UDC 930.85 (4—12) YU ISSN 0350—7653

ACADEMIE SERBE DES SCIENCES ET DES ARTS

COMITE INTERACADEMIQUE DE BALKANOLOGIE
DU CONSEIL DES ACADEMIES DES SCIENCES ET DES ARTS
DE LA R.S.F.Y.
INSTITUT DES ETUDES BALKANIQUES

BALCANICA

ANNUAIRE DE L'INSTITUT DES ETUDES BALKANIQUES

XV

BELGRADE 1984

UDC 903(497.1)"6347

H. Arthur BANKOFF
Dept. of Anthropology
Brooklyn College

Haskell J. GREENFIELD
Dept. of Anthropology
Graduate Center / Lehman College

DECISION-MAKING AND CULTURE CHANGE IN YUGOSLAV BRONZE AGE

Introduction

The importance of the economic and demographic changes in Europe from the onset of the Bronze Age has often been overshadowed by the more obvious events of the Neolithic.* A perusal of past syntheses (e. g. Boardman, Brown, and Powell 1971; Coles and Simpson 1968; Gimbutas 1965) suggests a conservative tendency toward simplistic explanations of the causes of important post-Neolithic developments in prehistoric Europe that is now beginning to lessen (cf. Milisavskas 1978; Sieveking et al. 1976; Sherratt 1976, 1980a, 1980b, 1982; Coles and Harding 1979). Until recently, the cultural changes observed in later European prehistory were explained largely by analogy to the historically documented large-scale ethnic movements of the first millenia B. C. and A. D. (Adams 1968; Tringham 1974; cf. Childe 1925; 1929; 1948; 1950; 1958; Gimbutas 1965; 1977; Piggott 1965). It is in the areas of temperate southea-

* We would like to gratefully acknowledge the financial and administrative aid from the following institutions in undertaking this research — National Science Foundation, National Endowment for the Humanities, National Geographic Society, Professional Staff Congress-CUNY Faculty Research Award Program, International Research and Exchanges Board, Wenner-Gren Foundation for Anthropological Research and Fulbright-Hays Program We would also like to thank our colleagues at the Narodni Muzej of Belgrade, the museums of Smederevska Palanka and Kragujevac, the Filozofski Fakultet of the University of Belgrade, and the Mladi Istraživači Srbija for their unstinting efforts during our field research. Various colleagues have commented upon aspects of this paper, but the ideas expressed are the sole responsibility of the authors. The theoretical model for this project was devised by Bankoff, and jointly refined and developed, faunal data and analyses are by Greenfeld.

stern Europe (Yougoslavia, Hungary, Romania, and Bulgaria — see map 1) that this orientation has assumed and retained overwhelming importance. The exceptions to this generalization are C. Renfrew (1969, 1972, 1973) and A. Sherratt (1976, 1980a, 1980b, 1982). Unfortunately, their contribution have had little impact on the archaeology of post-Neolithic temperate southeastern Europe among archaeologists trained in the more traditional Central European school.

MAP. 1.

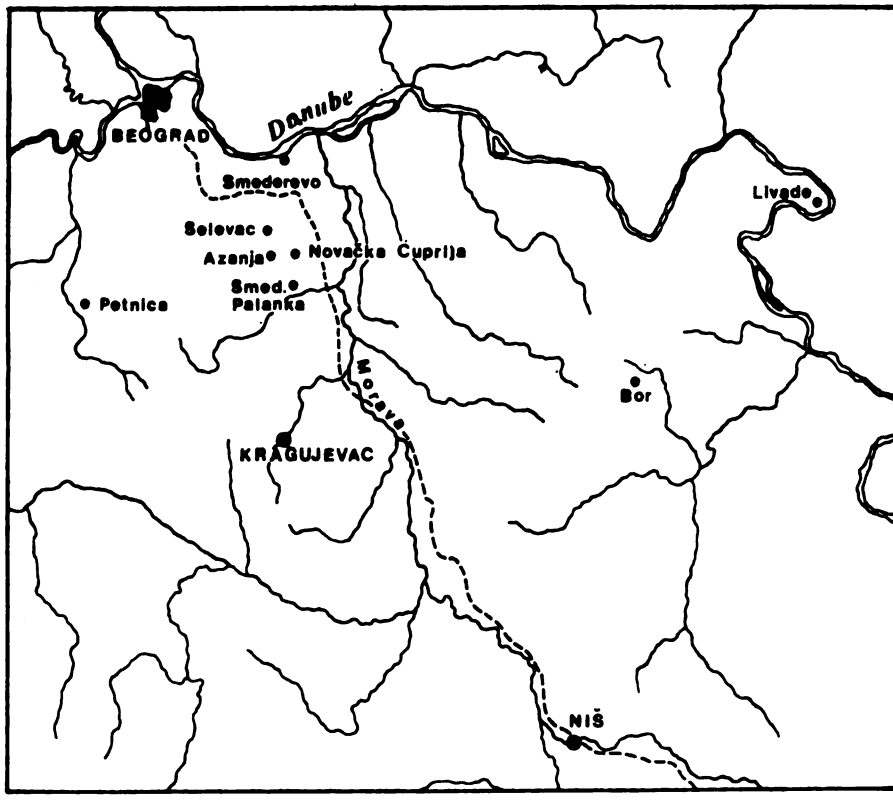
Generally, archaeologists have assumed some conquest, implicit military advantage, or migration model to explain why an agriculturally-oriented Neolithic community should adopt a supposedly more pastoral way of life in the Bronze Age. There has also been a pervasive confusion of pastoralism with nomadism, (as noticed by Milisavskas 1978), both of which are often contrasted with the supposedly more sedentary life led by the Neolithic farmers of eastern and central Europe. Methodological orientations have largely focused upon problems of space/time systematics (Ehrich 1965; Gimbutas 1965, 1977; Dumitrescu 1983). Traditional excava-

tion and recovery procedures often ignore important dimensions of data relevant to other problems in human prehistory. Moreover, even those archaeologists who are concerned with process in later European prehistory rarely answer questions concerning why certain processes would have been operative or retarded at specific times. The impossibility of using one of the above mechanisms whereby new ideas, artifacts, and information are brought into a community as an explanation for the adoption of new behavior on the part of the members of that community (cf. Steward 1955: 17) has been often conveniently overlooked. We believe that the observed changes can be explained without necessary recourse to models based on population displacement. This approach agrees with models which have been adumbrated for the explanation of the Neolithic/Bronze Age transition in Italy (Whitehouse 1968; 1973; Barker 1973) and Central Europe (Sherratt 1973, 1976), thus building toward a closer inter-regional synthesis and a more comprehensive theoretical base.

Final Neolithic-Bronze Age differences: the survey data

The realization that central Serbia would be particularly appropriate for the investigation of these problems grows out of the results of a season of site survey and excavation in the lower Morava Valley of north-central Yugoslavia in 1977 (Bankoff, Winter and Greenfield 1980). While surveying and testing later prehistoric sites in the Jasenica drainage of the Lower Morava region of north-central Serbia (see map 2) during 1977, several differences became apparent between the known final neolithic Vinča—Pločnik phase sites (second half of the fifth millenium b. c. — calibrated) and those of the Bronze and Iron Ages in the area. The Thomsen tripartite system remains, with minor additions, in full use in the Balkans and tends to hide real continuity between the phases. The archaeological cultural sequence has been most recently summarized by Garašanin (1983) for Yugoslavia and includes those cultures known locally as Vinča—Pločnik (Late Neolithic), Bubanj—Hum (Late Neolithic-Early Bronze Age), Baden—Kostolac—Vučedol (Eneolithic), Vinkovci (Early Bronze Age), Vatin (late Early Bronze-Middle Bronze Age), Dubovac—Žuto Brdo (Middle—Late Bronze Age), Mediana (Middle—Late Bronze Age), Paraćin (Middle—Late Bronze Age), and Bosut (Early Iron Age) — see table 1. Many of these groupings simply represent local ceramic stylistic variations of larger style horizons and probably do not represent valid cultural distinctions. For the purposes of this essay, this laundry list of local archaeological cultures will be grouped. This will allow us to compare the two temporal extremes of this continuum and to illustrate the gradual change continually taking place between them.

