ribarska Banja to the Južna Morava north of Đunis. This transect includes most of the Ribarska drainage and takes in a portion of each of the altitudinal zones, as well as cross-cutting the soil zones.

b) a 15 kilometer long transect running west-east from Dvorane to the hills east of Veliki Šiljegovac, across the Ribarska drainage. This includes the headwater regions of two Ribarska tributaries and the middle and lower course of three others. It is generally rolling upland topography (altitude zones 2 and 3), with both smonica and gajnjača soils.

The survey schedule is dependent on accessibility of the transect areas, which in turn depends on the agricultural cycle. Experience during the spring and summer of 1985 has shown that the best times of year for survey in the Morava valley are the late fall or early spring, when crops do not obscure the landscape and when site surfaces are most easily identified. The summer, either after the corn or wheat harvest (depending on the site), is best used for excavation, whether small-scale testing or larger-scale horizontal exposure. Although at some later point in the project it may be appropriate to attempt to establish the character of certain site-types by test excavation which can provide data for answering certain limited types of questions (Chapman and Batović n.d.: 12), such tests are not definitely planned at this time.

During 1986—87, preliminary work is beginning on the conversion of the known archaeological data and ethnographic analogies (see section IV) from the verbal form presented in this proposal to a programmed computer simulation model based upon the microeconomic needs of the various lifestyles (pastoral, settled agricultural, mixed) posited for prehistory. A detailed flow-chart of annually repetitive activities serves as the basis for a predictive model of settlement choices (of. Thomas 1972, 1973). Settlement location choices will be modelled assuming various economic strategies, changes in ecological zones and population throughout later prehistory (of. Sabloff 1981; Zimmerman 1978; Earle and Christenson 1980). The simulation does not aim to pinpoint most probable settlement locations except

in terms of the most probable zones, given a certain set of circumstances and desiderata. These results can then be tested in terms of the survey data, which in turn can be used to refine the hypotheses and weightings generating the simulated pattern. In this way, a true interaction between the survey operations and theory can be maintained.

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ПРАИСТОРИЈСКО НАСЕЉАВАЊЕ У МИКРОРЕГИЈИ РИБАРСКЕ РЕКЕ КОД КРУШЕВЦА

Резиме

Овај текст представља теоријски оквирни модел и методолошки концепт пројекта о праисторијском насељавању у оквиру микрорегије Рибарске реке код Крушевца. То је заправо део ширег пројекта *Предримска Дарданија у светлости археолошких извора*, чији је координатор Балканолошки институт САНУ. У оквиру рада на том пројекту, рекогносцирала се у неколико сезона хипотетична северна граница предримске Дарданије и резултати испитивања у околини Крушевца указивали су на то да би детаљније проучавање праисторијског насељавања тог подручја дало добре резултате и да би осветлило проблеме избора локалитета, односа природних извора и археолошких налазишта, као и неке аспекте праисторијске економије, и да би допринело познавању културне динамике палеобалканских народа, поготово у познијим епохама праисторије — бронзаном и гвозденом добу.

Балканолошки институт САНУ приступио је реализацији овог пројекта уз сарадњу Народног музеја из Крушевца и Брукlин колеџа Универзитета у Њујорку (Brooklyn College CUNY). Израђен је јединствен систем документације и за рекогносцирање и за ископавање, као и компјутерски програм који служи као оперативна основа истраживања. Прелиминарна рекогносцирања и истраживања су извршена, а 1985. године приступило се и сондирању терена које су заједнички финансирали *Републичка заједница науке Србије* и *International Research and Exchanges Board New Collaborative Project Program (USA)*. Истраживање је намерно било ограничено обимом и усмерено на оцртавање проблема који ће бити разматрани у оквиру пројекта, као и на доступне алтернативне начине рекогносцирања (рекогносцирање на основу претходне археолошке литературе и архива локалних музеја, на основу информација локалног становништва и водича, рекогносцирање у оквиру једног квадрата). Проучене су и педолошке карте, као и карте ерозије за предвиђену микрорегију, а проверена је и могућност коришћења магнетометра и извршено је упоређење магнетометарске анализе и непосредних археолошких података.

Прелиминарна истраживања наметнула су известан број питања, а и потребу формирања генералног теоријског модела који би се истраживањима проверавао. Генерални модел културне промене морао би се проверавати информацијама о појединачном локалитету или регији. Формирање и провера таквог модела зависи највише од сакупљања нових података, као и од поновног проучавања постојећег археолошког материјала. Када се приступа проучавању археолошких проблема једне регије неопходно је издвојити питања која се намећу. Рекогносцирање у једној регији може, барем делимично, да пружи одговоре на четири основна питања:

а) број локалитета у оквиру једног подручја

б) број локалитета по периоду и функцији

в) однос између археолошког локалитета и променљивих фактора околине

г) међузависност између археолошких локалитета.

Показало се да би било потребно формирати прецизан теоријски модел, извршити серију интензивних рекогносцирања и компјутером анализирати и упоредити добијене податке. Нацрт теоријског модела, овде изнет, садржи поглавља:

I Увод

II Регионална археологија у Србији 1945—1985

III Подручје истраживања: географија

IV Грађа за формирање хипотеза

V Методологија истраживања

VI Библиографија.