The first difference between the periods is that while ceramic and lithic artifacts attributable to the Starčevo (early Neolithic), Baden/Kostolac (later Eneolithic), Slatina (Early Bronze Age), Paraćin (Middle/Late Bronze Age), Bosut (Early Iron Age), and Roman phases were found on one or more of the surveyed sites, only a single stray sherd attributable to the Vinča period was recovered. In addition, Vinča—Pločnik phase sites, both within and outside



MAP 2.

of our survey area (e. g. Medvenjak, Selevac, Divostin, Gomolava, Pločnik, Vinča) did not yield evidence of large-scale intensive occupation in these later periods. Such a seemingly exclusive distribution suggests that site location criteria for Vinča-phase localities differed from those of earlier or later phases in the region.

Second, Bronze Age sites in the survey area are more closely spaced than the later Neolithic sites. Our survey indicated that several Bronze Age sites may occur per small stream valley (e. g.

Crkvina, Ive, Novačka Ćuprija), in contrast to the apparent Vinča pattern of one large site per major valley. There are two larger Vinča settlements known within the area of our preliminary survey: Medvednjak and Selevac (Tringham 1971; Tringham et al. 1980). Each of these lies within its own drainage system, as compared with at least eight known Bronze/Iron Age sites, within a single drainage system, which cover a time period of roughly equivalent duration. Chapman (1981) notes the existence of a few smaller Vinča sites further up the Jasenica, outside of our survey area. It would appear that the large Vinča sites (on the basis of their size, number and location) may have been functioning as central localities for a variety of smaller settlements, but this remains hypothetical in the absence of systematic regional surveys.

Third, the Bronze Age settlements are essentially shallow (less than two meters in depth including plow zone), with: a) features in the sub-humus layer easily disturbed by ancient and modern plowing; b) insubstantial wattle-and-daub architecture; c) rarely more than one vertically definable stratum or occupation level; and d) horizontally displaced stratigraphy. They are spatially extensive, and have low surface and subsurface artifact densities. By contrast, earlier Vinča-phase sites often show relativtely deeper, stratigraphically superimposed deposits and structures, and, as a result, better feature preservation and a higher artifact and feature density over rather large areas (ca. 800,000 sq. m. at Selevac).

Fourth, later Neolithic sites like Divostin and Grivac (McPherron and Ralph 1970), Banjica (Glišić 1968; Perešić 1980), Vinča (Vasić 1932—36; Chapman 1981) and Gomolava (Brukner, Jovanović and Tasić 1974: 73; Petrović 1982) provide well-documented evidence for large, internally well-organized communities with contemporaneous houses arranged more or less in regular rows. No such organized distribution of structures is known from Bronze Age sites in the same region. It appears that smaller areas on the sites were occupied at any one time in the Bronze Age than during the later Neolithic.

The period from the end of the late Neolithic Vinča—Pločnik phase to the beginning of the Bronze Age therefore represents a crucial transition period (Tringham 1971: 206—207; Sherratt 1976; 1980a; 1980b) in which Balkan society underwent serious systemic reorganization. The full significance of the settlement data possibly bearing upon demographic distributions is difficult to assess in the absence of systematic regional surveys. Nevertheless, it may be inferred that the data do indicate an apparent demographic redistibution from one of high intrasettlement population density and size, with regional population heavily concentrated in large settlements, to a pattern of low intra-settlement population density and size, and population dispersion into a larger number of more closely spaced residential localities.

Such differences between the settlement paterns and the possible land use of the later Neolithic and that of the Bronze Age in the same southeastern European river valley led us, at first, to posit that their explanation might lie in a model with »population pressure« or »climatic change« as causative variables, especially since the later Neolithic/Bronze Age transition seems to roughly correspond with the end of the warmer Atlantic climatic period and the onset of the cooler sub-Boreal (Gribben and Lamb 1978:69). To establish some rough population parameters and consider some factors underlying the later Neolithic paleoeconomy, we turned to the analysis of site catchment area, which has been useful in other areas for such purposes.

Catchment areas and population parameters: the Atlantic Period

Let us assume that the primary catchment area of a sedentary settlement during the warmer Atlantic climatic phase (after ca. 6000 B. C.) may be found within a three kilometer radius around it (Chisholm 1968: 66; Flannery 1976: 106). Although catchment area sizes found in the literature run from two kilometers (Dennell and Webley 1975) to five kilometers (Barker 1975; Higgs and Vita-Finzi 1972; Vita-Finzi and Higgs 1970), three kilometers is approximately one hour's walk over the open, rolling terrain of the lower Morava (and the central Balkans in general — cf. Higgs 1975: 223), and corresponds to about the spatial limit at which Chisholm (1968: 86) found that movement costs begin to significantly affect peasant cultivation choices. Taking the improbable best-case assumption that all land within the catchment area was arable and equally productive, then there are 2824.43 hectares of potential farmland for a village covering three hectares. Data from Bosnia suggest a yield of about 140—160 kilograms of grain per hectare under modern, although non-mechanized, conditions (Lockwood 1975: 93), of which about 20 kg/ha must be kept for seed grain. Using an estimate of 200 kg/ha for our area (cf. Halpern 1967: 58), in order to give prehistoric cultivators the benefit of the doubt and disregarding other land use possibilities, provides an estimated maximal productive capacity of 508,397 kg of edible grain from the fields within the catchment area after the seed grain has been deducted.

At one kilogram per person per day (Taylor and Orrea 1966: 52), this could feed about 1393 people, or 232 households (at six persons per household) for a year. This gives a possible population density for this hypothetical catchment area approximately half that supportable by modern methods in the same region (Halpern 1967: 56). The assumption of a system of field use in which crops were sown every other year, or half the fields were fallow in any given year (cf. Boserup 1965: 16) would further reduce the maximum

supportable population to 697 people, or 116 households. Further utilization of the cultivated half of the catchment area for winter fodder, ritual activities, or structures, and the inclusion of higher aspiration levels for the entire community or even differentially according to age, status, sex, etc., within the community would serve to reduce the maximum population supportable in a settlement with a three kilometer radius catchment area in this region. Obviously, utilization of faunal and/or marine resources can raise the ceiling on population levels, but natural topographic and soil variability preventing the use of the total area will lower it. Only the lighter weight soils of southeastern Europe would have been favorable for pre-plow cultivators (Sherratt 1980a; 1980b). The heavy chernozems and smolnitzas would have been unworkable during this time range (Dennell and Webley 1975: 100; Barker 1975: 88), affecting the distribution of agricultural settlements (but see Champan 1981 for another view). These are extremely rough estimates, meant to provide maximal parameters for the population of the later Neolithic settlements of the Lower Morava and throughout most of temperate southeastern Europe during the warmer Atlantic climatic phase. They appear to allow for a higher population than is documented for most, if not all, of the later Neolithic settlements in southeastern Europe. It remains a truism that early agricultural villages draw on the land »at a level well below the potential carrying capacity of their respective environments« (Flannery 1976: 95). It seems valid to infer that population pressure is therefore not a viable causative agent for the explanation of the observe Neolithic/Bronze Age settlement changes.

It is interesting to note that Dennell and Webley (1975), estimating the prehistoric population of the Nova Zagora region of southern Bulgaria by a similar method (although with different yield and consumption data) have independently arrived at an estimate of between 400 and 500 inhabitants for a village covering about three hectares (Dennell and Webley 1975: 106). Using their calculations for a three kilometer catchment area rather than their assumed two kilometer radius about doubles this estimate, which exceeds but is still not far from ours. Several sources of data are needed to evaluate these admittedly rough parameters. These include information on the size, number, and spacing of domestic and non-domestic structures within Vinča settlements and the site areas occupied in each phase of the settlements' existence. Although preliminary evaluation can be begun from the reports of partially excavated Vinča sites, it is hoped that these data will be forthcoming from new excavations of later Neolithic sites in southeastern Europe. Nonetheless, we think it improbable that new data will support an argument linking observed changes in settlement pattern and subsistence to a population pressure explanation.

The Natural Context

Since population pressur seems insufficient to explain choices of settlement types, sizes, and subsistence strategies on either side of the Neolithic/Bronze Age transition, the next step is to examine those environmental factors, both human and natural, which might have effected some changes in the cultural system which would be archaeologically visible. Since we lack sufficient data to control for the human behavioral elements at this time, we have chosen to separate the human from the natural variables, and begin with the better known of these ecological variables. This is, in fact, the opposite side of arguing settlement change through the pressures of increasing population: the investigation of lowered carrying capacity through climatic deteroiration.

Paleoenvironmental data indicate that approximately 3800 B. C. (calibrated) marked the end of the period of warmest times in the post-glacial era (Gribben and Lamb 1978: 69). The preceding Atlantic period (from ca. 6000 to ca. 3800 B. C.) was characterized by summer temperatures two to three degrees centigrade above the present European norms (Clark 1952: 14), by a generally wetter climate, and by the displacement of the sub-polar depressions and the axis of the main anti-cyclone belt northward, placing the high-pressure belt as far north as 40—45 degrees north latitude (Gribben and Lamb 1978: 69—70). World sea levels rose to slightly above present heights, as Alpine and Scandinavian glaciers melted (Lind 1969). The altitudinal tree line of the Alps was 300 meters higher than today (Butzer 1971: 571), and the percentage of tree pollen in Moldavia and along the Lower Danube increased (Tringham 1971: 31). Tringham notes that »everywhere in Europe there is evidence that the maximum growth of forest was reached ca. 4000 B. C. [uncorrected]« (1971: 33). In the last five hundred years of the Atlantic period, an advance of glaciers in Europe signals a sharper oscillation toward a colder climate (the »Piora Oscillation«) than for any several thousand years previously (Frenzel 1966; Lamb 1977: 372). During the succeeding Sub-Boreal (ca. 3800 B. C. to ca. 1000 B. C.) the forests regained ground as the temperatures gradually returned to their warmer level. The period is, however, characterized by sharp rainfall fluctuations (Brooks 1949: 298; Lamb 1977: 373). While it is unlikely that in and of itself the climatic deterioration of the Atlantic/Sub-Boreal boundary was severe enough to have been a cause of drastic cultural systematic realignment, it may have added some impetus to changes already beginning to take place.

Discussion

From the material presented above, it is possible to rule out certain popular »prime movers« as explanations for cultural change between the later Neolithic and Bronze Age. As has been shown, the observed environmental conditions were not altered in a drastic enough fashion to account for any significant change in terms of cultural adaptation. Available pollen diagrams, as well as modern floral distribution, indicate that the Balkan environment was probably much the same in the Bronze Age as it is at present, barring modern deforestation (Willcox n. d.). The hypothetical reconstruction and analysis of the resources available in site catchment areas has also indicated that population pressure can be discounted as a significant variable, even under a worst-case situation. The predominance of cremation burial in the Bronze Age and the paucity of later Neolithic internments allows no anthropometric data for the evaluation of migration hypotheses (cf. Stuckert n. d.). Nothing in the cultural inventory convincingly argues for migration (contra Hammond 1976; Gimbutas 1977) rather than »in situ« evolution or diffusion. Migration/Invasion has always been an appealing explanation for changes in cultural inventory (Adams 1968) which take place over a short period of time. This was fostered by a chronology that compressed the Bronze Age into a period of less than 1000 years, immediately following on the Late Neolithic. The introduction of a radiocarbon chronology for these periods in southeastern Europe (cf. C. Renfrew 1973; Ehrich 1965; Ehrich and Bankoff n. d.; Harding 1980) currently indicates a much longer span of time. At least two thousand years elapsed between the final Neolithic and the end of the Late Bronze Age (Bankoff n. d. — see table 1). This does not logically destroy the possibility of migrations or invasions, but does remove the need for them as the only possible explanatory devices. Alternative explanations can be considered as well. The full re-evaluation of the evidence for migration (e. g. Gimbutas 1977), which will become necessary with a clearer picture of the rate and scope of change, falls outside of this paper.

As far as can be determined, there is little evidence for significant political differentiation between the later Neolithic and earlier Bronze Age in the regions immediately to the north (i. e. Hungary, Czechoslovakia, and Romania — Dumitrescu 1983; Shennan 1975; Sherratt 1976; Skomal 1980). Increased conflict may also be ruled out as an explanation for the observed changes. More unsettled conditions (e. g. due to warfare) should have produced a noticable effect on the settlement pattern of the Bronze Age. One would expect the appearance of new Bronze Age settlements on more readily defendable positions, with some sort of natural or artificial fortification, and a clustered, rather than dispersed settlement pattern. In fact, sites of this nature are found only late in the Bronze Age of the Balkans (Garašanin 1973: 294; 1983: 175—181). They are more

often encountered earlier to the notrh (e. g. Otomani — Dumitrescu 1983: 57—58). The presence of fences or ditches surrounding sites (cf. Tringham 1971; 1972; Tringham et al. 1980) or sites on hilltop locations (e. g. Srejović 1965) does not necessarily indicate the presence of a fortification. Other less complex reasons may be suggested for their presence on sites from the Neolithic through the Bronze Age (e. g. corrals, settlement social boundaries, etc. — Tringham 1972). The exclusion of these variables still leaves one with the problem of explaining the demonstrable differences in settlement pattern between the later Neolithic and Bronze Age. It seems apparent to us, as to others (e. g. Sherratt 1980a; 1980b), that such changes are not a function of any one prime mover but of a number of interacting variables.

Evidence for the alteration of ecological relationships as the Neolithic progressed may be seen in the dramatic increase in the size of intra-settlement population densities and sites of the later Neolithic Vinča—Pločnik culture, in contrast to the earlier Neolithic phases (Starčevo and Vinča—Tordoš). Generally larger sites (Garašanin 1973: 71ff; Tringham 1971: 148; Grbić 1968; Stalio 1968), more closely spaced houses (Garašanin 1973: 72—74), higher artifact densities (Tringham, pers. comm.), and greater thickness of relevant strata in the final Neolithic phase as compared with the earlier periods support the assumption of increased intra-settlement population densities and size. It is further clear from the settlement data that the late Neolithic community sizes (cf. Champan 1981) far exceeded anything during the Bronze Age. Such large communities are anomalous for other prehistoric time periods in the Balkans. It seems that whatever social mechanisms maintained such nucleated communities over the time span of the later Neolithic were inoperative by the Bronze Age (see below). A complete investigation of the nature of these mechanisms during the later Neolithic lies outside the immediate range of this paper. But some discussion is unavoidable. Large nucleated settlements appear only in Vinča times. Another important feautre of the material culture that distinguishes Vinča is its stylistic uniformity over a vast area and time. This uniformity is especially evident in pottery and figurines, which may represent the only durable remains of ritual paraphernalia and behavior. Architecture, family size, subsistence, settlement location, etc. are all locally variable (Champan 1981). This is reminiscent of an elite interaction sphere (e. g. Hassuna, Halaf — Watson and LeBlanc 1973; Hopewell — Struever and Houart 1972) with local non-elite variations. Champan (1981) has adequately demonstrated the absence of any criteria for social stratification, except the presence of unequal distribution of exotic paraphernalia in Vinča burials, which also rules out an egalitarian society. Therefore, by a process of elimination, we assume that the Vinča culture is characterized by an system of social ranking (cf.

Fried 1967; Flannery 1972; Peebles and Kus 1977). The role of an elite in an interaction sphere lies in the control of trade in perishable and exotic goods (i e., metal, ground stone, spondylus shells, etc.), such as one may find in a Kula-type interaction network (Malinowski 1922; Struever and Houart 1972; Sherratt 1976). These elite, through reciprocal relationships within and without their communities contribute to the movement of goods throughout the region and the spread of cultural attributes (Dalton 1971; 1977; Uberoi 1962). An important function of this elite is to form an information dissemination network through their contacts. They make decisions on the basis of more information than is available to local non-elites (e. g. local scarcities in subsistence systems, weather changes elsewhere).

At the end of the late Neolithic, the period of largest settlements, the system seems suddenly disrupted. The small settlements continue to exist, frequently through the Eneolithic and into the Bronze Age. A few of the large settlements continue to exist in a contracted form into the Eneolithic (e. g. Gomolava and Vinča), with sporadic Bronze Age reoccupation. We would hypothesize that this disruption took place because either the function of this information-dissemination network or the means of its maintenance ceased. We see no logical reason for the function to have ceased, since elsewhere (to the north) it continued (cf. Sherratt 1976) and there is no persuasive evidence for outside intervention (see above). Information dissemination is always of importance to the survival of any society. If this network function did not cease, then its disruption was due to the lack of the elite's ability to maintain it and to counteract existing centrifugal social forces. This may have occurred in the following manner: as locally available metal replaced scarcer stone, the elites' access to and control of lithic resources became less important. The widespread development of metal technology gradually made metal available to all. As animal powered agriculture replaced human powered horticulture (Sherratt 1980b), large work groups no longer needed to be organized by the elite for production and transportation. As animal power increased efficient transport distances, elites were no longer necessary for the procurement and distribution of necessary and desired goods. The loss of control of access to the goods and services which symbolized and maintained their elite status was the death knell of this network.

Champan (1981) has amply demonstrated that not all Vinča settlements were organized along similar lines. Some were characterized more by nuclear family units, others by extended family units and many by a combination of both. The growth and spread of Vinča settlements appears to have been linked to the budding-off of nuclear family units from the older settlements. These new units of production then struck off on their own to found new settlements. Most of the smaller sites are characterized by nuclear

family-sized houses, while the older more established sites (e. g. Gomolava, Vinča) are dominated by long-houses (Chapman 1981; Brukner, Jovanović and Tasić 1974; Petrović 1982; Vasić 1932—36). Through evaluation of the evidence from modern egalitarian and ranked societies (cf. Flannery 1972; Fried 1967), the assumption of »population dispersal tendencies« seems reasonable. Such societies tend to undegro local descent group segmentation (cf. Meggitt 1962; 1965 — New Guinea; Sahlins 1961 — Africa; Wagley 1951 — South America), upon the attainment of culturally-specific community sizes and expand at the expense of other peoples (cf. Sahlins 1961) or bud into less densely populated areas through dispersion of descent groups (cf. Carneiro 1970). Such centrifugal tendencies of large but poorly integrated communities would favor eventual fissioning of these communities along descent group lines. This tendency would be even more likely where there are no adjoining populations of significant density, as in Early Neolithic Europe (Ammerman and Cavalli-Sforza 1971: 687), Late Neolithic southeastern Europe (Sherratt 1972: 531—536), and in other essentially open systems (cf. Binford 1968). Accelerated fissioning and consequent population dispersal may be viewed as the result of the removal of pressures or the breakdown of mechanisms which fostered later Neolithic nucleation (cf. Renfrew 1969). The reasons for this nucleation are still under investigation. A number of factors may have contributed to the process of the development of settlements of different sizes (see Chapman 1981 and Johnson 1977 with literature). The introduction of the wagon and the animal-drawn plough into southeastern Europe appears to have occurred at the very end of the Neolithic or the transition to the Bronze Age (the Chalcolithic/Eneolithic of the Hungarian Plain — Sherratt 1980b: 264, 270; Clark 1952). Their appearance would have helped to accentuate and accelerate the chain of events which was already leading to a redistribution of population over the landscape. Wheeled vehicles virtually revolutionized transport by making it more efficient for fewer people to move bulk. The plough offered the potential of opening up previously uncultivable areas beyond the soft alluvium, around which earlier settlements had congregated (cf. Barker 1975; Sherratt 1980b — see Champan 1981 for an alternative point of view as to the time of plough introduction and settlement distribution). The combination of these changes at this time allowed and stimulated the shift in the focus of settlements to include the drier interfluves (cf. Sherratt 1980a: 316).

For both theoretical and operational reasons, recent models of culture and cultural change (Rappaport 1967, 1971) have drawn heavily upon biological ecology (Odum 1959; Bennett 1976) and General Systems Theory (Ashby 1956; Rodin et al. 1978). These models have gained wide acceptance among archaeologists (Binford 1968; Blanton 1975; Clarke 1968; Flannery 1968, 1972; Plog 1975; Renfrew 1972). The processes of change in these models are neither

irreversible nor unpreventable (Blanton 1975). There need be no steady evolutionary trend; nucleated »proto-urban« settlements need not necessarily evolve into cities. Basic to all is an appreciation of which processes are active at specific temporal points in the development of the system (Flannery 1968). We consider change a consequence of human decision-making, and would emphasize »the crucial role of human choice (and therefore, error) in human ecology« (Bennett 1976: 164—166). Rutz (1977: 96) has demonstrated that the »aggregate pattern of behavior is the sequential outcome of ... competitive interaction ... among households« or the basic units of decision-making in a society. Therefore, any model of cultural change must not only be able to account for the grosser systematic variables, but also to indicate how those variables are influenced by and influence the decisions of individual decision-makers (Jochim 1976; Johnson 1978). The development of the Bronze Age way of life represents the culmination of individual and group decisions affecting the course of history of temperate Europe. These were as important as those made by the initial Neolithic settlers. From the above discussion it seems likely that by the Bronze Age decision-making (and the information on which it was based) passed from the hands of the elite to the more widely dispersed network of farmers.

Choice of a resource mix on the part of individuals is highly dependant on the sensitivity of the various resources to the vagaries of weather systems. For individual farmers and/or herds to survive in the long run, choices will be made in the direction of the resource mix which will produce »... the highest yield under the most adverse conditions, rather than the one with the highest yield if the weather were good« (Sherratt 1972: 497). With the resource types, information and technology available in the Bronze Age, the combination of mixed farming, barley cultivation, and »modern« barnyard animals may well have been repeatedly developed or accepted by cultures throughout temperate Europe. The adaptive dynamics of the Bronze Age can explain the prevalence of this resource mix and its effects at least as reasonably as migration/diffusion models. Flannery (1969: 87) has noted that in areas where agriculture is characterized by years of scarcity mixed unpredictably with years of bumper crops, »live storage« in the form of herds is a way of levelling these fluctuations. Moreover, a change in preferred site locations from forested land with its thick, easily worked humus, to a more grassy ground cover with a tightly knit root structure which could now be worked by animal-drawn ploughs would further increase the area of land suitable for herding. If Bronze Age subsistence is marked by an increased dependance on milk products (Sherratt 1980b), then these factors would tend to increase the importance of herding in the Bronze Age economy without any necessary introduction of new »pastoralists«.

There appears to be some indications of an alteration in the subsistence system between the later Neolithic and the Bronze Age. From our 1977 test trenches, it seemed that fish and wild fauna had almost completely dropped out of the picture during the Bronze Age (Greenfield, n. d.), whereas they represented at least ten percent of the animals exploited at Vinča sites (Tringham 1971; Tringham et al. 1980: 28; Clark 1952: 156; Bökönyi 1974). Faunal exploitation strategies in the Bronze Age appeared to be more heavily dependent on domesticated species, and there was a decrease in the number of species utilized in general (Greenfield n. d.). Barley appeared to increase in frequency until it becomes the predominant domesticated grain of southeastern Europe during the Bronze Age (J. Renfrew 1973; Hubbard n. d.: 12; Sherratt 1980a: 319). More recent research on paleoeconomic questions in the Balkans (Greenfield 1984a; 1984b; n. d.) has caused important revisions of our initial assessment. Recovery procedures on the older excavations of Neolithic localities often caused underrepresentation of several species. Data from the sites of Ljuljaci and Petnica (Greenfield 1984c; n. d.) illustrate that the major change in regional paleoeconomy took place after the Eneolithic — not before. Essentially similar systems of animal resource exploitation existed during the Late Neolithic and Eneolithic. During the Bronze Age we can see an appreciable change in economic orientation taking place. A greater emphasis upon domestic species exists. However the evidence cautions us not to assume a single pathway for economic development in the region. Individual micro-regions underwent different paths and rates of change (e. g. upland versus lowland). Based upon the age and sex distributions of each species, it would appear that the settlements were inhabited year-round and emphasized secondary, as well as primary products (Sherratt 1980b). Nevertheless, hunting frequently continued to represent an important resource supplement (Greenfield 1984c; n. d.) — see table 2.

Conclusions

From the above discussion, it is possible to outline the nature of the changes taking place between the Late Neolithic and Bronze Age. Decision-making and the individual units of decision-making changes from the village (Late Neolithic) to the household (Bronze Age). Late Neolithic production was dependant upon a large communal work force. Whereas, in the Bronze Age, individual producers were free to function independently since they possessed or could possess, the necessary technology for production. The increased efficiency of transport and the ability of animal-drawn plough agriculture to work larger areas with a smaller workforce, in conjunction with the fissioning tendencies mentioned above and the possible breakdown of Neolithic population nucleating mechanism (e.

g. trade — cf. Renfrew 1969), wolud produce a new picture of population distribution over the landscape. This would be characterized by new, smaller, and more evenly distributed and closely-spaced homesteads, each inhabited by a smaller group of people than a later Neolithic village, practicing mixed temperate farming.

Evidence for such population dispersal exists, at least in preliminary form. The massive large settlements, the upper tier (cf. Champan 1981; Johnson 1977), disappear. The small settlements continue to exist after the end of the Neolithic. In the lower Morava region, which we consider fairly typical of the floodplain edge environments of the Central Balkans, the later Neolithic settlement pattern of a single large site per small river valley (data derived from Champan 1977) is not followed in the Bronze Age. (As noted above, the pattern in other regions may differ strongly — i. e., Sava, Kragujevac — Champan 1981). Our 1977 survey shows several examples of fairly extensive (ca. 5 ha.) contemporaneous sites in one river valley, together possibly supporting a population as large or larger than the former, single, but larger (ca. 15 ha.) Vinča settlement. If this population dispersal had begun, even in incipient form, as seems likely by the end of the Vinča—Pločnik period (later Neolithic data from Divostin and Selevac support this — S. Kaufman, R. Tringham pers. comm.), it would be reinforced by the improvements in subsistence and transport technology (Sherratt 1980b). However, it appears that this dispersal tendency is a constant — it was always there from the early Neolithic (Starčevo) period onwards.

Changes in the subsistence and transport technologies are introduced into Southeastern Europe at the Neolithic/Bronze Age juncture (Sherratt 1980b). There is no a priori reason to assume, as Sherratt does (cf. 1980b), that technological change accounts for the observed cultural changes. We believe that it is the interaction of the introduction of this new technology with a set of cultural and environmental parameters which were already beginning to lose their stability that produced the cultural configurations distinctive to the Bronze Age. Data from pollen diagrams from southeastern Europe (Nandris 1977; Gigov 1964) have been interpreted as indicating extensive ecosystemic manipulation by human groups throughout the Neolithic (Nandris 1976: 550; 1977). This manipulation operated within a set of extraordinary environmental parameters (the Atlantic »climatic optimum«). Even the admitted minor changes in climate at the onest of the Piora Oscillation and subBoreal (see above), combined with continuing forest clearance during the Neolithic may have contributed to a further imbalance in the forest ecosystem during the Bronze Age. Clearing for cultivation, and collecting fodder for domestic animals are examples of the human activities which contributed to the alteration of ecological relationships (Pullar 1977).

It seems logical, then, to maintain that all of the above factors, human and natural, exogenous and endogenous, were responsible for the initiation and acceptance of the observal systemic changes at this time. With the currently available data, it is not yet possible to weigh their relative importance. But we believe that their combination produced a synergistic effect, allowing us to better understand why such changes should have occurred at this specific time and in these specific ways. The net result was a pattern of life that we believed to have differed radically from that known earlier in temperate Europe, one which was finally and thoroughly divorced from Near Eastern urban models, and one which shaped the face of rural Europe until the Industrial Revolution: the life of the small-scale subsistence farmer and his village.

BIBLIOGRAPHY

Adams, W. Y.
1968 »Invasion, diffusion, evolution?« *Antiquity* 42 (167): 194—215.
Ammerman, A. J. and Cavalli-Sforza, L. L.
1971 »Measuring the Rate of Spread of Early Farming in Europe« *Man* 6 (4): 674—688.
Ashoby, W. Ross
1956 *Introduction to Cybernetics* (New York; Wiley).
Bankoff, H. A.
n. d. »Absolute Chronology of the Bronze Age in Southeastern Europe«, paper presented at the Feb. 1983 meeting of Hleb i Vino, Philadelphia, Pa.
Bankoff, H. A., Winter, F. and Greenfield, H. J.
1980 »Arhaeological Survey in the Lower Morava Valley, Yugoslavia« *Current Anthropology* 21 (2): 269—269.
Barker, G.
1973 »Cultural and economic change in the prehistory of central Italy« C. Renfrew (ed.), *The Explanation of Culture Change* (London; Duckworth), pp. 359—370.
Barker, G.
1975 »Early Neolithic Land Use in Yugoslavia« *Proceedings of the Prehistoric Society* 41: 85—104.
Bennet, J. W.
1976 *The Ecological Transition* (New York; Pergamun).
Binford, L.
1968 »Post-Pleistocene Adaptations«, L. and S. Binford (eds.), *New Perspectives in Archaeology* (Chicago; Aldine), pp. 313—341.
Blanton, R.
1975 »The Cybernetic analysis of Human Population Growth« *American Antiquity* 40 (2): 116—126.
Boardman, J., M. A. Brown, and T. G. E. Powell
1971 *The European Community in Later Prehistory* (London; Routledge and Kegan Paul).
Bokonyi, S.
1974 *History of Domestic Mammals in Central and Eastern Europe* (Budapest; Akademiai Kiado).
Boserup, E.
1965 *The Conditions of Agricultural Growth* (Chicago; Aldine).

Brooks, C. E. P.
1949 *Climate Through the Ages* (Wiley; New York).
Brukner, B., B. Jovanovic and N. Tasic
1974 *Praistorija Vojvodine* (Belgrade; Savez Arheoloških Društava Jugoslavije).
Butzer, K.
1971 *Environment and Archaeology* (Chicago; Aldine).
Carneiro, R. L.
1970 »A Theory of the Origin of the State« *Science* 169: 733—738.
Champan, J. C.
1981 *The Vinča Culture of South-East Europe: Studies in Chronology, Economy and Society.* B. A. R. International Series 117 (part 1 & 2).
Childe, V. G.
1925 *The Dawn of European Civilization* (London; Routlegde and Kegan Paul; 6th edition — 1957).
Childe, V. G.
1929 *The Danube in Prehistory* (Oxford; Oxford University Press).
Childe, V. G.
1948 »The Final Bronze Age in the Near East and temperate Europe« *Proceedings of the Prehistoric Society* 48: 117—195.
Childe, V. G.
1950 *Prehistoric Migrations in Europe* (Oslo; Instituttet for Sammenlignende Kulturforskning).
Childe, V. G.
1958 *The Prehistory of European Society* (England; Harmondsworth).
Chisholm, M.
1968 *Rural Settlement and Land Use: an essay in Location* (London; Hutchinson 2nd edition).
Clark, J. G. D.
1952 *Prehistoric Europe: The Economic Basis* (London; Methuen).
Clarke, D.
1968 *Analytical Archaeology* (London; Methuen).
Coles, J. M. and A. F. Harding
1979 *The Bronze Age in Europe* (New York; St. Martins).
Coles, J. M. and D. D. A. Simpson (eds.)
1968 *Studies in Ancient Europe* (Leicester).
Dalton, G.
1971 »Traditional Tribal and Peasant Economies: An Introductory Survey of Economic Anthropology« *McCaleb Modules in Anthropology* (Reading, Mass.; Addison-Wesley).
Dalton, G.
1977 »Aboriginal Economies in Stateless Societies«, T. K. Earle and J. E. Ericson (eds.), *Exchange Systems in Prehistory* (New York; Academic), pp. 191—212.
Dennell, R. W.
1972 »The Interpretation of Plant Remains: Bulgaria«, E. S. Higgs (ed.), *Papers in Economic Prehistory* (Cambridge; Cambridge University Press), pp. 149—160.
Dennell, R. and Webley, D.
1975 »Prehistoric Settlement and Land Use in Southern Bulgaria«, E. S. Higgs (ed.), *Paleoeconomy* (Cambridge; Cambridge University Press), pp. 97—109.
Dumitrescu, V.
1983 »The Prehistory of Romania from the earliest times to 1000 B. C.«, *Cambridge Ancient History*, vol. 3, part 1 (Cambridge; Cambridge University Press — 2nd edition), pp. 1—74.

Ehrich. R.
1965 »Geographical and Chronological Patterns in East-Central Europe«, R. Ehrich (ed.), *Chronologies in Old World Archaeology* (Chicago; University of Chicago Press), pp. 403—458.

Ehrich, R. and H. A. Bankoff
n. d. »Absolute Chronology of the Neolithic in Southeastern Europe« R. Ehrich (ed.), *Chronologies in Old World Archaeology* (2nd edition; Chicago; University of Chicago Press) in press.

Flannery, K.
1968 »Archaeological Systems Theory and Early Mesoamerica«, B. J. Meggars (ed.), *Anthropological Archaeology in the Americas* (Washington, D. C.; Anthropological Society of Washington), pp. 67—87.

Flannery, K. V.
1969 »Origins and Ecological Effects of Early Domestication in Iran and the Near East«, P. J. Ucko and G. W. Dimbleby (eds.), *The Domestication and Exploitation of Plants and Animals* (London; Duckworth), pp. 73—100.

Flannery, K. V.
1972 »The Cultural Evolution of Civilizations« *Annual Review of Ecology and Systematics* 3: 399—426.

Flannery, K.
1976 *The Early Mesoamerican Village* (New York; Academic).

Fried, M. H.
1967 *The Evolution of Political Society* (New York; Random House).

Frenzel, B.
1966 »Climatic Change in the Atlantic/Sub-Boreal Transition«, J. S. Sawyer (ed.), *World Climate 8000—0 B. C.* (London; Royal Meteorological Society), pp. 99—123.

Garašanin, M.
1973 *Praistorija na tlu SR Srbije* (Belgrade; Srpska Književna Zadruga).

Garašanin, M.
1983 »The Stone Age in the Central Balkans« *Cambridge Ancient History* (Cambridge; Cambridge Univ. Press), vol 3, part. 1, pp. 75—135.

Gigov, A.
1964 »Typen der Pollen-diagramme am Gebiet Jugoslavien in laufe der Nacheiszeit« *Frontiers of Plant Science* 9: 9—14.

Gimbutas, M.
1965 *Bronze Age Cultures in Central and Eastern Europe* (The Hague; Mouton).

Gimbutas, M.
1977 »The First Wave of Eurasian Steppe Pastoralists into Copper Age Europe« *Journal of Indo-European Studies* 5 (4) 277—338.

Glišić, J.
1968 »Ekonomika i socijalno-ekonomski odnosi u neolitu Podunavsko-Pomoravskog basena«, L. Trifunović (ed.), *Neolit Centralnog Balkana* (Beograd; Narodni Muzej), pp. 21—61.

Grbić, M.
1968 »Nalazišta starčevačkog i vinčanskog neolita u Srbiji i Makedoniji«, L. Trifunović (ed.), *Neolit Centralnog Balkana* (Beograd; Narodni Muzej), pp. 63—76.

Greenfield, H. J.
1984a »A Model of Changing Animal Exploitation Strategies during the later Prehistory of the Central Balkans«, J. Clutton-

Brock and C. Grigson (eds.), *Animals in Archaeology*, vol. 4, (British Archaeological Reports; Oxford), in press.

Greenfield, H. J.
1984b »A Preliminary Evaluation of a Model of Faunal Exploitation for the Bronze Age of the Central Balkans« in *Archaeology and Zooarchaeology*, 1984 MASCA supplement (University Museum; Philadelphia, Pa.), in press.

Greenfield, H. J.
1984c »Ljuljaci: The Faunal Remains from a late Early Bronze Age — Middle Bronze Age fortified Settlement in Central Serbia«, M. Bogdanović (ed.), *Ljuljaci Excavations* (Kragujevac, Yugo.; Narodni Muzej), in press.

Greenfield, H. J.
n. d. *The Paleoeconomy of the Central Balkans during the Late Neolithic and Bronze Ages: Analysis of the Faunal Remains* (Ph. D. Thesis; City University of New York).

Gribben, J. and H. H. Lamb
1978 »Climatic Change in Historical Times«, J. Gribben (ed.), *Climatic Change* (New York; Cambridge University Press), pp. 68—82.

Halpern, J.
1967 *A Serbian Village* (New York; Columbia University Press; 2nd edition).

Hammond, N. G. L.
1976 *Migrations and Invasions in Greece and Adjacent Areas* (Park Ridge, N. J.; Noyes).

Harding, A. F.
1980 »Radiocarbon Calibration and the Chronology of the European Bronze Age« *Arheologicke Rozhledy* 32: 178—186.

Higgs, E.
1975 »Site Catchment Analysis: A Concise Guide to Field Methods« E. Higgs (ed.), *Paleoeconomy* (Cambridge; Cambridge University Press), pp. 223—225.

Higgs, E. and Vita-Finzi, C.
1972 »Prehistoric Economies: A Territorial Approach«, E. Higgs (ed.), *Papers in Economic Prehistory* (Cambridge; Cambridge University Press), pp. 27—36.

Hubbard, R. N.
n. d. »Development of Agriculture in Europe and the Near East (manuscript).

Jochim, M. A.
1976 *Hunter-Gatherer Subsistence and Settlement: A Predictive Model* (New York; Academic).

Johnson, D. C. and Gustafson, R. L.
1962 *Grain Yields and Food Supply* (Chicago).

Johnson, G. A.
1977 »Aspects of Regional Analysis« *Annual Review of Anthropology* 6: 479—508.

Johnson, G. A.
1978 »Information Sources and the Development of Decision-Making Organizations«, C. L. Redman (ed.), *Social Archaeology: Beyond Subsistence and Dating* (New York; Academic), pp.

Lamb, H. H.
1977 *Climate: Past, Present, and Future* (New York), 2 vols.

Lind, A. O.
1969 »Coastal Landforms of Cat Island, Bahamas«, *Research Papers, University of Chicago Geography Department* 122: 1—156.

Lockwood, W.
1975 *European Moslems: Economy and Ethnicity in Western Bosnia* (New York; Academic).
Malinowski, B.
1922 *Argonauts of the Western Pacific* (London; Routledge and Kegan Paul).
McPherron, A. and Ralph, E. R.
1970 »Magnetometer Location of Neolithic Houses in Yugoslavia« *Expedition* 12 (2): 10—17.
Meggitt, M.
1962 »Growth and Decline of Agnatic Descent Groups among the Mae Enga of the New Guinea Highlands« *Ethnology 1* (2): 158—165.
Meggitt, M.
1965 *The Lineage System of the Mae Enga of New Guinea* (New York).
Milisauskas, S
1978 *European Prehistory* (New York; Academic).
Nandris, J.
1976 »Some Factors in the Early Neotherman Settlement of South--East Europe«, G. de G. Sieveking, I. H. Longworth, and K. E. Wilson (eds.), *Problems in Economic and Social Archaeology* (London; Duckworth), pp. 549—556.
Nandris, J.
1977 »The Perspective of Long-Term Change in South-East Europe«, F. W. Carter (ed.), *An Historical Geography of the Balkans* (New York; Academic), pp. 25—57.
Odum, E. P. and Odum, H. T.
1959 *Fundamentals of Ecology* (Philadelphia; 2nd edition).
Peebles, C. S. and S. M. Kus
1977 »Some Archaeological Correlates of Ranked Societies« *American Antiquity* 42 (3): 421—448.
Perešić, S.
1980 »Banjica, Beograd — naselje vinčanske kulture« *Arheološki Pregled* 21: 18—19.
Petrović, J.
1982 »Gomolava, Hrtkovci — Višeslojno Nalazište« *Arheološki Pregled* 23: 15—20.
Piggott, S.
1965 *Ancient Europe* (Chicago; Aldine).
Plog, F.
1975 »Systems Theory in Archaeological Research« *Annual Review of Anthropology* 4: 207—223.
Pullar, J.
1977 »Early Cultivation in the Zagros« *Iran* 15: 15—37.
Rappaport, R. A.
1967 *Pigs for the Ancestors* (New Haven; Yale Univ. Press).
Rappaport, R. A.
1971 «Nature, Culture and Ecological Anthropology«, H. L. Shapiro (ed.), *Man, Culture and Society* (Oxford; Oxford Univ. Press), pp. 237—267.
Renfrew, C.
1969 »Trade and Culture Process in European Prehistory« *Current Anthropology* 10 (2/3): 151—169.
Renfrew, C.
1972 *The Emergence of Civilization* (London; Methuen).
Renfrew, C. (ed.)
1973 *The Explanation of Culture Change* (London; Duckworth).

Renfrew, J.
1973 *Paleoethnobotany* (London; Methuen).
Rodin, M., Michaelson, K. and Britan, G. M.
1978 »Systems Theory in Anthropology« *Current Anthropology* 19 (4): 747—762.
Rutz, H.
1977 »Individual Decisions and Functional Systems: Economic Rationality and Environmontal Adaption« *American Ethnologist* 4: 94—112.
Sahlins, M.
1961 »Segmentary Lineage: An Organization of Predatory Expansion« *American Anthropologist* 63: 322—345.
Sanders, W. T. and Webster, D.
1978 »Unilinealism, Multilinealism, and the Evolution of Complex Societies«, C. L. Redman, et al. (eds.), *Social Archaeology: Beyond Subsistence and Dating* (New York; Academic), pp. 249—302.
Shennan, S.
1975 »The Social Organization at Branc« *Antiquity* 49 (196): 279—288.
Sherratt, A. G.
1972 »Socio-Economic and Demographic Models for the Neolithic and Bronze Ages of Europe«, D. L. Clark (ed.), *Models in Archaeology* (London; Methuen), pp. 477—542.
Sherratt, A.
1973 »The Interpretation of Change in European Prehistory«, C. Renfrew (ed.), *The Explanation of Culture Change* (London: Duckworth), pp. 419—428.
Sherratt, A. G.
1976 »Resources, Technology and Trade in Early European Metallurgy«, G. de G. Sieveking, I. H. Longworth, and K. E. Wilson (eds.), *Problems in Economic and Social Archaeology* (London; Duckworth), pp. 557—582.
Sherratt, A. G.
1980a »Water, Soil and Seasonality in Early Cereal Cultivation« *World Archaeology* 11 (3): 311—330.
Sherratt, A. G.
1980b »Plough and Pastoralism: Aspects of the Secondary Products Revolution«, I. Hodder, G. Isaac, and N. Hammond (eds.), *Pattern of the Past* (Cambridge; Cambridge Univ. Press), pp. 261—306.
Sherratt, A.
1982 »The Secondary Products Revolution of Animals in the Old World« *World Archaeology* 15 (1): 90—104.
Sieveking, G. de G., I. H. Longworth, and K. E. Wilson (ed.)
1976 *Problems in Economic and Social Archaeology* (London; Duckworth).
Skomal, S.
1980 »The Social Organization of the Tiszapolgar Group at Basatanya-Carpathian Basin Copper Age« *Journal of Indo-European Studies* 8 (1 & 2): 75—92
Srejović, D.
1965 »Milića Gradina, Ljuljaci, Kragujevac« *Arheološki Pregled* 7: 54—55.
Stalio, B.
1968 »Naselje i stan neolitskog perioda«, L. Trifunović (ed.) *Neolit Centralnog Balkana* (Beograd; Narodni Muzej), pp. 77—106.
Steward, J. H.
1955 *Theory of Culture Change* (Urbana; University of Illinois).

Struever, and G. L. Houart
1972 »An Analysis of the Hopewell Interaction Sphere« E. N. Wilmsen (ed.), *Social Exchange and Interaction*, Anthropological Papers № 46 (Ann Arbor, Michigan; University of Michigan, Museum of Anthropology), pp. 47—80.

Stuckert, C. M.
n. d. »Roman to Saxon: Population Biology and Archaeology«, paper presented at the 1980 meetings of the Society for American Archaeology, Philadelphia.

Taylor, C. M. and E. R. Orrea
1966 *Foundations of Nutrition* (New York; McMillan).

Tringham, R.
1971 *Hunters, Fishers and Farmers of Eastern Europe, 6000—3000 B. C.* (London; Hutchinson University Library).

Tringham, R.
1972 »Territorial Demarcation of Prehistoric Settlements« R. Tringham, and G. W. Dimbleby (eds.), *Man, Settlemnt, and Urbanism* (London; Duckworth), pp. 463—475.

Tringham, R.
1974 »The Concept of Civilization in European Achaeology«, J. Sabloff and C. C. Lamberg-Karlovsky (eds.), *The Rise and Fall of Civilization* (Menlo Park, California; Cummings), pp. 470—485.

Tringham, R. et al.
1980 »The Early Agricultural Site of Selevac, Yugoslavia«, *Archaeology* 33 (2): 24—32.

Uberoi, J. P. S.
1962 *The Politics of the Kula Ring* (Manchester; Manchester University Press).

Vasić, M. M.
1932—36 *Prehistoriska Vinča* (Beograd).

Vita-Finzi, C. and Higgs, E. S.
1970 »Prehistoric Economy in the Mt. Carmel Area of Palestine« *Proceedings of the Prehistoric Society* 36: 1—37.

Wagley, C.
1951 (1969) »Cultural Influences on Populations: A Comparison of two Tupi Tribes« *Revista do Museo Paulista* n. s. 5:95—104. Reprinted in A. P. Vayda (ed.) *Environment and Cultural Behavior* (Garden City, New York; Natural History Press), pp. 268—280.

Watson, P. J. and S. A. Le Blanc
n. d. »Excavation and Analysis of Halafian Materials from Southern Turkey«, paper presented at the 72nd annual meeting of American Anthropological Assosiation, New Orleans.

Whitehouse, R.
1968 »Settlement and Economy in southern Italy in the Neothermal Period« *Proceedings of the Prehistoric Society* 34: 332—354.

Whitehouse, R.
1973 »The Earliest Towns in Peninsular Italy«, C. Renfrew (ed.) *The Explanation of Culture Change* (London; Duckworth), pps. 617—624.

Willcox, C.
n. d. »Floral Remains from Novačka Ćuprija« (manuscript).

Wilsie, C. P.
1962 *Crop Adaptation and Distribution* (San Francisco).

Van Zeist, W.
1975 »Preliminary Report on the Botany of Gomolava« *Journal of Archaeological Science* 2: 315—326.

ОДЛУЧИВАЊЕ И КУЛТУРНА ПРОМЕНА У БРОНЗАНОМ ДОБУ ЈУГОСЛАВИЈЕ

Резиме

Разлика у положају и типу позно-неолитских (Винча—Плочник) и бронзанодопских насеља најчешће је била објашњавана као последица миграције становништва. Иако је јасно да су носиоци бронзанодопских култура у југоисточној Европи, уопште узев, живели у мањим, расутијим и неорганизованијим насељима од својих позно-неолитских предходника, није извесно да ли је измена становништва једини, или уопште битан, разлог за промену типа насеља.

Подаци добијени рекогносцирањем долине реке Јасенице, код Смедеревске Паланке, 1977. године, указују на извесне специфичне разлике између позно-неолитских и бронзанодопских налазишта: 1) док су у оквиру рекогносцираног подручја констатована налазишта из свих периода бронзаног доба, налазишта фазе Винча—Плочник потпуно недостају што указује на сасвим различите критеријуме за избор положаја насеља; 2) насеља бронзаног доба нису била много удаљена једна од другог и често их је било по неколико у једној долини, док се на основу положаја познатих винчанско-полчинчких насеља може констатовати да је најчешће било само једно насеље у једној долини; 3) насеља бронзаног доба су плића, мање збијена и њима недостају сачуване архитектонске целине, какве су налажене на неолитским локалитетима; 4) у насељима Винча— Плочник фазе било је више становника него у бронзанодопским, а унутрашња организација зграда унутар насеља била је много сложенија на позно-неолитским него на бронзанодопским налазиштима.

Ови подаци указују на промену обрасца насеља. Образац великог, густо насељеног насеља у коме се концентрисало становништво једне области изменио се у образац мањег и ређе насељеног насеобинског типа са становништвом расутим у више међусобно блиских насеобина.

Да би се одстранили могући еколошки разлози за ове промене израчунат је највећи могући број становника које би позно-неолитско село могло да издржава. Анализе подручја узетог као статистички узорак показале су да прираст становништва није био одлучујући фактор који је довео до напуштања позно-неолитских насеља, пошто су она, према прорачунима, могла да поднесу неколико пута бројније становништво него што је стварно био случај .Климатске промене на крају Атлантика такође нису проузроковале расипање становништва, већ су само дале подстрек више културним променама које су већ биле у току. Клима југоисточне Европе у бронзаном добу није се битно разликовала од данашње.

Разлоге за ове културне промене, дакле, требало би тражити у самим позно-неолтиским културама. Ако се комбинују локалне променљивости и опште једнообразности које се могу установити у винчанско-плочничкој фази, могуће је говорити о манипулацији једне елитне интеракцијске сфере, каква је позната и у другим историјским и праисторијским културама (Hassuna-Halaf, Hopewell, Trobrianidi итд.). У овим културама одлуке које су се тицале целе групе доносила је мања елитна група, која је била у контакту са другим таквим групама у сфери међусобног дејства Улога једне такве елите у раслојеном друштву, какво сматрамо да је било Винча—Плочник друштво, била је контрола егзотичних и потрошних добара унутар и изван једне заједнице. Таква контрола остваривала се успостављањем узајамних трговинских односа. На тај начин могуће је створити археолошку слику културе у којој заједничке културне особености група превазилазе суштаствене локалне различитости појединачне групе. Важна улога оваквог међусобног дејства елите лежи у ширењу информација унутар елитне групе, која потом може доносити одлуке на основу већег броја расположивих података него остали сегменти друштва.

Слом оваквог система доласком бронзаног доба био је убрзан, не само битном склоношћу ка уситњавању група, која је била видљива и раније, већ, у исто време, и увођењем нове технологије у пољопривреди и превозу робе. Кола и плугови које је вукла стока, као и већа зависност од мешовите пољопривреде (земљорадња са сточарством) учиниле су да усамљено сеоско домаћинство буде успешнија производна јединица од ранијих већих родовских група, неопходних уколико се пољопривредни радови обављају без животиња за вучу. Мање заједнице, равномерније разуђене по једном пределу, могле су на бољи начин да искористе локална природна богатства. Доношење одлука прешло је из руку елите у руке обичног сељака.

Тумачење да је оваква коренита промена начина живота наступила као последица свих наведених фактора, како људских и природних, тако и спољашњих и унутрашњих, и да су ти фактори започели и развили тадашње промене система, у најмању руку је подједнако логично као и објашњење да су те промене настале услед миграција. Све у свему последица ових промена била је образац живота из основа различит од обрасца који је до тада постојао. Нови образац живота коначно и темељито раскрстио је са блиско-источним урбаним моделима и обликовао је сеоску Европу све до Индустријске револуције: живот села и малог сеоског домаћинства.

Table 1: ABSOLUTE CHRONOLOGY*

Date B. C.	Period	Danube Valley/Vojvodina	Morava Valley/Serbia
1000			III
1250	LBA	Žuto Brdo	
1500		Paraćin	II
1750	MBA		
2000		Vatin	Mediana I
2250			III
2500	EBA	Vinkovci [Slatina]	
2750			II
3000		Vučedol Kostolac	
3250		Kostolac	
3500			Bubanj—Hum
3750	Eneolithic		I
4000			
4250		Vinča—Pločnik Vinča—Pločnik	
4500	L. Neol.		
4750			
5000		Vinča—Tordoš Vinča—Tordoš	
5250			
5500	M. Neol.	Starčevo Starčevo	
5750			
6000			

* Based primarily on C14 dates; cf. Bankoff n. d.

Table 2: COMPARISON OF UPLAND AND LOWLAND BRONZE AGE LOCALITIES

Site:	Petnica		Ljuljaci		Livade		Crkvina	
Species	Frag	%	Frag	%	Frag	%	Frag	%
Ovis aries	4	2.0	9	0.5	24	2.5	3	2.6
Capra hircus	2	1.0	1	0.05	6	0.6	1	0.9
Ovis/Capra	15	7.6	40	2.5	103	11.0	22	19.1
Bos primigenius	1	0.5	20	1.25	2	0.2	0	0.0
Bos taurus	44	22.5	370	23.0	320	34.1	41	35.6
Sus scrofa (?)	2	1.0	0	0.0	0	0.0	0	0.0
Sus scrofa (W)	11	5.6	348	21.75	20	2.1	0	0.0
Sus scrofa dom.	59	30.1	389	24.0	224	23.8	32	27.8
Canis fam.	2	1.0	27	1.7	30	3.2	4	3.5
Equus caballus	2	1.0	112	7.0	28	3.0	2	1.7
Cervus elaphus	42	21.4	250	15.5	95	10.1	5	4.3
Capreolus cap.	8	4.1	15	1.0	10	1.1	2	1.7
Lepus capensis	0	0.0	2	0.01	3	0.3	0	0.0
Castor fiber	0	0.0	3	0.2	1	0.1	0	0.0
Meles meles	0	0.0	3	0.2	0	0.0	0	0.0
Ursus arctos	4	2.0	21	1.3	1	0.1	0	0.0
Pisces sp.	0	0.0	0	0.0	70	7.4	0	0.0
Aves sp.	0	0.0	0	0.0	2	0.2	3	2.6
Unio sp	0		1		243		0	
Helix sp.	0		2		11		0	
Total	196	98.9	1610	100.05	939	98.7	115	99.8
Domestic	128	65.3	948	58.9	735	78.3	105	91.3
Wild	66	33.7	662	41.1	204	21.7	10	8.7

(W=wild; Frag=fragments; %=percentage)